NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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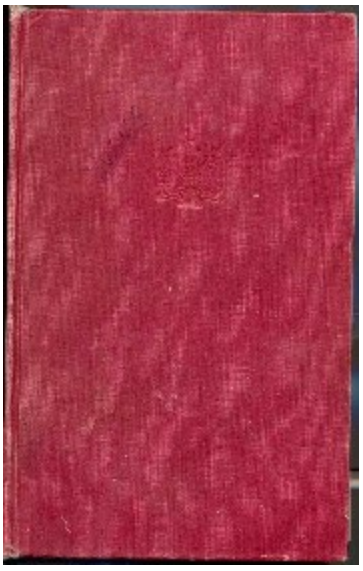

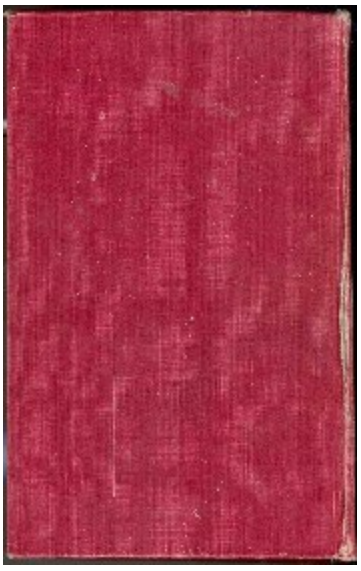

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

OFFICIAL HISTORY OF NEW ZEALAND IN THE SECOND WORLD WAR 1939-45

Official History of New Zealand in the Second World War 1939-45

The authors of the volumes in this series of histories prepared under the supervision of the War History Branch of the Department of Internal Affairs have been given full access to official documents. They and the Editor-in-Chief are responsible for the statements made and the views expressed by them.

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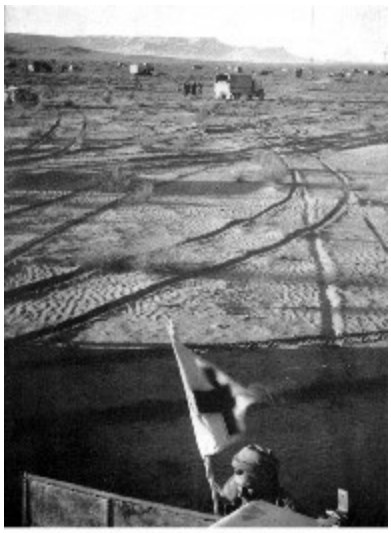

Light Section 1 NZ CCS disperses for the night on the way to Tripoli

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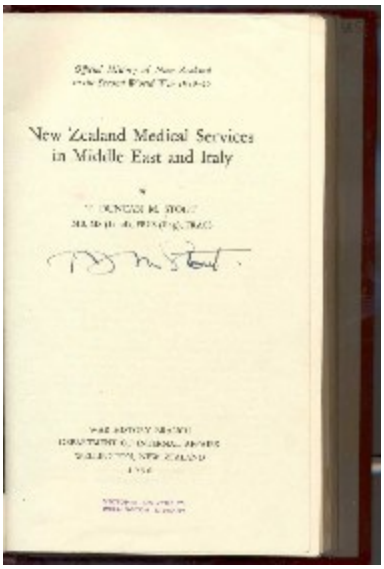

Official History of New Zealand in the Second World War 1939–45

New Zealand Medical Services in Middle East and Italy

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WAR HISTORY BRANCH

DEPARTMENT OF INTERNAL AFFAIRS WELLINGTON, NEW ZEALAND

1956

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FOREWORD

Foreword

By , VC

THE publication of this volume of the New Zealand War History gives me an opportunity of paying a well-earned tribute to the work of our medical services during the campaigns, battles, and engagements in the Middle East and Italy, from 1940 right through to the end of the War.

I have often been asked how it was that the 2nd New Zealand Expeditionary Force was able to carry on fighting over the five and a half years of the war, and in spite of heavy casualties maintain its high morale. In my opinion the chief among several reasons was because of the excellence of our Medical and Nursing Services, the efficiency of which has seldom been equalled.

When we came overseas from New Zealand to Egypt in January 1940, those of us who had served in the Middle East in the First World War felt that a heavy responsibility rested upon our shoulders. We realised the importance of taking every possible precaution against the prevalent local diseases.

In a short foreword I cannot fully acknowledge the quality of help and advice we had both from our medical and surgical specialists, and from the director of the medical service. They planned ahead with great foresight.

Before we arrived in Egypt, they had studied the plagues and infections with which the Middle East is smitten, and they set to work to find means of guarding against them. There was no detail too small for their notice, and no enemies more constantly attacked than water-

borne diseases and the fly and the mosquito. Our medical service organised our water supply system, our cookhouses, the dining halls and the wash-houses, etc. There was no avenue of possible infection that was not explored and the remedy sought.

In the realm of early surgery, clinical treatment and nursing on the battlefield, the New Zealand medical service was outstanding, and many of our methods were copied by others. Our medical men displayed a high standard of training and imagination. Our medical leaders can claim that in the Middle East they had the first mobile surgical unit.

In the turning movements at El Agheila and the Mareth Line, they moved with the advanced guard. They put up their surgical tents and actually worked on the battlefields. When the force advanced further, a small tented hospital complete with doctors, nursing orderlies, food and water remained. There were, in fact, small complete field hospitals hundreds of miles out in the desert. This system enabled the desperately wounded men to recover from the shock of major operations and to regain their strength before they were moved to the base.

Engineers, complete with bulldozers, prepared landing strips alongside the small hospitals, and on these improvised airfields transport aircraft came in to pick up and fly the wounded back to the big base hospital in Tripoli, or even to Cairo. Many lives were undoubtedly saved through this form of organisation.

When the Division went to Italy almost our complete medical organisation moved across with the Division, where they maintained the high standard of medical service that had been achieved in North Africa.

This history tells the whole story of the New Zealand Medical War Service, and I hope that it will have the wide and general circulation that it has surely earned.

Bernard Freyberg

Deputy Constable and Lieutenant Governor, Windsor Castle

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PREFACE

Preface

THIS is the second volume of the official medical history of New Zealand in the Second World War. It has been preceded by the Clinical Volume in which important surgical and medical experience has been recorded and evaluated in case of future need. Also, it follows the unit history, *Medical Units of 2 NZEF in Middle East and Italy*, by J. B. McKinney, but it covers another field, concentrating rather on the story of the New Zealand Medical Corps in the campaigns in the Middle East and Italy, on the professional problems and on medical administration. A final volume will cover other activities of the New Zealand Medical Corps—with the Pacific Forces, with prisoners of war in Europe, with the Royal New Zealand Navy, with the Royal New Zealand Air Force, with hospital ships, and the army and civil medical organisations in New Zealand. The size of this present volume has precluded the inclusion of all overseas activities in this history as was originally planned.

The record of the New Zealand Medical Corps in the First World War was admirably presented by Lieutenant-Colonel A. D. Carbery in his book *The New Zealand Medical Service in the Great War 1914–1918*. This present volume takes up the story where he left off, and briefly covers the inter-war years before turning to the mobilisation and campaigns of the Second World War. Each campaign has been briefly summarised so that the medical story may be intelligible, but the reader is also referred to other War History volumes. Medical histories are being published by other Commonwealth countries, and, in the United Kingdom volumes particularly, those interested may see how the New Zealand Medical Corps fits into the broader picture of, for instance, the medical service of the Eighth Army. A pleasing feature of the writing of the history has been the co-operation achieved by the Medical Editors or Historians of

the different countries through the Official Medical Historians' Liaison Committee of the Commonwealth countries and the United States of America.

In the medical history of a single homogeneous division, problems and experiences can be analysed more intimately than is possible with a larger force. Thus it is felt that this volume has a significant contribution to make to the history of the Second World War. Despite fairly complete war diaries and reports, it would have been impossible to present an adequate and accurate history without the help of many members of the Corps who have supplied information and perused drafts of the chapters. They are too many to mention all by name, but they are thanked for their assistance, especially Brigadier H. S. Kenrick and Colonel R. D. King. The invaluable services of my assistant, J. B. McKinney, are also gratefully acknowledged.

It is hoped that this volume will constitute a worthy record of those who served during the Second World War in the New Zealand Medical Corps.

,

Medical Editor

WELLINGTON
1956

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

DURING the First World War the New Zealand Medical Corps, with all its members drawn from the medical and nursing professions and other sections of the civilian community, built up an honourable record of courageous and efficient service in Samoa, Egypt, Gallipoli, France, Palestine, and England. For several years after the end of the war some members of the Corps continued their military work in army hospitals in New Zealand, as the civilian hospitals at that time were not able to provide the specialised staffs or the buildings to complete the treatment of returned servicemen.

General demobilisation after the First World War was practically completed by April 1920, but there remained in military hospitals over 1500 service patients, and the 700 members of the New Zealand Medical Corps caring for them were retained in a temporary formation called the Army Medical Department. From the Department were staffed the King George V Hospital of 300 beds at Rotorua, the Trentham Military Hospital of 500 beds, the sanatoria at Pukeora and at Cashmere Hills, the centre for nervous diseases at Hanmer, and the convalescent camp at Narrow Neck. The military staffs which had been in charge of military wards at Christchurch, Timaru, and Dunedin were absorbed by the civil hospitals in 1920.

The staff of the Army Medical Department was reduced as the number of service patients decreased, and by 1922 the military medical institutions were handed over to the Department of Health. The staffs ceased to be employed by the Army but continued service as civilians. From 1 November 1923 the Army Medical Department was abolished and the New Zealand Medical Corps reverted to a peacetime territorial basis. The Director-General of Medical Services, Major-General Sir Donald McGavin, in addition to his military duties was appointed Medical

Administrator of War Pensions, so ensuring continuity in administration and freeing the Defence Department from all further responsibility with regard to ex-soldiers.

On 30 November 1924 Sir Donald McGavin relinquished the appointment of Director-General of Medical Services. He was succeeded in the appointment, which now reverted to that of Director of Medical Services, on a part-time basis, by Colonel R. Tracey-Inglis, of Auckland.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

COMPULSORY TERRITORIAL TRAINING

Compulsory Territorial Training

With the cessation of hostilities in the First World War and the subsequent general demobilisation, the public generally was apathetic towards military training. However, early in 1921, the Government finally decided to introduce compulsory military service for all males in the Dominion between the ages of fourteen and twenty-one years, thus providing a limited measure of training for defence.

After leaving school, boys were enrolled for cadet service until the age of eighteen years. They were then entered for service in a territorial unit until reaching the age of twenty-one when, if they had performed efficient service, they were transferred to the reserve. The amount of service required each year was thirty evenings for drill, twelve half-day parades, and six days' continuous training in camp. The number of evenings for drill was later reduced to twenty-one.

For the New Zealand Medical Corps training depots were formed at Auckland, Wellington, and Christchurch, each catering for about 150 personnel, and a permanent staff instructor was appointed to each depot for training and administrative purposes. (Previously, there had been an organisation of field ambulance units with sections stationed at various towns throughout New Zealand. For instance, 8 Field Ambulance had sections at Napier, Palmerston North, and Wellington.)

Compulsory military service provided an adequate number of men for training, but the apathy and lack of interest of the majority of medical officers resulted in a steady deterioration of the efficiency of the New Zealand Medical Corps. The Director of Medical Services lived in Auckland, and Major G. A. Gibbs, an ex-RAMC quartermaster, at Army Headquarters in Wellington, was left to carry out the administration for

the training of medical units. He even set the examination papers for the promotion of medical officers.

The lack of interest by medical officers in the training of the NZMC can be attributed to the fact that at this time they were settling in again to practices which had been upset during the war years. However, there were a few officers who willingly gave their services as RMOs (Regimental Medical Officers) in camps and gave lectures to NZMC groups at evening parades in the three centres.

Despite the prevailing apathy, good progress was made by both cadets and territorials. Courses of instruction for NZMC officers and NCOs were held each year at Trentham. Competitions for the NZMC Challenge Shield were revived and decided at these courses.

During the later years of the nineteen-twenties there was a greater interest generally in defence matters. Younger members of the medical profession sought enrolment for service on the active list. Territorial parades, still on a compulsory basis, were well attended and the NZMC depots were turning out a number of very useful NCOs and men. The NZMC territorial force attained a fair standard in spite of the limited training facilities.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHANGES IN ADMINISTRATION

Changes in Administration

In 1929 Colonel Inglis completed his period of service and Colonel J. L. Frazerhurst, who was practising in Norsewood but who shortly afterwards moved to Whangarei, was appointed DMS.

The Chief of the General Staff, Major-General W. L. H. Sinclair-Burgess, realised the necessity for a responsible representative of the Medical Corps being in close touch with Army Headquarters, and with Colonel Frazerhurst's approval it was arranged that Lieutenant-Colonel Bowerbank, [1] who had been appointed ADMS Central Military District, should act for the DMS at Army Headquarters as the need arose. This scheme worked very well.

During the next few years there was a definite resurgence. Those medical officers, senior and junior, who had lost interest were placed on the Reserve of Officers and were replaced by younger post-war graduates, some of whom had returned from the United Kingdom after a course of post-graduate study.

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[1] Maj-Gen Sir Fred T. Bowerbank, KBE, ED, m.i.d., Order of Orange-Nassau (Netherlands); Wellington; born Penrith, England, 30 Apr 1880; physician; 1 NZEF 1915–19: Egypt, England, France—Officer i/c medical division 1 Gen Hosp, England; President Travelling Medical Board, France; DMS Army and PMO Air, 1934–39; Director-General of Medical Services (Army and Air), Army HQ (NZ) Sep 1939–Mar 1947.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

COMPULSORY TRAINING SUSPENDED

Compulsory Training Suspended

In 1931, during the depression, the Government decided that it could no longer maintain the defence force then existing and abolished compulsory military training. This halted the resurgence, but an even more serious blow to the Medical Corps was the summary discharge of Major Gibbs to the Reserve of Officers. It may be truly said that his devotion to duty in spite of frustration and apathy during the post-war years was to a great extent responsible for arresting the general deterioration and for the resurgence which commenced in 1929. The NZMC was then without a permanent officer, as on the discharge of Major Gibbs the only permanent member of the NZMC was a corporal attached to Ordnance at Trentham. However, Sergeant-Major Kidman [1] of the permanent staff was then attached to the New Zealand Medical Corps and did valuable work. Major Gibbs still retained a lively interest in the Medical Corps after his retirement and was always ready to advise Colonel Bowerbank, on whose shoulders had fallen much extra responsibility.

Prior to the last compulsory parade, instructions were issued that all units would remain as units, with personnel serving on a voluntary basis. The response to the call for volunteers was very poor and somewhat disappointing to the Regular Force instructors. Much credit is therefore due to those officers, NCOs, and men who elected to remain on the active list, and who formed the foundation for the building up of the military units of 2 NZEF in 1939.

In 1931 there was a reorganisation of the defence forces. The NZMC units were given new establishments and organised as field ambulances again. Thus, the Northern Depot at Auckland became 1 Field

Ambulance, Central Depot at Wellington became 2 Field Ambulance, and Southern Depot at Christchurch became 3 Field Ambulance. Each had an establishment of 10 officers, 20 NCOs, and 70 other ranks. The medical students at Dunedin became the Otago University Medical Company (OUMC) with an establishment of 15 officers, 47 NCOs, and 230 other ranks.

During the early nineteen-thirties there were very few volunteer territorials. Parades of the Medical Corps were held fortnightly and NCO classes were held in the intervening week. Weekend bivouacs were also held periodically but it was not uncommon to have an attendance of only about ten officers and seven other ranks. The cost of running these camps had to be borne privately, and the small honoraria received by the DMS and ADsMS in the three districts were given up at the request of the Minister of Defence and were not restored until 1938.

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[1] **Maj C. H. Kidman, MBE, MM and bar; Wellington; born Wellington, 28 Mar 1888, instructor, Permanent Staff, Wellington; 1 NZEF 1914–19: NCO 2 Fd Amb, Egypt; Gallipoli, France; instructor to NZMC in NZ, Sep 1939–Sep 1942; OC Medical Training Depot, Trentham, Sep 1942–Sep 1944; SO and QM Army HQ, Sep 1944–Jan 1947.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NEW ZEALAND ARMY NURSING SERVICE

New Zealand Army Nursing Service

With the closing of the military hospitals in 1922, all members of the New Zealand Army Nursing Service were placed on the reserve, except a Matron-in-Chief and matrons in each of the military districts who were appointed on a part-time basis and without any honorarium. Their duties consisted mainly in assisting in the training of Medical Corps personnel.

The New Zealand Army Nursing Service was placed on a peacetime establishment of a Matron-in-Chief, a Principal Matron, four matrons, and sixty-two sisters and staff nurses. Miss Hester Mac-Lean, who was Matron-in-Chief in the First World War, had been followed during the peace years by Miss J. Bicknell and Miss F. Wilson, and in 1934 Miss I. G. Willis [1] appointed Matron-in-Chief, a position which she was to hold until 1946.

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[1] **Matron-in-Chief Miss I. G. Willis, OBE, ARRC, ED, m.i.d.; born Wellington, 29 Dec 1881; Asst Inspector of Hospitals, Wellington; 1 NZEF 1914–18: sister 1 Stationary Hosp, surgical team, Matron 1918; Matron-in-Chief Army HQ, Sep 1939–Mar 1946.**

CHANGE OF DMS

Change of DMS

On 30 November 1934 Colonel Frazerhurst relinquished the appointment of Director of Medical Services and was succeeded by Lieutenant-Colonel Bowerbank, who was appointed with the rank of colonel on 1 December. The appointment also included that of Principal Medical Officer to the Royal New Zealand Air Force, the Air Force having been organised as a separate force from the Army in 1934. [2] Up to this time the Directors of Medical Services were appointed according to seniority, irrespective of the locality in New Zealand where they had their permanent residence. This arrangement had many disadvantages and often caused delay in dealing with records and correspondence. Although Colonel Bowerbank was not the senior medical officer on the active list at the time, he did reside in Wellington and could be easily contacted by the staff at Army Headquarters.

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[2] **See section in later volume on RNZAF Medical Services.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

AWAKENING TO DEFENCE NEEDS

Awakening to Defence Needs

As the years went by there was a gradual awakening to the fact that New Zealand should look to matters of defence. Scientific advances were making the rest of the world much less remote. Great advances in aircraft design, for instance, enabled pioneer airmen to travel from England to Australia and New Zealand in a few days. Recruiting campaigns were organised and young men began to feel that they should participate in the military training and join up with some unit. Territorials were paid for the time they spent in training camps and at evening drill. Travelling expenses were also allowed and uniforms were improved. The strength of units increased, and in the medical units the men were keen and enthusiastic about their training.

Annual six-day training camps were held in various centres, and although the attendances at these camps were very small, partly because employers would not let employees have leave, valuable training was carried out. The officers were given advanced work in medical corps duties and the handling of field ambulances in battle. The NCOs and men had a syllabus of parade-ground work, the handling and care of casualties in battle, and the care of patients in hospital.

Soon after his appointment as DMS, Colonel Bowerbank realised the great potential value of the Otago University Medical Company, but the chiefs of the services, though not unfavourable to it, found difficulty in allocating out of a very limited financial grant the necessary expenditure for training. In 1936 changes were made in the functions of the OUMC. It was converted into a field ambulance and it carried out seven days' annual training. The medical officers were responsible for a high degree of efficiency attained by the unit.

A satisfying feature was the response of the young medical practitioners. In all three military districts the establishments were up to field strength, and in the Central Military District the numbers volunteering were so great that in 1938 it was possible with few exceptions to select young medical practitioners who had senior medical or surgical qualifications. This high medical standard was, after the outbreak of war, a most important factor in the attainment of the exceptionally high standard of medical units of 2 NZEF, both in the Middle East and in the Pacific.

In 1937, in spite of the increasing threat of war, training was still left largely under the direction of the keen territorial officers and NCOs. The regular force was small—there were only two other ranks in the Medical Corps. The honoraria which had been given up willingly by the DMS and ADsMS were not restored until 1938, and then only to half the original amount, although work was increasing rapidly.

At his own expense, Colonel Bowerbank attended in August 1937 the Australian BMA Congress, of which he was appointed president of the Military Medical Section. Much help was given to him by Major-General R. M. Downes, the DGMS in the Australian forces. He found that in Australia there was increased activity in the training of army and air forces and in the manufacture of medical equipment. Travelling to England, he visited the War Office and the Air Ministry and found that preparations for war were proceeding apace. In England the service chiefs were working to a five-year plan for an expeditionary force of 100,000, as they considered that war might break out in the spring or summer of 1940. As in Australia, Colonel Bowerbank was given every help, and he returned to New Zealand with all the latest establishments and equipment tables for both Army and Air Force units. This was of special value because the NZMC had always followed the RAMC practice and continued to do so, with only slight modifications, throughout the war. It is appropriate to mention here that the contacts Colonel Bowerbank made with the administrative medical officers in England and Australia were most valuable after the outbreak of war in 1939.

In New Zealand there was not the military organisation to make elaborate preparations, nor was there much public support or planning by the Government. The Medical Corps, as with other units, was wholly territorial. It had part-time administrative officers, each of whom received a small honorarium. These were the Director of Medical Services, and Assistant Directors of Medical Services for each of the three military districts (Northern, Central, and Southern).

On his return from overseas Colonel Bowerbank took another step in building up the organisation at Army Medical Headquarters by securing approval for the appointment of Major Bull [1] as DADMS, on a small honorarium, to help with the increasing work and revise the organisation of the territorial NZMC. The DADMS examined the medical histories of the First World War to assist him in the preparation of regulations and establishments.

In 1938 a well-attended special course of instruction was held for officers and NCOs at Trentham. A year or so later, the majority of these officers and NCOs were serving in hospital units and field ambulances and as RMOs with infantry battalions and artillery regiments mobilised for service overseas.

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[1] **Brig W. H. B. Bull, CBE, ED; Wellington; born Napier, 19 May 1897; surgeon; CO 6 Fd Amb Feb 1940–May 1941; ADMS 2 NZ Div May 1941; p.w. 28 May 1941; DGMS, Army HQ.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL EQUIPMENT

Medical Equipment

After the First World War all medical and surgical equipment used by 1 NZEF was forwarded to New Zealand, and surplus equipment was sold. The three medical training depots were issued with all that the instructors required for training purposes, and an amount sufficient to equip all medical units of a division was kept in a medical store at Trentham. These stores were set up in complete groups ready for immediate issue to RAPs (Regimental Aid Posts) and field ambulances if required.

Each military area throughout the country was issued with one pair of medical panniers, one medical companion, and one surgical haversack for use by RMOs at local camps of instruction. These were replenished on indent from the medical store at Trentham, and up to the depression necessary medical supplies were purchased from local drug importers, thus maintaining the divisional equipment complete.

During the depression years and the years following, however, no replacements were made to existing stocks and consequently the divisional equipment was drawn on to supply territorial camps, permanent staff depots, and army training schools.

As the DGMS reported to the Adjutant-General in March 1935: The position and condition of medical equipment is unsatisfactory from every point of view. This is due partly to the depression of the past four years and the consequent tightening of the purse strings, with the result that both additions and replacements have been reduced to a very bare minimum. Another factor is that since Major Gibbs, NZAMC, was retired in 1931, only casual and spasmodic examination of medical stores has been made owing to the fact that his duties were not taken over by any

officer or NCO.

The result was that in September 1938, when the whole world became alarmed at the aggressive attitude of Germany, the army medical equipment was in a poor state. It had been realised for some years that the reserve of medical equipment necessary for a division was not only out-of-date but largely useless. The medical and surgical panniers, some dating from 1912, were borer-infested, and in most cases half-emptied of their contents, and other stocks were in a similar condition. It may be added that equipment for other divisional units was in a similar state.

The DMS on his visit to Australia and the United Kingdom had seen new medical equipment being produced, and on his return instructions were issued for a full inquiry and report on all medical equipment. On representations made by the Director of Medical Services, Major Gibbs was recalled to Wellington in February 1939 to investigate and report on medical equipment and stores. As a result, medical equipment estimated to cost £2468 was ordered from England in March 1939. This began to arrive just as war was declared.

Panniers of a new pattern had been ordered, it being planned that they could be filled from existing stocks of drugs and dressings in which there had been little change. During 1939, however, many big camps were held, and when the empty panniers arrived from England practically all military medical stores had been exhausted. In due course some of the panniers were made up at local drug merchants while others were sent to Australia and returned to New Zealand complete. If the war had come to the shores of this country shortly after the outbreak of hostilities, the army would have been badly handicapped by a lack of medical supplies. As it happened, it was fortunate that the medical units of 2 NZEF proceeding overseas were able to be equipped after their arrival at their destination. As it was, some of the medical stores supplied for use on transports were so old as to be useless, as, for example, plaster bandages provided for ships' hospitals on Second Echelon troopships.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

STRENGTH OF UNITS, 1939

Strength of Units, 1939

The staff establishments of the territorial units of the New Zealand Medical Corps in 1939 provided for three territorial field ambulances with a total of 31 officers and 318 other ranks, the Otago University Medical Company with 13 officers and 194 other ranks, 62 medical officers attached to other territorial units, and 35 medical officers unattached. The establishments of the field ambulances were, however, not fully manned and the effective strength was considerably smaller.

On the strength of each territorial field ambulance at the outbreak of war in September 1939 were nearly all the officers required but only about one-third of the other ranks. [1] A large proportion of the Territorials immediately volunteered for service with 4 and 5 Field Ambulances and formed the backbone of these units.

Thus, in 1939 the New Zealand Medical Corps was in a similarly difficult position to that in which it had found itself in 1914, with an inadequate administrative staff and not even the nucleus of some of the medical units that were suddenly required when war was declared. That there was even an embryo Medical Corps was due to the zealous work of a few officers at some personal sacrifice, and to the handful of volunteers who had presented themselves for training.

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[1] **Strength of NZMC territorial units at 31 May 1938 was:**

	Offrs	*ORs*
1 Fd Amb	**8**	**49**
2 Fd Amb	**13**	**29**
3 Fd Amb	**10**	**38**
OUMC	**12**	**138**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NATIONAL MEDICAL COMMITTEE

National Medical Committee

In the years immediately preceding the Second World War, however, valuable planning had been made on a national basis by a Medical Committee working under the Organisation for National Security, which had grown out of the New Zealand Committee for Imperial Defence. To ensure the co-ordination of all preparations for any future war, the New Zealand Committee for Imperial Defence held its first conference in Wellington on 15 November 1933. Besides the armed services, a number of key Government departments were represented as the planning involved a wide range of the State's activities. The name of this committee was changed in August 1936 to the Organisation for National Security.

The Committee for Imperial Defence in 1934 appointed a Manpower Committee to deal with the problem of manpower in war. One of the problems to which this committee turned its attention was the standardisation of medical examinations so that men could be properly classified prior to acceptance in the armed services. In 1936 a medical sub-committee was set up to consider this and other medical subjects associated with a national emergency.

This committee held its first meeting on 19 June 1936, when it was known as the Medical Sub-committee of the New Zealand Committee for Imperial Defence. After its sixth meeting it was designated as the Medical Committee of the Organisation for National Security, and continued as such until 1940, when its activities came under the National Service Emergency Regulations 1940. It then became the National Medical Committee, an advisory body to the Minister of Health, and, strangely enough, was divorced from the National Service

Department, which undertook many of the duties of the Organisation for National Security. The committee functioned very efficiently throughout the war, holding its final meeting on 21 September 1945, and had a profound influence on the medical services of the Dominion.

The membership of the committee remained constant from its inception to its dissolution, comprising Dr M. H. Watt, Director-General of Health (chairman), Major-General Sir Donald McGavin, representing the British Medical Association, Colonel (later Major-General Sir Fred) Bowerbank, Director-General of Medical Services (Army and Air), and Mr F. J. Fenton of the Department of Health, with a secretary from Army Department whose duties were taken over by Mr Fenton.

In general terms, the committee was set up to organise the medical examination of recruits, the care of sick and wounded of the forces, and the medical care of the civilian population in any state of emergency.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL STANDARDS AND CLASSIFICATION

Medical Standards and Classification

As the Medical Committee first directed its attention to standards of medical examination of recruits, it is apposite to refer to the position in the First World War. At the outbreak of war in 1914 the medical standards for acceptance of recruits for overseas service were low, being those laid down in 1904. Rules for the guidance of medical examiners were brief and vague and the form to be filled in was incomplete. The assessment of fitness, in fact, depended wholly on the experience of the medical examiner, with consequent great variation between the different examination centres in the percentage of recruits accepted or rejected. In many cases the percentage of acceptances was high owing to inexperience, and this was revealed later when a number of soldiers were discharged from the Army as a result of pre-enlistment disabilities. In 1916 the increasing numbers of men being returned to New Zealand for discharge after little or no service led to the formation of travelling medical boards. These full-time boards were staffed by specially-trained medical officers. The result was a rise in the rejection rates of recruits and a consequent fall in the percentages of soldiers breaking down later. (Up to 20 June 1916 the percentage of rejections at enlistment was 29·84, revealing, even on the low standard of medical examination, a permanent degree of physical unfitness of which the public generally was unaware.)

Later, in 1917, in an endeavour to meet the increasing demands on the depleted male population, the medical standard was again lowered, an action which drew vigorous protests from the Expeditionary Force headquarters in London. When drafts of soldiers arrived, a relatively large proportion of them required boarding and were returned to New Zealand without ever reaching France, while of the remainder many

broke down after a short period of service.

One important consequence of the low medical standard was that the New Zealand Government became responsible for the payment of large sums in pensions for pre-enlistment disabilities held to have been aggravated by service in the Army. In order, therefore, that better standards should be adopted in any future war and that there should be conservation and better application of manpower, the Medical Committee was formed.

At the outset in 1936, the Medical Committee drew attention to the inadequacy of the system of medical examination laid down in the Mobilisation Regulations 1935. In the first place, the medical examination was to be conducted by the local doctor, upon whom rested the responsibility of deciding whether the man was fit to go into camp. This was held not to be satisfactory as the examination would not be very complete and, also, the possibility of pressure by interested parties could not be overlooked. Under the regulations a man would not be regarded as fit until he had been examined and passed in camp by a medical board. It was evident that this was totally unsatisfactory. A new system had to be devised. The principle of civilian medical boards was recommended by the Manpower Committee in 1935 and approved by Cabinet. This determined that recruits would receive a thorough and final medical examination before they left their own districts. The Medical Committee on this basis drew up a report, which it furnished in June 1937, on the detailed organisation and composition of civilian medical boards. Key men were the eleven Regional Deputies, who were later chosen by the committee from senior medical practitioners.

The committee, with the assistance of Lieutenant-Colonel Bull, also compiled a *Code of Instructions for Medical Boards* which was published in 1938 as a booklet of fifty-nine pages. This Code of Instructions was modelled on the very comprehensive Hill Report, prepared for the Imperial Defence Committee by a group of distinguished doctors set up in Great Britain in July 1924 to consider all medical aspects of national service in the light of the experiences of the First

World War. The Hill Report had been revised and brought up to date in 1933. Among other points, it stressed the necessity for a thorough and properly-recorded initial examination on enlistment, and the tremendous cost to the State in pensions where this action was not taken. A medical examination form was also drawn up by the Medical Committee. This not only contained additional questions on the past medical history and illnesses of the candidate, but also required an examination of the urine and blood pressure, a cardiac-efficiency test, and a complete dental examination by a dental surgeon. (A later additional requirement was an X-ray of the chest.) The extra information supplied was of great value in the assessment of medical grading. That there was, after the outbreak of war, still an unduly large number of pre-enlistment disabilities discovered after the entry of men into camp was due in great measure to careless or insufficient examinations, or else to lack of experience and knowledge of army conditions on the part of medical boards, and not to any fault of the regulations laid down for their guidance. In addition, of course, men eager to enlist did not reveal their past medical history or else tried to cover up their disabilities. That unfit men did proceed overseas in some numbers, especially in the early stages, indicated insufficient check-up in training camps.

The Code of Instructions specified as its objects:

(1) The medical classification of men to enable the Army, Navy, or Air Force to determine the type of duty for which they were most fitted.
(2) The establishment of a standard system of grading.

It provided for a dominion organisation, under the Director-General of Health, with regional deputies in the eleven main centres controlling a total of twenty-five districts and with varying numbers of civilian medical boards in each district. Each medical board was to consist of two doctors and one dentist with supplementary staff. Later, an optician was added.

With Government approval the dominion organisation was set up early in 1939 and trial medical boards held for the examination of

Territorials. These preliminary tests brought about a degree of co-ordination between boards and their staffs, and the organisation was in being and able to function smoothly when war broke out. Executive control rested with the Health Department. In June 1939 the Director-General of Health issued a circular to members of the medical profession giving details of the action to be taken by medical boards in the event of home-defence mobilisation.

The examination of recruits, therefore, was carried out not by the Army, but by a civilian organisation under the Director-General of Health with the advice of the Medical Committee of the Organisation for National Security. This was not generally realised by the public as the Army had been responsible for medical boarding in the First World War. (This procedure also applied in regard to soldiers who became unfit in camp and whose discharge became necessary. Upon receipt of the recommendations from the military authorities such soldiers were dealt with by the civilian medical boards.)

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HOSPITAL PROVISION

Hospital Provision

In the early years of the First World War there was a system of dual control of the sick and wounded shared by the Public Health Department and the Defence Department. An important change in medical administration of sick and wounded came about in March 1918 following recommendations by the Minister of Defence. By resolution of the Cabinet the care and treatment of both discharged and undischarged disabled soldiers was made the sole responsibility of the Defence Department. Under the revised arrangements at the end of the war whereby the Minister of Defence assumed complete control over military patients, it was still necessary to make use of the hospital accommodation provided by the civil hospitals. In order to co-ordinate the work the Chief Health Officer, who had been Director of Military Hospitals with the honorary rank of colonel since 1915, was temporarily lent by the Public Health Department to the Defence Department and became a whole-time military officer under the DGMS. The King George V Hospital at Rotorua, the sanatorium at Hanmer, and all convalescent homes hitherto administered by the Public Health Department became military institutions. There had been a gradual change in opinion and, in effect, to the principle that the sick and wounded soldier was primarily the responsibility of the Defence Department; though it was necessary and indeed advisable to make use of the hospital accommodation provided by the civil hospitals, the soldier while an in-patient of the civil hospital was still the responsibility of the Army.

With the intention of benefiting from the experiences of 1914–18, the Medical Committee set about defining a policy for the future treatment of sick and wounded servicemen. At a meeting on 23 October 1936 it was agreed that the system of building temporary military

hospitals adopted in the First World War was unsound and uneconomic, and that it was preferable to utilise the existing hospital facilities, with the provision of additional accommodation where necessary, and possibly provide separate military accommodation and staffs in the case of the larger hospitals.

On this basis, the Medical Committee made certain recommendations concerning the hospital treatment of sick and wounded service- men, for submission to the Organisation for National Security, and these were the subject of Cabinet decision on 7 February 1938. Cabinet accepted the principle recommended by the Medical Committee, though not approved by the Director of Medical Services, that 'the local hospital facilities in New Zealand be utilised and adapted if necessary for the sick and wounded of the fighting forces in war'.

The policy approved by the Government was that all hospital treatment or investigation for sick and wounded servicemen, lasting more than twenty-four to forty-eight hours, was to be the function of the Health Department (through the Hospital Boards). It was thought that the Health Department was most favourably situated to review the facilities for medical treatment generally, to provide extensions to existing institutions, and to organise specialist treatment on a proper basis. In addition, where possible, the serviceman was to be treated in the institution nearest to his home.

It was laid down that the Army would hand over the sick or wounded soldier to the Health Department at the door of the civil hospital. From that point the Health Department would assume the responsibility for his treatment until he was fit to rejoin the Army. It was not fully realised, however, that the Health Department could act only in an advisory capacity to the hospital boards, which were independent and autonomous as regards the medical treatment and care of the patients in their institutions.

On this basis the army medical service arranged for only limited bed accommodation in camp hospitals. The function of these hospitals was

to treat minor illnesses and lessen the call on beds in the civil hospital. To serve this latter end these hospitals did on occasion retain patients for more than forty-eight hours, many minor cases actually being retained up to a week.

There is no doubt that the policy limitation of the stay of patients in camp hospitals to forty-eight hours resulted in a number of cases of minor disabilities being unnecessarily transferred to civil hospitals. The direct result of this was that public hospitals, especially in Auckland and Wellington, which were chronically congested before the war and had long waiting lists, were still further congested and embarrassed by the daily admission of army patients with minor disabilities and mild infectious diseases which in civilian life would have been treated at home. These public hospitals, of course, had highly trained staffs, elaborate departments and equipment for dealing with the more serious diseases, and the overhead cost of a bed in one of these hospitals was very great by comparison with the requirements for hospitals dealing solely with minor diseases and disabilities.

On analogy with the system developed in 2 NZEF in Egypt, where there was no time limit for the retention of patients in camp hospitals, where transfer to a base hospital depended on the severity of the illness, and where minor cases of infectious disease and minor disabilities not requiring specialist attention were treated, it should have been possible to lay down a more flexible policy which would have enabled camp hospitals in New Zealand to be enlarged and to care for a larger proportion of patients.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ADMINISTRATIVE POLICY FOR SICK AND WOUNDED

Administrative Policy for Sick and Wounded

In drawing up his Medical Appreciation for the Defence of New Zealand of 31 March 1939, the Director of Medical Services, using the Cabinet decision of 7 February 1938 as a basis, made certain further recommendations. Among these was the suggestion that 'in order to facilitate administration and personal contacts between Health Department and Army generally, it would be well to confer honorary military rank upon, for example, the Director-General of Health, Director of Hospitals, and medical superintendents of metropolitan hospitals'. Further, it was suggested in regard to discipline in hospitals that the local Area Officer would presumably assist the Medical Superintendent, where necessary, in the maintenance of discipline. The appreciation also stated that convalescent and medical board depots would be required on the basis of at least one per military district, assuming that, during a soldier's convalescent period, the Army would assist in making him fit to rejoin his unit. Though a responsibility of the Department of Health, these depots should have a military commandant (who was also a medical officer) to work in collaboration with the Health Department staff and be responsible for discipline; and military instructors in physical training who should, under the guidance of a medical board, refit the man physically.

However, when this appreciation was submitted to the Medical Committee, majority decisions favoured variations which the DMS considered would establish the very system of dual control he sought to avoid. It was the opinion of the Health Department officers, who constituted a majority on the Committee, that:

1. **The matter of honorary military rank either for officers of the Department of Health or Superintendents of Hospitals should be left**

in abeyance.

2. Discipline in civilian hospitals amongst soldier patients could be as effectively maintained by civilian medical superintendents without military rank, though it was agreed that the local Area Officer was to be called in as required to deal with any breach of discipline.
3. Convalescent and Medical Board Depots should have a civilian medical practitioner in command (preferably an officer in the reserve) as medical superintendent, but that such military liaison officers as were necessary would be attached for military purposes.

Within a few weeks of the outbreak of war it was necessary to make modifications in the general policy. The Director-General of Health was not prepared to accept for in-patient treatment soldiers suffering from venereal disease. In consequence of a ruling by the Minister of Health that such patients be treated in camp, contagious disease hospitals were erected in the three main camps (Papakura, Trentham, and Burnham) to deal with all cases of venereal disease from the Army and Air Force in the three military districts. This arrangement worked very satisfactorily.

The opinion expressed by a majority of the Medical Committee regarding the ability of the civilian staffs to maintain discipline unaided was quickly disproved, and the Army was asked to appoint full-time NCOs (but not of NZMC) at hospitals.

As a result of a War Council recommendation in 1940, Cabinet modified the original decision in regard to convalescent depots and ruled that these depots should be established and controlled by the Army. The Health Department was almost wholly an administrative body, its basic function being the preservation of health and the prevention of disease. It did not at the outset have a clear perception of the purpose of, or need for, convalescent depots to harden patients after discharge from hospital. Nor did it have the staff available for running convalescent depots, and the hospital boards were not prepared to accept the responsibility. Partly because convalescent depots were not available early in the war, it became the practice to send patients to their own homes for convalescence. The Army thus lost direct control of many of its men and there was a considerable wastage of manpower. [1]

[1] **The activities of the National Medical Committee will be further discussed in Vol III.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NURSING COUNCIL

Nursing Council

At a meeting of the National Medical Committee on 15 June 1938, a Nursing Council was formed to advise the committee on all matters pertaining to army and civilian nursing in time of war, and to link up the activities of the Red Cross Society of New Zealand and the Order of St. John as far as the training of Voluntary Aid Detachments, both male and female, was concerned. The Council was composed of the Director, Division of Nursing, Health Department (Miss M. I. Lambie), the Matron-in-Chief, New Zealand Army Nursing Service (Miss I. G. Willis), and a representative of the matrons of public hospitals (Miss L. M. Banks, of Palmerston North). In September 1938 the Nursing Council submitted a draft report to the Medical Committee covering the enrolment and organisation of the registered nurses in the Dominion in the event of a national emergency. On 24 February 1939 the members of the Nursing Council, together with one representative each from the New Zealand Red Cross Society and the Order of St. John, met as the Voluntary Aid Detachment Council and gave consideration to the organisation of Voluntary Aid Detachments, and to the training necessary for these detachments.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

OUTBREAK OF WAR—CHANGES IN ARMY MEDICAL ADMINISTRATION

Outbreak of War—Changes in Army Medical Administration

As already mentioned, the Director of Medical Services on 31 March 1939 produced a comprehensive medical appreciation of the problems associated with mobilisation for either home-defence or expeditionary forces. This appreciation was an important and valuable basis for the rapid expansion of medical services for the military forces consequent upon the outbreak of war.

When Britain declared war on Germany on 3 September 1939, an immediate move was made to place the New Zealand Medical Corps on a war footing, although it was some three weeks before administrative arrangements could be made properly effective. The Director of Medical Services (Army) and Principal Medical Officer RNZAF, Colonel Bowerbank, became the Director-General of Medical Services (Army and Air) and took up a full-time appointment, while the ADMS Central Military District, Lieutenant-Colonel Wilson, [1] became Assistant Director of Medical Services at Army Headquarters, also on a full-time basis, and a Staff Officer and Quartermaster was appointed. Miss Willis was appointed Matron-in-Chief (Army and Air) on a part-time basis which continued until April 1941, when she became a full-time officer. (It is difficult to understand why the Matron-in-Chief was not appointed a full-time officer and given adequate assistance at the beginning of the war. There must have been ample work to keep her fully occupied.) A civilian staff of four was called in to assist with the rush of organisation.

In each of the military districts, Northern, Central, and Southern, an Assistant Director of Medical Services was employed on a half-time basis.

Shortly after the outbreak of war the Director of Public Hygiene, Department of Health, Dr T. R. Ritchie, was appointed part-time

Director of Hygiene on the staff of the DGMS with the rank of major, while the Medical Officers of Health at Auckland, Wellington, Christchurch, and Dunedin were appointed part-time Assistant Directors of Hygiene. The growth of camps, with increased needs for supervision in hygiene and sanitation, proved that a part-time appointment alone was insufficient. This resulted in the additional appointment in November 1940 of the Principal Sanitary Inspector, Department of Health, Captain J. H. Cowdrey, as full-time Deputy Director of Hygiene, under the DGMS. Thus a measure of liaison was achieved and any tendency to dual control by the Health Department and Army on health matters in camps was eliminated. The new appointment was analogous to the position of ADMS (Sanitary) on the staff of the DGMS in the First World War. In each mobilisation camp a health inspector seconded from the Health Department worked under the senior medical officer of the camp.

For some years before the outbreak of the war the Director of Dental Services was directly under the Adjutant-General, but in March 1939 the dental service was again placed under the direction of the DGMS, as in the First World War, and in accordance with military organisation in Great Britain, Australia, and South Africa. At a conference on 25 and 27 March 1939, it was unanimously agreed that the DDS would administer the Dental Corps without interference from the DGMS or ADsMS Districts, but that all changes of policy or matters of importance concerning the dental treatment of troops in New Zealand would be submitted to the DGMS or to the Adjutant-General through the DGMS. The DDS, however, was never heartily in agreement with the policy of the Dental Corps being under the control of the DGMS, and at times referred policy matters direct to the Adjutant-General. This led to repeated friction and misunderstanding between the DDS and DGMS, but the efficiency of the Dental Corps fortunately was unaffected.

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[1] Brig I. S. Wilson, OBE, MC and bar, ED, m.i.d.; Wellington; born Dunedin, 13 Jul 1883; physician; 1914–18: medical officer BEF Fd Amb, RMO 1 Bn Scots Guards, Guards Fd Amb; wounded, Somme, 1916; ADMS Central Military District 1935–39; ADMS

Army HQ, Sep 1939–Feb 1944; acting DGMS Army HQ, Feb-Jul 1944; CO 2 Gen Hosp Oct 1944–Jul 1945.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EXTENSION OF RESPONSIBILITY OF NATIONAL MEDICAL COMMITTEE

Extension of Responsibility of National Medical Committee

With the outbreak of war the original purpose of the National Medical Committee was extended to enable it to take measures to ensure that the requirements of the Navy, Army, and Air Force were met as far as professional medical personnel were concerned, and to maintain a balance between the needs of the armed services and the civilian population.

On 7 September 1939 the Ministers of Health and Defence gave their approval to control being assumed by the Medical Committee in the matters in which it had been acting in a planning capacity prior to the war, and the committee became in effect the adviser to the Government on all medical matters in connection with the war. No members of the medical profession, other than those then under obligation to the Army, whether in hospitals or private practice, could be accepted for service until their case had been reviewed by the Medical Committee.

At its meeting on 26 September 1939 the Medical Committee expressed its opinion that, in addition to functions already assumed, it should be given further powers to enable it to be the recommending authority direct to the Minister of Health for utilisation of all medical, nursing, and semi-professional personnel, whether civil or institutional, connected with the health of the community. This included medical practitioners, nurses, dentists, radiologists, pathologists, pharmacists, and masseurs. The recommendation of the committee was agreed to.

In October 1939 a Dental Sub-Committee and a Masseurs Advisory Committee were formed. No control was instituted in regard to the enlistment of chemists, but in March 1940 when the Director of Pharmacy pointed out the numbers of pharmacists who had enlisted and

been called up for military service, sometimes with combatant units, the Medical Committee recommended to the Director of National Service that no further pharmacists be accepted unless required as dispensers in the Army Medical Corps.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEETING OF NURSING COUNCIL

Meeting of Nursing Council

The Nursing Council met on 5 September 1939 to give consideration to the recruitment of nurses for the New Zealand Army Nursing Service, and to the question of supplementing the nursing staff of hospitals should this become necessary. Its report was adopted by the National Medical Committee, received Ministerial approval, and was the basis for the regulation of the intake of registered nurses into the NZANS, having regard to the needs of the armed services and the civilian population. [1]

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[1] **This subject is also further discussed in Vol III.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DUTIES AND RESPONSIBILITIES OF MEDICAL ADMINISTRATORS

Duties and Responsibilities of Medical Administrators

It is appropriate that some of the duties and responsibilities of those controlling the organisation and maintenance of the Army and Air medical services in New Zealand from 1939 onwards should be stated.

***DGMS*: The DGMS was the responsible adviser to the Chief of the General Staff, Army, and the Chief of Air Staff in all medical and sanitary matters, and, as the head of the medical service, administered it and was responsible for its efficiency. On purely technical matters he issued instructions to his representatives with lower formations, and he arranged movements of personnel through the Adjutant-General or Air Member for Personnel. He dealt directly with the Quartermaster-General on questions in connection with the siting and construction of camps, diet of troops, siting and construction of military hospitals, and dieting of hospitals. Subject to General Staff policy, he was responsible for the requirements of the troops so far as medical services, medical stores, and medical equipment were concerned.**

***ADMS*: The ADMS at Army Headquarters was the chief assistant to the DGMS in all his duties.**

***Staff Officer and Quartermaster*: The staff officer and quartermaster was in charge of all medical stores and was responsible for the equipment of all medical units and for the proper accounting for and periodical inspection of this equipment.**

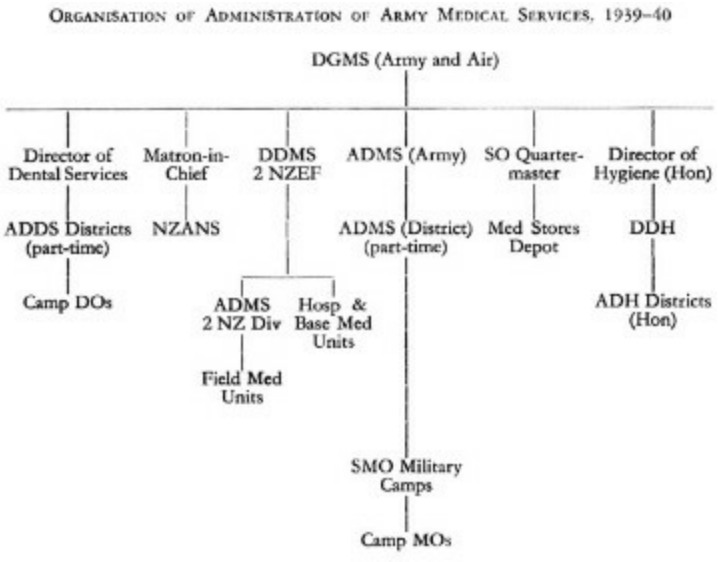
***Deputy Director of Hygiene*: The Deputy Director of Hygiene was the adviser of the DGMS on camp sites, buildings, water supply, drainage, and sewage disposal. He made systematic inspections of the camps in regard to hygiene, health of troops, control of preventable or infectious**

diseases, and instruction and training in hygiene and sanitation.

***Matron-in-Chief*: The Matron-in-Chief was responsible to the DGMS for the organisation and control of the New Zealand Army and RNZAF Nursing Services. In her duties she saw that none but properly trained and qualified nurses were recommended for appointment in the Army, Navy, and Air Nursing Services, and she made the recommendations for appointment of matrons of the hospitals under the control of the DGMS.**

***ADsMS Military Districts*: In a military district the duties and responsibilities of an ADMS, who was appointed by the DGMS, were similar to those of the DGMS at Army Headquarters. He was under the direction of the DGMS and responsible to him for the efficient training of the medical units. He had to keep his District Commander informed on all important technical instructions received from the DGMS, and advise him on all medical and sanitary matters. He controlled all medical units in his district and was responsible to the DGMS for their efficiency, as well as for the adequate supply of medical stores to all units.**

This, then, was the nucleus of administrators responsible for the handling of medical problems associated with mobilisation and the provision of medical services for home and overseas forces.



Organisation of Adminstration of Army Medical Services. 1939–40

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 2 — MEDICAL ORGANISATION AND TRAINING, 1939-40

CHAPTER 2
Medical Organisation and Training, 1939-40

DURING 1939 the Territorial Force in New Zealand was in the process of reorganisation from a cadre to a peace establishment within reasonable reach of its war establishment, and the National Military Reserve was being formed and plans for home defence were being revised. Shortly after the outbreak of war on 3 September 1939, the Government decided to raise a special force of one division and ancillary troops for service overseas or for home defence. Medical examinations were necessary before the men responding to the call for volunteers for the Army were admitted to mobilisation camps.

By 31 July 1939 the machinery for medical boarding was ready to operate at short notice. The country had been divided into eleven areas, and a Regional Deputy, a senior medical practitioner, was in charge of the medical examinations in each region. A total of 253 medical boards, each comprising two doctors and a dentist, had been chosen to meet the requirements and places of mobilisation of the Army. For their guidance these medical boards had the comprehensive Code of Instructions which had been printed in 1938.

With the number of boards arranged, and sessions of four hours a day each, it was expected to complete in four days the examination of the 39,900 men the Army proposed to mobilise. (In actual experience it was found that the army mobilisation did not achieve any such intensity as mooted in pre-war proposals. Up to 9 December 1939 nine of the eleven regions had been called upon to examine only 15,796 recruits. Figures were not available for the other two regions but they probably did not exceed 1000 each.)

At the meeting of the Medical Committee on 24 September 1939 it was stated that reports received and inspections made indicated that the organisation for medical boarding was carried into effect immediately and efficiently following the outbreak of war. The Regional Deputies,

who functioned in a part-time capacity, were asked at that stage to report in regard to the Code of Instructions, the forms in use, and whether there was need to improve the literature or the organisation. The reports were generally satisfactory as regards accommodation and staff but a number of suggestions were made for the improvement of the Code of Instructions, the Army Instructions for conduct of medical examinations, and Army Form 355 (Record of Medical Board). Some of the suggested improvements led to amendments to the instructions.

The introduction of compulsory military service under the National Service Emergency Regulations 1940 (dated 18 June 1940) brought about certain alterations in official policy and imposed additional responsibilities on regional deputies and medical boards. It was therefore necessary to supplement the original instructions, prepared as they were primarily for initial examination under a system of voluntary recruitment.

When conscription was introduced in 1940 the Army demanded that boarding of the men on each ballot list should be completed within six weeks. This entailed the use of every available doctor at a time when practitioners were reduced in number and busier than ever with the introduction of more classes of benefit under the Social Security legislation.

Under the National Service Emergency Regulations 1940, Regulation *35 et seq*, the responsibility for medical boarding was transferred from the National Medical Committee to the Minister of Health. The Regional Deputies became therefore, in fact, deputies for the Minister of Health, to whom the National Medical Committee was, strictly speaking, only an advisory body. The effect was to weaken the administrative control that had previously been exercised by the National Medical Committee, which had a body of military experience from the First World War, and concentrate authority in the Minister of Health.

As deficiencies in the medical examination system became apparent, modifications and additions were made to the Code of Instructions. On 2

December 1940 the definition of Grade I men, which had been 'men who attain the full normal standard of health and strength and are capable of enduring physical exertion suitable to their age' (the age limits being twenty-one to forty years), was qualified by 'Fit for Active Service in any part of the world'. A new medical examination form (NZ 355) was drawn up to give a more complete procedure for examination of recruits and a record of pre-enlistment medical history, besides incorporating the amendments to grading classification. (Later, with the experience gained from the examination of men returned from overseas for health reasons, and from reports of medical officers overseas, the National Medical Committee drafted a greatly improved Code of Instructions giving more complete instructions to medical boards regarding grading and detailing the procedure to be followed in the case of various disabilities. The new edition, printed in February 1942, was made available to medical boards in the middle of 1942. Certain aspects of medical boarding were still unsatisfactory, and consideration was given in December 1942 to constituting selected medical boards staffed preferably by doctors with military experience, acting in a full-time capacity, but these were not set up.)

There was a case in the earlier years of the war for a closer liaison between the army medical services and the Health Department, which was in executive control of the civil medical boards examining recruits, so that doctors could have been kept constantly aware of the disabilities likely to cause rejection from the Army. On this question of rejection the same problems were encountered in Australia and Canada. [1]

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[1] This subject will be further elaborated in Vol III.

Hospital Treatment-Convalescent Depots and Camp Hospitals

There seemed to be a lack of appreciation by the Health Department of the problem of the convalescent soldier. Civil hospitals were not accustomed to arrange for the convalescence of patients suffering from

ordinary illness. These were expected to convalesce at home. It was only in the more serious illnesses and in special conditions demanding prolonged treatment that any provision at all was made. When the Health Department originally arranged for the use of Hanmer and Rotorua, it envisaged the treatment of returned wounded men and not sickness cases from New Zealand camps. These cases, in its opinion, required no special provision. They were sent back to their units in camp at the end of their period of sick leave at their homes. The necessity for hardening up after a debilitating illness before being subjected to the conditions of a military camp was simply not understood. This, of course, was quite contrary to the military outlook.

The hospitals discharged the military patients to their homes for varying periods of sick leave before returning to camp, and this leave could be extended on the certificate of their local doctor. The inevitable happened, and the military authorities found that great wastage of personnel was occurring and that they could not check up on the men scattered all over the country. This led to the setting up of a ' Sick and Wounded Branch', which was placed directly under the Adjutant-General, to check up on and control all unattached army personnel. The Branch took over medical as well as administrative functions, and there was some difficulty caused by its lack of medical knowledge and co-ordination. The appointment later of a senior medical officer to the Branch for consultation led to improved control in matters requiring professional knowledge.

The Army eventually built three convalescent depots to attempt to supply a more complete medical chain, but they were not completed until 1942 and 1943 and did not receive a great many of the patients discharged from hospital. The depot built for the Central District was given over to the Americans before it functioned as a convalescent depot. The civil hospitals were used for sick and wounded returned from overseas, and the Army had no military hospitals of its own at any stage, except for small hospitals in mobilisation camps.

For the admission of minor sick, small camp hospitals with the most

modern equipment were erected in the three main mobilisation camps, Papakura, Trentham, and Burnham, each having accommodation for thirty to fifty patients. Each had an establishment of five members of the NZANS, two officers, and twenty-five other ranks. (Prior to the completion of Papakura camp in 1940, a camp hospital at Ngaruawahia was similarly staffed.) The amount of accommodation and the size of the staffs were increased during the war.

Motor Ambulances

At the outbreak of war there were no military motor ambulances on hand to convey the sick from camps to civil hospitals. In some instances ambulances belonging to hospital boards were used, and where they were not available army service trucks were adapted by placing mattresses or stretchers on the floor.

In October 1939 the Salvation Army gave two motor ambulances, and about the same time five chassis were obtained and bodies built on them at the Post and Telegraph Department workshops, Wellington. An ambulance was presented by the Red Cross Society and donations towards ambulances were made by various organisations and individuals. An amount of £4410 was donated in this way for the purchase of army motor ambulances up to the end of October 1940. Subsequently, ambulances became available through army channels and the substantial deficiency was overcome.

Health of Troops

With large numbers of men congregated in camps under conditions to which the majority of them are unused, there is likely to be a greater incidence of disease than normally occurs in the civil population. The DGMS (Army and Air) was insistent in his recommendations to camp authorities at the beginning of the war that the following points should be strictly observed:

1. **Adequate air space and ventilation in sleeping quarters.**

2. All damp and wet clothing to be changed at the earliest possible moment, and the provision of adequate drying facilities, and no wet or damp clothing to be permitted in sleeping quarters.
3. Adequate changes of clothing to be provided.
4. Avoidance of undue fatigue in the early stages of training, i.e., training to be graduated.
5. Provision of sufficient hot and cold showers.
6. Diet not only wholesome and well cooked, but containing those foods which have a protective value against disease, and the food to be varied and served in a palatable manner.
7. Sanitary arrangements to be above suspicion.

In regard to (1), it was pointed out that it was essential that each soldier should have 600 cubic feet of air space and that the distance between the centres of adjacent beds be at least 6 ft. In the early stages of the First World War proper attention was not given to adequate ventilation and air space, and when a serious outbreak of cerebro-spinal fever occurred, a number of cases being fatal, a complete disorganisation of training resulted. Points (2), (3), and (4) were the direct responsibility of the unit commander.

The efficiency of the medical services was sternly tried in the latter part of October and during November 1939 by a severe epidemic of influenza (streptococcal respiratory catarrh) in which between 30 and 54 per cent of the strength of all units in the mobilisation camps was affected, the incidence rates in the three camps being similar. Energetic measures were taken to combat the epidemic, these consisting mainly in an insistence on the medical safeguards for the health of troops already set out. The fact that there was not a single death and only four cases of true pneumonia as a result of the infection was evidence of the success of the prophylactic and nursing measures taken. Similarly, a milder influenza epidemic in May 1940 did not assume any serious proportions.

In the early months of 1940 it was found that on some matters in connection with camp construction and arrangements neither the Army Medical Service nor the Assistant Director of Hygiene for the district was consulted. It was felt that there should have been a greater degree of

consultation between the Public Works Department, the Quartermaster-General's Branch, the Army Medical Service and the Director of Hygiene.

Neither the DGMS nor the ADsMS were first consulted regarding the design of huts, latrines, and showers, and strong protests by them when they pointed out weaknesses during the actual construction work or insanitary conditions were often ignored, particularly in the Central Military District. It was fortunate that the consequences were not more serious.

To some extent this was probably a result of the concern of one particular organisation to push ahead expeditiously with its own programme. The medical interest in camp construction and arrangements from the point of view of the health of the troops and the avoidance of epidemics had to be emphatically stressed before it came to be recognised. Otherwise the valuable and extensive experience of senior medical officers in military medicine and hygiene, and the importance of its application, tended to be underrated.

On 31 October 1940 a conference was held to discuss the question of hygiene and sanitation of military camps; attending it were representatives of the Army, Health, and Public Works Departments, with the Adjutant-General as chairman. The chairman admitted that conditions in some camps were not all that could be desired, but it had to be remembered that practically all camps had been established at very short notice. The urgent nature of most of the work required quick action, and the usual procedure of preparing plans and submitting them to various officers had, in some cases, been departed from, and, instead, verbal arrangements had been made on the spot by Army and Public Works officers. The sole reason for non-consultation with specialists in hygiene and medicine was the urgent demand for construction. The delay in completing Waiouru camp had seriously upset army plans and necessitated the occupation of temporary camps where expenditure was restricted to what were considered to be essentials, and economies were effected at the expense of efficiency and proper hygiene conditions.

It was explained that the army officers concerned proposed to recommend the appointment of a full-time Deputy Director of Hygiene. It was decided that, in future, the procedure to be followed in deciding on the location of a camp would include a reconnaissance of the site and buildings by the district commanding officer, AQMG, and ADMS, the Works Officer, and District Engineer, Public Works Department. These officers would furnish a report on the site. When plans were received at Army Headquarters, the Quartermaster-General would submit them to the Director-General of Medical Services and Deputy Director of Hygiene for approval from the medical service point of view. In November 1940 the Principal Sanitary Inspector, Health Department, was appointed full-time Deputy Director of Hygiene (Army and Air), and held the appointment throughout the war. The revised arrangements worked effectively.

Camp Medical Arrangements

With the mobilisation of the First Echelon of the Special Force in September and October 1939, whole-time senior medical officers were appointed to Ngaruawahia, Trentham, and Burnham camps, to which three assistant medical officers were later appointed. With the completion of the mobilisation camp at Papakura, the senior medical officer and some of the staff from Ngaruawahia were transferred there. Full-time medical officers were stationed at Narrow Neck, Motutapu, and Fort Dorset, while part-time medical officers were appointed to the Lyttelton Fortress troops and Wellington Fortress troops.

The senior medical officers were on the staff of the camp commandants in the mobilisation camps. They were responsible for the care of all sick, and were the advisers to the camp commandant on all matters pertaining to the health of troops, as well as being inspectors of sanitation arrangements. On sanitary matters each had the help of a sanitary inspector with the rank of WO I. Under the control of the senior medical officer were the military camp hospital and a contagious disease hospital where venereal disease patients were retained and treated. There

was an arrangement between the Health Department and the Army whereby soldiers who contracted venereal disease after they went to camp were to be treated by the Army. If they had contracted the disease after attestation but before going to camp, they might be discharged from camp and become the responsibility of the Health Department. The senior medical officer had a number of medical officers to assist him. One looked after the camp hospital, while others were appointed as regimental medical officers to the battalions of reinforcements undergoing training. These were practically always medical officers who were themselves going overseas with the reinforcements.

The duties of these regimental medical officers were varied- holding sick parades, lecturing to the men on the maintenance of health, inspecting feet after route marches, inspecting barracks, kitchens, showers, and latrines, and giving the necessary inoculations.

Camp dental clinics were established in each of the three mobilisation camps, and all dental treatment was carried out at the expense of the Government after the recruits entered camp.

Preventive treatment by way of inoculation and vaccination was carried out. It was decided to immunise the troops in camp against tetanus before sending them overseas. All troops after the First Echelon were given two injections of 1 cc. of toxoid at an interval of six weeks; adrenalin was available in case of anaphylactic shock and the men were kept under observation for three hours.

Two injections of TAB vaccine for protection against typhoid were given at a week's interval. Individual reactions were generally marked and sometimes severe, and the preparation was adjusted so as to obviate very severe reactions. There was some difficulty in obtaining virile strains of organisms in New Zealand, a typhoid bone abscess being utilised at one time.

Vaccination against smallpox was also carried out. The troops of the First Echelon were done on the transports proceeding overseas and

complaints were made of the discomfort suffered under the tropical conditions. The Second Echelon were vaccinated in camp in New Zealand and the camp staffs complained of interference with training. This led again to the vaccination being carried out on the troopships. At a later period when there was less urgency, the men were usually vaccinated in camp. The vaccination was repeated if no positive reaction occurred.

With the great development in the use of blood transfusion before the war, it was realised that blood would be freely given to the wounded. In order that the blood group of each soldier would be known in the case of emergency, it was arranged that each man should be blood-typed and the international symbol for his group entered in his paybook and marked on his identity disc.

Venereal Disease Policy

As a result of a forceful report submitted by the Director-General of Medical Services (Army and Air) through the Adjutant-General to War Cabinet, venereal disease was treated in a sane and reasonable manner. The policy was almost revolutionary compared with the First World War precautions of barbed-wire enclosures and armed guards for such patients. It was at first watched with great misgivings and doubt by some combatant officers. The attitude of the DGMS (Army and Air) was that nothing would be accomplished by treating as criminals those troops who contracted venereal disease, and that too harsh a policy would discourage infected soldiers from reporting early and openly for treatment.

In each of the three main mobilisation camps small isolation hospitals, called contagious disease hospitals, were established, and here patients were admitted and in most cases speedily cured by treatment with sulphonamides. These hospitals were used for both Army and Air Force personnel, while Trentham and Burnham hospitals also accepted any naval personnel from the Wellington and Christchurch areas.

Primarily, however, in order to reduce manpower wastage, the preventive aspects of venereal disease were emphasised. In all camps preventive ablution huts were established and all troops exposing themselves to infection were encouraged to visit these huts on their return to camp. In addition, preventive ablution centres were provided in the main cities for use by all the services. Attempts were made to trace the women who were sources of infection. The educational approach was also used extensively and medical officers gave lectures to troops on the dangers of promiscuous sexual intercourse. This campaign, combined with plans on a broader basis for keeping men interested in healthy physical and mental diversions during off-duty hours, more than justified itself in the relatively low incidence of venereal disease.

Chest X-ray Examinations

Early in September 1939 the Director-General of Medical Services discussed with the Director-General of Health the question of recruits who might be suffering from pulmonary tuberculosis. The necessity for X-ray of the chest of all recruits had been discussed in September 1937 at the Australasian Congress at Adelaide, at which the DGMS had been present. It was realised that the ordinary clinical medical examination probably would not detect early, latent, or quiescent pulmonary tuberculosis, and that an X-ray examination was the only sure means of detection, especially if the recruit, anxious to get away, withheld information as to present and past symptoms of the disease. Obviously, every effort had to be made to exclude infected recruits, and Cabinet agreed at once to the proposal for the use of X-rays of the chest.

In September 1939 Ministerial approval was given for a unit capable of undertaking chest photography to be purchased and installed in each of the three main military camps- Burnham, Trentham, and Papakura. The apparatus for each unit was to cost £800, and buildings had to be provided in which to house the plant and conduct examinations. The apparatus was available within a few weeks, but the authority to erect the necessary buildings was delayed and the X-ray apparatus could not

be installed until it was too late to X-ray more than a few men of the First Echelon.

The Second Echelon was X-rayed in camp, but the operation of the system brought to light some cases of hardship where soldiers had been attested, had left their civilian occupations or sold their businesses, and had then been rejected in camp for tuberculosis. (As a result of the X-ray examination of chests up to 30 April 1940, 143 soldiers were found to be suffering from pulmonary tuberculosis and were discharged from military camps.)

It was later accepted that the X-ray of the chest was really part of the initial medical examination and a responsibility of the Health Department under the civilian medical board system. In April 1940, therefore, it was decided that all recruits should undergo the examination before they were called into camp, and arrangements were made by the Department of Health for this to be carried out at thirty-four hospitals, and the interpretation of the films made at the eleven largest hospitals. Thenceforth an X-ray examination of the chest was regarded as a routine for all recruits classified fit for active service. Army area officers made the best possible arrangements with the Medical Superintendents of hospitals, and every endeavour was made to have men who had to travel some distance for medical examination X-rayed immediately after that examination, so as to avoid a second journey with consequent expense and loss of time. This system operated fairly efficiently, but for various reasons many recruits entered camp before being X-rayed.

The institution of an X-ray examination for all recruits from the Second Echelon onwards was the means of detecting tubercular cases who might otherwise have been passed as fit, but who would undoubtedly have broken down under active-service conditions. Doubtful cases were referred to specialist chest medical boards for diagnosis and decision regarding grading. Calculations in 1940 rated active or latent cases among recruits at about 1 per cent, with figures for Maoris higher than those for Europeans.

The army authorities arranged for lists of all recruits for 2 NZEF to be supplied to the Health Department, and throughout the war officers of that department checked these lists to detect the names of those who were, or had been, on tuberculosis registers. Such recruits were specially examined.

Diet

At the outset of the war the New Zealand Army Board adopted the revised British Army war rations scale issued in June 1939, but with certain modifications to suit the New Zealander, such as butter in place of margarine, and more meat, cheese, and fresh vegetables. The diet was calculated by hospital dietitians, who found it adequate in protein, fat, and carbohydrates but lacking in minerals and vitamins B and C. On this basis the Director-General of Medical Services recommended certain adjustments in October 1939. The Nutrition Committee of the Medical Research Council, reporting separately in December 1939, made very similar suggestions.

As regards 2 NZEF itself, a conference of the GOC 2 NZEF, ADMS 2 NZEF, DGMS and others on 27 December 1939 at Army Headquarters, Wellington, decided that for the diet on troopships the Australian schedule would be followed as a basis, it being recommended that the GOC be granted authority to increase diets when necessary. It was further decided that all army cooks would go to a school of cookery in Egypt, and that green vegetables and fruits for consumption in that country be sterilised by immersion in potassium permanganate. The standard British Army ration in Egypt was accepted with certain increases, the GOC being authorised to apply to the Treasury for permission to increase it further if necessary.

At this conference the medical officers were impressed with the obvious interest shown in the medical side by General Freyberg. It was clear from his remarks that he regarded the efficiency of the New Zealand Medical Corps as of the utmost importance, that he was

prepared to support the Medical Corps in all its requirements, and that he was keen to ensure the highest degree of hygiene in the force, including due attention to the quality and preparation of the food. The distinct impression of the medical officers was that the New Zealand Medical Corps was not going to be relegated to the background, but was expected to play a leading role in the campaigns of the Expeditionary Force. Throughout the war General Freyberg consistently displayed his emphasis on, and his appreciation of, medical arrangements.

Every effort was made to educate quartermasters and supply officers on the importance of modern diet standards and food values. On 9 March 1940 a conference of quartermasters and ASC supply officers from all camps throughout New Zealand was convened by the Quartermaster-General and presided over by the Director-General of Medical Services. The conference studied the three essential values of the diet of the soldier:

1. **The aperitif or psychological value, for which the cook and unit quartermaster were jointly responsible.**
2. **The nutritional value, for which the supply officer, the quartermaster, and the medical officer were jointly responsible.**
3. **The economic value, for which the supply officer and the purchasing board were jointly responsible.**

Great interest was shown by all officers, and the practical result was a great improvement in the diet as regards food value and variety. Copies of menus were furnished regularly to the Director-General of Medical Services for his appreciation or criticism.

In December 1940 the DGMS made strong recommendations for the appointment of a Director of Catering in order to provide a technical service to enable further improvements to be made in the dietary arrangements for the troops. This appointment was not made, although the RNZAF later had an efficient Food and Dietary Section with a Catering Director.

Appreciation of Hospital Requirements Overseas

Although the DGMS on 8 October 1939 in a medical appreciation of the First Echelon overseas (then planned to number 8000 troops) estimated the number of beds required for sickness cases if the echelon went to the Middle East as 800, with an increase to 1280 beds if the echelon went into action, no hospital unit was called up with the First Echelon to provide these beds. It was assumed that British military hospitals established in the Middle East would be able to serve the New Zealanders in the meantime. As it happened, when the First Echelon reached Egypt its sickness rate was not nearly as high as estimated, but nevertheless 4 Field Ambulance was called upon to run both a camp hospital and a general hospital, and also provide medical services for its brigade group in the Western Desert later. The diversion of the Second Echelon to England was a complicating factor, but as events proved there was certainly a strong case for sending a hospital unit with the first troops proceeding overseas.

It must be admitted, however, that New Zealand had no medical equipment to send with hospital staffs, nor indeed with the field ambulances, a deplorable state of affairs for which the medical administrators were in no way responsible.

The tentative plans made on limited information by the DGMS on 8 October stated that 'it may be necessary to have two small general hospitals, but this is a consideration which can and will be dealt with after the New Zealand Force arrives at the area of operations'. It was considered necessary to have a convalescent depot but not a casualty clearing station.

Following more definite information the DGMS was able, on 20 December 1939, to reassess the hospital and medical requirements on the basis that there would be an initial expeditionary force of 6000 men, followed at intervals of about two months by two further echelons of 6000 men each; that the advanced New Zealand base would be in Egypt, 10,000 miles from New Zealand, and transport would be by sea; that medical units would be equipped on arrival overseas; that hospital and

medical requirements would be essentially for the treatment, retention, and disposal of sick and wounded New Zealanders only; and that the force would be stationed in Egypt at least until the formation of the Division, that is, about five months. Taking these factors into consideration and estimating the wastage at 10 per cent of the force, the DGMS recommended that a general hospital of 600 beds, and a convalescent depot of 500 beds, should proceed overseas with the Second Echelon and a general hospital of 1200 beds with the Third Echelon. The first hospital could be expanded to 1200 beds if necessary. Apart from that, it was understood that a field ambulance would normally be called up with each echelon.

RAISING AND TRAINING OF MEDICAL UNITS

4 Field Ambulance and 4 Field Hygiene Section

The medical units called up with other units of the First Echelon for entry into mobilisation camps in October 1939 were 4 Field Ambulance and 4 Field Hygiene Section. From 4 October 1939 the main bodies of these units entered Burnham Camp, whither the advance party of officers and NCOs had proceeded on 26 and 27 September. These units were the normal field medical units for the brigade group of the First Echelon as a fighting force.

The officer appointed to command 4 Field Ambulance at Burnham was Lieutenant-Colonel Will, [1] and there were nine other medical officers and a quartermaster, a dental officer, and a chaplain with the unit. The NCOs were drawn mainly from 1, 2, and 3 Field Ambulances of the Territorial Force, in which the majority had seen several years' continuous service. They had attended courses of instruction, passed first-aid and nursing-orderly examinations, and were, on the whole, a very capable group. The main body of men was mostly without military or medical training. The men for 4 Field Hygiene Section were placed under the command of Lieutenant Wyn Irwin, [2] who had been a district health officer.

Training consisted in instruction in first aid, the system of evacuation of casualties, the work of stretcher-bearers, clerical and nursing duties at advanced and main dressing stations, the recording of casualties, field cooking, and in hygiene methods used on field service. By the time final leave came in the last two weeks of December the original group had become an efficient unit.

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[1] Lt-Col J. H. Will, ED; born Scotland, 1 Feb 1883; medical practitioner; CO 4 Fd Amb Oct 1939–Sep 1940; SMO Ngaruawahia Camp Sep 1941–Jan 1943; died, Auckland, 19 Aug 1954.

[2] Maj B. T. Wyn Irwin, m.i.d.; born Christchurch, 12 Oct 1905; Medical Officer of Health, Wellington; OC 4 Fd Hyg Sec Oct 1939–Sep 1941; OC Maadi Camp Hyg Sec Sep–Dec 1941; died (in NZ) 12 Mar 1942.

Embarkation of First Echelon

In the advance party which left New Zealand on 11 December 1939 in SS *Awatea* were two men of 4 Field Ambulance, and they were joined in Egypt by Lieutenant Harrison, [3] who had come from the United Kingdom and who became acting Deputy Assistant Director of Medical Services to the Expeditionary Force. The main embarkation of the First Echelon took place on 5 January 1940. At Lyttelton 6 officers and 217 other ranks of 4 Field Ambulance and 1 officer and 28 other ranks of 4 Field Hygiene Section embarked on HMT *Dunera*. At Wellington other Medical Corps personnel, comprising Colonel K. MacCormick, [4] Assistant Director of Medical Services to the Expeditionary Force, 8 regimental officers, 18 sisters of the New Zealand Army Nursing Service, and 4 medical officers and 12 nursing orderlies and dispensers from 4 Field Ambulance, embarked on the *Orion*, *Strathaird*, *Empress of Canada*, *Rangitata*, and *Sobieski*.

The regimental medical officers and nursing sisters were split up

among the transports and were able to establish small ships' hospitals to attend to any sickness cases during the voyage. The convoy sailed on 6 January 1940.

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[3] Maj T. W. Harrison, OBE, m.i.d.; Hanmer; born Dunedin, 9 May 1912; medical practitioner; DADMS 2 NZEF Jan–Mar 1940; Registrar 4 Gen Hosp Jul–Oct 1940; 4 Fd Amb Oct 1940–Sep 1942; surgeon 1 Mob CCS Sep 1942–Jul 1943; surgeon 3 Gen Hosp Jul 1943–Jun 1944.

[4] Brig K. MacCormick, CB, CBE, DSO, ED, m.i.d.; Auckland; born Auckland, 13 Jan 1891; surgeon; 1 NZEF 1914–19: Egypt, Gallipoli, France–OC 2 Fd Amb Dec 1917–Jan 1918; DADMS 1 NZ Div Jan-Oct 1918; ADMS Northern Military District 1930-34; ADMS 2 NZEF Jan–Oct 1940; DMS 2 NZEF Oct 1940–May 1942, Sep 1942–Apr 1943.

Medical Units with Second Echelon

To form the field medical unit for the Second Echelon the officers and NCOs of 5 Field Ambulance, under Lieutenant-Colonel Kenrick, [1] commenced a course of training at Burnham on 8 December 1939, concluding it on 6 January 1940. Most of the officers and NCOs had had some years of territorial training. The main body of the unit began to arrive in camp on 10 January 1940. Most of the men were new to medical work as well as to army life. Like 4 Field Ambulance before them, they were given training in all departments of field ambulance duties. Training was extended into April, pending the arrival of ships to take the Second Echelon overseas, and 5 Field Ambulance left Burnham for Lyttelton on 30 April to go by ferry to Wellington, where the unit embarked on HMT *Aquitania* on 1 May. The strength of the unit, including attached personnel, was 14 officers and 230 other ranks.

As planned, a general hospital staff was called up with the Second Echelon. The first members of 1 General Hospital began to assemble at Trentham Camp on 12 January 1940 under the command of Colonel

McKillop. [2] Only a few had had previous territorial training. Training consisted of squad and company drill, first aid, bandaging, and stretcher drill, while as many men as possible were employed in rotation at the camp hospital where they were given lectures by sisters of the NZANS. The hospital's establishment provided for specialists in the different branches of medicine and surgery. In addition to experienced general physicians and surgeons there was a specialist in tropical medicine, an orthopaedic surgeon, an eye and ENT surgeon, and an anaesthetist.

Embarkation on the *Empress of Britain* took place on the night of 1 May at Wellington. Small sections of medical officers and sisters were detached to provide medical services on the sister ships of

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[1] Brig H. S. Kenrick, CB, CBE, ED, m.i.d., MC (Greek); Auckland; born Paeroa, 7 Aug 1898; consulting obstetrician; 1 NZEF 1916–19: infantry officer 4 Bn; CO 5 Fd Amb Dec 1939–May 1940; acting ADMS 2 NZEF, Jun–Sep 1940; ADMS 2 NZ Div Oct 1940–May 1942; DMS 2 NZEF May–Sep 1942, Apr 1943–May 1945; Superintendent-in-Chief, Auckland Hospital Board.

[2] Col A. C. McKillop, m.i.d.; Christchurch; born Scotland, 9 Mar 1885; Superintendent, Sunnyside Hospital, Christchurch; 1 NZEF: medical officer, Samoa, Egypt, Gallipoli, 1914–16; CO 1 Gen Hosp Jan 1940–Jun 1941; ADMS 3 Div (Fiji) Aug 1941–Jul 1942; ADMS 1 Div (NZ) Aug 1942–Mar 1943.

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the convoy- *Aquitania*, *Empress of Japan*, and *Andes*. The unit's total strength was 21 officers, 37 sisters, and 145 other ranks.

The staff of 1 Convalescent Depot was assembled at Trentham at the same time as that of 1 General Hospital and underwent the same training. They were originally under the command of Lieutenant-Colonel Spencer, [1] but on the eve of sailing Colonel Spencer was given command of 2 General Hospital and Lieutenant-Colonel Boag [2] took his place. The convalescent depot also embarked at Wellington on the evening of 1 May 1940, its ship being the *Empress of Japan*. Its strength was 5 officers

and 49 other ranks.

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[1] Col F. M. Spencer, OBE, m.i.d.; born Rotorua, 3 Oct 1893; medical practitioner; 1 NZEF: NCO NZMC 1914, medical officer 1918–19, 1 Gen Hosp, 1 Fd Amb, 1 Bn Canterbury Regt; CO 2 Gen Hosp Apr 1940-Jun 1943; died, North Africa, Jun 1943.

[2] Lt-Col N. F. Boag, ED; Christchurch; born Leeston, 13 Aug 1897; medical practitioner; CO 1 Conv Depot Mar–Dec 1940.

Medical Units with Third Echelon

On 1 February 1940 there began at Burnham Camp a training course for the NCOs of the field medical unit to accompany the Third Echelon. It was attended by twenty-five men. Practically all of them were raw recruits who (unlike 4 and 5 Field Ambulance NCOs) had not had any territorial training.

The Commanding Officer of 6 Field Ambulance, Lieutenant-Colonel Bull, entered camp at Burnham on 2 April and other officers arrived on 16 April. The main body of 6 Field Ambulance was mobilised on 15 May and entered on a comprehensive scheme of training, which culminated in combined exercises with infantry battalions and the construction of a large underground dressing station.

With a total strength of 234, the unit embarked with other units of the Third Echelon at Lyttelton on 27 August, its ship being the *Orcades*. Other ships embarking troops at Wellington were the *Mauretania* and *Empress of Japan*.

Officers and prospective NCOs for 2 General Hospital entered Trentham Camp on 17 April, to be followed by the main body of the unit a month later. The standardised medical training was carried out, with the addition that nursing orderlies received training in the Wellington Public Hospital as well as at the camp hospital. Colonel F. M. Spencer was its commanding officer.

Embarkation on the *Mauretania* took place at Wellington on 27 August 1940, and the unit strength was 18 officers (including the chaplain), 39 nursing sisters, and 148 other ranks. The convoy carrying the Third Echelon sailed for Egypt on 28 August and there linked up with the First Echelon. The Second Echelon was still in England.

3 General Hospital (4th Reinforcements)

After tentative plans made earlier in 1940 for the mobilisation of a third general hospital had been cancelled, representations from General Freyberg in September 1940 led to the calling-up of 3 General Hospital in October. The Commanding Officer, Colonel Gower, [1] entered Trentham Camp on 27 October and the rest of the unit arrived in the next three days.

The 4th Reinforcements then in camp embarked in three separate sections, and according to the usual practice a medical officer and a few orderlies were sent with each departing transport. No. 3 General Hospital embarked on the *Nieuw Amsterdam* with the third section of the 4th Reinforcements on 1 February 1941, the number embarking being 14 officers (including a dental officer and a chaplain), 48 sisters, and 143 other ranks.

After the departure of 3 General Hospital no further medical units were formed in New Zealand to extend the medical services of 2 NZEF in the Middle East. Other units, notably the Casualty Clearing Station, were established in the Middle East. This enabled full use to be made of the capable officers and men who already had considerable experience of overseas conditions.

Medical reinforcements from New Zealand proceeded overseas with each general reinforcement and also on HS *Maunganui*.

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[1] Brig G. W. Gower, CBE, ED, m.i.d.; Hamilton; born Invercargill, 15 Apr 1887; surgeon; 1 NZEF 1915–19: medical officer 133 Br

Fd Amb, 1915, 1 Gen Hosp 1916–18; surgeon, Christchurch Military Hospital, 1919; CO 3 Gen Hosp Oct 1940–May 1945; DMS 2 NZEF May–Oct 1945.

First Echelon—Voyage to Middle East

Of the six transports selected to convey the First Echelon overseas, five were passenger liners and one a regular army troopship. The liners were the *Orion*, *Strathaird*, *Empress of Canada*, *Rangitata*, and *Sobieski* and the troop transport the *Dunera*. Except on the troopship, most of the troops were quartered in cabins, the regular passenger accommodation being augmented in some cases by extra berths in the larger cabins. In general, most of the troops on the passenger liners, with the possible exception of those in the holds, travelled with all the usual comforts and facilities afforded the peacetime tourist. (This was not the case for later reinforcement drafts.) In the *Dunera* the troops were not so fortunate. This ship was a specially constructed troop transport, used before the war to take drafts of British troops to Indian and Eastern stations. Cabins were allotted to officers and senior NCOs, but all other ranks were quartered in troop-decks.

On all transports the health of the troops throughout the voyage was good. Each troopship carried at least one medical officer, three nursing sisters, and a number of medical orderlies to staff the ship's hospital. During the voyage all personnel were vaccinated. The men were done in small batches so as not to interfere unduly with training and ship's fatigues. In addition, there were a number of TAB inoculations of men not done in camp.

Seven major operations were performed on the *Sobieski*—five of them for removal of appendix. On the *Strathaird* a successful operation for the opening up of a mastoid was performed with the aid of an electric drill borrowed from the ship's engineering staff and two carpenter's chisels.

Ships' hospitals, although considered small should any epidemics

have occurred, were sufficient for the voyage. The most common illnesses experienced on board were tonsillitis, mild influenza, measles, and diarrhoea. Preventive ablution centres were established at ports of call, regular medical inspections of troops were carried out, and some cases of venereal disease treated. In addition, medical officers gave frequent lectures on health precautions in the tropics, personal hygiene, and on conditions in Egypt.

An epidemic of acute diarrhoea of unknown causation occurred on the *Dunera*. An interesting feature on this ship was the apparatus for manufacturing 'eusol' in bulk from sea-water by electrolysis. This solution was used for the daily scrubbing of troop-decks, mess tables, latrines, etc.

Shortages of medical equipment, particularly of instruments necessary for a major surgical operation, were frequently commented on in voyage reports from each transport, but no serious difficulty ever arose. The chief needs included drugs, nursing equipment, sterilisers, and surgical instruments; stretchers, splints, and bandages were also needed for training hospital staffs, and additional fittings were required in ships' hospitals.

Ventilation on the transports suffered, particularly at night, because of the necessity of keeping hatches and portholes closed and doors opening on to the decks covered with heavy blackout curtains. With natural ventilation thus reduced to a minimum, temperatures below decks at night were high, those taken at midnight on one occasion on the *Sobieski* ranging from 90 to 93 degrees Fahrenheit. Recommendations were made by the medical officer of this ship that hatches should be partially removed at nights and protective devices erected to comply with the blackout; also that screens should be built outside all doors leading on to decks to allow them to be left open at nights without the danger of lights showing.

The convoy reached Port Tewfik on 12 February after calling at Fremantle and Colombo, and the troops disembarked and proceeded to

Maadi Camp on the following two days.

Second Echelon—Voyage to United Kingdom

The ships which conveyed the Second Echelon overseas were the *Empress of Britain*, *Aquitania*, *Empress of Japan*, and *Andes*. These were all passenger liners. The convoy, which sailed on 2 May 1940, was joined off the coast of Australia by other ships. Its destination was ostensibly the Middle East, though there was still some doubt about this at the time of its departure. When the convoy was proceeding towards Colombo from Fremantle on 15 May its course was changed to take it to Capetown and thence to the United Kingdom. The United Kingdom Government's War Cabinet had decided that, in view of the anticipated declaration of war by Italy, it would be inadvisable for the convoy to continue to the Middle East.

As with the First Echelon, medical officers, nursing sisters, and orderlies were posted to each ship to staff ships' hospitals and give medical treatment. The wearing of rubber-soled tennis shoes on transports was a source of trouble, just as it had been with the previous echelon. The medical officers of the First Echelon had recommended sandals but the Defence Purchase Division, on the score of cost, and also because of the lack of suitable leather, decided against any change. [1] Foot troubles were the inevitable consequence, in spite of precautions, in this and succeeding drafts going overseas. Besides developing fungoid infections on the feet, troops also found difficulty in getting their feet used to army boots after being some weeks on board ship, and after the first few route marches overseas, the number of cases reporting sick with blistered feet was very high.

Ship's hospital accommodation proved adequate on all ships in spite of upper respiratory infection, common in the camps in New Zealand, being prevalent aboard. Among these cases a gradual progressive increase in severity was noted and the onset of broncho-pneumonia was not unusual. The isolation hospitals for treatment of venereal disease also had a small number of patients. German measles broke out on some

of the ships, its incubation period corresponding with infection arising at Fremantle. Its incidence was much higher on the Australian than the New Zealand ships. Lack of space prevented quarantine measures and further cases developed after disembarkation.

Medical supplies generally were adequate, although demands for particular drugs called for their replenishment at Fremantle and Capetown. Plaster-of-paris bandages on the *Empress of Britain* were found to be useless, the tins being obviously many years old. Medical equipment was incomplete in important details, but medical officers were able to remedy the deficiencies from their personal instruments.

As the convoy drew near to Great Britain in June 1940 at the time of Dunkirk, first-aid posts were established at strategic points on the ships and surgical teams appointed to act in the case of enemy air attacks, but fortunately no such emergency arose.

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[1] Leather sandals were issued for use on shipboard from 1941 and also for use overseas later.

Third Echelon—Voyage to Middle East

The Third Echelon embarked for the Middle East on 27 August 1940 on the *Mauretania*, *Empress of Japan*, and *Orcades*. While the accommodation in the *Mauretania* and the *Orcades* was good, in the other ship a degree of overcrowding made conditions unpleasant.

The medical arrangements for the Third Echelon were similar to those of the two preceding echelons. Influenza, measles, and mumps were the main causes of hospitalisation but in no case was the incidence serious. The medical officers on the transports were united in their recommendations that inoculations and vaccinations should be completed prior to embarkation. Where the troops were accommodated in hammocks their sore arms caused great discomfort and severe vaccine reactions were suffered by numbers of troops in the tropics.

At Bombay on 16 September 6 Field Ambulance was disembarked and 2 General Hospital was transferred to the *Ormonde*. The troops who were disembarked found themselves submitted to considerable inconvenience and trying conditions in Bombay and Deolali. Sixth Field Ambulance eventually reached Port Said on 26 October after travelling from India on a most unhygienic ship called the *Felix Roussel*. In the Red Sea the convoy was attacked by Italian planes but without serious damage resulting, and the *Felix Roussel* was subjected to a further harmless attack while at Port Sudan.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

DURING 1939 the Territorial Force in New Zealand was in the process of reorganisation from a cadre to a peace establishment within reasonable reach of its war establishment, and the National Military Reserve was being formed and plans for home defence were being revised. Shortly after the outbreak of war on 3 September 1939, the Government decided to raise a special force of one division and ancillary troops for service overseas or for home defence. Medical examinations were necessary before the men responding to the call for volunteers for the Army were admitted to mobilisation camps.

By 31 July 1939 the machinery for medical boarding was ready to operate at short notice. The country had been divided into eleven areas, and a Regional Deputy, a senior medical practitioner, was in charge of the medical examinations in each region. A total of 253 medical boards, each comprising two doctors and a dentist, had been chosen to meet the requirements and places of mobilisation of the Army. For their guidance these medical boards had the comprehensive Code of Instructions which had been printed in 1938.

With the number of boards arranged, and sessions of four hours a day each, it was expected to complete in four days the examination of the 39,900 men the Army proposed to mobilise. (In actual experience it was found that the army mobilisation did not achieve any such intensity as mooted in pre-war proposals. Up to 9 December 1939 nine of the eleven regions had been called upon to examine only 15,796 recruits. Figures were not available for the other two regions but they probably did not exceed 1000 each.)

At the meeting of the Medical Committee on 24 September 1939 it was stated that reports received and inspections made indicated that the organisation for medical boarding was carried into effect immediately

and efficiently following the outbreak of war. The Regional Deputies, who functioned in a part-time capacity, were asked at that stage to report in regard to the Code of Instructions, the forms in use, and whether there was need to improve the literature or the organisation. The reports were generally satisfactory as regards accommodation and staff but a number of suggestions were made for the improvement of the Code of Instructions, the Army Instructions for conduct of medical examinations, and Army Form 355 (Record of Medical Board). Some of the suggested improvements led to amendments to the instructions.

The introduction of compulsory military service under the National Service Emergency Regulations 1940 (dated 18 June 1940) brought about certain alterations in official policy and imposed additional responsibilities on regional deputies and medical boards. It was therefore necessary to supplement the original instructions, prepared as they were primarily for initial examination under a system of voluntary recruitment.

When conscription was introduced in 1940 the Army demanded that boarding of the men on each ballot list should be completed within six weeks. This entailed the use of every available doctor at a time when practitioners were reduced in number and busier than ever with the introduction of more classes of benefit under the Social Security legislation.

Under the National Service Emergency Regulations 1940, Regulation *35 et seq*, the responsibility for medical boarding was transferred from the National Medical Committee to the Minister of Health. The Regional Deputies became therefore, in fact, deputies for the Minister of Health, to whom the National Medical Committee was, strictly speaking, only an advisory body. The effect was to weaken the administrative control that had previously been exercised by the National Medical Committee, which had a body of military experience from the First World War, and concentrate authority in the Minister of Health.

As deficiencies in the medical examination system became apparent,

modifications and additions were made to the Code of Instructions. On 2 December 1940 the definition of Grade I men, which had been 'men who attain the full normal standard of health and strength and are capable of enduring physical exertion suitable to their age' (the age limits being twenty-one to forty years), was qualified by 'Fit for Active Service in any part of the world'. A new medical examination form (NZ 355) was drawn up to give a more complete procedure for examination of recruits and a record of pre-enlistment medical history, besides incorporating the amendments to grading classification. (Later, with the experience gained from the examination of men returned from overseas for health reasons, and from reports of medical officers overseas, the National Medical Committee drafted a greatly improved Code of Instructions giving more complete instructions to medical boards regarding grading and detailing the procedure to be followed in the case of various disabilities. The new edition, printed in February 1942, was made available to medical boards in the middle of 1942. Certain aspects of medical boarding were still unsatisfactory, and consideration was given in December 1942 to constituting selected medical boards staffed preferably by doctors with military experience, acting in a full-time capacity, but these were not set up.)

There was a case in the earlier years of the war for a closer liaison between the army medical services and the Health Department, which was in executive control of the civil medical boards examining recruits, so that doctors could have been kept constantly aware of the disabilities likely to cause rejection from the Army. On this question of rejection the same problems were encountered in Australia and Canada. [1]

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[1] **This subject will be further elaborated in Vol III.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HOSPITAL TREATMENT-CONVALESCENT DEPOTS AND CAMP HOSPITALS

Hospital Treatment-Convalescent Depots and Camp Hospitals

There seemed to be a lack of appreciation by the Health Department of the problem of the convalescent soldier. Civil hospitals were not accustomed to arrange for the convalescence of patients suffering from ordinary illness. These were expected to convalesce at home. It was only in the more serious illnesses and in special conditions demanding prolonged treatment that any provision at all was made. When the Health Department originally arranged for the use of Hanmer and Rotorua, it envisaged the treatment of returned wounded men and not sickness cases from New Zealand camps. These cases, in its opinion, required no special provision. They were sent back to their units in camp at the end of their period of sick leave at their homes. The necessity for hardening up after a debilitating illness before being subjected to the conditions of a military camp was simply not understood. This, of course, was quite contrary to the military outlook.

The hospitals discharged the military patients to their homes for varying periods of sick leave before returning to camp, and this leave could be extended on the certificate of their local doctor. The inevitable happened, and the military authorities found that great wastage of personnel was occurring and that they could not check up on the men scattered all over the country. This led to the setting up of a ' Sick and Wounded Branch', which was placed directly under the Adjutant-General, to check up on and control all unattached army personnel. The Branch took over medical as well as administrative functions, and there was some difficulty caused by its lack of medical knowledge and co-ordination. The appointment later of a senior medical officer to the Branch for consultation led to improved control in matters requiring professional knowledge.

The Army eventually built three convalescent depots to attempt to supply a more complete medical chain, but they were not completed until 1942 and 1943 and did not receive a great many of the patients discharged from hospital. The depot built for the Central District was given over to the Americans before it functioned as a convalescent depot. The civil hospitals were used for sick and wounded returned from overseas, and the Army had no military hospitals of its own at any stage, except for small hospitals in mobilisation camps.

For the admission of minor sick, small camp hospitals with the most modern equipment were erected in the three main mobilisation camps, Papakura, Trentham, and Burnham, each having accommodation for thirty to fifty patients. Each had an establishment of five members of the NZANS, two officers, and twenty-five other ranks. (Prior to the completion of Papakura camp in 1940, a camp hospital at Ngaruawahia was similarly staffed.) The amount of accommodation and the size of the staffs were increased during the war.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOTOR AMBULANCES

Motor Ambulances

At the outbreak of war there were no military motor ambulances on hand to convey the sick from camps to civil hospitals. In some instances ambulances belonging to hospital boards were used, and where they were not available army service trucks were adapted by placing mattresses or stretchers on the floor.

In October 1939 the Salvation Army gave two motor ambulances, and about the same time five chassis were obtained and bodies built on them at the Post and Telegraph Department workshops, Wellington. An ambulance was presented by the Red Cross Society and donations towards ambulances were made by various organisations and individuals. An amount of £4410 was donated in this way for the purchase of army motor ambulances up to the end of October 1940. Subsequently, ambulances became available through army channels and the substantial deficiency was overcome.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF TROOPS

Health of Troops

With large numbers of men congregated in camps under conditions to which the majority of them are unused, there is likely to be a greater incidence of disease than normally occurs in the civil population. The DGMS (Army and Air) was insistent in his recommendations to camp authorities at the beginning of the war that the following points should be strictly observed:

1. **Adequate air space and ventilation in sleeping quarters.**
2. **All damp and wet clothing to be changed at the earliest possible moment, and the provision of adequate drying facilities, and no wet or damp clothing to be permitted in sleeping quarters.**
3. **Adequate changes of clothing to be provided.**
4. **Avoidance of undue fatigue in the early stages of training, i.e., training to be graduated.**
5. **Provision of sufficient hot and cold showers.**
6. **Diet not only wholesome and well cooked, but containing those foods which have a protective value against disease, and the food to be varied and served in a palatable manner.**
7. **Sanitary arrangements to be above suspicion.**

In regard to (1), it was pointed out that it was essential that each soldier should have 600 cubic feet of air space and that the distance between the centres of adjacent beds be at least 6 ft. In the early stages of the First World War proper attention was not given to adequate ventilation and air space, and when a serious outbreak of cerebro-spinal fever occurred, a number of cases being fatal, a complete disorganisation of training resulted. Points (2), (3), and (4) were the direct responsibility of the unit commander.

The efficiency of the medical services was sternly tried in the latter part of October and during November 1939 by a severe epidemic of

influenza (streptococcal respiratory catarrh) in which between 30 and 54 per cent of the strength of all units in the mobilisation camps was affected, the incidence rates in the three camps being similar. Energetic measures were taken to combat the epidemic, these consisting mainly in an insistence on the medical safeguards for the health of troops already set out. The fact that there was not a single death and only four cases of true pneumonia as a result of the infection was evidence of the success of the prophylactic and nursing measures taken. Similarly, a milder influenza epidemic in May 1940 did not assume any serious proportions.

In the early months of 1940 it was found that on some matters in connection with camp construction and arrangements neither the Army Medical Service nor the Assistant Director of Hygiene for the district was consulted. It was felt that there should have been a greater degree of consultation between the Public Works Department, the Quartermaster-General's Branch, the Army Medical Service and the Director of Hygiene.

Neither the DGMS nor the ADsMS were first consulted regarding the design of huts, latrines, and showers, and strong protests by them when they pointed out weaknesses during the actual construction work or insanitary conditions were often ignored, particularly in the Central Military District. It was fortunate that the consequences were not more serious.

To some extent this was probably a result of the concern of one particular organisation to push ahead expeditiously with its own programme. The medical interest in camp construction and arrangements from the point of view of the health of the troops and the avoidance of epidemics had to be emphatically stressed before it came to be recognised. Otherwise the valuable and extensive experience of senior medical officers in military medicine and hygiene, and the importance of its application, tended to be underrated.

On 31 October 1940 a conference was held to discuss the question of hygiene and sanitation of military camps; attending it were representatives of the Army, Health, and Public Works Departments,

with the Adjutant-General as chairman. The chairman admitted that conditions in some camps were not all that could be desired, but it had to be remembered that practically all camps had been established at very short notice. The urgent nature of most of the work required quick action, and the usual procedure of preparing plans and submitting them to various officers had, in some cases, been departed from, and, instead, verbal arrangements had been made on the spot by Army and Public Works officers. The sole reason for non-consultation with specialists in hygiene and medicine was the urgent demand for construction. The delay in completing Waiouru camp had seriously upset army plans and necessitated the occupation of temporary camps where expenditure was restricted to what were considered to be essentials, and economies were effected at the expense of efficiency and proper hygiene conditions.

It was explained that the army officers concerned proposed to recommend the appointment of a full-time Deputy Director of Hygiene. It was decided that, in future, the procedure to be followed in deciding on the location of a camp would include a reconnaissance of the site and buildings by the district commanding officer, AQMG, and ADMS, the Works Officer, and District Engineer, Public Works Department. These officers would furnish a report on the site. When plans were received at Army Headquarters, the Quartermaster-General would submit them to the Director-General of Medical Services and Deputy Director of Hygiene for approval from the medical service point of view. In November 1940 the Principal Sanitary Inspector, Health Department, was appointed full-time Deputy Director of Hygiene (Army and Air), and held the appointment throughout the war. The revised arrangements worked effectively.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CAMP MEDICAL ARRANGEMENTS

Camp Medical Arrangements

With the mobilisation of the First Echelon of the Special Force in September and October 1939, whole-time senior medical officers were appointed to Ngaruawahia, Trentham, and Burnham camps, to which three assistant medical officers were later appointed. With the completion of the mobilisation camp at Papakura, the senior medical officer and some of the staff from Ngaruawahia were transferred there. Full-time medical officers were stationed at Narrow Neck, Motutapu, and Fort Dorset, while part-time medical officers were appointed to the Lyttelton Fortress troops and Wellington Fortress troops.

The senior medical officers were on the staff of the camp commandants in the mobilisation camps. They were responsible for the care of all sick, and were the advisers to the camp commandant on all matters pertaining to the health of troops, as well as being inspectors of sanitation arrangements. On sanitary matters each had the help of a sanitary inspector with the rank of WO I. Under the control of the senior medical officer were the military camp hospital and a contagious disease hospital where venereal disease patients were retained and treated. There was an arrangement between the Health Department and the Army whereby soldiers who contracted venereal disease after they went to camp were to be treated by the Army. If they had contracted the disease after attestation but before going to camp, they might be discharged from camp and become the responsibility of the Health Department. The senior medical officer had a number of medical officers to assist him. One looked after the camp hospital, while others were appointed as regimental medical officers to the battalions of reinforcements undergoing training. These were practically always medical officers who were themselves going overseas with the reinforcements.

The duties of these regimental medical officers were varied- holding sick parades, lecturing to the men on the maintenance of health, inspecting feet after route marches, inspecting barracks, kitchens, showers, and latrines, and giving the necessary inoculations.

Camp dental clinics were established in each of the three mobilisation camps, and all dental treatment was carried out at the expense of the Government after the recruits entered camp.

Preventive treatment by way of inoculation and vaccination was carried out. It was decided to immunise the troops in camp against tetanus before sending them overseas. All troops after the First Echelon were given two injections of 1 cc. of toxoid at an interval of six weeks; adrenalin was available in case of anaphylactic shock and the men were kept under observation for three hours.

Two injections of TAB vaccine for protection against typhoid were given at a week's interval. Individual reactions were generally marked and sometimes severe, and the preparation was adjusted so as to obviate very severe reactions. There was some difficulty in obtaining virile strains of organisms in New Zealand, a typhoid bone abscess being utilised at one time.

Vaccination against smallpox was also carried out. The troops of the First Echelon were done on the transports proceeding overseas and complaints were made of the discomfort suffered under the tropical conditions. The Second Echelon were vaccinated in camp in New Zealand and the camp staffs complained of interference with training. This led again to the vaccination being carried out on the troopships. At a later period when there was less urgency, the men were usually vaccinated in camp. The vaccination was repeated if no positive reaction occurred.

With the great development in the use of blood transfusion before the war, it was realised that blood would be freely given to the wounded. In order that the blood group of each soldier would be known in the case

of emergency, it was arranged that each man should be blood-typed and the international symbol for his group entered in his paybook and marked on his identity disc.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

VENEREAL DISEASE POLICY

Venereal Disease Policy

As a result of a forceful report submitted by the Director-General of Medical Services (Army and Air) through the Adjutant-General to War Cabinet, venereal disease was treated in a sane and reasonable manner. The policy was almost revolutionary compared with the First World War precautions of barbed-wire enclosures and armed guards for such patients. It was at first watched with great misgivings and doubt by some combatant officers. The attitude of the DGMS (Army and Air) was that nothing would be accomplished by treating as criminals those troops who contracted venereal disease, and that too harsh a policy would discourage infected soldiers from reporting early and openly for treatment.

In each of the three main mobilisation camps small isolation hospitals, called contagious disease hospitals, were established, and here patients were admitted and in most cases speedily cured by treatment with sulphonamides. These hospitals were used for both Army and Air Force personnel, while Trentham and Burnham hospitals also accepted any naval personnel from the Wellington and Christchurch areas.

Primarily, however, in order to reduce manpower wastage, the preventive aspects of venereal disease were emphasised. In all camps preventive ablution huts were established and all troops exposing themselves to infection were encouraged to visit these huts on their return to camp. In addition, preventive ablution centres were provided in the main cities for use by all the services. Attempts were made to trace the women who were sources of infection. The educational approach was also used extensively and medical officers gave lectures to troops on the dangers of promiscuous sexual intercourse. This campaign, combined

with plans on a broader basis for keeping men interested in healthy physical and mental diversions during off-duty hours, more than justified itself in the relatively low incidence of venereal disease.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHEST X-RAY EXAMINATIONS

Chest X-ray Examinations

Early in September 1939 the Director-General of Medical Services discussed with the Director-General of Health the question of recruits who might be suffering from pulmonary tuberculosis. The necessity for X-ray of the chest of all recruits had been discussed in September 1937 at the Australasian Congress at Adelaide, at which the DGMS had been present. It was realised that the ordinary clinical medical examination probably would not detect early, latent, or quiescent pulmonary tuberculosis, and that an X-ray examination was the only sure means of detection, especially if the recruit, anxious to get away, withheld information as to present and past symptoms of the disease. Obviously, every effort had to be made to exclude infected recruits, and Cabinet agreed at once to the proposal for the use of X-rays of the chest.

In September 1939 Ministerial approval was given for a unit capable of undertaking chest photography to be purchased and installed in each of the three main military camps- Burnham, Trentham, and Papakura. The apparatus for each unit was to cost £800, and buildings had to be provided in which to house the plant and conduct examinations. The apparatus was available within a few weeks, but the authority to erect the necessary buildings was delayed and the X-ray apparatus could not be installed until it was too late to X-ray more than a few men of the First Echelon.

The Second Echelon was X-rayed in camp, but the operation of the system brought to light some cases of hardship where soldiers had been attested, had left their civilian occupations or sold their businesses, and had then been rejected in camp for tuberculosis. (As a result of the X-ray examination of chests up to 30 April 1940, 143 soldiers were found to be

suffering from pulmonary tuberculosis and were discharged from military camps.)

It was later accepted that the X-ray of the chest was really part of the initial medical examination and a responsibility of the Health Department under the civilian medical board system. In April 1940, therefore, it was decided that all recruits should undergo the examination before they were called into camp, and arrangements were made by the Department of Health for this to be carried out at thirty-four hospitals, and the interpretation of the films made at the eleven largest hospitals. Thenceforth an X-ray examination of the chest was regarded as a routine for all recruits classified fit for active service. Army area officers made the best possible arrangements with the Medical Superintendents of hospitals, and every endeavour was made to have men who had to travel some distance for medical examination X-rayed immediately after that examination, so as to avoid a second journey with consequent expense and loss of time. This system operated fairly efficiently, but for various reasons many recruits entered camp before being X-rayed.

The institution of an X-ray examination for all recruits from the Second Echelon onwards was the means of detecting tubercular cases who might otherwise have been passed as fit, but who would undoubtedly have broken down under active-service conditions. Doubtful cases were referred to specialist chest medical boards for diagnosis and decision regarding grading. Calculations in 1940 rated active or latent cases among recruits at about 1 per cent, with figures for Maoris higher than those for Europeans.

The army authorities arranged for lists of all recruits for 2 NZEF to be supplied to the Health Department, and throughout the war officers of that department checked these lists to detect the names of those who were, or had been, on tuberculosis registers. Such recruits were specially examined.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DIET

Diet

At the outset of the war the New Zealand Army Board adopted the revised British Army war rations scale issued in June 1939, but with certain modifications to suit the New Zealander, such as butter in place of margarine, and more meat, cheese, and fresh vegetables. The diet was calculated by hospital dietitians, who found it adequate in protein, fat, and carbohydrates but lacking in minerals and vitamins B and C. On this basis the Director-General of Medical Services recommended certain adjustments in October 1939. The Nutrition Committee of the Medical Research Council, reporting separately in December 1939, made very similar suggestions.

As regards 2 NZEF itself, a conference of the GOC 2 NZEF, ADMS 2 NZEF, DGMS and others on 27 December 1939 at Army Headquarters, Wellington, decided that for the diet on troopships the Australian schedule would be followed as a basis, it being recommended that the GOC be granted authority to increase diets when necessary. It was further decided that all army cooks would go to a school of cookery in Egypt, and that green vegetables and fruits for consumption in that country be sterilised by immersion in potassium permanganate. The standard British Army ration in Egypt was accepted with certain increases, the GOC being authorised to apply to the Treasury for permission to increase it further if necessary.

At this conference the medical officers were impressed with the obvious interest shown in the medical side by General Freyberg. It was clear from his remarks that he regarded the efficiency of the New Zealand Medical Corps as of the utmost importance, that he was prepared to support the Medical Corps in all its requirements, and that

he was keen to ensure the highest degree of hygiene in the force, including due attention to the quality and preparation of the food. The distinct impression of the medical officers was that the New Zealand Medical Corps was not going to be relegated to the background, but was expected to play a leading role in the campaigns of the Expeditionary Force. Throughout the war General Freyberg consistently displayed his emphasis on, and his appreciation of, medical arrangements.

Every effort was made to educate quartermasters and supply officers on the importance of modern diet standards and food values. On 9 March 1940 a conference of quartermasters and ASC supply officers from all camps throughout New Zealand was convened by the Quartermaster-General and presided over by the Director-General of Medical Services. The conference studied the three essential values of the diet of the soldier:

1. **The aperitif or psychological value, for which the cook and unit quartermaster were jointly responsible.**
2. **The nutritional value, for which the supply officer, the quartermaster, and the medical officer were jointly responsible.**
3. **The economic value, for which the supply officer and the purchasing board were jointly responsible.**

Great interest was shown by all officers, and the practical result was a great improvement in the diet as regards food value and variety. Copies of menus were furnished regularly to the Director-General of Medical Services for his appreciation or criticism.

In December 1940 the DGMS made strong recommendations for the appointment of a Director of Catering in order to provide a technical service to enable further improvements to be made in the dietary arrangements for the troops. This appointment was not made, although the RNZAF later had an efficient Food and Dietary Section with a Catering Director.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

APPRECIATION OF HOSPITAL REQUIREMENTS OVERSEAS

Appreciation of Hospital Requirements Overseas

Although the DGMS on 8 October 1939 in a medical appreciation of the First Echelon overseas (then planned to number 8000 troops) estimated the number of beds required for sickness cases if the echelon went to the Middle East as 800, with an increase to 1280 beds if the echelon went into action, no hospital unit was called up with the First Echelon to provide these beds. It was assumed that British military hospitals established in the Middle East would be able to serve the New Zealanders in the meantime. As it happened, when the First Echelon reached Egypt its sickness rate was not nearly as high as estimated, but nevertheless 4 Field Ambulance was called upon to run both a camp hospital and a general hospital, and also provide medical services for its brigade group in the Western Desert later. The diversion of the Second Echelon to England was a complicating factor, but as events proved there was certainly a strong case for sending a hospital unit with the first troops proceeding overseas.

It must be admitted, however, that New Zealand had no medical equipment to send with hospital staffs, nor indeed with the field ambulances, a deplorable state of affairs for which the medical administrators were in no way responsible.

The tentative plans made on limited information by the DGMS on 8 October stated that 'it may be necessary to have two small general hospitals, but this is a consideration which can and will be dealt with after the New Zealand Force arrives at the area of operations'. It was considered necessary to have a convalescent depot but not a casualty clearing station.

Following more definite information the DGMS was able, on 20

December 1939, to reassess the hospital and medical requirements on the basis that there would be an initial expeditionary force of 6000 men, followed at intervals of about two months by two further echelons of 6000 men each; that the advanced New Zealand base would be in Egypt, 10,000 miles from New Zealand, and transport would be by sea; that medical units would be equipped on arrival overseas; that hospital and medical requirements would be essentially for the treatment, retention, and disposal of sick and wounded New Zealanders only; and that the force would be stationed in Egypt at least until the formation of the Division, that is, about five months. Taking these factors into consideration and estimating the wastage at 10 per cent of the force, the DGMS recommended that a general hospital of 600 beds, and a convalescent depot of 500 beds, should proceed overseas with the Second Echelon and a general hospital of 1200 beds with the Third Echelon. The first hospital could be expanded to 1200 beds if necessary. Apart from that, it was understood that a field ambulance would normally be called up with each echelon.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RAISING AND TRAINING OF MEDICAL UNITS

RAISING AND TRAINING OF MEDICAL UNITS

4 Field Ambulance and 4 Field Hygiene Section

The medical units called up with other units of the First Echelon for entry into mobilisation camps in October 1939 were 4 Field Ambulance and 4 Field Hygiene Section. From 4 October 1939 the main bodies of these units entered Burnham Camp, whither the advance party of officers and NCOs had proceeded on 26 and 27 September. These units were the normal field medical units for the brigade group of the First Echelon as a fighting force.

The officer appointed to command 4 Field Ambulance at Burnham was Lieutenant-Colonel Will, [1] and there were nine other medical officers and a quartermaster, a dental officer, and a chaplain with the unit. The NCOs were drawn mainly from 1, 2, and 3 Field Ambulances of the Territorial Force, in which the majority had seen several years' continuous service. They had attended courses of instruction, passed first-aid and nursing-orderly examinations, and were, on the whole, a very capable group. The main body of men was mostly without military or medical training. The men for 4 Field Hygiene Section were placed under the command of Lieutenant Wyn Irwin, [2] who had been a district health officer.

Training consisted in instruction in first aid, the system of evacuation of casualties, the work of stretcher-bearers, clerical and nursing duties at advanced and main dressing stations, the recording of casualties, field cooking, and in hygiene methods used on field service. By the time final leave came in the last two weeks of December the original group had become an efficient unit.

[1] Lt-Col J. H. Will, ED; born Scotland, 1 Feb 1883; medical practitioner; CO 4 Fd Amb Oct 1939–Sep 1940; SMO Ngaruawahia Camp Sep 1941–Jan 1943; died, Auckland, 19 Aug 1954.

[2] Maj B. T. Wyn Irwin, m.i.d.; born Christchurch, 12 Oct 1905; Medical Officer of Health, Wellington; OC 4 Fd Hyg Sec Oct 1939–Sep 1941; OC Maadi Camp Hyg Sec Sep–Dec 1941; died (in NZ) 12 Mar 1942.

Embarkation of First Echelon

In the advance party which left New Zealand on 11 December 1939 in SS *Awatea* were two men of 4 Field Ambulance, and they were joined in Egypt by Lieutenant Harrison, [3] who had come from the United Kingdom and who became acting Deputy Assistant Director of Medical Services to the Expeditionary Force. The main embarkation of the First Echelon took place on 5 January 1940. At Lyttelton 6 officers and 217 other ranks of 4 Field Ambulance and 1 officer and 28 other ranks of 4 Field Hygiene Section embarked on HMT *Dunera*. At Wellington other Medical Corps personnel, comprising Colonel K. MacCormick, [4] Assistant Director of Medical Services to the Expeditionary Force, 8 regimental officers, 18 sisters of the New Zealand Army Nursing Service, and 4 medical officers and 12 nursing orderlies and dispensers from 4 Field Ambulance, embarked on the *Orion*, *Strathaird*, *Empress of Canada*, *Rangitata*, and *Sobieski*.

The regimental medical officers and nursing sisters were split up among the transports and were able to establish small ships' hospitals to attend to any sickness cases during the voyage. The convoy sailed on 6 January 1940.

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[3] Maj T. W. Harrison, OBE, m.i.d.; Hanmer; born Dunedin, 9 May 1912; medical practitioner; DADMS 2 NZEF Jan–Mar 1940; Registrar 4 Gen Hosp Jul–Oct 1940; 4 Fd Amb Oct 1940–Sep

1942; surgeon 1 Mob CCS Sep 1942–Jul 1943; surgeon 3 Gen Hosp Jul 1943–Jun 1944.

[4] Brig K. MacCormick, CB, CBE, DSO, ED, m.i.d.; Auckland; born Auckland, 13 Jan 1891; surgeon; 1 NZEF 1914–19: Egypt, Gallipoli, France–OC 2 Fd Amb Dec 1917–Jan 1918; DADMS 1 NZ Div Jan-Oct 1918; ADMS Northern Military District 1930-34; ADMS 2 NZEF Jan–Oct 1940; DMS 2 NZEF Oct 1940–May 1942, Sep 1942–Apr 1943.

Medical Units with Second Echelon

To form the field medical unit for the Second Echelon the officers and NCOs of 5 Field Ambulance, under Lieutenant-Colonel Kenrick, [1] commenced a course of training at Burnham on 8 December 1939, concluding it on 6 January 1940. Most of the officers and NCOs had had some years of territorial training. The main body of the unit began to arrive in camp on 10 January 1940. Most of the men were new to medical work as well as to army life. Like 4 Field Ambulance before them, they were given training in all departments of field ambulance duties. Training was extended into April, pending the arrival of ships to take the Second Echelon overseas, and 5 Field Ambulance left Burnham for Lyttelton on 30 April to go by ferry to Wellington, where the unit embarked on HMT *Aquitania* on 1 May. The strength of the unit, including attached personnel, was 14 officers and 230 other ranks.

As planned, a general hospital staff was called up with the Second Echelon. The first members of 1 General Hospital began to assemble at Trentham Camp on 12 January 1940 under the command of Colonel McKillop. [2] Only a few had had previous territorial training. Training consisted of squad and company drill, first aid, bandaging, and stretcher drill, while as many men as possible were employed in rotation at the camp hospital where they were given lectures by sisters of the NZANS. The hospital's establishment provided for specialists in the different branches of medicine and surgery. In addition to experienced general physicians and surgeons there was a specialist in tropical medicine, an

orthopaedic surgeon, an eye and ENT surgeon, and an anaesthetist.

Embarkation on the *Empress of Britain* took place on the night of 1 May at Wellington. Small sections of medical officers and sisters were detached to provide medical services on the sister ships of

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the convoy- *Aquitania*, *Empress of Japan*, and *Andes*. The unit's total strength was 21 officers, 37 sisters, and 145 other ranks.

The staff of 1 Convalescent Depot was assembled at Trentham at the same time as that of 1 General Hospital and underwent the same training. They were originally under the command of Lieutenant-Colonel Spencer, [1] but on the eve of sailing Colonel Spencer was given command of 2 General Hospital and Lieutenant-Colonel Boag [2] took his place. The convalescent depot also embarked at Wellington on the evening of 1 May 1940, its ship being the *Empress of Japan*. Its strength was 5 officers and 49 other ranks.

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Medical Units with Third Echelon

On 1 February 1940 there began at Burnham Camp a training course for the NCOs of the field medical unit to accompany the Third Echelon. It was attended by twenty-five men. Practically all of them were raw recruits who (unlike 4 and 5 Field Ambulance NCOs) had not had any territorial training.

The Commanding Officer of 6 Field Ambulance, Lieutenant-Colonel Bull, entered camp at Burnham on 2 April and other officers arrived on 16 April. The main body of 6 Field Ambulance was mobilised on 15 May and entered on a comprehensive scheme of training, which culminated in combined exercises with infantry battalions and the construction of a large underground dressing station.

With a total strength of 234, the unit embarked with other units of the Third Echelon at Lyttelton on 27 August, its ship being the *Orcades*. Other ships embarking troops at Wellington were the *Mauretania* and *Empress of Japan*.

Officers and prospective NCOs for 2 General Hospital entered Trentham Camp on 17 April, to be followed by the main body of the unit a month later. The standardised medical training was carried out, with the addition that nursing orderlies received training in the Wellington Public Hospital as well as at the camp hospital. Colonel F. M. Spencer was its commanding officer.

Embarkation on the *Mauretania* took place at Wellington on 27 August 1940, and the unit strength was 18 officers (including the chaplain), 39 nursing sisters, and 148 other ranks. The convoy carrying the Third Echelon sailed for Egypt on 28 August and there linked up with the First Echelon. The Second Echelon was still in England.

3 General Hospital (4th Reinforcements)

After tentative plans made earlier in 1940 for the mobilisation of a third general hospital had been cancelled, representations from General Freyberg in September 1940 led to the calling-up of 3 General Hospital in October. The Commanding Officer, Colonel Gower, [1] entered Trentham Camp on 27 October and the rest of the unit arrived in the next three days.

The 4th Reinforcements then in camp embarked in three separate sections, and according to the usual practice a medical officer and a few orderlies were sent with each departing transport. No. 3 General Hospital embarked on the *Nieuw Amsterdam* with the third section of the 4th Reinforcements on 1 February 1941, the number embarking being 14 officers (including a dental officer and a chaplain), 48 sisters, and 143 other ranks.

After the departure of 3 General Hospital no further medical units were formed in New Zealand to extend the medical services of 2 NZEF in the Middle East. Other units, notably the Casualty Clearing Station, were established in the Middle East. This enabled full use to be made of the capable officers and men who already had considerable experience of overseas conditions.

Medical reinforcements from New Zealand proceeded overseas with each general reinforcement and also on HS *Maunganui*.

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First Echelon—Voyage to Middle East

Of the six transports selected to convey the First Echelon overseas,

five were passenger liners and one a regular army troopship. The liners were the *Orion*, *Strathaird*, *Empress of Canada*, *Rangitata*, and *Sobieski* and the troop transport the *Dunera*. Except on the troopship, most of the troops were quartered in cabins, the regular passenger accommodation being augmented in some cases by extra berths in the larger cabins. In general, most of the troops on the passenger liners, with the possible exception of those in the holds, travelled with all the usual comforts and facilities afforded the peacetime tourist. (This was not the case for later reinforcement drafts.) In the *Dunera* the troops were not so fortunate. This ship was a specially constructed troop transport, used before the war to take drafts of British troops to Indian and Eastern stations. Cabins were allotted to officers and senior NCOs, but all other ranks were quartered in troop-decks.

On all transports the health of the troops throughout the voyage was good. Each troopship carried at least one medical officer, three nursing sisters, and a number of medical orderlies to staff the ship's hospital. During the voyage all personnel were vaccinated. The men were done in small batches so as not to interfere unduly with training and ship's fatigues. In addition, there were a number of TAB inoculations of men not done in camp.

Seven major operations were performed on the *Sobieski*—five of them for removal of appendix. On the *Strathaird* a successful operation for the opening up of a mastoid was performed with the aid of an electric drill borrowed from the ship's engineering staff and two carpenter's chisels.

Ships' hospitals, although considered small should any epidemics have occurred, were sufficient for the voyage. The most common illnesses experienced on board were tonsillitis, mild influenza, measles, and diarrhoea. Preventive ablution centres were established at ports of call, regular medical inspections of troops were carried out, and some cases of venereal disease treated. In addition, medical officers gave frequent lectures on health precautions in the tropics, personal hygiene, and on conditions in Egypt.

An epidemic of acute diarrhoea of unknown causation occurred on the *Dunera*. An interesting feature on this ship was the apparatus for manufacturing 'eusol' in bulk from sea-water by electrolysis. This solution was used for the daily scrubbing of troop-decks, mess tables, latrines, etc.

Shortages of medical equipment, particularly of instruments necessary for a major surgical operation, were frequently commented on in voyage reports from each transport, but no serious difficulty ever arose. The chief needs included drugs, nursing equipment, sterilisers, and surgical instruments; stretchers, splints, and bandages were also needed for training hospital staffs, and additional fittings were required in ships' hospitals.

Ventilation on the transports suffered, particularly at night, because of the necessity of keeping hatches and portholes closed and doors opening on to the decks covered with heavy blackout curtains. With natural ventilation thus reduced to a minimum, temperatures below decks at night were high, those taken at midnight on one occasion on the *Sobieski* ranging from 90 to 93 degrees Fahrenheit. Recommendations were made by the medical officer of this ship that hatches should be partially removed at nights and protective devices erected to comply with the blackout; also that screens should be built outside all doors leading on to decks to allow them to be left open at nights without the danger of lights showing.

The convoy reached Port Tewfik on 12 February after calling at Fremantle and Colombo, and the troops disembarked and proceeded to Maadi Camp on the following two days.

Second Echelon—Voyage to United Kingdom

The ships which conveyed the Second Echelon overseas were the *Empress of Britain*, *Aquitania*, *Empress of Japan*, and *Andes*. These were all passenger liners. The convoy, which sailed on 2 May 1940, was

joined off the coast of Australia by other ships. Its destination was ostensibly the Middle East, though there was still some doubt about this at the time of its departure. When the convoy was proceeding towards Colombo from Fremantle on 15 May its course was changed to take it to Capetown and thence to the United Kingdom. The United Kingdom Government's War Cabinet had decided that, in view of the anticipated declaration of war by Italy, it would be inadvisable for the convoy to continue to the Middle East.

As with the First Echelon, medical officers, nursing sisters, and orderlies were posted to each ship to staff ships' hospitals and give medical treatment. The wearing of rubber-soled tennis shoes on transports was a source of trouble, just as it had been with the previous echelon. The medical officers of the First Echelon had recommended sandals but the Defence Purchase Division, on the score of cost, and also because of the lack of suitable leather, decided against any change. [1] Foot troubles were the inevitable consequence, in spite of precautions, in this and succeeding drafts going overseas. Besides developing fungoid infections on the feet, troops also found difficulty in getting their feet used to army boots after being some weeks on board ship, and after the first few route marches overseas, the number of cases reporting sick with blistered feet was very high.

Ship's hospital accommodation proved adequate on all ships in spite of upper respiratory infection, common in the camps in New Zealand, being prevalent aboard. Among these cases a gradual progressive increase in severity was noted and the onset of broncho-pneumonia was not unusual. The isolation hospitals for treatment of venereal disease also had a small number of patients. German measles broke out on some of the ships, its incubation period corresponding with infection arising at Fremantle. Its incidence was much higher on the Australian than the New Zealand ships. Lack of space prevented quarantine measures and further cases developed after disembarkation.

Medical supplies generally were adequate, although demands for particular drugs called for their replenishment at Fremantle and

Capetown. Plaster-of-paris bandages on the *Empress of Britain* were found to be useless, the tins being obviously many years old. Medical equipment was incomplete in important details, but medical officers were able to remedy the deficiencies from their personal instruments.

As the convoy drew near to Great Britain in June 1940 at the time of Dunkirk, first-aid posts were established at strategic points on the ships and surgical teams appointed to act in the case of enemy air attacks, but fortunately no such emergency arose.

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[1] Leather sandals were issued for use on shipboard from 1941 and also for use overseas later.

Third Echelon—Voyage to Middle East

The Third Echelon embarked for the Middle East on 27 August 1940 on the *Mauretania*, *Empress of Japan*, and *Orcades*. While the accommodation in the *Mauretania* and the *Orcades* was good, in the other ship a degree of overcrowding made conditions unpleasant.

The medical arrangements for the Third Echelon were similar to those of the two preceding echelons. Influenza, measles, and mumps were the main causes of hospitalisation but in no case was the incidence serious. The medical officers on the transports were united in their recommendations that inoculations and vaccinations should be completed prior to embarkation. Where the troops were accommodated in hammocks their sore arms caused great discomfort and severe vaccine reactions were suffered by numbers of troops in the tropics.

At Bombay on 16 September 6 Field Ambulance was disembarked and 2 General Hospital was transferred to the *Ormonde*. The troops who were disembarked found themselves submitted to considerable inconvenience and trying conditions in Bombay and Deolali. Sixth Field Ambulance eventually reached Port Said on 26 October after travelling from India on a most unhygienic ship called the *Felix Roussel*. In the Red Sea the

convoy was attacked by Italian planes but without serious damage resulting, and the *Felix Roussel* was subjected to a further harmless attack while at Port Sudan.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

4 FIELD AMBULANCE AND 4 FIELD HYGIENE SECTION

4 Field Ambulance and 4 Field Hygiene Section

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The officer appointed to command 4 Field Ambulance at Burnham was Lieutenant-Colonel Will, [1] and there were nine other medical officers and a quartermaster, a dental officer, and a chaplain with the unit. The NCOs were drawn mainly from 1, 2, and 3 Field Ambulances of the Territorial Force, in which the majority had seen several years' continuous service. They had attended courses of instruction, passed first-aid and nursing-orderly examinations, and were, on the whole, a very capable group. The main body of men was mostly without military or medical training. The men for 4 Field Hygiene Section were placed under the command of Lieutenant Wyn Irwin, [2] who had been a district health officer.

Training consisted in instruction in first aid, the system of evacuation of casualties, the work of stretcher-bearers, clerical and nursing duties at advanced and main dressing stations, the recording of casualties, field cooking, and in hygiene methods used on field service. By the time final leave came in the last two weeks of December the original group had become an efficient unit.

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[2] Maj B. T. Wyn Irwin, m.i.d.; born Christchurch, 12 Oct 1905; Medical Officer of Health, Wellington; OC 4 Fd Hyg Sec Oct 1939–Sep 1941; OC Maadi Camp Hyg Sec Sep–Dec 1941; died (in NZ) 12 Mar 1942.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EMBARKATION OF FIRST ECHELON

Embarkation of First Echelon

In the advance party which left New Zealand on 11 December 1939 in SS *Awatea* were two men of 4 Field Ambulance, and they were joined in Egypt by Lieutenant Harrison, [3] who had come from the United Kingdom and who became acting Deputy Assistant Director of Medical Services to the Expeditionary Force. The main embarkation of the First Echelon took place on 5 January 1940. At Lyttelton 6 officers and 217 other ranks of 4 Field Ambulance and 1 officer and 28 other ranks of 4 Field Hygiene Section embarked on HMT *Dunera*. At Wellington other Medical Corps personnel, comprising Colonel K. MacCormick, [4] Assistant Director of Medical Services to the Expeditionary Force, 8 regimental officers, 18 sisters of the New Zealand Army Nursing Service, and 4 medical officers and 12 nursing orderlies and dispensers from 4 Field Ambulance, embarked on the *Orion*, *Strathaird*, *Empress of Canada*, *Rangitata*, and *Sobieski*.

The regimental medical officers and nursing sisters were split up among the transports and were able to establish small ships' hospitals to attend to any sickness cases during the voyage. The convoy sailed on 6 January 1940.

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL UNITS WITH SECOND ECHELON

Medical Units with Second Echelon

To form the field medical unit for the Second Echelon the officers and NCOs of 5 Field Ambulance, under Lieutenant-Colonel Kenrick, [1] commenced a course of training at Burnham on 8 December 1939, concluding it on 6 January 1940. Most of the officers and NCOs had had some years of territorial training. The main body of the unit began to arrive in camp on 10 January 1940. Most of the men were new to medical work as well as to army life. Like 4 Field Ambulance before them, they were given training in all departments of field ambulance duties. Training was extended into April, pending the arrival of ships to take the Second Echelon overseas, and 5 Field Ambulance left Burnham for Lyttelton on 30 April to go by ferry to Wellington, where the unit embarked on HMT *Aquitania* on 1 May. The strength of the unit, including attached personnel, was 14 officers and 230 other ranks.

As planned, a general hospital staff was called up with the Second Echelon. The first members of 1 General Hospital began to assemble at Trentham Camp on 12 January 1940 under the command of Colonel McKillop. [2] Only a few had had previous territorial training. Training consisted of squad and company drill, first aid, bandaging, and stretcher drill, while as many men as possible were employed in rotation at the camp hospital where they were given lectures by sisters of the NZANS. The hospital's establishment provided for specialists in the different branches of medicine and surgery. In addition to experienced general physicians and surgeons there was a specialist in tropical medicine, an orthopaedic surgeon, an eye and ENT surgeon, and an anaesthetist.

Embarkation on the *Empress of Britain* took place on the night of 1 May at Wellington. Small sections of medical officers and sisters were

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL UNITS WITH THIRD ECHELON

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The Commanding Officer of 6 Field Ambulance, Lieutenant-Colonel Bull, entered camp at Burnham on 2 April and other officers arrived on 16 April. The main body of 6 Field Ambulance was mobilised on 15 May and entered on a comprehensive scheme of training, which culminated in combined exercises with infantry battalions and the construction of a large underground dressing station.

With a total strength of 234, the unit embarked with other units of the Third Echelon at Lyttelton on 27 August, its ship being the *Orcades*. Other ships embarking troops at Wellington were the *Mauretania* and *Empress of Japan*.

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with the First Echelon. The Second Echelon was still in England.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

3 GENERAL HOSPITAL (4TH REINFORCEMENTS)

3 General Hospital (4th Reinforcements)

After tentative plans made earlier in 1940 for the mobilisation of a third general hospital had been cancelled, representations from General Freyberg in September 1940 led to the calling-up of 3 General Hospital in October. The Commanding Officer, Colonel Gower, [1] entered Trentham Camp on 27 October and the rest of the unit arrived in the next three days.

The 4th Reinforcements then in camp embarked in three separate sections, and according to the usual practice a medical officer and a few orderlies were sent with each departing transport. No. 3 General Hospital embarked on the *Nieuw Amsterdam* with the third section of the 4th Reinforcements on 1 February 1941, the number embarking being 14 officers (including a dental officer and a chaplain), 48 sisters, and 143 other ranks.

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FIRST ECHELON—VOYAGE TO MIDDLE EAST

First Echelon—Voyage to Middle East

Of the six transports selected to convey the First Echelon overseas, five were passenger liners and one a regular army troopship. The liners were the *Orion*, *Strathaird*, *Empress of Canada*, *Rangitata*, and *Sobieski* and the troop transport the *Dunera*. Except on the troopship, most of the troops were quartered in cabins, the regular passenger accommodation being augmented in some cases by extra berths in the larger cabins. In general, most of the troops on the passenger liners, with the possible exception of those in the holds, travelled with all the usual comforts and facilities afforded the peacetime tourist. (This was not the case for later reinforcement drafts.) In the *Dunera* the troops were not so fortunate. This ship was a specially constructed troop transport, used before the war to take drafts of British troops to Indian and Eastern stations. Cabins were allotted to officers and senior NCOs, but all other ranks were quartered in troop-decks.

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The convoy reached Port Tewfik on 12 February after calling at

Fremantle and Colombo, and the troops disembarked and proceeded to Maadi Camp on the following two days.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SECOND ECHELON—VOYAGE TO UNITED KINGDOM

Second Echelon—Voyage to United Kingdom

The ships which conveyed the Second Echelon overseas were the *Empress of Britain*, *Aquitania*, *Empress of Japan*, and *Andes*. These were all passenger liners. The convoy, which sailed on 2 May 1940, was joined off the coast of Australia by other ships. Its destination was ostensibly the Middle East, though there was still some doubt about this at the time of its departure. When the convoy was proceeding towards Colombo from Fremantle on 15 May its course was changed to take it to Capetown and thence to the United Kingdom. The United Kingdom Government's War Cabinet had decided that, in view of the anticipated declaration of war by Italy, it would be inadvisable for the convoy to continue to the Middle East.

As with the First Echelon, medical officers, nursing sisters, and orderlies were posted to each ship to staff ships' hospitals and give medical treatment. The wearing of rubber-soled tennis shoes on transports was a source of trouble, just as it had been with the previous echelon. The medical officers of the First Echelon had recommended sandals but the Defence Purchase Division, on the score of cost, and also because of the lack of suitable leather, decided against any change. [1] **Foot troubles were the inevitable consequence, in spite of precautions, in this and succeeding drafts going overseas. Besides developing fungoid infections on the feet, troops also found difficulty in getting their feet used to army boots after being some weeks on board ship, and after the first few route marches overseas, the number of cases reporting sick with blistered feet was very high.**

Ship's hospital accommodation proved adequate on all ships in spite of upper respiratory infection, common in the camps in New Zealand,

being prevalent aboard. Among these cases a gradual progressive increase in severity was noted and the onset of broncho-pneumonia was not unusual. The isolation hospitals for treatment of venereal disease also had a small number of patients. German measles broke out on some of the ships, its incubation period corresponding with infection arising at Fremantle. Its incidence was much higher on the Australian than the New Zealand ships. Lack of space prevented quarantine measures and further cases developed after disembarkation.

Medical supplies generally were adequate, although demands for particular drugs called for their replenishment at Fremantle and Capetown. Plaster-of-paris bandages on the *Empress of Britain* were found to be useless, the tins being obviously many years old. Medical equipment was incomplete in important details, but medical officers were able to remedy the deficiencies from their personal instruments.

As the convoy drew near to Great Britain in June 1940 at the time of Dunkirk, first-aid posts were established at strategic points on the ships and surgical teams appointed to act in the case of enemy air attacks, but fortunately no such emergency arose.

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[1] Leather sandals were issued for use on shipboard from 1941 and also for use overseas later.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THIRD ECHELON—VOYAGE TO MIDDLE EAST

Third Echelon—Voyage to Middle East

The Third Echelon embarked for the Middle East on 27 August 1940 on the *Mauretania*, *Empress of Japan*, and *Orcades*. While the accommodation in the *Mauretania* and the *Orcades* was good, in the other ship a degree of overcrowding made conditions unpleasant.

The medical arrangements for the Third Echelon were similar to those of the two preceding echelons. Influenza, measles, and mumps were the main causes of hospitalisation but in no case was the incidence serious. The medical officers on the transports were united in their recommendations that inoculations and vaccinations should be completed prior to embarkation. Where the troops were accommodated in hammocks their sore arms caused great discomfort and severe vaccine reactions were suffered by numbers of troops in the tropics.

At Bombay on 16 September 6 Field Ambulance was disembarked and 2 General Hospital was transferred to the *Ormonde*. The troops who were disembarked found themselves submitted to considerable inconvenience and trying conditions in Bombay and Deolali. Sixth Field Ambulance eventually reached Port Said on 26 October after travelling from India on a most unhygienic ship called the *Felix Roussel*. In the Red Sea the convoy was attacked by Italian planes but without serious damage resulting, and the *Felix Roussel* was subjected to a further harmless attack while at Port Sudan.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 3 — MEDICAL ARRANGEMENTS IN EGYPT AND ENGLAND, 1940

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

In Egypt the first tasks for the Medical Corps were the planning of hygiene services to ensure good health among the New Zealand troops in a country totally different from New Zealand, and the provision of hospital services for the sickness and accident cases bound to arise in the best of conditions among any large body of men. For this important work there was sent overseas with the First Echelon an Assistant Director of Medical Services, [1] Colonel K. MacCormick, and 18 sisters of NZANS; 4 NZ Field Ambulance, comprising 9 medical officers, a quartermaster, and 171 men; and 4 NZ Field Hygiene Section, including 1 medical officer and 28 men. (Also attached to 4 Field Ambulance were a chaplain, an ASC officer and 56 drivers, 2 dental officers, and 6 dental mechanics.)

Colonel MacCormick arrived in Egypt from Sydney by air on 22 January 1940, Lieutenant T. W. Harrison had arrived from the United Kingdom on 5 January, and two men of 4 Field Ambulance had reached Egypt with the advanced overseas party on 7 January. The remainder of 4 Field Ambulance travelling with the First Echelon arrived at Maadi Camp on 13–14 February.

The planning of the medical arrangements for the overseas force was partly carried out in New Zealand. General Freyberg had held a conference with the senior medical officers in Wellington on 27 December 1939 to consider matters of special importance to the health of the troops in Egypt. It was fortunate that the senior officers, including the DGMS, Brigadier Bowerbank, and ADMS, Colonel MacCormick, had had previous experience of army conditions in Egypt during the First World War. The questions of diet and hygiene were especially discussed and agreement reached on preventive measures against the endemic diseases. Colonel MacCormick, accompanying the

GOC, had made investigations in Australia and had studied an account by Castellani on the Italian medical services in Abyssinia. He incorporated some of Castellani's methods in hygiene regulations which he drew up for the force in Egypt. A special circular was issued by Headquarters 2 NZ Division setting out in complete detail the instructions regarding hygiene and sanitation. Strong emphasis was placed on the responsibility of commanding officers to ensure that the regulations were promulgated orally to the men and that they were subsequently enforced.

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[1] **This appointment of ADMS NZ Division was changed to DDMS 2 NZEF and then DMS 2 NZEF as the size of the New Zealand Force grew.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MAADI CAMP

Maadi Camp

On arrival, the ADMS found that the site chosen for the Base Camp was in the desert east of Maadi, eight miles up the Nile from Cairo, where a British garden suburb had been laid out very attractively since the First World War. The camp overlooked the Nile valley and was sited on an extensive empty area of raised rocky plateau which was covered by only a thin layer of sand. The site was an excellent one, much superior to the site at Zeitoun occupied by 1 NZEF in the 1914–18 War. Except on the side nearest the river, where Maadi township lay, there were no inhabited areas anywhere near the camp and there was plenty of room for expansion.

The New Zealand troops came under command of HQ BTE (British Troops in Egypt), and the special services of that command, as well as its knowledge and experience of local conditions, were made freely available.

Already preparations were well ahead, and British and Indian engineers employing Egyptian labour had laid out the camp. Seven miles of tarmac road, six miles of water mains, and more than four miles of drains had been laid down. More than 150 huts had been built to provide cookhouses, messrooms, canteens, and shower-houses, though all the huts were not completed. Colonel MacCormick reported that the camp was only half finished when the troops arrived, and that, under these conditions, it was impossible to carry out fully many of the necessary health precautions. Accommodation for personnel was provided in tents, which were very difficult to erect because of the hard ground. The troops, wearing serge on disembarkation, arrived at Suez and reached Maadi by train, and were welcomed into their camp by details from

British units who had made preparations, including the provision of a meal, for their arrival. The sick cases which required hospital care were transferred to a British hospital at Moascar, and the eighteen nursing sisters were sent to 2/10 British General Hospital at Helmieh. Fortunately, the force arrived during the most healthy period of the year.

Shortly after the echelon arrived the ADMS gave a lecture to the commanding officers and the medical officers on important aspects of hygiene, disease, and sanitation. He pointed out the necessity for taking every health precaution because of the very low standard of cleanliness and sanitation of the fellahin and the prevalence of dust and flies, the plagues of Egypt. Many diseases were endemic and widespread, though the local inhabitants had developed a high immunity to many of them. Troops, especially New Zealand troops, on their arrival in the country were very susceptible to these diseases, above all to dysentery. The medical arrangements that were instituted to safeguard the health of the troops and the special problems encountered will be considered in appropriate sections.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WATER

Water

The camp water supply came from the Nile. The water was sedimented, filtered, chlorinated, and then detasted, and was considered safe from all diseases except bilharzia, of which there were no reported cases in Maadi town. Water had been laid on throughout the camp at numerous water points for cookhouses, for washing, and for showers. Altogether, 20 gallons per head a day was available for camp use. On test the water at the camp was found at first to contain bacillus coli in considerable concentration, though at the Maadi supply point none was found. Various sources of contamination were gradually eliminated, such as the use of contaminated dip-sticks by natives in charge of the pumping plant and, later, seepage from the evaporating pans through faulty pipe junctions into the water pipes, some of which were found to run beneath the pans. Measures were taken to prevent the contamination, and the camp water points were put under constant check and supervision by the Hygiene Section. When unit water-tank trucks were issued some weeks after arrival, rechlorination was carried out. Tests then were satisfactory. (The standard method of sterilisation in the field was by clarification, superchlorination with water sterilising powder, and dechlorination with taste-remover tablets (two tablets per 100 gallons of water chlorinated). Owing to the presence of schistosomiasis (bilharzia) in the Middle East, the minimum period required for sterilisation before the addition of the taste-remover tablets was half an hour but a period of several hours was preferred.)

As an added health precaution, in April the Hygiene Section emptied, cleaned, sterilised, and refilled the reservoirs at Maadi from which the camp supply was drawn. A guard was placed over the reservoirs. Further poor water tests led to covering of the reservoirs with concrete roofs.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MAADI SWIMMING BATH

Maadi Swimming Bath

The construction of a large swimming bath on the outskirts of the town of Maadi beyond the confines of the camp was commenced before the troops arrived. The bath was considered desirable both as a health measure and as an attraction to keep the men out of Cairo, with its temptations and infectious diseases. The bath was excavated and lined with concrete and the water obtained from the town supply. It was opened for use on 7 April 1940, and it proved of great value and was very popular throughout the whole period of the war.

A high incidence of infection of the nasal sinuses and of the ears was present in the force during the North African campaign, and the swimming bath was held responsible for many of the cases. Tests showed that, although the water in the bath was changed daily, there was a high bacterial count in samples taken towards the evening. The bath water was therefore chlorinated from 8 June 1940. Regulations were also promulgated forbidding diving, ducking, and underwater swimming; these proved very difficult to enforce. All men suffering from any of the following diseases were forbidden to bathe in any swimming bath, civil or military: (1) Diseases of the skin or scalp; (2) venereal diseases in an infective stage; (3) infectious diseases of the ear, or with evidence of previous ear disease; (4) convalescents from enteric or dysentery until certified free from infection; and (5) nasal infections. Men with infections of the ear were also debarred from swimming in the sea.

Efforts were made at different periods to ensure that all troops were taught swimming. There can be no doubt that the bath contributed much to the health and happiness of the men.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SHOWERS

Showers

Shower-houses with concrete floors were constructed in the different areas of the camp. At first only cold water was available, but later arrangements were made for the supply of a limited amount of hot water, especially in the colder weather. The cleansing of the floor boards with antiseptics to prevent the spread of tinea was regularly carried out.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WASHING

Washing

In each unit area water was piped to wooden stands for ablutions. Washing of clothes was also carried out here, but it was found necessary to prohibit this owing to the added demands on the water supply and drainage systems.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

LAUNDRY

Laundry

A camp laundry was built capable of dealing with the clothing of a thousand men a day and a contract made with an Egyptian to operate the laundry. Operations commenced within nine days of the arrival of the force, although the construction was not yet complete and grease traps and drainage were unfinished. The Hygiene Section gave very necessary supervision over the cleanliness, disinfestation, and standard of work of the native staff of the laundry.

Each unit was able to arrange for washing twice a week and lists were carefully drawn up and checked, each man's garments being indelibly marked with name and number. The contractor was held responsible for losses and damage. The laundry was available to officers at a small charge, but private laundries in Maadi township were also patronised.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL PRECAUTIONS

General Precautions

Medical instructions given prominence in early unit routine orders for this period included the prohibition, because of bilharzia, of bathing in the Nile or wading in any canal or pool, warnings against sunbathing and tattooing, the precautions to be taken against contracting chills, and the holding of compulsory shower parades. Blankets were to be aired regularly by being spread out in the sunshine along the ridgepoles and sides of tents. Other orders detailed the scrubbing of tables in messrooms, the duties of sanitary police, and cleanliness in unit lines.

FOOD

Food

Careful thought was given to the determination of a suitable ration for the troops in Egypt and the matter was discussed in New Zealand during General Freyberg's visit before the First Echelon left. The Australian ration was agreed to for use on the transports, but more butter was to be provided in place of part of the cheese ration. It was agreed that the British Army ration in Egypt, with certain additions, was suitable. It was held that a minimum of two ounces of butter was desirable and that ice-cream should be provided. In Egypt the army ration was found to be adequate and satisfactory for New Zealand troops after some slight adjustments had been made. The alterations in the ration were that the jam ration was increased from one to two ounces, cheese reduced from 1 oz. to ½ oz., tea from ¾ to ½ oz.; herrings were deleted, and butter 2 oz. was substituted for margarine 1 ½ oz. A cash allowance of one penny a man a day was also allowed for extra purchases of fresh foods. Some fresh meat was obtained by utilising buffalo beef. Eggs were available and were added to the ration early in 1941, instead of, as previously, being purchased out of the cash allowance. Both the jam and butter rations were earlier reduced to 1 ½ oz. This was done to ensure that our troops did not have any advantage over the British troops. [1]

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[1] **See Appendix A to this chapter.**

Alterations in the basic ration were made from time to time so as to substitute local products for overseas supplies and thus save valuable shipping space. This especially referred to meat, eggs, fish, vegetables, and fruit.

When operating away from the base camps the troops were put on a field ration and the penny-a-day supplementation was discontinued. Special provision was made for such items as dried fruits, ground nuts, boiled sweets, chocolate, and tinned fish, and ascorbic acid tablets, marmite, and cocoa were added.

The danger of infection from food obtained from civilian sources was stressed before the troops landed in Egypt and was the subject of repeated lectures and army orders, both before and after their arrival in Maadi Camp. The lack of ordinary cleanliness and hygiene throughout the native population made it inevitable that all food and drink except that obtained in first-class European establishments should be suspect, and the troops were warned against eating any food or drinking anywhere else, especially from itinerant vendors, who were banned from the camps. The troops were advised not to eat any fruit without a thick skin and to wash the fruit in a disinfectant beforehand. Melons were also suspect and at first prohibited. Uncooked vegetables were soaked in permanganate solution or dipped in boiling water for 30 seconds before eating, and they were seldom provided for the troops. The native methods of cultivation made their contamination a certainty. [1]

Most fresh food was cooked and eaten within twenty-four hours and when kept in the cookhouses was protected by wire netting or muslin shields. In the cookhouses a special room was set aside for meat. Storerooms were provided with safes for such articles as butter, jam, and milk and also for vegetables. The type of building erected for cookhouses and the material used made it almost impossible to keep them completely free of flies.

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[1] See Appendix B to this chapter.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

COOKS

Cooks

The importance of good cooking was not overlooked. Cooks chosen for the First Echelon were given courses of training at the Trentham school of cookery. In Egypt arrangements were made for the training of New Zealand cooks at the army school of cookery, Cairo. Also, the services of an NCO of 7 British Armoured Division were obtained as an instructor to 2 NZEF under the officer commanding the Divisional Supply Column. The GOC instructed that a 2 NZEF cookery school be established on the lines of the successful school at Aldershot. Arrangements were then made with the War Office, London, for four NCOs to be seconded to 2 NZEF to form the nucleus of an adequate cookery school. The NCOs accompanied Second Echelon troops from England to Egypt. A building suitable for training purposes was erected at Maadi Camp and new plant was installed. Thus reorganised and expanded, the NZEF cookery school was able to put cooks through proper training and testing. From February 1941 all cooks had to be qualified at either the NZEF school or the Middle East school before being granted extra-duty pay. It was calculated at the time that the extra-duty pay for cooks would amount to £30,000 per annum when 2 NZEF was at full strength. All aspects of cooking, including cooking under normal and abnormal camp conditions and the construction of improvised cookers, were included in the course, which lasted two months.

Precautions were taken to see that no man who had suffered from typhoid, dysentery, or cholera or who was suffering from venereal disease should be employed in the cookhouse or handle food. Cooks were supplied with three sets of white uniforms and facilities for washing and disinfecting the hands. Smoking in the cookhouses was prohibited, as

was sleeping and the keeping of clothing in mess kitchens and storerooms.

At first, when infections such as dysentery and typhoid were prevalent in the camp, all personnel, army or native, handling food were suspected of being carriers. Laboratory examinations of the stools were carried out regularly when such conditions arose, and any cook found to be a carrier was promptly given other duties.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MESS UTENSILS

Mess Utensils

Basins of disinfectant (1 per cent cresol) were provided at the entrance to the messrooms for all ranks to dip their hands in before entering. After the meal all mess utensils had to be washed in clean soapy water and then boiled in special stoves and stored in fly-proof containers in the messrooms. Objection was raised by quartermasters that cutlery and utensils were an individual issue and signed for by the men. This, however, was overridden as it was held to be useless to sterilise dishes and then permit men to carry them in pockets or haversacks and leave them about the tents. Nevertheless, this ideal arrangement did not last very long; mess utensils reverted to an individual issue and remained so, while washing facilities provided by mess fatigues were seldom adequate for the number of men at each mess.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DRINKS

Drinks

Troops were warned against taking any of the cool drinks supplied by the Egyptians. The native beer was also not to be trusted, and even the beer and cordials allowed in the camp were often found to be quite unsatisfactory. Troops were also advised not to drink water apart from the camp supply. If there was any question of its purity, water was to be boiled, and tea was strongly recommended as the routine drink. Fresh milk had always to be boiled. Only those cordials from sources approved by the Army were allowed. Ice was considered to be almost invariably contaminated during transport and its use in drinks was prohibited.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ICE-CREAM

Ice-cream

The ice-creams sold in Egypt were known to be unsafe, and even Groppi's ices manufactured under clean conditions had been found to be contaminated shortly before the arrival of the troops. The provision of ices by the force itself had been discussed by General Freyberg in New Zealand and eventually an ice-cream factory, financed by the Patriotic Fund, was set up in Maadi Camp. Full precautions were taken as regards cleanliness and the Egyptian staff was rigidly controlled. The hospital patients were given first preference in supply, but the troops were able to obtain their share in the camp and in the New Zealand Forces Club.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FLIES

Flies

Flies were one of the plagues of Egypt so well remembered by men of 1 NZEF, when the presence of horses in the lines had added greatly to the problem of fly control. There had been a remarkable improvement since the First World War, but the fly was still present in teeming numbers and was an objectionable insect and a constant menace to health. Warning was given to the troops and the urgency of fly control was well instilled in the force. The Hygiene Section waged an eternal war against them. Fortunately, Maadi Camp was some considerable distance from native quarters and it was therefore possible to carry out efficient control; throughout the war there was never any marked increase in their numbers and at times there were few to be seen. The early summer months were the worst period, but in the hottest months, as in the coldest, the flies disappeared. Control, however, was never relaxed and full sanitary precautions were taken to destroy any possible breeding grounds. The kitchens and storerooms were fly-proofed, kept clean of any refuse, and cleaned efficiently. All refuse and swill bins were provided with lids and all pits covered. The latrines were all covered and gradually boxed in, and sawdust was used to cover over the faeces. The urinal tins were kept clean and crude oil or disinfectant put into them after they were emptied. The latrine buckets were emptied twice daily by contractors and the seats scrubbed daily. Fly-traps were used when the flies were numerous. The methods used to kill flies in the camp consisted of: (1) spraying with anti-fly solutions; (2) tanglefoot on wires or paper; (3) fly swatters; (4) formalin solution (one dessertspoon to a pint) with sugar in open dishes with a centre of bread for the fly to alight on; (5) fly-traps with bait such as formalin and sugar. It was thought that flies were at times blown by the high winds from the sewage farm associated with Tura prison and the Egyptian military

barracks. The farm was found to be in a very neglected state, with extensive fly-breeding in scum and sludge pits.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOSQUITOES AND BEDBUGS

Mosquitoes and Bedbugs

The 4th Field Hygiene Section caught in Maadi Camp in May 1940 several specimens of anopheles pharoensis, the malarial carrier of Egypt. This was quite a surprise to the local authorities, who regarded the area as free of anopheles. It was believed they bred in the neighbouring villages, so pressure was brought to bear on local authorities to deal with the menace. The Field Hygiene Section maintained a steady drive against possible breeding places of mosquitoes. A prolific breeding ground for 'culex' was located in two water tanks in a camel-police camp near Maadi Tent and probable sources in untreated stagnant irrigation wells. Further spots were found in culverts draining irrigation water from the channel filled daily with water from the camp baths. These spots were all oiled immediately. (Later, on 8 July after an intensive search, stone cisterns in the Jewish cemetery, a mile and a half along the Citadel road, were found to be breeding anopheles mosquitoes. No malarial parasites were found in captured mosquitoes.)

Bedbugs made their appearance, too, during May 1940. They were brought into camp when some of our troops returned from Mustapha Barracks, where they were stationed for a short period. They were also probably introduced in furniture brought from Abbassia. Measures taken against these bugs included steam disinfestation, the sprinkling of tents with pyrethrum powder, and dipping bedboards in kerosene. The bugs, however, continued to thrive and proved one of the banes of life in the huts at Maadi Camp.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

LATRINES

Latrines

The hard, stony condition of the ground made the use of trench latrines impossible. Bucket latrines were therefore instituted and were available when the First Echelon arrived in Maadi Camp. Movable seats were provided, but these were loose-fitting and were not fool- or fly-proof. Boxed latrine superstructures were provided later with hinged lids and proved quite satisfactory. The buckets were emptied by the natives employed by the sanitary contractor into large iron containers provided with lids, and carted in lorries to the outskirts of the camp. Here the excreta, along with other camp refuse, was buried in large pits six feet square and nine feet deep. The refuse was covered over with three feet of soil, and then three inches of sand mixed with heavy oil, and finally with dry sand. Incinerators, however, had been set up in batteries of seven, on the outskirts of the camp, when the troops arrived and were working well at the beginning of March 1940, but there was difficulty with the excreta. Shavings were then used to cover the faeces in the buckets and this helped in the incinerator. The refuse to be burned in the incinerators was mixed with sawdust, tibben (chopped straw), etc. Then kerosene-soaked sawdust was used instead of the shavings, and at the end of March wood and coal were used with better results. In April the incinerators were primed with sump oil. It seems that there was always some difficulty with the incinerators, and the pits were still being used after the first year of the camp and were necessary, in any case, for liquid refuse and for the ashes from the incinerators. The bucket system worked well but needed constant supervision. The use of sawdust proved of great value. Bowls filled with 1 per cent cresol were placed at the entrance to every latrine and the troops instructed to immerse their hands up to the wrists in them on leaving the latrine.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

URINALS

Urinals

At first troughs were used leading to open shallow pits, but this proved unsatisfactory as splashing occurred and the ground did not lend itself to proper soakage. Buckets were then introduced, and these were emptied and the urine carted away and disposed of well beyond the camp area.

RUBBISH

Rubbish

Arrangements were made for the collection of all rubbish throughout the camp by contractors. The rubbish was carted by lorries, tarpaulins being used to cover it during transit, outside the camp and either buried or burnt as already described. A considerable amount had to be collected at the beginning throughout the camp area, especially in the quarries.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

KITCHEN REFUSE

Kitchen Refuse

Four drums were provided at the cookhouses for kitchen refuse. They were placed on stands like a milkcan stand so that they could be readily dealt with by the conservancy contractors. In one drum was placed dry refuse such as ashes and bottles. In another were food scraps such as bacon, not of any use for food. Another held tins and the last one grease. All drums had proper lids. After emptying, the drums were washed by the unit personnel.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SWILL

Swill

Contracts were let for the purchase of kitchen scraps and fats. Bins with lids were provided at each mess for their collection. One drum was used for meat scraps but not bacon (because of the Moslem ban), and one was used for dry bread. A tin was also provided for fat. The bins were emptied three times a day and cleanliness insisted on. The money obtained was utilised to purchase extras for the men's mess.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SUMPS

Sumps

The hard, stony, impermeable nature of the ground made it very difficult to carry out efficient drainage and ordinary pits proved quite inefficient. The sullage water had eventually to be piped through cement pipes from the cookhouses and washing stands to the perimeter of the camp, where large evaporating pans, sixty feet square, in sets of four, were constructed. Two pans were flooded with water to a depth of six inches after it had passed through large grease traps. Evaporation was complete in twenty-four hours, when the other two pans were used. The dried deposit was scraped out and sent to the incinerator. Later, the pans were used to grow eucalyptus trees and crops of cabbages, tomatoes, maize, etc., and the little grease passing through the large grease trap was dealt with by digging in frequently to prevent fly breeding. The grease traps were cleaned out every week, the layer of surface grease being removed daily.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NATIVE LABOUR

Native Labour

The Egyptian labourers, of whom there were two thousand employed during the first year, proved a constant trouble as regards sanitation. They had polluted the whole camp area before the troops arrived and it took one hundred labourers two months to clean up the excreta. Then followed a long-drawn-out fight to persuade the natives to use the bucket latrines provided for them and to keep them clean.

Very large numbers of Egyptian labourers continued to be employed in the camps under the engineers in making roads, building huts, shower-houses, and latrines, on the staffs of NAAFI, the laundry, and later of the ice-cream factory; while the sanitary contractors dealing with the kitchen refuse and with the latrines also used native labour. They were dirty and often lousy; a later improvement was the erection of shower huts for them at the entrance to the camp, where they were washed and their clothes disinfested. There was a constant menace of the possible spread of infectious disease. Typhus was endemic in Egypt and at times serious outbreaks occurred in Cairo. Typhoid and dysentery were prevalent and careful watch had to be kept to see that no carriers were placed in positions in the camp that would allow the spread of these infections. Bacteriological investigations of stools were carried out regularly when Egyptians were employed in handling food either in camp or later at the New Zealand Forces Club in Cairo. Hawkers were not allowed in the camp and all the labourers had to have a pass.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BARBERS' SHOPS

Barbers' Shops

Regulations were drawn up to ensure the cleanliness of these shops and the apparatus used by the Egyptian barbers. They were required to wash their hands before attending to each customer and to provide clean covers and towels. Hair and shaving brushes had to be washed and soaked in 5 per cent dettol or carbolic solution for an hour each time they were used, and combs, scissors, and hair clippers had to be cleaned and soaked in 5 per cent dettol for ten minutes.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HOSPITAL ARRANGEMENTS

Hospital Arrangements

Medical arrangements in respect to sickness and accidents were put into operation immediately upon the arrival of the First Echelon. Fourth Field Ambulance established in Maadi Camp a camp hospital of 100 beds in tents. This comprised five large HP marquees for general sickness, four large HP marquees for infectious and venereal cases, with one GS and three small RD tents for administration purposes. [1] More tents were added as the need arose. Equipment was drawn from British depots in Egypt.

More seriously ill patients were transferred to 2/10 British General Hospital at Helmieh, another suburb of Cairo, and near the site of the camp occupied by New Zealand troops in the First World War. To assist in treating the New Zealanders, the eighteen nursing sisters went to this hospital immediately on disembarkation, and a detachment of three medical officers and fifty orderlies from 4 Field Ambulance, under command of Major Tennent, [2] was sent there two days afterwards. The New Zealand staff took charge of two

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[1] **HP ? hospital pattern; GS ? general service; RD ? ridge double.**

[2] **Col A. A. Tennent, m.i.d.; Wellington; born Timaru, 4 Sep 1899; medical practitioner; 2 i/c 4 Fd Amb Sep 1939–Mar 1940; DADMS NZ Div Mar–Dec 1940; CO 1 Conv Depot Dec 1940–Oct 1941; CO 4 Fd Amb Oct–Dec 1941; p.w. Dec 1941; repatriated Apr 1942; ADMS 4 Div (NZ) Aug–Oct 1942; CO 4 Gen Hosp 2 NZEF (IP) Nov 1942–Dec 1943; SMO Sick and Wounded, Army HQ, Dec 1943–1944; ADMS Central Military District 1944–45.**

wards, one medical and one surgical. Besides ensuring that all the equipment and specialised services of an established hospital were available for New Zealand patients, this arrangement also enabled 4 Field Ambulance staff to receive training in the care of the sick and to profit by association with experienced members of the RAMC.

It was soon felt that the New Zealand Medical Corps in Egypt lacked sufficient medical officers with surgical experience for the duties which it was being asked to perform. It was anticipated that the need would be increased when the troops took over large numbers of mechanised transport vehicles and sustained severe accidental injuries. It was felt that none but the best possible surgical assistance should be available for our men. General Freyberg sent an urgent request to Army Headquarters, New Zealand, on 7 February asking for the despatch of two capable surgeons to supplement the staff, a surgeon capable of dealing with head injuries being especially desired. Captains Button [1] and Furkert [2] were then quickly flown to Egypt from New Zealand. On their arrival Captain Button was placed in charge of the detachment at Helmieh, thus relieving Major Tennent for duties at Divisional Headquarters as DADMS, for which post he was originally intended. The policy of caring for our own sick and wounded, which had been laid down at the beginning of the war, had not been fully implemented. The lesson was learnt that adequate provision for hospital treatment must be first priority, and that this implied that a hospital unit of some kind should accompany the first troops sent overseas.

Successive detachments from 4 Field Ambulance underwent tours of duty at 2/10 British General Hospital and their training syllabi covered nursing, operating-theatre practice, radiology, massage, dispensing, laboratory, medical stores, administrative and general duties. The knowledge then gained was invaluable to our force, at that time inexperienced in military hospital administration, and later the staffs of our hospitals were also to benefit from the experience passed on to them.

Medical officers of 4 Field Ambulance proceeded to and from tours of duty as regimental medical officers to the various combatant units in training in Maadi Camp. Owing to the lack of medical equipment, only four medical inspection rooms were established in the camp, in large marquees. Sick parades were usually held in unit

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[1] **Col E. L. Button, OBE, ED; Wellington; born London, 9 Mar 1903; surgeon; CO 4 Gen Hosp Jul–Sep 1940; in charge surgical division 3 Gen Hosp, Mar 1941–Sep 1943; CO 1 Mob CCS Oct 1943–Aug 1944.**

[2] **Col F. P. Furkert, ED, m.i.d.; Auckland; born Taihape, 8 Dec 1906; surgeon; surgeon 5 Fd Amb Nov 1939–Feb 1940; 4 Fd Amb Oct 1940–Feb 1941; OC Mobile Surgical Unit Mar 1941–Jan 1942; CO 6 Fd Amb Jan 1942–Feb 1943; ADMS 2 NZ Div Feb–Jun 1943.**

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lines soon after reveille and the men were marched to the nearest MI room by the orderly corporal.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ESTABLISHMENT OF A NEW ZEALAND GENERAL HOSPITAL IN EGYPT

Establishment of a New Zealand General Hospital in Egypt

Discussions between Colonel Bowerbank and Colonel MacCormick before the departure of the latter for the Middle East in January 1940 resulted in the schedule being drawn up that one 600-bed general hospital and a convalescent depot should be sent overseas with the Second Echelon and one 1200-bed general hospital with the Third Echelon. It was further decided that it was desirable that the sick and wounded among New Zealand troops should be cared for, as far as possible, by New Zealand medical services.

The Government's decision in the matter of medical services was announced by the Minister of Defence on 2 March 1940, when he stated that a fully equipped general hospital and convalescent depot, staffed entirely by New Zealanders, would be sent overseas. This decision, he said, had been taken to ensure that New Zealand soldiers would be treated in their own hospital by doctors and nurses of their own country.

In Egypt the ADMS NZ Division (Colonel MacCormick) found difficulty in securing separate hospital accommodation and reported the matter to General Freyberg, who took it up with General H. M. Wilson, GOC British Troops in Egypt, who was well known to New Zealanders as a former GSO I of 1 NZ Division. General Wilson readily agreed with the policy that as far as possible New Zealand troops should be cared for by New Zealanders. The ADMS NZ Division followed up the question with DDMS BTE, Colonel P. S. Tomlinson. The DDMS was aware that New Zealand medical units were arriving in the Middle East without equipment and despatched a cable to the War Office asking that the delivery of equipment for the New Zealand Force be expedited. A reply was received the following day indicating that equipment would be

despatched shortly afterwards for all regimental medical officers, a field ambulance, and a 600-bed general hospital. (Medical equipment for Maadi Camp reception hospital, as well as medical supplies for four medical inspection rooms at Maadi Camp, was drawn from the British Depot of Medical Stores, Helmieh.)

It was arranged with DDMS BTE that, in the meantime, wards would be set apart for New Zealand sick at 2/10 British General Hospital at Helmieh. The DDMS BTE was strongly of the opinion that three 600-bed hospitals were advisable instead of one 600-bed and one 1200-bed hospital. The basis for this opinion was that, if there were active operations in the Middle East, it was more than likely that there would be more than one line of evacuation. Unless three general hospitals were available, New Zealand troops might not pass into the care of a New Zealand hospital. Two hospitals could be conveniently placed on lines of communication, while the third hospital, expanded if necessary, could care for the cases evacuated from the more advanced general hospitals and also serve troops at the base.

Three general hospitals, of considerably greater bed strength, were necessary in the First World War, and all these considerations, together with the fact that smaller units have a greater tactical mobility in all circumstances, converted ADMS NZ Division to this plan. He reported to the DGMS in New Zealand that the change of plan involved an increase of approximately 20 per cent in both personnel and equipment, though some saving could be effected as the third general hospital could remain on call in New Zealand. A recommendation to this effect was therefore made to the DGMS on 20 February 1940.

When endeavours were made to secure a location for a 600-bed general hospital, no site other than the Grand Hotel, Helwan, could be found, it being stated that tented or hutted accommodation was out of the question. The hotel had been closed on 13 March 1940, and, while not ideal in some respects, was able to provide ample accommodation for some 450 beds plus administrative sections. It was decided to hire the building and secure nearby buildings for quarters for medical officers,

nursing sisters, and male staff. The need for a New Zealand general hospital to be opened as soon as possible was emphasised by the daily average of New Zealand hospital patients in 2/10 British General Hospital and Camp Hospital, Maadi—97·4 in February, 178·8 in March, and then 276·5 in April.

Negotiations for the hire of the Grand Hotel, Helwan, and other buildings became a protracted process, which it was necessary to let HQ BTE conduct. The actual taking over and conversion to a hospital was delayed until the hiring contract was completed, and took effect from 1 June 1940. Contracts were then let for additions and renovations.

By the end of June the hotel building was nearly ready for occupation by medical cases but the contract for the building of an operating-theatre block had not then been let. The medical equipment for a 600-bed hospital had reached Cairo, but the staff of 1 NZ General Hospital had been diverted to the United Kingdom with the Second Echelon, arriving there in the middle of June.

The DDMS GHQ ME (now Colonel Tomlinson) and the DDMS BTE (Colonel R. G. Shaw) were both desirous that 2 NZEF should go on with the proposed hospital at Helwan, especially as Italy had by then declared war. It was decided to open the hospital for medical cases as soon as possible, leaving the surgical cases at 2/10 General Hospital in the meantime. The staffing of the institution presented many difficulties, there being no solution but to continue to use the company of 4 Field Ambulance which had been on duty at 2/10 General Hospital, although it was recognised that this might complicate matters if the New Zealand troops proceeded on active service in the field.

At this time General Freyberg and Colonel MacCormick were in England making arrangements for the arrival of the Second Echelon. Acting on instructions from the GOC, Colonel MacCormick had gone to the United Kingdom by air on 26 May. Lieutenant-Colonel Kenrick, CO 5 Field Ambulance, was instructed to disembark from the *Aquitania* and come from Capetown to Cairo by air. On his arrival on 8 June he became

acting ADMS NZ Division in the Middle East. On 29 June he sent a cable to Colonel MacCormick advising him of the situation regarding Helwan hospital. The matter was discussed with General Freyberg, who directed the withdrawal of personnel from the Helmieh hospital to take over the Helwan hospital. Reinforcements were promised at the earliest opportunity.

4 NZ GENERAL HOSPITAL OPENS AT HELWAN

4 NZ General Hospital Opens at Helwan

No. 4 NZ General Hospital (with most of its staff drawn from 4 Field Ambulance) opened as a 300-bed hospital at the Grand Hotel, Helwan, on 24 July. It was the first New Zealand general hospital established in Egypt, although 1 NZ General Hospital was operating in England at this time.

The medical staff of 4 NZ General Hospital comprised Major Button, Officer Commanding and Senior Surgeon, Captain Kirk, [1] Senior Physician, Lieutenant Harrison, Registrar, Lieutenant Neale [2] and Lieutenant Macfarlane, [3] company officers, and Captain Peek, [4] quartermaster attached. In addition, it was arranged that Captain J. K. Elliott [5] and Captain R. A. Elliott [6] should visit the hospital once

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[1] **Lt-Col G. R. Kirk, OBE, m.i.d.; Dunedin; born Gisborne, 18 Jun 1907; physician; RMO 20 Bn 1939–40; physician 1 Gen Hosp 1940–41; 2 Gen Hosp, 1941; 1 Mob CCS 1942; in charge medical division 1 Gen Hosp, Sep 1942–Jan 1945.**

[2] **Capt H. C. Neale; Levin; born Nelson, 20 Aug 1914; medical practitioner; medical officer 4 Fd Amb Sep 1939–Apr 1941; p.w. Apr 1941.**

[3] **Maj T. A. Macfarlane, m.i.d.; Auckland; born Scotland, 21 Jan 1911; medical practitioner; RMO NZ Engineers Aug 1940–Aug 1941; 6 Fd Amb 1941; DADMS 2 NZ Div 1941–43; 1 Gen Hosp 1943.**

[4] **Maj G. Peek, m.i.d.; born Christchurch, 22 Sep 1891; Inspector of Explosives; Lt QM 2 Gen Hosp1940; OC Medical**

Stores Depot Oct 1940–Feb 1946; died, Christchurch, 22 Dec 1949.

[5] Lt-Col J. K. Elliott, OBE, ED; Wellington; born Wellington, 24 Aug 1908; surgeon; RMO 18 Bn 1939–40; DADMS 2 NZ Div Dec 1940–Nov 1941; surgeon 1 Gen Hosp Nov 1941–Jun 1943; CO 4 Fd Amb Jun 1943–Apr 1944; Orthopaedic Consultant (NZ) Jun 1944–Mar 1945.

[6] Col R. A. Elliott, OBE, ED, m.i.d.; Wellington; born Wellington, 8 Apr 1910; surgeon; surgeon 4 Fd Amb, 1 and 2 Gen Hosps, Oct 1939–1942; DADMS 2 NZ Div Feb–Jul 1943; CO 5 Fd Amb Dec 1943–Jul 1944; ADMS 2 NZ Div Dec 1944–Oct 1945.

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weekly from Maadi, as consultant orthopaedic and ENT surgeons respectively.

The nursing staff comprised Miss D. I. Brown, [1] Matron, and thirteen of the New Zealand sisters who had been working with 2/10 General Hospital; the remaining four sisters joined them later when all patients were transferred.

In the advance party of male staff there were 20 men of 4 Field Ambulance from 2/10 General Hospital, 7 men from 4 Field Ambulance, Maadi, and 24 graded men from base and divisional units. Then, on 31 July, the remaining 24 men from 4 Field Ambulance at 2/10 General Hospital (less three detailed to remain for special duty) were transferred to the Helwan staff.

Ordnance stores for a 300-bed hospital and medical stores for a 600-bed hospital were unpacked by the advance party, which also prepared living accommodation for the staff and got ready to receive patients. By 31 July the hospital had 188 beds equipped for the reception of medical, minor surgical, and convalescent patients. On the afternoon of that day 82 patients were smoothly transferred by 4 Field Ambulance from 2/10 General Hospital at Helmieh. On 3 August a further 61 patients were

admitted from the Camp Hospital, Maadi. The first admission of a patient direct to the hospital was made on 2 August.

The medical arrangements for 2 NZEF in Egypt at this stage were:

1. Medical cases and minor surgical cases were admitted to 4 NZ General Hospital.
2. Cases requiring major surgical operation were admitted to 2/10 General Hospital pending the completion of the operating block at Helwan.
3. Cases of venereal disease were admitted to 4 Field Ambulance (Camp) Hospital, Maadi.
4. Infectious diseases cases were admitted to 4 Field Ambulance (Camp) Hospital, Maadi.
5. Mental cases were retained at 2/10 General Hospital, but were to be transferred to 4 General Hospital as soon as suitable provision had been made for them.

A very complete passive air defence scheme was drawn up for 4 General Hospital in the event of enemy air attack.

As the number of occupied beds increased, the shortage of nursing staff, both sisters and nursing orderlies, became most apparent. Instead of the regular establishment of a 300-bed hospital, there was

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[1] Matron Miss D. I. Brown, RRC, m.i.d.; Wellington; born Napier, 24 Apr 1905; sister; sister-in-charge Camp Hospital, Ngaruawahia, Oct 1939–Jan 1940; Matron 4 Gen Hosp Jul–Oct 1940; Matron 2 Gen Hosp Oct 1940–Jun 1943; now Mrs R. G. Milne, Matron-in-Chief Wellington Hospital.

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only one company of a field ambulance, eighteen nursing sisters, and five medical officers. The base details posted for duty were not entirely satisfactory and for the most part could be used only for the lighter forms of general duties. Five of the army cooks posted were unfit for full duty because of various disabilities. The native staff employed were unsuitable as cooks, largely because the low wage attracted only an inferior grade of cook.

The medical officers were accommodated in Dr Moore's house and the sisters in M. Chalom's villa, while the men were quartered first in Villa Gubalieh and then in the Winter Palace Hotel. The Grand Hotel was a building of several stories, and work was early commenced on the installation of a lift to obviate the need to carry bed patients up and down stairs.

By 11 August an emergency operating theatre was equipped and ready for use pending the construction of a permanent theatre block. All types of emergency surgery were possible except where X-ray control was necessary, e.g., in compound fractures. The admission of all New Zealand surgical patients, other than those requiring X-ray, was arranged from this date. On the two subsequent days the remaining patients and four New Zealand sisters were transferred from 2/10 General Hospital to 4 NZ General Hospital. Although the transfer of these four sisters gave a certain relief to the overworked nursing staff, such was the increase in the amount of work that six members of the TANS [1] were attached on 28 August. These were supplemented on 18 September by twelve members of QAIMNS, [2] also temporarily attached.

The opening of the Kiwi Club on 10 August proved very useful to the hospital in the provision of recreational facilities for convalescent patients. The club was established mainly through the initiative of Lady Lampson, wife of the British Ambassador to Egypt, and the British Red Cross Society in Cairo. It was temporarily housed at the Boys' Preparatory School, Helwan, the building having been put at the disposal of the club's committee by the Minister of Education until the beginning of the school year, when the use of another building was obtained on the northern outskirts of Helwan. This building was originally erected by the Egyptian Education Department for the Boy Scout movement. In the homely atmosphere of the club games could be played and refreshments bought, and there was also a little shop. Later a swimming pool was provided. The Kiwi Club was a valuable adjunct to the New Zealand hospital in Helwan for over five years, and ladies of Helwan, Maadi, and Cairo provided a much-appreciated service in it.

On 26 August the first evacuation of invalids to New Zealand

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[1] Territorial Army Nursing Service (British).

[2] Queen Alexandra's Imperial Military Nursing Service.

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took place when ninety-three men embarked on the Indian hospital ship, *Karapara*. Of these, thirteen were patients of 4 General Hospital. There were also other patients boarded for return to New Zealand but they had to remain at the hospital in the meantime. Certain difficulties arose in connection with the despatch of the draft and on this account, as well as in anticipation of increased numbers of invalids after the arrival of the Second and Third Echelons, it was decided to cable Army Headquarters in New Zealand asking that the fitting of New Zealand's own hospital ship be accelerated. In the meantime the possibility of being able to share Australian hospital ship accommodation was investigated. The Australian authorities were quite agreeable to assist and did so by embarking fifty New Zealand invalids on their hospital ship *Manunda* in November.

Lieutenant-Colonel Kenrick became commanding officer of the Helwan hospital on 9 September, following the return of Colonel MacCormick to Egypt from England. Captain Furkert had been posted to the hospital earlier. On 8 September seven medical officers and thirty-three orderlies from 2 Australian General Hospital were attached for duty. These included a radiologist, who supervised the installation of an X-ray plant which was first used three days later. The attachment of the Australian personnel was in accordance with an arrangement whereby 100 to 150 patients of the Australian Forces were temporarily accommodated during the move of certain units of the AIF from Palestine to Egypt, and pending the establishment of an Australian general hospital in Egypt.

Twelve sisters, five medical officers, and thirty men from New

Zealand medical units of the Second Echelon in England arrived at Helwan on 17 September and immediately set to work as the number of patients increased and new wards were opened. There were then 337 patients. At the end of September, with the arrival of 2 NZ General Hospital in Egypt imminent, members of QAIMNS and the TANS returned to their own units after having given great help in the staffing problem. Twelve of the sisters concerned were New Zealand registered nurses attached to QAIMNS.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

2 NZ GENERAL HOSPITAL ARRIVES

2 NZ General Hospital Arrives

The arrival of 2 General Hospital in Egypt with the Third Echelon at the beginning of October meant that there was now available for the first time the complete staff of a New Zealand military hospital of 600 beds. Their arrival was opportune as 4 General Hospital had an occupied bed state of 434 on 4 October, when 2 General Hospital proceeded to take over. By 8 October the change-over had been smoothly completed and 4 General Hospital's male staff went back to 4 Field Ambulance or the Camp Hospital at Maadi for posting to their units, except for twenty-nine men retained temporarily as key personnel. There was a considerable number of changes in the postings of medical officers.

The GOC visited 4 General Hospital on 28 September prior to its relief and issued a special order following his visit. It read:

With the arrival of further personnel the medical units of the 2 NZEF are about to be reformed. Before this reorganisation takes place I wish to say that I am particularly pleased with the work done in establishing No. 4 NZ General Hospital. I realise that owing to the shortage of staff this work was effected under difficult conditions and I feel that the present efficient running of the hospital is a tribute to the high standard of the NZANS, NZMC, and attached personnel. I am more than sorry that the organisation so carefully thought out must now be taken over by another unit and the Emergency Staff sent to other work. Will you please tell all ranks how pleased I was with all I saw during my visit and thank them, especially those from the British and Australian Medical Services.

The eighteen sisters of the First Echelon became part of the staff of 2 General Hospital, with Miss Brown as matron and Miss Chisholm, [1]

assistant matron. It was now possible to grant leave to these sisters who had experienced an extremely strenuous time.

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[1] **Principal Matron Miss M. Chisholm, RRC; (now Mrs Cartwright); Wellington; born Masterton, 23 Oct 1902; sister; sister-in-charge Camp Hospital, Trentham, Oct 1939–Jan 1940; Charge Sister 4 Gen Hosp Jul–Oct 1940; Asst Matron 2 Gen Hosp Oct 1940–Apr 1941; Matron 3 Gen Hosp Apr 1941–Nov 1943; 1 Gen Hosp Dec 1943–Aug 1944, Feb–May 1945; Principal Matron May–Dec 1945.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DEFENCE OF EGYPT

Defence of Egypt

Egypt throughout the ages has been of great strategic importance. The construction of the Suez Canal added considerably to the country's value in this respect, especially to a great maritime power like Great Britain. New Zealanders were highly conscious of this, as they had been called upon during the First World War to help in its defence and to use it as a base for operations in Galiipoli and in Palestine. At that time a New Zealand force had also fought against the Senussi in the Western Desert, a force with which Brigadier Puttick, [2] commander of 4 Brigade, was associated.

The defence of Egypt in 1940 became still more important after Italy's declaration of war in June 1940, as Italy had powerful forces in Libya and also in Eritrea and Abyssinia, and the possession of Egypt would have proved of the greatest value to her. The fall of France greatly increased the Italian threat, all the Italian troops in Africa being freed for action against the forces in Egypt. Convoys of troops and equipment from Britain had also to go round the Cape as the Mediterranean route was menaced by the Italians, and this meant grave delay in building up the forces in the Middle East.

The shortage of medical equipment and supplies in Egypt made this delay a serious one to the medical services, and as all our New Zealand equipment was to be supplied from Great Britain it was of particular importance to our force. The defence of Egypt was to call for adaptation of the organisation and administration of medical units to meet the medical problems associated with the extreme mobility and long range of the fighting, the absence of roads, and the shortage of water.

British operations against the Italians at first were restricted to

bombing and frontier raids, whilst the Italians bombed bases in the Western Desert and Alexandria without causing much damage. This period lasted till the Italians moved forward into Egypt in September 1940.

The already-prepared passive air defence (PAD) scheme for Maadi Camp was put into effect in June. At night troops dispersed in vehicles to prearranged positions in the surrounding desert without confusion or incident under a rigid blackout. The tents occupied by 4 Field Ambulance were dispersed and dug in, while collective slit trenches were dug and sandbagged. The hospital tents for patients were not dispersed, although shelters were dug for the patients and the tent walls strongly sandbagged. In a hill adjacent to the field ambulance area, an operating theatre was provided in a 'dugout'. This was completely sandbagged and made lightproof.

On 18 June New Zealand units comprising 18 Battalion, 19 Battalion, 4 Reserve MT Company, and a detachment of Divisional Signals left Maadi for Garawla, near Mersa Matruh, 300 miles away, to be attached to the Western Desert Force. Three medical officers and three ambulance cars accompanied the force, and 4 Field Hygiene Section went with it to supervise water supply and sanitation, but returned to Maadi on 22 June.

Arrangements were made for the sick—and possible wounded—to be evacuated to 2/5 British CCS at El Daba, and, if they were likely to want more than ten days' treatment, they were to be sent from there to 2/5 British General Hospital, Alexandria.

On 24 and 25 June the acting ADMS NZ Division, Lieutenant-Colonel Kenrick, made a tour of inspection of the area and conferred with Colonel F. G. Smythe, ADMS Western Desert Force. Colonel Kenrick was satisfied that, while the troops were living under trying conditions, the medical arrangements were functioning satisfactorily. The water ration for the force was two gallons a man a day for all purposes, but fortunately most of the troops were near the sea and took full advantage

of the sea bathing and also washed their clothes in sea water.

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[2] **Lt-Gen Sir Edward Puttick, KCB, DSO and bar, m.i.d., MC (Greek), Legion of Merit (US); Wellington; born Timaru, 26 Jun 1890; Regular soldier; NZ Rifle Brigade 1914–19 (CO 3 Bn); wounded Mar 1918; commanded 4 Bde, Jan 1940–Aug 1941; 2 NZ Div (Crete) 29 Apr–27 May 1941; CGS and GOC NZ Military Forces, Aug 1941–Dec 1945.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FIELD AMBULANCE EQUIPMENT AND TRAINING

Field Ambulance Equipment and Training

Equipment to enable 4 Field Ambulance to function as a mobile field ambulance was not received until May 1940. Small groups of the unit, however, had during April proceeded out into the desert to establish and work an advanced dressing station for the training operations carried out by combatant units. The exercises emphasised the need for frequent practice in the field to master all the functions of a field ambulance. Practice blackouts and air-raid alarms pointed to the need for the unit to be prepared to deal with air-raid casualties.

During the next few months more units of 4 Brigade Group moved up into the desert for the defence of the Baggush Box and maintenance of the lines of communication, until by 1 September most of them were in the desert, stationed for the greater part at Baggush. On 29 August Headquarters Company 4 Field Ambulance moved to Maaten Burbeita, 34 miles east of Mersa Matruh, to establish an MDS, and on 2 September A Company moved up to Ikingi Maryut, where it took over an ADS from 19 Indian Field Ambulance. Most of the patients of the Camp Hospital, Maadi, had been transferred to 4 NZ General Hospital, Helwan, earlier in August in preparation for this move to the Western Desert. Seven men under command of the base medical officer took over the camp hospital on the departure of 4 Field Ambulance. B Company rejoined 4 Field Ambulance early in October, when 2 General Hospital relieved it at the Helwan hospital.

The role of 4 Infantry Brigade, together with various British and Indian units under command of 4 Indian Division, was to defend a perimeter around Maaten Baggush and Maaten Burbeita. There were 4800 men in 4 Infantry Brigade Group plus certain non-divisional troops,

such as the Railway Construction Company, in the Western Desert. The MDS of 4 Field Ambulance served the troops in the area, and A Company later rejoined the unit from Ikingi Maryut. A route of evacuation for casualties was established by unit ambulances to the ambulance train at Sidi Haneish station. Thence they went back along the lines of communication to 2/5 CCS at El Daba, 2/5 General Hospital at Alexandria, and 4 (later 2) NZ General Hospital, Helwan.

From Alexandria a single railway line and a tarmac road ran along the coast to Mersa Matruh; the road extended further to Sidi Barrani. Thence all transport was obliged to use desert tracks which quickly cut up into loose sand in which progress was slow and arduous.

No ambulance trains were at first available. A temporary arrangement was made for an ambulance coach to run daily with the passenger train from Mersa Matruh to Daba and there empty into the CCS and return to Mersa Matruh. When patients had to be evacuated to base hospital at Alexandria, another coach was despatched from Alexandria to Daba to pick them up. Later, ambulance trains ran daily from Mersa Matruh, stopping at Garawla, Sidi Haneish, and Fuka to pick up sick from field ambulances and the Royal Air Force, unloading minor sick patients for treatment at the CCSs at Daba and, after taking on others for evacuation, proceeding to Alexandria and Cairo.

The possibilities of evacuating casualties by air were explored by ADMS Western Desert Force but it was reported that, although all senior medical officers were in favour of air evacuation for special cases from forward areas, the RAF considered that the scheme was impracticable because of maintenance difficulties, the need of protection for ambulance planes, and the problem of preparing suitable landing grounds near the front.

On 13 September the Italian forces pressed their advance beyond the frontier of Egypt to Sollum and later to Sidi Barrani. Before numerically superior forces, the British troops gradually withdrew to prepared defences at Mersa Matruh. On 15 September, following an air raid during

the night, a number of casualties, all British, were admitted to 4 MDS for treatment. By 18 September the MDS held 31 patients, and by the end of September there were 64. The enemy air force was making frequent day and night attacks on troops, camps, and supply dumps in the Western Desert and on the railway line from Alexandria to Mersa Matruh.

Members of 4 Field Ambulance, especially A Company, were given training under mobile conditions with battalions of the brigade group, in view of the apparent imminence of extensive offensive action. During October the unit, which was nearly forty under strength, evacuated 634 patients sick and wounded—mostly sick. Of this total 289 were New Zealand troops and 345 British. In addition, many patients were detained under treatment and, on recovery, were discharged directly back to their units.

During this period in the desert opportunity was taken by 4 Field Ambulance to view the arrangements in the field made by ambulance units of 7 Armoured Division. Officers were impressed by their methods of dispersal, the set-up of the MDS and the ADS, their use of large tarpaulins (40 feet by 40 feet as a minimum) for providing quickly erected and efficient lightproof coverage for patients, and their arrangement of equipment in their panniers.

It was realised that several additions to equipment would be necessary because of the changed functions of a field ambulance in mobile warfare in the desert. The unit's equipment scale was designed to meet those conditions met in France during static war- fare in a closely inhabited country, where buildings were nearly always available to house casualties awaiting evacuation. In desert warfare the conditions were entirely different. There were no buildings, war was not static, and field ambulances might be called upon to hold casualties for lengthy periods pending evacuation. Hence, the old equipment scale of three small tents had to be supplemented with coverage that was capable of quick erection and removal.

As a result tarpaulins were provided for 4 Field Ambulance and became standard equipment. They were used with a truck, such as the operating truck, as the principal support for the tarpaulin, one side of which was spread over the vehicle and the other sides pinned to the ground. Poles inside the tarpaulin raised it sufficiently high off the ground to provide coverage for twenty to thirty stretchers. The open end of the truck faced inwards so that the equipment was easily available for use inside the marquee-like structure. Such a structure could be erected in a few minutes.

Lessons learned in a training exercise in November 1940 included navigation, by day and by night, and the art of dispersal, and further practice was received in the rapid establishment of both main and advanced dressing stations. The unit was now highly trained, although further improvement was thought desirable in the collection and transportation of a continuous flow of casualties from a battalion.

On 7 November 4 Field Ambulance was relieved of all British patients, who were transferred to 215 Field Ambulance which had now opened up in the neighbourhood. The hospital work of the unit was thus cut by half. On the night of 18–19 October 4 Field Ambulance was bombed by enemy aircraft and the ASC drivers attached suffered four casualties—one killed and three wounded, one of whom subsequently died of wounds.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WATER SUPPLIES

Water Supplies

Lack of water constituted probably the greatest problem of desert warfare. In the coastal area the presence of salt as well as fresh water underground made it useless to sink wells. The main source of water for the force was by water train from Alexandria. Roman aqueducts, repaired and developed by the engineers, at Mersa Matruh, Maaten Baggush, and Burbeita supplemented the supply. Later, pipelines were laid from the aqueducts to new water points. The water thus obtained was good and easily rendered sterile, but unfortunately the amount available was limited by the fact that over-pumping at once produced salinity.

There was a further difficulty of distribution to forward and dispersed troops, for whom insufficient water carts and containers were available. Water drawn for New Zealand troops was chlorinated at the water point before distribution. The ration was one and a half gallons a day for all purposes, three-quarters of a gallon being used for cooking and three-quarters for drinking and washing. This was adequate provided there was no waste. Some units washed their clothes each week in water saved from the daily allowance, whilst others sent their clothes to a military laundry in Alexandria.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FOOD

Food

The ration scale in the Western Desert was that of the British Army in Egypt. It was comprehensive and contained all necessary ingredients. Margarine was substituted for butter. Cigarettes became a weekly issue. Wet canteens were run mostly on a unit basis. A certain amount of ale was available, this being regarded as an important source of Vitamin B. Marmite could also be indented to make up deficiencies in this respect. Fresh limes were a daily issue to units and were best utilised in making refreshing lime drinks. A grant was made to units of 2 NZEF from the National Patriotic Fund to buy extra vegetables and fruit, and units also used regimental funds for this purpose. Some units in the area farther forward experienced a shortage of green vegetables at times owing to their poor condition on arrival.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HYGIENE

Hygiene

Flies were bad in some places at first, but were not troublesome where an anti-fly campaign was pursued with vigour. In all places except temporary bivouacs and certain water-bearing areas, the deep-trench latrine was the approved pattern.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BRITISH OFFENSIVE

British Offensive

On 9 December British and Indian troops and elements of 6 Australian Division commenced operations against the Italian forward positions with marked success. Adjacent British ambulance units moved forward to establish ADSs to deal with the wounded, leaving 4 Field Ambulance stationary as an MDS to continue its function of the previous three months. No New Zealand combatant units took part in the offensive. The diversion of the Second Echelon (5 Infantry Brigade Group) to the United Kingdom had delayed the formation of a complete New Zealand division in the Middle East. The New Zealand Government had expressed a wish that our troops should not be employed until the Division was assembled, except in an emergency, which did not arise.

However, 4 NZ Reserve MT Company (to which Lieutenant Lomas, [1] NZMC, was attached as RMO) transported troops of 5 Brigade of 4 Indian Division to the region of the Tummar outposts from 5 to 9 December 1940. On the night of 8 December Lieutenant Lomas was transferred by Brigade Headquarters to the ADS of 5 Indian Brigade (B Company 14 Indian Field Ambulance).

On 9 December, immediately following the capture of Tummar West by two battalions of the brigade, the ADS set up at a central site to treat casualties. A slight interruption occurred when this area was shelled and machine-gunned during an enemy counter-attack from Tummar East, but the attack was repulsed by tanks which put ten enemy tanks out of action.

The ADS staff consisted of two Indian captains, an Indian second-lieutenant (assistant surgeon), and Lieutenant Lomas. The two captains did the work of organising the reception of casualties and providing

blankets, medical comforts, etc., for the wounded, whilst Lomas and the assistant surgeon attended to the wounded. They worked steadily for twelve hours until 2.30 a.m. on 10 December and commenced work again at dawn, continuing throughout that day. The MDS and MAC did not arrive until evening.

Every type of injury passed through the surgeons' hands in this period. Several limb amputations were necessary; there were about five cases of fractured skulls with herniation of the brain, and many with chest and abdominal wounds. The casualties were British, Indian, Italian, and Libyan. Casualties from 11 and 16 Brigades also arrived at 5 Brigade ADS, as they had trouble in finding their own ADSs. For his part in the action Lieutenant Lomas was awarded the Military Cross—the first award to the New Zealand Medical Corps in the war.

The main attack on Sidi Barrani was then begun and the Italian forces were driven into general retreat, leaving behind thousands of prisoners, including casualties, and much equipment. The Italians were driven out of Egypt when Sollum fell on 16 December. Then followed the clearing of Bardia and Derna and the push on to Benghazi.

Fourth Field Ambulance was called upon to deal with only a few bomb casualties beyond the usual sickness cases. During December 202 New Zealand, 97 British, and 9 Australian cases were evacuated. In the last week of December the unit ceased to function as a reception and evacuation centre, and prepared for the move by road to the divisional base camp recently established at Helwan.

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[1] **Maj A. L. Lomas, MC, m.i.d.; Hamilton; born Wanganui, 30 Jun 1916; medical practitioner; RMO ASC Jan 1940–Jun 1941; OC Maadi Camp Hosp Jun 1942–Apr 1943; DADMS 2 NZ Div Aug 1943–Apr 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

LESSONS FROM THE CAMPAIGN

Lessons from the Campaign

On 17 November Colonel G. W. B. James, Consultant Psychiatrist, BTE, visited 4 Field Ambulance and with medical officers discussed the question of the prevalence of neurosis in the forward areas. General opinion indicated that the incidence was very small, at least in New Zealand troops, but it was suggested that any such cases should be treated with sedatives and held in the forward medical unit rather than be evacuated to a general hospital, where the complex increased, thereby making it much more difficult to return the men to their units.

In the campaign in December it had been possible for the commanding officer 4 Field Ambulance, Lieutenant-Colonel Graves, [1] to accompany Colonel Kenrick as far forward as Bardia to the MDS of 2/1 Australian Field Ambulance. There valuable information was gained on the evacuation of battle casualties from the battle then in progress. Three ADSs were functioning at the time about 2 miles behind the front line and all casualties passed through the MDS, which was situated close to the division's headquarters, about 12 miles back. From observations made, it was clear that in future operations New Zealand's field ambulances would have to make provision at the MDS for the following:

(*a*) The holding of many more cases than previously planned.

(*b*) The performance of major surgery as required.

(*c*) The attachment of additional surgeons.

(*d*) An electric lighting set for theatre work.

(*e*) Use of walking wounded as blood donors.

(*f*) Improvement of arrangements for clerical recording at the admission and discharge of patients.

When 4 Field Ambulance concluded its first period of four months in the field under active-service conditions, valuable experience had been gained in hospital work and field training, and the unit felt confident that it could undertake any role in field ambulance work.

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[1] **Col P. V. Graves, ED; Waverley; born Hawera, 1 Apr 1896; medical practitioner; medical orderly NZ Hospital Ship *Maheno*, 1917–19; RMO 2 Div Cav Sep 1939–Sep 1940; CO 4 Fd Amb Sep 1940–Aug 1941; ADMS Central Military District Sep 1942–Aug 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DEVELOPMENTS AT BASE—CHANGES IN ADMINISTRATION

Developments at Base—Changes in Administration

The movement of 4 Brigade Group to the Western Desert while a proportion of men remained in Maadi Camp and at Helwan hospital led to changes in headquarters administration. Up to September 1940 all administrative functions had been carried on by Headquarters NZ Division. This title was retained by the headquarters of the brigade group when it moved up under active-service conditions, and a reconstituted headquarters at Base became Headquarters 2 NZEF. This latter organisation could only be built up slowly without drawing unduly on the divisional troops. In September separate routine orders were issued by Headquarters NZ Division (on matters affecting all troops under its direct command) and by Headquarters 2 NZEF (on matters having force throughout 2 NZEF).

In August the acting ADMS NZ Division, Lieutenant-Colonel Kenrick, drew attention to the fact that it was impossible for one man to carry out satisfactorily the duties of ADMS with the force in the field, and at the same time cope with such important base duties as the establishment of hospitals and convalescent depots. When Colonel MacCormick returned from his duties with the Second Echelon in England in September he took a similar view. Immediately upon General Freyberg's return to Egypt from England, the question of the administration of the New Zealand Medical Services was taken up with him.

It was decided that there should be a DDMS 2 NZEF on Headquarters 2 NZEF and Colonel MacCormick was appointed to this position. Lieutenant-Colonel Kenrick was thereupon appointed ADMS NZ Division with the rank of colonel. These appointments were effective from 1

October 1940.

The DADMS NZ Division, Major Tennent, continued to assist the ADMS until appointed to command 1 Convalescent Depot, and Captain Williams [1] was appointed DADMS in the office of the DDMS at Maadi Camp. Both DDMS 2 NZEF and ADMS NZ Division had a clerical staff to assist with administrative matters. This staff, especially at the DDMS's office, was expanded later with the increase in numbers and size of the medical units. A quartermaster, Major Peek, was posted to DDMS's staff as officer-in-charge of medical supplies and equipment.

The DDMS thus became responsible for the medical arrangements throughout 2 NZEF as a whole, including all hospital arrangements, and was adviser to the GOC in medical matters, while the ADMS made the medical arrangements for the Division in the field, being responsible to the DDMS.

In January 1941 Miss Nutsey [2] arrived in Egypt to become Matron-in-Chief 2 NZEF. Under the DDMS, she was in administrative control of the members of the NZANS, and later of the members of the New Zealand Women's Army Auxiliary Corps (Medical Division).

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[1] Lt-Col M. Williams; Wellington; born Masterton, 29 Jan 1910; physician; RMO NZ Engineers, Oct 1939–Sep 1940; DADMS 2 NZEF Oct–Dec 1940; OC Base Hyg Sec Dec 1940–Jun 1941; OC 4 Fd Hyg Sec Jun 1941–Jan 1942; 5 Fd Amb Jan–Aug 1942; 1 Gen Hosp Aug 1942–Jun 1943; in charge medical division 4 Gen Hosp (Pacific) Sep 1943–Aug 1944.

[2] Matron-in-Chief Miss E. M. Nutsey, MBE, RRC, ED, m.i.d.; born Christchurch, 9 Jun 1887; Lady Superintendent, Auckland Hospital; 1 NZEF 1915–19: staff nurse, Egypt, 1915–16, sister, England, 1916–19; Matron-in-Chief 2 NZEF Jan 1941–Nov 1943; died 4 Jul 1953.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

1 NZ CAMP HOSPITAL

1 NZ Camp Hospital

It became obvious in September, after the departure of 4 Field Ambulance from Maadi, that a base camp hospital with its own war establishment was necessary. Since its arrival in February 1940, 4 Field Ambulance had run an infectious and contagious disease hospital in Maadi Camp. The opening of a general hospital at Helwan did not make the camp hospital redundant. Owing to the close proximity of the wards at Helwan no part of the hospital was suitable for venereal disease patients, nor could the lesser infectious diseases such as measles and mumps be conveniently treated there. It was thought that the camp hospital might be administered as part of 2 NZ General Hospital, but the distance of 17 miles, shortage of staff, and other difficulties made this solution impracticable. (Sixth Field Ambulance might have been able to staff the hospital temporarily, but the unit did not arrive with the main body of the Third Echelon at the beginning of October, having been disembarked at Bombay, and eventually reached Maadi on 27 October. In any case, this course would not have left the unit free to perform its proper function and undergo a full course of training.)

The 1st NZ Camp Hospital was therefore formed as a unit of 2 NZEF on 25 October 1940, with Captain Cottrell [1] as officer commanding and medical officer for the infectious diseases section, and Lieutenant Platts [2] medical officer for the venereal disease section. The establishment provided for a staff of 3 sergeants and 25 medical orderlies.

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[1] **Col J. D. Cottrell, OBE; England; born England, 26 Oct 1903; medical practitioner; medical officer 5 Fd Amb, 28 (Maori) Bn, 4 Gen Hosp, Jan 1940–Jan 1941; DADMS 2 NZEF Jan–Aug 1941; in charge medical division 2 Gen Hosp, Aug–Dec 1941; SMO Maadi Camp Jan–Mar 1942; in charge medical division 3 Gen**

Hosp, Mar 1942–Mar 1945; Consultant Physician 2 NZEF, Mar–May 1945.

[2] Maj W. M. Platts; Christchurch; born Port Chalmers, 6 Nov 1909; medical practitioner; Officer i/c VD Sec Maadi Camp Hosp; OC Maadi Camp Hosp 1941–Jun 1942; 6 Fd Amb Jul 1942; 4 Fd Amb Aug 1942–May 1944; wounded 15 Apr 1943.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NZ BASE HYGIENE SECTION

NZ Base Hygiene Section

The inspection of hygiene and sanitation arrangements of Maadi Camp had been the duty of 4 Field Hygiene Section. This unit operated for a short time with NZ Division in the Western Desert, and then on 14 December 1940 left Maadi Camp for the divisional camp established at Helwan, to which New Zealand troops went on their return from the Western Desert. Thereafter, the section was to remain with NZ Division.

It then became an urgent matter to form a Base Hygiene Section to supervise hygiene and sanitation in Maadi Camp, in outlying garrison posts manned by 2 NZEF troops, in the prisoner-of-war camp, Helwan, and the New Zealand Forces Club, Cairo. Two NCOs and four men from 4 Field Hygiene Section provided the nucleus of its staff, and Captain Williams took over command on 27 December 1940

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

1 NZ GENERAL HOSPITAL, HELMIEH

1 NZ General Hospital, Helmieh

The finding of a suitable location for 1 NZ General Hospital before that unit's arrival in Egypt was fraught with a number of difficulties. In the low-lying Nile Delta no location could be considered. Alexandria was considered unsuitable on account of bombing raids. Buildings in Cairo were almost unobtainable and most of the suitable sites on the Suez Canal had been taken. Tel-el-Kebir was put forward as a possible site, but it was an arid and extremely hot summer location, as those of 1 NZEF well remembered from 1916. Eventually, a site near 2/10 General Hospital at Helmieh was decided upon. It was part of the New Zealand camp site at Zeitoun in 1914–18. An administrative block, quartermaster's stores, kitchens, dining rooms, and bath-house were complete and ready on the site. An operating theatre of standard army design had to be built.

The advance party of 1 General Hospital, which had been working at Helwan hospital, made preliminary preparations at Helmieh before the arrival of the unit on 17 November. Upon arrival, the staff of the unit erected tents to enable a 600-bed hospital to be established. Hospital extending tents were used, each ward being formed of two parallel groups of sections, joined at one end by a single section forming a square service tent. This small tent acted as a ward kitchen, duty room, sterilising room, and treatment room. The tents were all dug well below ground level and surrounded by mud-brick walls, as a protection to bed patients in the event of enemy air attack. The sunken floors were paved with smooth stones, and brick facing walls built to hold back the sand. Assistance was rendered by working parties from infantry battalions in Maadi. Native contractors engaged in the erection of the operating theatre, X-ray and physiotherapy block, made slow progress.

Huts were made from rather flimsy shelters formerly used as stables by British garrison troops. These were constructed of rush walls at the back and on either side and had a flat roof, the front being open. The walls inside and the ceilings were plastered and the floors concreted. An area in the middle of the open front was bricked up to form a duty room and kitchen, leaving a wide entrance door on either side. A protective wall of mud bricks 4 feet high was then built outside the huts. The absence of rain and the extreme heat of summer made them a satisfactory method of temporary housing for the patients.

Drainage presented a difficulty. This was solved by digging down to 12 feet below ground level, where a porous sand sub-stratum was encountered. A sump of this depth had to be provided for each ward for the disposal of water used for washing patients. Dish water had to be disposed of through a separate drainage system.

The equipment for the hospital began to arrive on 23 November. The ordnance equipment had suffered considerably by damage and loss in handling on the voyage from England. The medical equipment was drawn in Egypt.

Construction work was still in progress when instructions were received on 13 December to prepare to admit patients. Casualties from the offensive in Libya were beginning to tax the available hospital accommodation. On 12 December DDMS BTE requested the DDMS 2 NZEF to make arrangements for the admission of casualties to New Zealand general hospitals, although the main body of New Zealand troops was not engaged. Colonel MacCormick gave his assurance that 2 General Hospital would take up to 250 cases and 1 General Hospital up to 200 cases of lightly wounded and sick. Both institutions responded splendidly. By 15 December 2 General Hospital had taken 117 British and 85 prisoner-of-war casualties, and on that date 1 General Hospital admitted 81 patients who were transferred from 2/10 British General Hospital.

By the end of January 1941, 1 General Hospital had seven tented

wards equipped with forty beds each, and five huts equipped with twenty-four beds. All this and other subsidiary work earned high praise from the DDMS BTE, who requested permission to send the commanding officers of all other hospitals to see what excellent arrangements had been made. This was the first hospital in the Middle East with tents sunk and protected against air raids.

In one period of ten days 300 patients, mostly Australian, were admitted, and the total in hospital reached 376 on 31 January. During February there were 241 patients admitted. On 24 February orders were received for the hospital to be cleared. All patients were discharged or transferred in two days and all equipment packed and loaded on a train in three days. The unit had been chosen to proceed with New Zealand troops across the Mediterranean to Greece. (The site at Helmieh was taken over by 3 NZ General Hospital on its arrival in Egypt on 23 March 1941.)

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

2 NZ GENERAL HOSPITAL, HELWAN

2 NZ General Hospital, Helwan

When 2 General Hospital took over from 4 General Hospital on 8 October there were 472 equipped beds and 448 patients. During the following week two more wards were opened up, bringing the number of available beds to 559. It was fortunate that this increase was possible just at that time, for there was a steady rise in the number of patients due to the departure of a brigade of 6 Australian Division from Helwan and the need for the Australians to transfer their sick from their camp hospital; and also to an increase in the number of cases of dysentery from both the Western Desert and Maadi Camp, where the Third Echelon had arrived early in October. On 30 October there were 533 patients, of whom 160 were Australians. Medical outnumbered surgical cases on an average of about two to one.

The number of patients rose to a peak of 586 on 1 November, but the bed state fell steadily to 458 at the end of the month with an easing of tension for all departments. Most of the construction work in the hospital was then finished and the staff had become accustomed to hospital routine. Admissions for the month totalled 825 and discharges 863.

It was not until December that the theatre block was functioning. This block was well designed and of ample size to cope with all the work offering, though all the surgical work was concentrated at Helwan pending the erection of the operating block at Helmieh several months later.

The sanitary arrangements of the Grand Hotel building were quite unsuited to cope with a large number of hospital patients. Soakage and cess-pits were in use, some of them under part of the buildings, and

these became overfull, offensive, and a danger to health. A new drainage system was put in and the drainage from the wards piped into a septic tank, and the effluent taken out into the desert three-quarters of a mile from the hospital. Two wards used for intestinal cases were still drained into larger cesspits to enable disinfectants to be used. Thereafter sanitary conditions were quite satisfactory.

In December, following the offensive in the Western Desert, men of many nationalities were admitted: 130 British, 72 Australian, 494 New Zealand, 3 French, and 215 Italian prisoner-of-war patients. Actual battle casualties were 73 Allies and 102 Italians.

In January large convoys of patients arrived following the battles of both Bardia and Tobruk. More Australians than New Zealanders were admitted for the month—426 as against 416. On 31 January the number of patients totalled 656. A transfer of 90 Australians to an Australian general hospital was made on 25 February and this left only 38 Australians. February's admissions totalled 658.

By March the rush of the work consequent on the January convoys had slackened to a marked extent, added to which the hospital was serving only New Zealand troops; and, of these, the majority were on their way to Greece early in March.

The casualties from other forces admitted from the First Libyan Campaign and Tobruk included both light and serious cases. The closed plaster treatment was largely carried out at this period and sulphonamides were used both locally and parenterally. Little was done in the way of wound suture. The major fractures demanded much attention, and the presence of an orthopaedic surgeon on the staff of the hospital proved of great value. Very few deaths occurred among the battle casualties.

Of other surgical admissions, accidental injuries were relatively common both from road accidents and from games, especially football. Orthopaedic conditions of a minor nature were not uncommon, many

being pre-war disabilities such as old osteomyelitic infections of the lower limb which were prone to break down in Egypt. There were also numerous cases of hammer toes, hallux valgus, and exostosis, many of which called for operative treatment.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

1 NZ CONVALESCENT DEPOT

1 NZ Convalescent Depot

After their arrival from England on 17 September the Convalescent Depot staff went to Maadi Camp for a short period. Negotiations with GHQ MEF had resulted in Lieutenant-Colonel Kenrick inspecting the 'Nelson Lines' at Moascar in the Suez Canal area at the end of August, and these permanent barracks were found suitable in all respects for a convalescent depot. They were pleasantly situated, with ample messrooms and recreation rooms, while several tennis courts were available and bathing, boating, and launch trips were possible.

On 1 October 1940 1 NZ Convalescent Depot left Maadi for Moascar, where the unit took over part of the barracks from a British convalescent depot which moved to El Arish. At this time 379 of the 500 beds were occupied by convalescents from British Army units and from RAF, Royal Navy, French, and Australian forces. As these convalescent patients were discharged their places were taken by New Zealanders. From an initial preponderance, British and Australian patients dropped to 50 and 80 respectively by the end of November, when the majority of the 390 patients were New Zealanders.

The unit was slow in attaining a reasonable standard of efficiency. A change of commanding officers took place in December 1940. When Lieutenant-Colonel Stout [1] and Lieutenant-Colonel Boyd [2] visited the depot in January 1941 to report on it to DDMS 2 NZEF, they found the general administration and discipline excellent and the cooking arrangements, food, and diet very satisfactory. They had, however, a number of recommendations to make on the medical treatment and convalescent training of patients, and also emphasised in their report the need for older, experienced medical officers to be appointed to the

staff of the depot—men who were more capable of classifying the patients and dealing with neurotics and malingerers. Facilities were such that cases could reasonably be discharged from hospital to the depot at earlier stages of recovery.

In the running of a convalescent depot there were certain features that could be learnt only by experience, as it was a bridge between purely medical units and the training or divisional units. Although commanded by medical officers, the Convalescent Depot had a large proportion of non-medical personnel on its staff and was not protected under the Geneva Convention.

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[1] **Col T. D. M. Stout, CBE, DSO, ED, m.i.d.; Wellington; born Wellington, 25 Jul 1885; surgeon; 1 NZEF 1914–19: Samoa, Egypt, Salonika, France; OC NZ Surgical Team, France; in charge surgical division 1 Gen Hosp, England, Aug 1917–Aug 1919; Consultant Surgeon, Trentham Military Hospital, 1919–20; in charge surgical division 1 Gen Hosp, May 1940–Aug 1941; Consultant Surgeon 2 NZEF, Feb 1941–Sep 1945.**

[2] **Col J. R. Boyd, CBE, MC, m.i.d.; Wellington; born Scotland, 6 Sep 1886; physician; 1 NZEF 1917–18, medical officer NZ Mounted Fd Amb, Palestine; in charge medical division 1 Gen Hosp, May 1940–Aug 1941; Consultant Physician 2 NZEF, Feb 1941–Feb 1945.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL STORES ON TRANSPORTS

Medical Stores on Transports

Medical stores unloaded from the First Echelon transports were taken in charge and stored by Ordnance. In June 1940, after discussion with AA & QMG NZ Division, ADMS NZ Division arranged that these medical stores should be returned to New Zealand for use on later transports owing to the shortage of such stores in New Zealand. The medical stores were often badly damaged by the time of their arrival at Maadi Camp. It was noted that medical stores from 4th Reinforcement transports were received in better condition, although still not entirely satisfactory. Owing to the gross mishandling of packing cases in the Middle East, it was suggested that all senior medical officers on transports be impressed with the need for careful repacking of stores at the end of the voyage.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NEW ZEALAND MEDICAL STORES DEPOT

New Zealand Medical Stores Depot

During 1940 the New Zealand medical units in Egypt drew their medical supplies from the British Depot of Medical Stores, but from early in 1941 those medical units in, or handy to, Maadi Camp indented on the New Zealand Medical Stores Depot which it had been found advisable to establish.

In June 1940 it was decided by the AA & QMG and ADMS of the New Zealand force that medical stores which had been unloaded from transports and stored at the Ordnance Depot should be taken over, opened up, and examined by 4 Field Ambulance, the only medical unit in the force. When 4 Field Ambulance moved to the Western Desert, leaving only a small staff at its camp hospital, some alternative control of medical stores was necessary.

In September 1940 the DDMS reported that the need for the appointment of a quartermaster at Base was becoming very evident, not only for the checking of routine indenting for medical supplies but to prepare advanced indents for units arriving, and for periodic overhaul of unit and RMO equipment and supervision of Red Cross stores. (Responsibility for the latter stores belonged indirectly to the DDMS pending the arrival of a Red Cross Commissioner and the ultimate establishment of a separate Red Cross store.)

In November 1940 Captain G. Peek was appointed Quartermaster on the staff of DDMS 2 NZEF. His duties were: (*a*) The checking of indents for medical supplies; (*b*) the maintenance of medical supplies for all camp units and medical inspection rooms; (*c*) the periodic inspection of medical equipment for all units; (*d*) the storage, care, and issue, on approval of DDMS, of New Zealand Red Cross stores; (*e*) the return to

New Zealand of medical equipment placed on transports for the voyage to the Middle East only; and (*f*) such other duties as were delegated by the DDMS.

In December 1940 the battles of the First Libyan Campaign caused a sudden increase of patients, other than New Zealanders, in New Zealand general hospitals. The DDMS reported that 'the demands on Medical Stores have proved well-nigh insuperable. I have offered to establish a bulk medical store of our own to help meet the situation and the proposal, with certain modifications, has been accepted.' By January 1941 the DDMS was able to report: 'Owing to considerable difficulty in keeping up medical supplies due to pressure on British Depots of Medical Stores, arrangements have been made to draw stores in bulk. A Base store of our own has been established under the charge of Capt. G. Peek. Red Cross stores will also be kept and distributed from this store.'

The New Zealand Medical Stores Depot thus became established as a separate medical unit and built up to a staff of seven. It supplied the Helwan hospital and Maadi Camp hospital, and the three New Zealand field ambulances when they were in Maadi Camp for re-equipping between campaigns. (When the Division moved to Italy in 1943 the Medical Stores Depot was transferred to Bari, adjacent to 3 NZ General Hospital, and in the later stages of the Italian campaign it also established an advanced depot at Senigallia, near HQ 2 NZEF and 1 NZ General Hospital.)

The unit took control of, and accounted for, surgical and medical equipment drawn from normal army sources, extra items purchased by the New Zealand Government for use by New Zealand medical units, a special donation of surgical equipment by Mr (later Sir) Arthur Sims, and some captured enemy material.

The chief advantages of having a New Zealand Depot of Medical Stores were:

(1) Quickness of supply. This was an important factor in the case of

units coming back to base areas for re-equipping.

(2) Power for local purchase of any required surgical instrument not available from Army sources.

(3) Training in Army accounting given medical quartermasters while on the staff of the unit.

(4) The ease with which hospital ships could be re-equipped.

(5) The ease with which new RAPs could be established for small out-of-the-way units.

(6) Provision of a service for repair and replating of instruments. The depot had many instruments replated in Cairo.

(7) The important link given the DMS 2 NZEF between himself and medical quartermasters.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DIVISION AT HELWAN CAMP

Division at Helwan Camp

The Third Echelon had arrived in Egypt on 29 September 1940. There were epidemics of mumps and measles among the troops on arrival, necessitating hospital treatment of a number of men. Arriving at Maadi Camp on 27 October from Bombay, 6 Field Ambulance was issued with its equipment and transport and underwent a course of training in the use of both. On 13 December the unit moved with 6 Brigade to Helwan Camp, which had been established for the accommodation and training of the Division, a mile or two into the desert beyond the small township of Helwan. Here 6 Field Ambulance undertook the management of a camp hospital for its brigade. It was a hospital of tented wards providing care and treatment for minor cases of sickness and injury for the troops in the camp, and a medical inspection room for the treatment of out-patients. One company in turn staffed the 50-bed hospital, while the other two companies carried out useful training. Early in January A Company under Major Plimmer [1] provided, by request, a small camp hospital at Ikingi Maryut for several weeks for 18 Australian Infantry Brigade, which was temporarily without its own medical personnel.

When 4 Infantry Brigade Group was withdrawn from the Western Desert in the second week of January 1941, the brigade also went to Helwan Camp. Preparations were made for 5 Infantry Brigade Group to be accommodated, on its arrival from the United Kingdom, in an area south of the main camp. Sixth Field Ambulance staffed the camp hospital and maintained a PA Centre at the entrance to the camp.

During February there were more than 10,000 New Zealand troops in Helwan Camp. Their general health remained good, the admissions to hospital averaging twelve daily, or 1·1 per thousand.

Fourth Field Ambulance and 6 Field Ambulance carried on with advanced training at the camp, with special reference to desert warfare, but were ready to go to Greece by the time 5 Field Ambulance arrived in Egypt.

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[1] **Lt-Col J. L. R. Plimmer; born Wellington, 28 Feb 1910; medical practitioner; 2 i/c 6 Fd Amb Feb 1940–May 1941; actg CO 6 Fd Amb May 1941; killed in action 20 May 1941.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FOURTH REINFORCEMENTS

Fourth Reinforcements

All medical units were short of staff until the arrival of the first and second sections of the 4th Reinforcements on 16 December 1940 and 29 January 1941. An NZMC training cadre had been formed in conjunction with 1 Camp Hospital, Maadi, but until the end of January it had functioned more or less as a reception depot only. All medical personnel marched in were drafted out as rapidly as possible to units which were under strength. Eight huts were erected before the arrival of the 4th Reinforcements, and a small number of men were accommodated in tents. A training syllabus, which also served to test trainees' capabilities, was then drawn up for all those who would be marched into the medical depot.

The type of men for medical units sent forward with the 4th Reinforcements came in for criticism from the GOC 2 NZEF and Base Commandant. A number of men in the first section of the 4th Reinforcements were recognised as rejects from medical units formed in New Zealand. In the second section, an inspection revealed a number of undersized and aged men, some twenty or thirty being of such a low standard that the training cadre reported it would be difficult to find employment for them. The DDMS 2 NZEF emphasised in his monthly report that all branches of the Medical Corps required men of good physique and intelligence, whether they were for stretcher-bearing or nursing duties, as both occupations called for considerable muscular effort and endurance. The only permissible lowering of the standard was possibly in regard to eyesight.

General Freyberg directed that a number of the men be medically boarded immediately. A special senior medical board examined fifteen

men out of 180 NZMC reinforcements. Four were graded unfit for overseas service, six fit for base duties only, and five remained Grade I as, although of poor physique, they were not medically unfit.

(*Note*: Later medical reinforcements were all found to be up to the required standard, although the Medical Corps was required to board a number of men of each group of reinforcements for other units soon after their arrival in the Middle East. Some groups were noticeably worse than others as regards unfit men.)

In his report of January 1941 to the DGMS (Army and Air), referring to medical personnel, the DDMS also stressed the fact that no men who were not of good type should be sent overseas. It was uneconomical in all respects to send over poor types, even if they were not actually unfit.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CLIMATE

Climate

The climatic conditions experienced at the base camps in Egypt were exacting in the summer months as there was little protection in the thin-walled huts and the tents from the excessive heat. The strong hot desert winds, the khamsins, with their associated sandstorms, added to the discomfort. It was thought that infection was possibly carried into the camp in the sand blown from the Egyptian settlements nearby. The flying sand was thought to be responsible for some of the prevalent nose and throat infections and also for chronic conjunctivitis.

It became necessary in the summer to cease active training in the afternoon and have a rest period. Temperatures up to 116 degrees F. in the shade were registered in June and over 110 degrees often in following summers. Fortunately, it was a dry heat and little harm was done except for some loss of weight and general debility. Heat exhaustion was uncommon and when it occurred was due largely to the loss of salt associated with excessive sweating. Drinks of salted water, flavoured with lime or lemon, were used as preventatives. It was found that head covering was relatively unimportant and topees quite unnecessary. Sunburn, also, did not occur away from the seaside. Excessive sweating was inevitable and thus skin diseases, especially seborrhoea, were prevalent; the feet were especially affected.

The light drill clothing, with shorts and shirts the normal summer uniform, proved very satisfactory. In the winter months battle dress was worn and the cold nights made extra blankets necessary.

Rain was practically unknown in Cairo, falling on only two or three days in the winter.

Climatic conditions in the Western Desert are not unhealthy so long as the wind blows from the sea. But the khamsin may spring up very suddenly, leading to a rapid rise in air temperature and a saturation of the air with fine dust, particularly in parts where motor transport has broken up the surface. During one of these khamsins, in June, a number of cases were treated for heat exhaustion, but all were mild and recovered quickly. Most of the troops remained located near the coast, where the climate was more invigorating than in the vicinity of Cairo. The men felt fitter and enjoyed the sea-bathing.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF THE TROOPS

Health of the Troops

The troops of the First Echelon arrived in Egypt in good health, but mild epidemics of both influenza and rubella had been present since leaving New Zealand, and many cases of dysentery, later found to be Flexner in type, had occurred after leaving Colombo. The epidemics continued in Egypt, 213 cases of influenza and 147 cases of rubella being admitted to the camp and general hospitals up to the end of March, and 70 cases of rubella in April.

Epidemic diseases of the common types experienced in New Zealand did not occur in the troops in Egypt, but throughout the war the reinforcements brought over these infections with them. One reinforcement had to be strictly quarantined on arrival for this reason, but there was never any spread of serious infection in the camp. Fortunately, the First Echelon arrived in the winter when flies and intestinal infections were relatively uncommon. Extensive outbreaks of 80-100 cases of mild gastro-enteritis, however, occurred in units in March, and there were 23 cases of dysentery. In April there was a marked increase in intestinal infections and up to 300 cases were treated at sick parades in a single day. One outbreak was experienced of food poisoning, due to keeping meat too long after cooking, but the sixty men affected all recovered. Some 98 cases of dysentery were reported. Precautions were tightened up, with some improvement in the incidence of infection. In May there was a decrease in intestinal infections and fewer cases of true dysentery.

Pneumonia, which had been dreaded owing to its marked prevalence and high mortality in Egypt during the First World War, proved to be infrequent, only 38 cases occurring up to the end of April, and the cases

responded well to treatment by sulphonamides, no deaths being recorded.

Many cases thought to be sandfly fever occurred, though very few phlebotomus sandflies were seen in the base camp.

There was a steady increase in the daily average of hospital cases from 97 in February to 178 in March and 276 in April, but at the end of May there were only 242. Nasal and antral infections and cases of otitis media and externa were common and the baths were thought to be largely responsible. Contrary to expectations, Egypt proved to have an unsatisfactory climate for asthmatics.

During July there was an increase of hospital admissions to 557 following the employment of units in the Western Desert, where there were more flies and dust-storms and also rigid rationing of water. Throughout the period in the Western Desert the health of the New Zealand troops remained good, and the field ambulance was called upon to care only for cases of upper respiratory tract infections, some cases of diarrhoea and clinical dysentery, otitis media and externa, and fairly common skin infections such as desert sores and tinea. In hospital most of the dysentery cases proved to be bacillary of the Flexner type, while a small percentage were amoebic. The cause of septic sores gave much food for speculation. They were common throughout the desert and also in Palestine, where the Australians carried out some research into the problem. Their conclusions were that the sores were in no way connected with a vitamin deficiency. They were able in nearly all cases to grow low-grade streptococci from the lesions. Almost invariably with the sores there was a history of trauma—a scratch, a cut, or insect bite. It was found that if men reported early for treatment the incidence could be much reduced. Profuse sweating and the ever-present dust and sand were no doubt factors in the persistence of the condition.

In August there was an improvement in health with only 462 admissions to hospital. Intestinal infection was less common as the troops became seasoned. Flies had become fewer in Maadi though they

were still troublesome in the desert. Cases of malaria were first noted at the time of the Nile flood in August, 12 of the BT type being notified, and mosquito nets were issued and instructions given for the wearing of dress covering the limbs after sunset. The malarial cases increased to 29 in September, but there had been only 63 cases of dysentery in hospital during the previous three months. The daily average of patients in hospital was: June 213; July 300; August 330; September 335.

The incidence of sickness was remarkably low throughout 1940, apart from the mild dysenteric infections to which the troops steadily acquired an immunity. The sulphonamides made a marked contribution to the cure of both gonorrhoea and pneumonia as they did later to the treatment of dysentery. Their use gave great relief to the hospitals compared with conditions experienced in Egypt in the First World War.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DYSENTERY

Dysentery

Dysentery constituted much the commonest disease in the early months and was associated at times with serious illness. There were three deaths reported, one being definitely due to Shiga infection. Altogether, 500 cases were admitted to hospital from February to November 1940, and the types of infection were: Flexner, 22·4 per cent; Shiga 4·5 per cent; Schmitz 1·4 per cent; Sonne 0·4 per cent; amoebic 2·0 per cent; bacillary exudate 38·4 per cent; and indefinite exudate 30·9 per cent. There was no difference in symptoms between those showing definite bacteriological evidence of infection and those with no such evidence. It was thought that all the cases were due to dysenteric infection, which was also suspected to cause the great majority of the mild cases of diarrhoea and gastro-enteritis occurring in the camps and clearing up without hospital treatment. Fresh troops almost invariably were affected and later developed some immunity. The highest incidence of dysentery was in April 1940 when 14 per 1000 were admitted to hospital. Salines were given as treatment for bacillary dysentery at this period, sulphaguanidine not being available till June 1941. For amoebic dysentery emetine was still the only drug with any marked specific action.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

VENEREAL DISEASES

Venereal Diseases

Experience during the First World War had shown that venereal disease was widespread and of a virulent type in Egypt. Particular stress was therefore laid on the education of the troops in the knowledge and prevention of these diseases, and lectures were given by medical officers on the troopships and in Maadi. A policy decision had been made by the GOC 2 NZEF, on the recommendation of both the DGMS (Colonel Bowerbank) and the ADMS (Colonel MacCormick), that a full programme of education should be carried out and that no penalties other than a small pay stoppage should be inflicted for the contraction of venereal disease. It was realised that some troops would inevitably indulge in sexual intercourse and contract venereal disease. The problem was then tackled realistically and every effort made to lessen the incidence of disease and so save serious manpower wastage. Preventive measures were arranged without delay, condoms and prophylactic outfits were made available and early treatment centres set up, both in Cairo and in the camps, with trained orderlies in attendance. At the same time stress was laid on the importance of continence both from the moral and the health point of view, and the sordid conditions of Cairo were emphasised. The troops were warned that the use of preventatives and of the licensed brothels did not render them safe from contracting disease, but that a reduced incidence of disease had been proved to be in direct relation to the greater use made of preventive measures. An early treatment centre was set up in the licensed brothel area in the Birket, and the troops were urged to go there instead of delaying treatment until their return to Maadi Camp.

In Cairo there were two brothel areas, one of them licensed and the other out of bounds to the troops. A system of compulsory medical

examination of the prostitutes which had previously been in force had recently been abandoned, but was later re-introduced by the civil authorities. This was never satisfactory in spite of some army supervision.

A contagious diseases section of the camp hospital at Maadi was set up on arrival by the First Echelon. It was staffed by 4 Field Ambulance and all venereal cases were held and treated there. Even before any cases of syphilis had occurred, Colonel MacCormick had arranged for a standard course of treatment and for the keeping of a register of cases. Following their first course at the CD hospital, syphilis patients were then referred to the nearest medical unit for subsequent treatment. A complete check on subsequent treatment was instituted.

The campaign against venereal disease proved successful as the incidence of disease among the troops was relatively low. There were 33 cases in April, and at the end of June there were only 18 cases in hospital. The cases of gonorrhoea had responded readily to the sulphonamide treatment, and patients were soon returned to their units.

In July the cases increased to 39 and again in August to 47. The troops then proceeded to the Western Desert, with a resultant decrease in cases in September to 33. A detachment of 4 Field Ambulance was left behind in Maadi to staff the camp hospital, but later a special camp staff was appointed. The Contagious Diseases (VD) section then became separated from the rest of the hospital. Lieutenant Platts, who had had special training at the Connaught hospital at Aldershot, was put in charge, and laid down the lines of treatment and trained his special staff. Valuable assistance was given by Lieutenant-Colonel R. Lees, RAMC, adviser in venereology to GHQ MEF.

By the end of 1940 the CD hospital was able to take 70 patients, though the average bed state at that time was 35. In October, following the arrival of the Third Echelon, there was an increase to 68 cases, and the numbers after that fluctuated from 46 to 82 in March 1941, when the troops left for Greece. The incidence per 1000 troops per month had

varied from 7·88 in March 1940 to 3·29 in December.

The diagnosis of disease was fully confirmed before treatment was commenced, especially in the case of syphilis where dark-ground examination and Wassermann or Kahn tests were carried out. As regards gonorrhoea, stained slides were examined. The treatment carried out for syphilis was a minimum of four courses of weekly injections for ten weeks of 0·6 gm. of neoarsphenamine and 0·2 gm. of bismuth. There was an interval of one month between courses during which a repeat blood test was made.

The treatment of gonorrhoea was by means of the sulphonamides. Sulphapyridine was the drug given at that period and it produced very good results but was somewhat toxic. The greater number of the patients were rapidly and satisfactorily cured. In the resistant cases antiseptic irrigations and instillations were carried out, and shock therapy by intravenous injection of TAB vaccine to produce a temperature of 103 degrees F. was sometimes given. A considerable number of cases of non-specific urethritis were treated by alkalinisation of the urine and injections of chloramine T or oxycyanide of mercury, and instillations of argyrol. Venereal sores cleared up quickly with the sulphonamides.

The rapid and efficient cure of gonorrhoea and soft sore, and the satisfactory treatment and control of syphilis, made the problem of venereal disease relatively unimportant compared to the serious wastage and virulent disease experienced by our New Zealand troops in Egypt during the First World War.

In the early period of the 1914–18 War in Egypt 206 cases of venereal disease were sent to Malta. Later, following the return of the New Zealand troops from Gallipoli, 50 to 70 cases a week were admitted to hospital and, in March 1916, 149 cases were reported, a rate of between 9 and 10 per 1000 per month. Records of the treatment centre at the No. 1 Stationary Hospital at Moascar in 1915 showed a total of 94 cases of syphilis being treated in a period of two months. The treatment at that time consisted of injections of Karsovan and mercury.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL INSPECTIONS

Medical Inspections

A medical inspection was carried out as a unit parade once a month. Foot inspections were carried out by the medical officer and, when available, also by a chiropodist at regular intervals of about a fortnight. All native employees of the canteens, the laundry, and the bakery were examined monthly, and the general labourers were also examined from time to time.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INOCULATIONS

Inoculations

Injections of tetanus toxoid were given after arrival in Egypt. Inoculations and vaccinations were repeated at set intervals to maintain as complete an immunity as possible among the troops.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS IN UNITED KINGDOM

Medical Arrangements in United Kingdom

The Second Echelon arrived in England on 16 June at the time of the fall of France, when the situation in the United Kingdom became critical under the threat of German invasion. From the medical point of view it meant that two separate medical services had to be established, one in Egypt and one in England, and that 2 General Hospital sailing with the Third Echelon became the first fully staffed New Zealand general hospital to be provided for the NZEF in Egypt. The New Zealand Division, however, did not engage in any battles until the three New Zealand general hospitals were ready.

To make all necessary arrangements for the arrival of the Second Echelon in the United Kingdom, Colonel MacCormick, ADMS 2 NZEF, went by air from Egypt to England, arriving in London on 26 May 1940. It was impossible to make any definite plans until the location of the force on its arrival had been finally settled as the Aldershot area, but preliminary inquiries and negotiations were made. To secure a hospital site for our troops at first appeared almost hopeless, and Colonel MacCormick was so informed by the DDMS Canadian Force and Medical Liaison Officer, Australian Force.

The Director-General of the Army Medical Service, Major-General Sir William MacArthur, had control of only pre-war military hospitals and was unable to help in the matter of hospital location, in spite of his willingness to assist. Sick and wounded were generally dispersed to hospitals of the Emergency Medical Service (EMS). Practically all hospitals in the United Kingdom had been graded and staffed under this scheme.

Colonel MacCormick interviewed Professor F. R. Fraser, head of the

EMS organisation at the Ministry of Health, who gave sympathetic consideration to the desire of the New Zealand Government for New Zealand troops to be, as far as possible, under the medical care of New Zealanders. Professor Fraser directed Dr Murchie, head of the hospital department, to afford all possible assistance in the furtherance of this policy. As a result Pinewood Sanatorium, near Wokingham, some 10 miles from the New Zealand camp in the Aldershot area, was offered to Colonel MacCormick for a hospital.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PINEWOOD HOSPITAL—1 NZ GENERAL HOSPITAL

Pinewood Hospital— 1 NZ General Hospital

Situated in a pine plantation, Pinewood Sanatorium was a London County Council institution for young women. A hutted hospital was being built by the EMS in the grounds some 300 yards away from the main buildings. It was this hutted hospital which was offered to the New Zealand force and which, after inspection, Colonel MacCormick was pleased to accept on its behalf.

At a conference in London on 15 June 1940 with London County Council and Public Health Department officials, it was agreed that the hutments should be set aside for New Zealand service sick, while the sanatorium itself would be left for tubercular and EMS patients, although 70 of its 260 beds would be available for any New Zealand casualties and sick New Zealand nurses. The New Zealand Medical Corps would staff the hutted hospital, but its medical officers would be available for work in the sanatorium, if required by the medical superintendent.

As the New Zealand hospital had no equipment of its own, it was arranged that EMS equipment be used. Food supplies, drugs and dressings, etc., were to be drawn through the sanatorium, and the New Zealand hospital would likewise share the other services of water, gas, electricity, fuel, telephone system, and laundry facilities. The general basis of the financial settlement was that the London County Council would keep separate costings for staff, supplies, and services provided for the New Zealand section and send the bill to the Ministry of Health (administrator of the EMS hospitals). The Ministry of Health would then approach the High Commissioner for New Zealand for a settlement of New Zealand's allocated liability. If it were found necessary to provide

further buildings or accommodation for the New Zealand hospital, it was agreed that the work would be executed under the direction and on the responsibility of the NZEF. Both the Ministry of Health and London County Council had met the New Zealand requirements most generously.

There were nine huts, each of which accommodated 36 beds normally and 42 beds in emergency. Each was complete with kitchen, storerooms, baths, lavatories, and heating. There were also a well-appointed theatre and X-ray block, cubicles for 36 nurses, dining and sitting rooms for nurses, and a kitchen block. Some of the wards were at first used for departments of 1 General Hospital, such as the quartermaster's branch, until huts were built for them. Administrative headquarters were improvised in a cottage. The male staff of the hospital was quartered in billets at Edgecumbe Manor, a mile and a quarter away, and the medical officers occupied unfurnished wards until they moved into East Hampstead Cottage some weeks later.

The first step in setting up 1 General Hospital was taken on 26 June 1940 when the commanding officer, Colonel McKillop, and a small party moved to Pinewood from Ewshott. A further small party joined them on 30 June. By then 72 beds had been made ready and two patients admitted. The remainder of the unit arrived at Pinewood on 2 July. A New Zealand hospital was thus speedily set up for the Second Echelon group in England when the country was subject to air attack and threatened by a German invasion.

Minor epidemics of measles and mumps had developed on the transports on the way to the United Kingdom, and it was patients suffering from these diseases who were the first treated in the hospital. Additional wards were opened up to cope with an increasing bed state. When the operating-theatre block was completed all surgical work was undertaken by the unit, which also provided a consultant service to neighbouring regimental officers.

A surgical team was called for urgently to help a small emergency hospital to treat severe casualties following an air raid on a large

aircraft factory at Weybridge. It was the first experience of the profound shock present in seriously wounded patients, many of whom died either without or shortly after operation. Our unit was thus able to realise and appreciate the ordeal through which the people of Great Britain were passing, as well as to gain valuable experience in war surgery. A considerable number of air-raid casualties from London were admitted to the hospital. These were of all ages from small children to elderly men and they proved excellent patients. Military patients from British units in the area as well as our own New Zealand troops were also admitted, and the staff was kept fully occupied.

A party from 1 Convalescent Depot established a small Camp Reception Hospital of twelve beds in a house at Farnborough on 22 June. The medical arrangements for 2 NZEF (UK) as from 30 June 1940 were that all sick and wounded were evacuated to the New Zealand Camp Reception Hospital, Farnborough, where the officer-in-charge (Major Speight) [1] was responsible for the disposal of cases to either the Camp Hospital, 1 NZ General Hospital, Pinewood, or special hospitals in the Aldershot Command.

In Egypt there was not sufficient personnel to staff the 300-bed hospital which opened on 24 July as 4 General Hospital, so arrangements were made to send reinforcements from England. These reinforcements comprised 2 medical officers, 12 nursing sisters, and 20 men from 1 General Hospital, 6 medical officers from 1 Convalescent Depot and enlistments in the United Kingdom, and 10 men from 5 Field Ambulance. They embarked at Glasgow on 4 August for Egypt, which they reached on 15 September. The staff of 1 Convalescent Depot also went to Egypt at the same time, as the depot was not really required in England nor was a suitable site available. The Camp Reception Hospital was taken over by a detachment of 1 General Hospital. The losses to the staff of 1 General Hospital were to some extent replaced by enlisting six NZANS in England and by employing local personnel, twelve VADs and five female cooks. This procedure conflicted with the policy of enlisting NZMC and NZANS personnel as far as possible only in New Zealand, but

the urgency of the situation demanded prompt action.

When 5 Infantry Brigade had a mobile role in the south-east of England in September, it was impossible to make adequate use of 1 General Hospital. Cases of sickness and accident, which could not be dealt with by 5 Field Ambulance, were being sent to nearer EMS hospitals. The GOC 2 NZEF, therefore, directed that the remainder of 1 General Hospital be sent to Egypt. The warning order to move was given to the unit on 7 September and the hospital was handed over to 18 General Hospital on 28 September. No. 1 General Hospital embarked from Gourock, Scotland, on 4 October on HMT *Georgic* and arrived at Port Tewfik on 16 November 1940.

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[1] **Col N. C. Speight, CBE, ED; Dunedin; born Dunedin, 6 Jul 1899; surgeon; medical officer 1 Conv Depot Mar–Nov 1940; CO 6 Fd Amb Jun–Nov 1941; p.w. Nov 1941; repatriated Apr 1942; ADMS 4 Div (NZ) Nov 1942–Mar 1943; ADMS 3 Div (Pacific) Mar 1943–Nov 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WARBROOK CONVALESCENT HOME

Warbrook Convalescent Home

When inquiries were being made for a convalescent home, Mrs Humphreys-Owen made a generous offer to the NZEF of her large country house rent-free and undertook to maintain portion of the staff. This house, 'Warbrook', was charmingly situated in beautiful grounds at Eversley, near Wokingham, and some 5 miles from Pinewood Hospital. Arrangements were made for the house to be fitted up for fifty patients by the War Organisation of the British Red Cross and Order of St. John of Jerusalem. Captain Kirker [1] and Sister Hennessy [2] of 1 General Hospital were appointed temporarily to this convalescent home on 23 August to supervise medical and nursing arrangements respectively. 'Warbrook' had 377 New Zealand patients in its first year and continued, under Major Robertson, [3] to be a convalescent home for New Zealanders until June 1943. The convalescent home was then transferred a few miles away to Church Crookham, where Captain Crowder, MP, made his house available. In January 1944 the convalescent home was closed as there was little need for it after the departure of the New Zealand Forestry Group.

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[1] **Lt-Col A. H. Kirker; Auckland; born Auckland, 15 May 1899; physician; medical officer 1 Gen Hosp Feb–Jul 1940; OC Warbrook Conv Home Aug–Sep 1940; DADMS 2 NZEF (UK) Sep–Dec 1940; Registrar 3 Gen Hosp Sep 1941–Feb 1942; OC 2 Rest Home Feb 1942–Jul 1943; in charge medical division 2 Gen Hosp, Jul 1943–1944.**

[2] **Matron Miss M. Hennessy, RRC, m.i.d.; Wellington; born Wellington, 5 Feb 1901; assistant matron; sister 1 Gen Hosp 1940–41; Matron Det 3 Gen Hosp Nov 1941–Apr 1942; Matron HS *Maunganui* May–Nov 1942.**

[3] **Col H. D. Robertson; Wanganui; born Auckland, 3 Feb 1888; medical practitioner; 1 NZEF 1915–18: medical officer 2 Gen Hosp, Stationary Hosp; DADMS 2 NZEF (UK) Jun 1940–Aug 1943; CO 5 Gen Hosp Feb–Jul 1945; CO 2 Gen Hosp Jul–Nov 1945.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ACTIVITIES OF 5 FIELD AMBULANCE

Activities of 5 Field Ambulance

During July and August 5 Field Ambulance undertook a series of field exercises in conjunction with 5 Infantry Brigade in its preparation for an operational role in the event of invasion. Particular emphasis was laid on the importance of maintaining contact between the advanced dressing station and the main dressing station. The unit also handled sickness and accident cases occurring in the New Zealand units. After two months in England the first vehicles were obtained. Towards the end of August 5 Field Ambulance accompanied 5 Brigade to Kent. Headquarters Company took over stables in the Sittingbourne Road outside Maidstone, while A Company was at Broughton Monchelsea and B Company at Sittingbourne. It was while the unit was in this area that the first air raid occurred and the ambulance took casualties, mostly civilians, to the Maidstone hospital. Fifth Field Ambulance continued to function through the various enemy air attacks during its stay in that area.

September was the month of the Luftwaffe's mass raids on London, planned to smash the way for an attempt at airborne and seaborne invasion. During the first week the New Zealand troops in reserve, by now a well-trained and mobile force, although not yet by any means fully equipped, were moved nearer the coast to occupy what were virtually battle positions covering the Folkestone- Dover area. After a period spent in bivouacs in the woods, units moved into billets in farmhouses, stables, and barns in the surrounding villages. Later in the month the threat of invasion lessened as the weather over the English Channel became worse. To avoid the strain of stand-to at dawn and dusk each day a relaxation of the manning of defences was ordered; troops were granted leave, sports were organised, and parties travelled by bus

sightseeing.

It had originally been intended that the Second Echelon should have been relieved of its operational role on 13 September, pending its embarkation for the Middle East, but these orders were cancelled three days before and the New Zealanders stayed in bivouacs covering Dover. There was still the menace of invasion, and it was afterwards learned that Mr Churchill postponed the departure of the New Zealanders for some weeks, at the same time keeping three ships ready for an emergency dash through the Mediterranean.

The postponement was not intended to be longer than would permit of the brigade leaving for the Middle East towards the end of October. Because of the urgent need in the Middle East for reinforcements of armour, artillery, and anti-aircraft units, the departure of the Second Echelon for Egypt had again to be delayed. The New Zealand force retained its operational role under command of 12 Corps and was largely concentrated in the Maidstone-Ashford area of Kent.

Under arrangements with DDMS 12 Corps, all New Zealand patients were held in special hospitals so that they would not be too scattered. Fifth Field Ambulance was responsible for the evacuation of casualties from the New Zealand force's area and for the care of all but serious cases.

Two ADSs and an MDS were established to treat these less serious cases. Besides taking patients back to the CCS or to hospital, the unit returned patients from hospital or, when required, transferred them to the Convalescent Home.

During September and October 186 patients suffering from various injuries, many of them due to football, were admitted to 5 Field Ambulance. A common cause of admission was respiratory disorders, for which during the two months 104 patients were treated, including 79 with only minor influenzal infections. The total number of cases evacuated by the ambulance beyond unit RAPs was 617. Most of the

patients evacuated beyond 5 Field Ambulance were admitted to British military hospitals in the area. Infectious and venereal cases were sent to special hospitals and convalescents to Warbrook Convalescent Home and to Camp Reception Hospital, Farnborough, which had been reopened on 14 October by a detachment from 5 Field Ambulance pending the return of the New Zealand force to the Aldershot Command.

Colonel MacCormick had returned to the Middle East, under instructions from the GOC, with the medical group on 4 August, leaving Colonel McKillop as senior medical officer to be consulted on all matters of policy and major administration. Lieutenant-Colonel Twhigg, [1] CO 5 Field Ambulance, was responsible for tactical arrangements within the brigade group, and Major Robertson was DADMS at Force Headquarters. With the departure of Colonel McKillop, Lieutenant-Colonel Twhigg was appointed acting ADMS NZ Division (UK) on 9 October.

The New Zealand force returned to Aldershot Command on 4 November and was accommodated in billets and quarters in various areas. To provide adequate treatment within the force for minor sickness it was decided to set up two further reception stations to be staffed by companies of 5 Field Ambulance. These were opened by the MDS at Inglewood, Runfold, and by the ADS at Heathcote, Camberley. Serious cases were evacuated either to Cambridge Hospital or 18 General Hospital, Pinewood.

A total of 67 cases was admitted to hospital in November, while 1706 were treated as out-patients by 5 Field Ambulance. In December 113 cases were admitted to hospital and 819 treated as out-patients. During these months the force was engaged in routine training and later in preparations for embarkation.

The three camp reception hospitals staffed by 5 Field Ambulance were closed on 27 December 1940 as the date of embarkation drew near, and a sick bay of ten beds was established at Base Camp, Moor Park, which had been formed on 17 December to accommodate unfit personnel awaiting return to New Zealand. These numbered 41 at the

end of November. Up to 23 December, 222 officers and men

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[1] Brig J. M. Twhigg, DSO, ED, m.i.d.; Wellington; born Dunedin, 13 Sep 1900; physician; CO 5 Fd Amb May 1940–Dec 1941; p.w. Dec 1941; repatriated Apr 1942; ADMS 3 NZ Div Aug 1942–Apr 1943; DDMS 2 NZEF (IP) Apr 1943–Aug 1944; ADMS 2 NZEF UK) Oct 1944–Feb 1946.

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had appeared before invaliding medical boards, 126 for preenlistment disabilities, and 96 for post-enlistment disabilities.

On the night of 1–2 January 1941 units of the New Zealand formation in England began to leave Aldershot Command for points of embarkation to join the remainder of the New Zealand Division in the Middle East. B Company 5 Field Ambulance, under the command of Captain Palmer, [1] embarked on the *Athlone Castle* on 3 January at Liverpool, while Headquarters and A Companies, under Lieutenant-Colonel Twhigg, embarked on the *Duchess of Bedford* at Newport, Wales, on 4 January. Captain T. G. de Clive Lowe [2] remained behind in charge of NZ Base Camp, while Major Robertson retained charge of Warbrook Convalescent Home and became DADMS (UK). Lieutenant Manchester [3] and Lieutenant Hutter [4] continued their courses of instruction in maxillo-facial surgery and a medical officer was appointed to the Forestry Group, New Zealand Engineers, which remained in the United Kingdom.

On 12 January the convoy proceeded to sea from Belfast Loch in the early morning, heading west in a zigzag course and then south. All ranks slept in their clothes in the danger zone and wore steel helmets and lifebelts while on deck. By 17 January permission was given for the removal of clothes at night. The hospital accommodation on the ships was taxed by the numbers of influenza patients, and nursing orderlies from the field ambulance companies were attached to their respective ship's hospital for duty. When influenza abated there was a mild epidemic of measles on board the *Duchess of Bedford*.

The voyage to Egypt was uneventful, although the double crossing of the Equator entailed conditions of temporary discomfort, especially for sleeping. The convoy completed its journey through the Red Sea and reached Port Tewfik on 3 March.

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[1] **Maj G. B. Palmer, m.i.d., Silver Cross (Gk); Seacliff; born England, 6 Feb 1909; medical practitioner; medical officer 5 Fd Amb Nov 1939–Aug 1941; DADMS 210 British Military Mission Nov 1941–May 1943; 2 i/c 1 Conv Depot May 1943–Oct 1944; OC Det 1 Conv Depot Oct 1944–Mar 1945.**

[2] **Maj T. G. de Clive Lowe; Auckland; born NZ 17 Sep 1900; surgeon; medical officer 5 Fd Amb Dec 1939–Dec 1940; Aug–Nov 1941; p.w. 28 Nov 1941; repatriated Apr 1942.**

[3] **Lt-Col W. M. Manchester; Auckland; born Waimate, 31 Oct 1913; medical practitioner; RMO 22 Bn 1940; seconded for plastic surgical training in UK, Nov 1940; 1 Gen Hosp 1942–43; asst surgeon, Plastic Surgical Unit, Burwood, 1944; OC Plastic Unit, Burwood, 1944–47.**

[4] **Lt-Col F. L. Hutter; Wellington; born Auckland, 6 Feb 1910; surgeon; 5 Fd Amb Jun–Dec 1940; surgeon 1 Gen Hosp Sep 1941–Nov 1941; 6 Fd Amb 1941–44; surgeon in 1, 2, and 3 Gen Hosps 1944–45.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RECRUITMENT OF NEW ZEALAND DOCTORS IN UNITED KINGDOM

Recruitment of New Zealand Doctors in United Kingdom

After the outbreak of war in September 1939 it was estimated that there were about three hundred New Zealand medical graduates in the United Kingdom. They included those actually practising in Britain, those holding posts in hospitals before or after obtaining senior medical or surgical qualifications, and more recent arrivals such as medical students in British universities and post-graduates on holiday. Except for medical officers on the active list of the Territorial Force in New Zealand, no action was taken by Army Headquarters to secure their return to New Zealand for service with 2 NZEF.

Places were kept for three of those on the active list in the establishment of 1 General Hospital, and they were sent to join the unit in Egypt. Instead, the Second Echelon, including the hospital unit, went to England. Replacements for two of the three were obtained from New Zealand doctors in England, and, in addition, the need for additional staff for the medical services, scattered as they were at the time, led Colonel MacCormick to obtain a few medical officers and a few sisters from those volunteering in England. No official move was made to secure any of the New Zealand doctors who were enlisted in the RAMC, but at least five managed to obtain their transfer from the RAMC to 2 NZEF in 1940 and 1941. Dominion doctors and nurses were liable for recruitment to the British services, provided they had been resident for three months in the United Kingdom, were medically fit and of a recruitable age. Strictly speaking, they could elect to join their own Dominion force in preference to the British Navy, Army, or Air Force, but transfer was not easily obtained unless the Dominion authorities pressed for it.

Many young medical graduates studying in Britain were refused enlistment in England by the New Zealand army authorities and served during the war in the RAMC. The shortage of medical practitioners in New Zealand, with a consequent difficulty in reinforcing 2 NZEF, which arose later, would have been alleviated if these graduates had been accepted, especially as they were very well suited for active service both by age and qualifications.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

APPENDIX A — FOOD RATION SCALE, MIDDLE EAST, 1940 (1941 VARIATIONS IN BRACKETS)

APPENDIX A

Food Ration Scale, Middle East, 1940 (1941 variations in brackets)

Fresh Ration	Ounces	
Bread	16	(12)
Meat, frozen	14	(12)
Vegetables	8	
Onions	2	
Potatoes	12	
Beans, lentils	2	(1)
Bacon	3	
Cheese	½	(¾)
Butter or margarine	1½	
Fruit, fresh	3½	(4)
Fruit, dried	4/7	
Jam	1½	(1)
Oatmeal (or flour)	1	
Rice	1	
Salmon, tinned	3/7	
Herrings, tinned	4/7	
Tea	½	(?)
Sugar	3½	
Salt	?	(½)
Milk	2	
Pepper	1/100	
Mustard	1/100	
Tobacco or cigarettes	2 oz. a week	
Matches	2 boxes a week	

Tinned Ration Equivalent	Ounces	
Biscuits	12	(10)

Meat	**12**	**(9)**
(M and V ration 20 oz ? frozen meat 14 oz, potatoes 12 oz, vegetables 8 oz, and onions 2 oz.)		
Bacon	**2½**	
or sausages		**(4)**

APPENDIX B — HEALTH PRECAUTIONS ISSUED BY HQ 2 NZEF IN EGYPT, 1940

APPENDIX B

Health Precautions Issued by HQ 2 NZEF in Egypt, 1940

MESSING

1. **Before entering messrooms for any meals, all ranks will disinfect hands in cresol solution, in special basins provided.**
2. **All messing utensils must be washed in clean soapy water and then boiled in special apparatus provided. To prevent rusting of tin plates, a level teaspoon of washing soda should be put into the tub at each boiling. All dishes and cutlery must be stored in messrooms in fly-proof containers. Unused portions of sugar, butter, jam, etc., must be stored in fly-proof receptacles promptly after meals.**

COOKHOUSES

3. ***Medical Fitness for Employment*: No one will be employed in the cookhouse, or in the handling of food, who has suffered from enteric fever, dysentery, typhoid, or cholera, or who is suffering from, or is under treatment for venereal disease. Regular medical inspection of personnel handling food will be carried out by Unit Medical Officers.**
4. ***Cooks' Clothing*: Each cook and man employed handling food will be provided with at least three sets of washable white uniforms. These should always be worn when at work, kept as clean as possible, and changed when dirty.**
5. ***Cleanliness of Hands*: A hand basin, soap, and a nailbrush will always be available for the use of cooks. There will also be provided a basin of cresol solution for the frequent disinfection of the hands.**
6. ***Clothing*: No personal clothing or private property of men employed in cookhouses will be kept there. A proper place is provided for hanging jackets, hats, etc., at entrance to cookhouses.**
7. ***Smoking in Cookhouses*: Smoking in cookhouses is forbidden.**
8. **No personnel will sleep in mess kitchens or storerooms.**
9. **Only efficient and conscientious men must be employed as cooks**

and mess orderlies. The latter should be inspected by RMOs before going on duty, should remain on duty for seven days, and be relieved in relays.

10. ***Cleanliness of Pots and Pans*: Pots and pans will be cleaned and dried immediately after use.**
11. ***General Cleanliness of the Cookhouses and Utensils*: The cookhouses, sinks, chopping blocks, cutting-up boards, pastry slabs, mincing machines, knives, forks, spoons, and other utensils will be kept as clean as possible when in use and will be thoroughly cleaned after the last meal of the day. All utensils when not in use will be kept in places allotted to them and will be available for inspection at any time. No accumulation of old rags, tins, etc., will be allowed in drawers or elsewhere in the cookhouses.**
12. ***Care and Preparation of Food*: Only food which is in the process of cooking will be kept in the cookhouse. Food for the current day's use only should be kept in the preparation rooms, and must be protected from flies. All meat and other perishable foodstuffs must be consumed within twenty-four hours of issue. An exception is made in the case of meat treated in brine tubs, but in this case it must be eaten within twenty-four hours of cooking. Tinned goods should be opened immediately prior to consumption. Tins should be closely inspected prior to opening.**
13. ***Preparation of Vegetables*: Vegetables will not be prepared in the same sink in which pots and pans are cleaned.**
14. ***Food Scraps*: Food scraps, vegetable peelings, etc., will not be thrown on the floor but deposited in a covered refuse bin provided for the purpose. In order to prevent used tea leaves being processed for incorporation in tea to be marketed, units will ensure that used tea leaves are burnt in their own fires.**
15. **(*a*) To prevent unsatisfactory functioning of sumps, the following instructions must be strictly adhered to:**
    - **(i) On no account will any water, dirty or clean, reach the sumps, except through the grease traps provided.**
    - **(ii) No refuse of any description will be thrown into the sumps.**
    - **(iii) Standpipes will be used for the drawing of water only. No washing of plates, hands, etc., will be carried out at the standpipes.**
    - **(iv) Economy of water at sumps is essential to assist their drainage, which is difficult in any circumstances.**

    (*Grease Traps*: The layer of grease on the surface should be

b) removed once daily and the sludge in the bottom once weekly.

16. *Refuse Swill Bins*: The contractor will completely empty the bins and clean them to the bottom daily: in the case of swill bins, they are to be emptied three times a day after meals. The bins should be scrubbed if necessary and the surroundings kept clean. The lids of bins will be kept closed.

DYSENTERY

17. In order that a special effort may be made to combat this disease it is thought that more interest may be taken and better results obtained if all officers, warrant officers, NCOs, and men understood how this disease is carried from one person to another, and the methods taken to prevent its spread.
18. It is impossible to get dysentery except through eating or drinking something contaminated by dysentery germs. In plain words it means that a person who gets dysentery has swallowed food or drink which has been defiled from a "latrine". Hence the necessity for disinfecting the hands after using latrines.
19. It is most strongly emphasised that the idea that anyone coming to **Egypt** must get "Gippy tummy" is absolutely wrong. In many cases so-called "Gippy tummy" is mild dysentery and will not occur if the proper precautions are followed.
20. It is obvious, therefore, that it is a disease that can be prevented by good sanitation. The infection of dysentery is usually carried out as follows (the precautions to be taken being shown under each heading):
21. *Contamination of Body by Dirty Hands, Flies, etc.*: Only purchase food from clean sources. Avoid unlicensed hawkers. Protect food from flies and dust. See that the mess orderlies wash their hands. Do not eat any food that appears in the least way tainted. Disinfect your hands after using the latrines and before meals.
22. *Contaminated Water, Milk, Minerals*: If in the least doubt boil the water. Tea is a good safe drink. Always boil fresh milk and keep all drinks protected from flies and dust. Only use minerals from recognised Army sources. Ice is almost invariably contaminated in transport and should not be put in drink....
23. *Uncooked Vegetables, Salads, Fruits*: In no circumstances eat uncooked green vegetables (lettuces, etc.) and onions. Eat only hard skinned fruit (except red melons) with a sound skin. Dip in boiling water for thirty seconds, or soak for one hour in "pink" solution (permanganate of potash), the strength being such that the bottom

of the container cannot be seen through the solution. After soaking, rinse in tap water. Tomatoes, dates, and figs may be bought if their skin is unbroken and they are treated in a similar manner. No fruit, vegetable, or other food is to be purchased from hawkers, who are forbidden to enter the camp precincts. Egyptian cheese is stated to be unsafe. Avoid overripe fruit. Grapes must not be eaten. Melons are safe to eat provided they are bought from a thoroughly reliable source (of which one is the Nile Cold Storage and Ice Coy.). The best type of melon is the "Chilean Black", followed by the ordinary water melon. Melons should bear the Government stamp. It must be emphasised that the above does not authorise the indiscriminate purchase of melons from any source.

FLIES

24. **Do not leave any refuse about to attract or allow flies to form breeding places. See that lids fit all dust-bins and keep the bins covered. See that all latrines especially those used by natives, are fly-proof. Personal investigation of this matter will cause some surprises. Protect all food from flies. Use fly-swatters and fly papers to kill the odd fly that may get into the house or barrack room.**
25. **Flies cause a spread of many diseases—not only diarrhoea and dysentery, but also cholera and typhoid fever, and diseases of the eye.**
26. **Units are responsible for the prevention of the breeding, and for the destruction of flies, within their own area.**
27. **The prevention of fly-breeding is mainly a matter of the efficient fly-proofing of latrines, and the storage of all refuse in fly-proof receptacles and the satisfactory disposal of same.**
28. **The best fly poison is a solution of formalin and sugar, placed in saucers, with a piece of bread in the middle for the fly to settle on. This solution will be prepared in bulk under the supervision of the Medical Officer in charge of the nearest medical inspection room or RAP, and issued to units as required. The solution is non-poisonous to human beings and animals. To be really successful it must be of a definite strength, and no fluid should be available with which the fly can satisfy his thirst apart from this solution.**
29. **All offices, messrooms, etc., should have some form of fly-trap.**
30. **The most efficient and easily constructed fly-trap is made by mixing together resin and castor oil, and whilst still hot, painting the mixture on sheets of tin or hoop iron or stiff wires (old telegraph wires, the wires used for binding bales of hay, etc.). These wires**

should have a hook at one end to hang from, and a piece of paper or cork at the bottom to prevent drips. These are hung on beams, etc. When covered with flies the wires and tins can be cleaned by burning, and then used again.

31. Units will arrange with the officer in medical charge of troops for instruction of their sanitary personnel in the use of sprays, preparation of castor oil and resin mixtures, and the best method of using formalin solution.
32. As the contamination of food is the principal danger of these parts, all food must be stored in fly-proof safes and protected from flies. It is most important to place in food safes food which is not cooked, such as bread, biscuits, cheese, jam, and sugar, and it is also necessary to provide similar receptacles for eating and drinking utensils. Fly-proof conditions should exist where food is stored, etc., prepared and consumed. It is realised that this is not fully possible, but it is the ideal to aim at.
33. Units must ensure that fly-proof safes are available, if necessary constructing them from scrap material obtained from the Garrison Engineer.
34. Everything should be done to prevent flies breeding and to reduce the fly pest. A plague of flies has a big bearing on health. Quartermasters should draw scale supplies of sprays, fly-tox, resin, oil, and swatters, etc. Every effort must be made to prevent flies from breeding and to keep all areas free of any material likely to encourage these pests.

LATRINES

35. All latrines must be boxed in. The seat and bucket type is not satisfactory.
36. Sanitary Police will be posted by units at all latrines from reveille to sunset:
    (*a*) To ensure that seats are kept closed and particularly that they are kept on top of buckets in cases where boxing is not complete.
    (*b*) To see that all ranks leaving the latrines immerse their hands up to the wrists in cresol solution (a 1 per cent solution, which is a "50" cigarette tin of cresol to 2 gallons of water—stronger solutions are no more efficient). During rush periods it may be necessary to reinforce the sanitary police or even station non-commissioned officers on duty to ensure compliance with orders on the subject.

37. Receptacles for disinfecting hands must not be inside latrines, but should be placed at least 30 feet from the centre of the latrine, and as near as possible to the normal route between tents and latrine. (For small latrines this distance could be reduced.) These stands should be whitewashed to facilitate location at night. The solution should be changed daily.
38. It will be found that hands dry very quickly in the air after immersion in the disinfectant, and no sort of discomfort is experienced.
39. Latrine seats must be scrubbed daily with soap and water and twice weekly with cresol solution. Buckets are cleaned by conservancy contractor after emptying. After cleaning, buckets should be wiped with pan-ol, and a trace left in the bottom. Pan-ol should be drawn from Unit QM.
40. The attention of all ranks is directed to the necessity of using sawdust freely in latrine pans and avoiding excess of urine in the pans by using the special urine buckets whenever possible. These measures facilitate incineration and contribute to the maintenance of a healthy camp.

SANDFLY FEVER

41. In view of the prevalence of sandfly fever in this area, the following notes are published as regards certain preventive measures:
    (*a*) Sandflies breed very rapidly when the temperature and humidity become favourable, generally April to May, reaching their highest number in August and September.
    (*b*) Old rough and pitted walls and heaps of rubble are the usual breeding places. The undulating desert or ground with a smooth surface is less favourable. It is desirable, therefore, that heaps of rubble should be removed from the neighbourhood of barrack rooms, or when removal is impossible, buried in sand.

CONSERVANCY

42. Proper conservancy in Egypt is of prime importance. Unless nightsoil, dirty water, are promptly cleared and thoroughly disposed of, one of Egypt's plagues, that of flies, will inevitably follow.
43. Conservancy services are carried out by a civilian contractor with native labour, and the standard of the work they render is in direct proportion to the standard desired by the unit concerned. Sanitary officers and their personnel will greatly assist in the satisfactory

carrying out of the service by closely supervising the work, insisting upon punctual and regular clearing of receptacles, verifying that all refuse is properly buried (when this means of disposal is used), or properly burnt (when incinerators are provided).

44. The principal points of Conservancy Contract are given below for guidance:

(*a*) Motor lorries carrying iron receptacles will clear latrines, urinals, cess pits, catchpits, sumps, slops, rubbish ashes, old tins, refuse bins.

(*b*) Hours of clearing will be fixed by Sanitary Officers. Two clearings per day, morning and evening, are stipulated.

Greece

(*c*) The iron receptacles will have lids and they must be kept closed during movement. Dry rubbish in lorries must be kept covered by canvas covers during transport.

(*d*) Until incinerators are constructed, trenches 2 metres deep will be dug and the day's refuse placed in them up to not nearer than ½ metre from the ground level. Covering sand will then be placed over them to 1/4 metre above ground level and sealed up with oiled sand under the responsibility of the Sanitary Officer. Old lorry sump oil is provided for the purpose of sealing the trenches. The trenching area has been sited 2 miles from camp.

(*e*) When incinerators have been constructed (site ½ mile from camp) all refuse will be mixed with sawdust, tibben (chopped straw), etc., at the incinerators and burnt.

(Transport receptacles and lorries will be cleaned and

(f) disinfected daily by the conservancy contractor's labourers, but latrine buckets, etc., will be kept clean by unit personnel.

(g) Each lorry will be accompanied by 1 driver and 2 labourers plus 2 more labourers per lorry digging trenches and working incinerators.

(h) Any complaints should be referred in writing to the Camp Adjutant.

45. Careful attention to the above points from the outset will help to create and maintain a satisfactory service upon which the health and comfort of all concerned depends.

46. Disinfectants, sump oil, fuel, etc., are obtainable....

HEAT EXHAUSTION AND CRAMPS

47. This condition is in a great measure due to salt loss owing to sweating. This can be prevented by supplying the following drink:

Half ounce table salt to a gallon of water.

Flavour with lime juice or lemon.

EARTHENWARE JARS USED FOR DRINKING WATER (ZEERS)

48. (a) Earthenware jars (zeers) are possible breeding places for mosquitoes and they should therefore be turned upside down and thoroughly dried out twice a week.

(b) Sandflies may breed in the constantly damp sand beneath jars and the latter should consequently be moved frequently.

(c) The use of a common mug and the habit of dipping a mug into the jar are both undesirable practices from a health point of view. Where individual drinking utensils are not available men should use their bottles for drawing water.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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(c) The iron receptacles will have lids and they must be kept closed during movement. Dry rubbish in lorries must be kept covered by canvas covers during transport.

(d) Until incinerators are constructed, trenches 2 metres deep will be dug and the day's refuse placed in them up to not nearer than ½ metre from the ground level. Covering sand will then be placed over them to 1/4 metre above ground level and sealed up with oiled sand under the responsibility of the Sanitary Officer. Old lorry sump oil is provided for the purpose of sealing the trenches. The trenching area has been sited 2 miles from camp.

(e) When incinerators have been constructed (site ½ mile from camp) all refuse will be mixed with sawdust, tibben (chopped straw), etc., at the incinerators and burnt.

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Half ounce table salt to a gallon of water.

Flavour with lime juice or lemon.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EARTHENWARE JARS USED FOR DRINKING WATER (ZEERS)

EARTHENWARE JARS USED FOR DRINKING WATER (ZEERS)

48. **(a) Earthenware jars (zeers) are possible breeding places for mosquitoes and they should therefore be turned upside down and thoroughly dried out twice a week.**

(b) Sandflies may breed in the constantly damp sand beneath jars and the latter should consequently be moved frequently.

(c) The use of a common mug and the habit of dipping a mug into the jar are both undesirable practices from a health point of view. Where individual drinking utensils are not available men should use their bottles for drawing water.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 4 — GREECE

Contents

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

TWO Italian armies had struck at Greece on 28 October 1940, but the spirit of Greek resistance had surprised everyone and dumbfounded the Italians, who in spite of overwhelming superiority, both in numbers and equipment, retreated before the determined Greek counter-attacks. The Greeks followed the Italians up into Albania. In November a small British force of three air squadrons and some base units, including 26 British General Hospital, was sent to Athens at the request of the Greeks.

Then an ominous shadow was cast over the situation when German armies started assembling in Roumania at the end of 1940. There was little doubt about the purpose of this concentration. Conferences were held in Athens between Greek political and military leaders and representatives of the British Cabinet and Army. At first, in January, the Greeks refused to entertain any offer of help with a strength of less than ten divisions, lest the Germans be given an excuse for aggression and there would be inadequate forces to oppose them; but on 8 February the Greeks asked for help if, and when, the Germans crossed into Bulgaria. As a result of this appeal the advance in North Africa was halted, and plans were made for a force to be sent to Greece. At a conference held in Athens on 22 February plans of operations were discussed and the Aliakmon defence line was agreed upon, the British delegates being led to believe that General Papagos, the Greek commander, would immediately withdraw his troops from the Metaxas line on the Bulgarian border. However, when the British delegation returned to Athens on 2 March after a visit to Turkey, it found that no Greek troops had been withdrawn owing to the uncertainty about developments in Yugoslavia. By this time Bulgaria had joined the Axis and German troops had crossed the Danube. It was then agreed that the Greeks should leave three divisions on the frontier and withdraw the remaining three divisions to the Aliakmon line. Britain decided on political grounds to

send what troops she could muster to help the Greeks and to persuade the Yugoslavs to resist the German advance. A force, called Lustre Force after the code word used in negotiations, was assembled with all possible speed in Egypt. The New Zealand Division was to form the advanced guard of the force and men and material were soon being shipped to Greece. As the first New Zealand troops moved out of Helwan Camp on 3 March, units of 5 Brigade were landing in Egypt from England.

The voyage across the Mediterranean was made in 'flights', fresh groups coming forward to the Amiriya transit camp and embarkation point at Alexandria as each flight sailed. General Freyberg and his advance party and a small advanced section of 1 General Hospital disembarked at Piraeus, the port of Athens, on 7 March. The medical units embarked for Greece on various dates between 6 and 26 March, the first to go being 1 General Hospital, which on 20 February had received orders to pack its complete equipment prior to moving. [1]

In proceeding to a country not yet at war with Germany it would seem that, from a medical point of view, a higher priority should have been given to the move of the medical units. Priority seems to have been given to the British armoured brigade and fighting troops, firstly, to impress the Greeks and Yugoslavs, and, secondly, to prepare defensive positions. In addition, it was not expected that fighting would break out so soon, but nevertheless medical units should not have been divorced from the formations they were expected to service.

Although General Freyberg, his GSO I, and AA & QMG left for Greece on 6 March, Colonel Kenrick, ADMS NZ Division, did not leave Egypt until 9 March, and then only at the urgent request of Brigadier D. T. M. Large, DDMS British Troops in Greece.

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[1] The medical units went to Greece on the following dates:

	Date of Embarkation 1941	*Date of Arrival at Piraeus* 1941

1 Gen Hosp (less nurses)	6 Mar	8 Mar
4 Fd Hyg Sec	9 Mar	10 Mar
ADMS	9 Mar	10 Mar
4 Fd Amb	11 Mar	15 Mar
6 Fd Amb	18 Mar	22 Mar
ADMS Office Staff	18 Mar	22 Mar
Nurses 1 Gen Hosp	25 Mar	27 Mar
5 Fd Amb	26 Mar	29 Mar

All reached Greece safely, although aerial attacks were made on some of the convoys.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL MEDICAL ADMINISTRATIVE ARRANGEMENTS

General Medical Administrative Arrangements

Brigadier Large, RAMC, with headquarters in Athens, was in command of all British medical services in Greece. Colonel Kenrick was given control of the operational area north of Elasson, the troops in the area at that time being the New Zealand Division and 1 British Armoured Brigade. When 6 Australian Division reached the forward areas, the command fell to Colonel W. W. S. Johnston, the senior Australian medical officer, as DDMS Anzac Corps, and Kenrick reverted to his position as ADMS NZ Division, which position gave him control of the three field ambulances and the field hygiene section, but not of 1 NZ General Hospital. Under Anzac Corps, in addition to field ambulances, were 2/3 Australian CCS and 2/1 Australian MAC.

There were two base sub-areas: 81 Base Sub-Area with headquarters at Larisa, and with Colonel R. H. Alexander, RAMC, as ADMS, controlled 24 British CCS, a section of 189 Field Ambulance, 1 NZ General Hospital, 2/6 Australian General Hospital, and supply and evacuation on the lines of communication to Athens; 80 Base Sub-Area at Athens, with Colonel J. B. Fulton, RAMC, as ADMS, controlled the base hospitals, 26 British and 5 Australian, Advanced Depot Medical Stores, Voula-Camp, and supplies and evacuation in the Athens area. A hygiene section was also stationed at Larisa to help in cleaning up the debris resulting from a severe earthquake which occurred at the end of February.

Thus, at first, 1 NZ General Hospital was under control of DDMS BTG, Brigadier Large, and then of ADMS 81 Base Sub-Area, Colonel Alexander. Orders affecting New Zealand medical personnel in Athens came from ADMS 80 Base Sub-Area.

There was no New Zealand medical liaison staff attached to HQ BTG

in Athens, although the Australians maintained a medical officer there. In retrospect, there can be no doubt that a New Zealand medical liaison officer attached to Medical HQ, British Troops in Greece, would have been of very great service during the campaign.

The New Zealand Division and its medical services, although under command of the force commander and DDMS BTG respectively, were still a separate expeditionary force, usually asserting a certain degree of independence which rendered close liaison with the overall command especially desirable.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NEW ZEALAND MEDICAL ADMINISTRATION

New Zealand Medical Administration

On 10 March, when Colonel Kenrick reported to General Freyberg and Brigadier Large, he was informed that he was to take over the medical responsibility of the forward area. He was also given details of the approximate date of the arrival of the various units in the forward area and the positions they were to take in the line. Until 13 March he was occupied with Brigadier Large, Colonel Alexander, and Colonel McKillop, CO 1 General Hospital, in the selection of a site for the hospital, and on 14 March, as ADMS Forward Area, he proceeded by car to Katerini via Elasson and over the Mount Olympus road to make his first reconnaissance of the forward areas. The first combatant troops, 18 Battalion, arrived by train at Katerini the same day.

The difficulties of terrain, bad roads, and poor communications—both road and rail—were at once apparent. When Colonel Kenrick crossed the shoulder of Mount Olympus it was snowing hard, emphasising the wisdom of the last-minute decision to send the troops from Egypt in battle dress rather than in summer kit. The country was bristling with problems from the medical point of view, and some of these are briefly surveyed.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TOPOGRAPHY

Topography

The country itself was mountainous and rough, with some large plains, low-lying, boggy, damp, and malarious, the largest being those of Thrace, the valley of the Vardar, and Thessaly. There was a mountain massif extending from Mount Olympus north-west to the Yugoslav-Albanian frontier. The rugged and rather barren country did not lend itself to rapid or easy communication; both road and railway construction had been difficult and the condition of neither was up to modern standards.

Greece had not reached the age of motor transport. There were few main roads and these were usually narrow and with a poor surface. There was one main single line of railway to the north from Athens, passing inland through hilly country, at times through gorges and over bridges very vulnerable to destruction by bombing or sabotage, until it reached the plain of Thessaly, north of which it bypassed the mountains by following the seashore to Salonika. A short narrow-gauge railway which was not used by the force ran at right angles to the main line from Demerli to the port of Volos on the east coast, and a similar line ran from Volos to Larisa. The main road north from Athens followed, except at Lamia, an inland route with an average distance of approximately 20 miles from the east coast. North of Lamia a coastal road proceeded to Volos, a seaport on a large, land-locked harbour, and thence to Larisa, the latter part of the road being quite unsuitable for heavy motor transport.

At the northern end of the plain at Elevtherokhorion, just north of Elasson, a branch road led to Katerini through a pass to the west of Mount Olympus, rising to a height of 4000 feet at the divide. Another

poor road led from Larisa to the Pinios Gorge, the Vale of Tempe, and the Platamon tunnel and round the coast to the east of Olympus. The main road continued from Larisa to the north-west through the village of Servia, crossing the Aliakmon River, to Kozani, Monastir, and so to Belgrade. The main road to Salonika passed from Kozani along the west of the Aliakmon River and through the Veroia Pass.

Communications between east and west were poor, making the reinforcement of the eastern front from the Albanian front slow and difficult.

From the standpoint of supply and evacuation there was thus available one line of railway—very vulnerable to attack—one main road through hilly country with narrow side roads through passes at the Olympus barrier, and a coastal road between Lamia and Volos with a very bad connection between Volos and the main road at Larisa.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CLIMATE

Climate

The climate of Greece was continental in type with the high Balkan hinterland producing severe winter conditions as a contrast to the warm summer. In the battle areas in the mountains cold, wet weather, and even snow and sleet, was experienced. The condition of the metalled roads deteriorated rapidly in the wet weather.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ENDEMIC DISEASES

Endemic Diseases

Malaria: **The low-lying and boggy plains of Greece have long been notorious as centres of malarial infection. During the First World War British troops stationed in the hinterland of Salonika suffered severely from this disease, in spite of precautionary measures. The dangers involved in a campaign in Greece by troops from non-malarious countries were pointed out with great force by Colonel N. H. Fairley, AAMC, and Colonel J. S. K. Boyd, RAMC, in a report to General Wavell.**

The lesson of the First World War was not forgotten on this occasion and the New Zealand Division, as well as the rest of Lustre Force, had made preparations to cope with the problem before its arrival in Greece. Up-to-date information on the subject, lectures, and training in malaria-control work had been given to medical units. Medical officers were charged with instructing all units in the essentials of malaria-control discipline and in the practical application of prophylactic measures. The Field Hygiene Section was fully alive to the problem and looked upon it as its main task. Infantry battalions were later issued with two-man mosquito-proof tents which proved excellent. All other troops were issued with bell-type mosquito nets which were unsuitable. Bush nets were not available.

As far as the New Zealand forces were concerned 4 Field Hygiene Section at once began anti-malaria measures, carrying out a careful survey of the battle areas. Contact was at once made with local medical practitioners and information obtained as to the local incidence of the disease. Even spleen surveys were carried out on children in these areas and the spleen rate in the villages was found to be 40–50 per cent. These surveys disclosed a relatively high incidence of malaria, higher than the

figures previously available, and as a result the evacuation of children from army areas was recommended as a precautionary measure.

The Hygiene Section proceeded to deal with breeding grounds by drainage and oiling, and to arrange for unit malaria squads to be formed to deal more intensively with the problem. Advice was also given to combatant units on the relative safety of areas as far as malaria was concerned. The force itself contained a malaria officer who had organised forty Greek foremen, each with a gang of twenty-three labourers, to deal with the problem from an army level. Arrangements had been made to equip three of these gangs for the New Zealand Division.

(Fortunately, as far as this campaign was concerned, only three cases of malaria were reported as seasonal infection did not occur until May at the earliest, with the main incidence in July, August, and September. Training in malaria control was, however, valuable for the future.)

Intestinal Diseases: **These were very prevalent in Greece, sanitary arrangements throughout the country being primitive except in the more modern part of Athens. The general poverty of the country outside Athens probably retarded the provision of modern hygienic conditions. Typhoid and paratyphoid fevers were more prevalent than in any other European country. Dysentery, both bacillary and amoebic, was widespread. Cholera had been absent for many years.**

To minimise infection of the force by these diseases the Field Hygiene Section carried out a complete examination of the water supply in the different villages in the battle areas. Arrangements were made for the chlorination of water where necessary.

Typhus: **Great epidemics had occurred in the Balkans at different times, including the First World War. Precautions were taken by the provision of disinfestors for all medical units.**

Venereal Disease: **Syphilis and gonorrhoea were very prevalent.**

Tuberculosis: **There was a high incidence of 3 per cent of pulmonary tuberculosis in Greece, but little glandular infection, possibly because of the custom of boiling the milk of goats and sheep.**

Water Supply: **The water generally throughout Greece was obtained from wells and was as a rule satisfactory. Chlorination of water in water carts was undertaken as required and chlorination tablets for individual use were also available; these were issued to units, but unfortunately, in many cases, not to the individual soldiers.**

Sanitation: **Generally, the civilian sanitary arrangements outside Athens were those of the cesspool and the midden. The Army used deep-trench and bored-hole latrines.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL MILITARY PLAN OF THE CAMPAIGN

General Military Plan of the Campaign

The defence of Greece against the threat of invasion by the Germans coming from Bulgaria was undertaken by a composite force, comprising elements of the Greek Army and a British Expeditionary Force sent hurriedly from Egypt. There had been a small RAF force assisting the Greeks in their defence against the Italians in Albania, but Lustre Force —comprising 1 British Armoured Brigade, 6 Australian Division, the New Zealand Division, and some British artillery and ancillery troops—was sent to help the Greek Army against the Germans. The 7th Australian Division and a Polish brigade were not sent as planned because of the serious threat to Egypt following Rommel's thrust south of Benghazi, and one brigade of 6 Australian Division arrived in Greece too late to take part in the operations. The total British and Imperial force sent to Greece was approximately 58,000, of whom 23,000 were Base and L of C troops. Very little reinforcement of the RAF was possible owing to the deficiency of the force generally in the Middle East.

The New Zealand Division shortly after its arrival in Greece took up its allotted position to the north of the Olympus Pass. It was somewhat handicapped because 5 Brigade had just arrived from England and had had no time to become acclimatised to Mediterranean conditions or to mould itself into the rest of the Division.

In the Aliakmon line the Division was responsible for the defence of the right flank between the coast and the Pierian Range where there was the widest of the three gaps in the mountain barriers. Across the Pierian Mountains, which rose to three and four thousand feet, 16 Australian Brigade was to defend the Veroia Gap through which ran the Aliakmon River and the main road to Salonika. The Vermion Range, which

reached a height of 6000 feet and was manned by two weak Greek divisions, separated the Veroia Gap from the Edhessa Gap to the north, and beyond that again were the mountains of the Yugoslav border. Through the Edhessa Gap, 1 British Armoured Brigade went forward to delay the German crossing of the Axios River. A brigade of 6 Australian Division was to be allotted to Kozani to be available for the defence of the Edhessa Gap and the remaining brigade was to be located at Servia, but neither brigade had time to reach these positions.

While the New Zealand Division manned the Aliakmon line, it prepared defensive positions behind the line at the Olympus Pass and also at the Platamon tunnel, which was situated between Mount Olympus and the sea, and through which ran the main railway from Salonika to Athens. The Olympus positions later formed part of the second line of defence, the Olympus- Aliakmon River line.

The Greeks decided to fight the Germans in rearguard actions at the passes along the Bulgarian frontier, 100 miles north of Olympus. The upper Vardar valley gave easy access into central Greece through the Monastir Gap, but it was hoped that the Yugoslavs would deny the Germans the use of that route. A force was formed under Major-General I. G. Mackay, commanding 6 Australian Division, to defend the left flank and cover the Monastir Gap. This was composed of part of 19 Australian Brigade, with British tanks and artillery of 1 British Armoured Brigade, and part of 27 NZ (Machine Gun) Battalion.

Such, briefly, was the position taken up by a small British force, consisting of less than two infantry divisions with one armoured brigade and inadequate air support, assisted by two weak Greek divisions—the whole force now named W Force and under the command of General H. M. Wilson—against a well-trained and powerful Germany army, greatly superior in numbers and armour and devastatingly superior in air power.

A last line of defence had been planned by General Wilson more than 100 miles to the rear at Thermopylae. This extended for 40 miles in the rugged mountains between the Euboea Channel and the Gulf of Corinth.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOVE TO THE LINE

Move to the Line

From Hymettus Camp, near Athens, in the last two weeks of March a steady stream of New Zealanders, including the medical units, went forward to positions in the Aliakmon line, north of Katerini. This line the Division prepared to hold, while forward of the new Olympus positions preparations were made for demolitions of roads and bridges. While the New Zealand Divisional Cavalry maintained patrols along the line of the Aliakmon River north of Katerini, 4 and 6 Brigades took over the Aliakmon line from the Greeks south of the river and 5 Brigade worked on the defensive positions astride Olympus Pass. The Division was spread over an enormous front, no continuous defence line being possible, and the Aliakmon line itself was destined not to be held because the Germans outflanked it at Monastir when Yugoslav resistance collapsed.

Most of the men travelled the distance of 300 miles from Athens by rail, but all vehicles, except tracked ones, were driven along the narrow, winding roads. Nearly all units were in the forward areas by 3 April.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL UNITS

Medical Units

On 17 March 4 Field Ambulance joined in the move of 4 Infantry Brigade to Katerini. By 21 March the unit had established an MDS at a site 1 ½ miles to the north of the village of Kalokhori, which was 2 ½ miles west of Katerini on the road leading back through the Olympus Pass. The tents were erected under fairly dense deciduous trees, not yet covered with spring foliage, and further screened by camouflaged canvas and netting, the Red Cross not being used at that time. Tarpaulins were erected around the 30-cwt trucks and excavations were made to ensure that all the patients were below ground level. The experience gained in the Western Desert proved most valuable in setting up and taking down the tents and tarpaulins. (It was found that the whole MDS could be packed and on the road in under four hours.) The MDS could accommodate up to 120 patients.

An extensive reconnaissance in the hilly country in the forward areas was undertaken by Colonel Kenrick and Lieutenant-Colonel Graves, and an ADS was sited 6 miles north of Palionellini behind the front held by 18 and 20 Battalions. Evacuation of casualties from the area would have proved very difficult owing to the broken nature of the country. Stretcher-bearers would have had an arduous carry and the Neil Robertson stretchers, of which 4 Field Ambulance had purchased four for each company, would have proved useful. The ADS was set up in dugouts, with a collecting post a mile further forward. The distance from the ADS to the MDS was 13 miles over a rough road, falling from an altitude of 1000 feet to almost sea level. A Company was sent to the Servia area on 21 March to provide an ADS for 1 British Armoured Brigade in the vicinity of Veroia, but was recalled to the MDS on the 26th and held in reserve.

From the moment of opening the MDS sick men were admitted from 4 and 6 Infantry Brigades and other divisional units, and evacuated by rail from Katerini to 26 British General Hospital in Athens, as the CCSs at Elasson and Larisa and 1 NZ General Hospital at Pharsala had not yet opened.

Sixth Field Ambulance, under Lieutenant-Colonel Bull, moved north in the wake of other divisional units on 26 and 27 March and established an MDS near Kato Melia, some 6 miles west of 4 MDS at the foot of the Olympus Pass, and two ADSs near Sfendhami and Koukos on the coastal side of 4 ADS. The MDS and one ADS were well dug in and camouflaged, the other ADS being set up in a stone building behind a hill. Evacuation was again a problem and stretcher-bearers would have been required in the rugged country. Accompanying 5 Brigade, 5 Field Ambulance under Lieutenant-Colonel Twhigg moved forward on 1 April and set up an MDS at Dholikhi, on an exposed slope alongside the road leading down from Olympus Pass, to serve 5 Brigade and all units south of the pass.

A survey of the areas of 23 Battalion and 28 (Maori) Battalion showed that, again, the bringing out of wounded would be a difficult task, entailing arduous work for stretcher-bearing parties. From the Maori Battalion a long trek down a valley and over a ridge would have entailed a 7-mile carry for wounded, and mules or donkeys would have been necessary. An ADS was set up just south of Ay Dhimitrios in the pass itself.

Thus, by the first week of April the plan for the New Zealand field medical units had taken shape, and 1 General Hospital under Colonel McKillop was also open at Pharsala for the reception of patients. A surgical team, comprising a surgeon, Major Christie, [1] an anaesthetist, and an orderly, and equipped with extra surgical instruments, was sent forward from 1 General Hospital on 1 April to be attached to one of the MDSs. On 5 April, following the arrival in Greece of 6 Australian Division, the New Zealand Division came under command of 1 Australian Corps, with the senior Australian officer, Colonel Johnston, as DDMS

Corps. (By 12 April the name was changed to Anzac Corps, under the command of Lieutenant-General Sir Thomas Blamey.)

In an order of 2 April setting out the divisional medical arrangements, the ADMS NZ Division emphasised that all field ambulances should retain mobility. Therefore, not more than twenty-five cases were to be kept at any one MDS. These were to be cases expected to recover within four days. At the commencement of hostilities the ambulances would be cleared of all sick preparatory to receiving wounded. All other cases, including venereal disease patients, were evacuated daily by rail from Katerini to 1 General Hospital at Pharsala (rail station, Demerli). Before 1 General Hospital opened, the field ambulances had retained infectious cases such as measles and venereal disease and minor medical and surgical cases. From 4 April ambulance cars of 1 Australian MAC were available for the evacuation of special cases (such as infectious cases) by road to 2/3 Australian CCS at Elasson, and their services would be more widely used at the commencement of hostilities. These arrangements fitted into the general medical plan which must be considered in some detail.

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[1] **Col H. K. Christie, CBE, ED; Wanganui; born Invercargill, 13 Jul 1894; surgeon; surgeon 1 Gen Hosp Mar 1940-Apr 1941; OC surgical team, Greece and Crete; in charge surgical division 1 Gen Hosp, Aug 1941-Jun 1943; CO 2 Gen Hosp Jun 1943-Oct 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE MEDICAL PLAN

The Medical Plan

The medical services to W Force were based on Athens, where was situated the headquarters of DDMS BTG. Here at Piraeus was the natural and only satisfactory port suitable for the landing of supplies and the evacuation of sick and wounded. Here existed, also, a fine modern city, perhaps the only modern area in Greece with large buildings suitable for conversion into military hospitals. From here, also, as has been discussed earlier, the only railway and main road in Greece led north to the north-eastern frontiers where the defensive positions lay. No other main base was possible and it was ideally situated, its distance from the front giving it some defence against air attack.

Here 26 British General Hospital was operating in excellent buildings in the modern and healthily situated suburb of Kifisia. The establishment of this hospital at Athens so long beforehand proved of the greatest value to the main force during the campaign and the greater part of the serious medical work was done by its staff. Later, 2/5 Australian General Hospital was sited in the same area, also in buildings. (This unit was not fully established at the end of the campaign, but performed valuable work later, when captured by the Germans, for our prisoners of war.) The Athens area was known as 80 Base Sub-Area, all medical services within the area being under the command of Colonel Fulton.

Larisa was the headquarters of 81 Base Sub-Area, with the British ADMS (Colonel Alexander) quartered at 189 British Field Ambulance, a company of which was sited on the main north road a few miles north of Larisa, the main body being in Crete. This field ambulance had been established early and had set up a small tented hospital to hold minor

cases and as a staging post for transport by rail of serious cases to Athens.

On the arrival on 8 March of the first two general hospitals of Lustre Force, 2/6 Australian General Hospital and 1 New Zealand General Hospital, a conference was held at Medical Headquarters in Athens to discuss medical planning for the force. At it were the DDMS BTG (Brigadier Large) and the officers commanding 26 British (Colonel C. Popham), 2/6 Australian (Colonel R. A. Money), and 1 New Zealand General Hospitals (Colonel McKillop). It was decided to use the last two hospitals, which were essentially base units, as L of C hospitals in 81 Base Sub-Area.

The actual siting of 1 NZ General Hospital in the 81 Base Sub-Area was decided after surveys of the area by the commanding officer, the Registrar, Major Hunter, [1] and the tropical diseases specialist of the unit, Captain Sayers; [2] and by Colonel Kenrick, Colonel Alexander, and Brigadier Large.

The choice lay between Volos, situated on a large harbour on the east coast, Nikaia, just south of Larisa, and Pharsala. Colonel McKillop reported that in his opinion it was inadvisable to site the hospital so far forward on account of the general unsuitability of the forward areas. Volos was favoured by Colonel Kenrick, but was ruled out by the army staff as unsuited for a hospital because the port was to be used for army supply and was likely to be bombed. (Subsequently, 2/6 Australian General Hospital was set up at Volos, but was not properly established before the retreat began. Its equipment was brought back to Athens by the Navy with great difficulty but did not leave Greece.) Nikaia was selected by Colonel McKillop, but before his report was submitted Brigadier Large decided on a site at Pharsala.

The site at Pharsala was not directly on the plain and the nature of the country was thought to offer protection from air attack, while from the malaria aspect the nearest village was over a mile away. The site was on the main north road and the main railway ran through Demerli, 6

miles away, while 3 miles away there was a narrow-gauge line which crossed the main line at right angles and went to Volos. Disadvantages were that it was some 20 miles from the supply base at Larisa, and that it was a relatively isolated area for a large and cumbersome unit with 350 tons of equipment and no transport of its own.

The site was in a long, narrow valley running west to east, with rocky ridges of 900 and 1200 feet to the north and south. A stream ran through the valley, but the clay soil made drainage from wards and kitchens difficult. Considerable engineering assistance was necessary to make roads and install water supply and drainage. The protection of the Red Cross was not relied on at that period and the wide dispersal of tents impeded the smooth working of the unit. The first patients (72) were admitted on 2 April from Larisa by MAC, and by 6 April the hospital was able to take 490 patients. The patients admitted were mainly minor medical cases, venereal cases, slight surgical cases, and a few battle casualties pending transfer to Athens.

The arrangements placed two 600-bed hospitals on the L of C, one on the main road and railway inland to Athens, and the other at a good coastal port capable of taking ships of 8000 tons, and with road communication by coastal route to Athens, and road and rail access to Larisa.

Forward of the hospitals were placed two CCSs, the 2/3 Australian and 24 British CCS, the former at Elasson in Corps area and the latter close to Larisa in 81 Base Sub-Area, both servicing the whole British front with the help of a company of 189 Field Ambulance, which had a surgical team attached and was sited alongside 24 British CCS.

In the Corps area of Elasson, also, was sited the headquarters of two sections of 1 Australian MAC, the only unit of its kind in the force and one which earned the highest praise from our medical units.

In the New Zealand Division's area three fully-equipped field ambulances were available, one for each brigade, but under divisional

control. They all carried equipment in excess of the regular establishment.

The medical plan as it affected the New Zealand Division can, therefore, be outlined as follows:

1. RMOs attached to battalions working from RAPs.
2. Three field ambulances, each with three companies and with established ADSs and MDSs. One ADS was attached under temporary command to each brigade so as to ensure medical attention in any eventuality, the rest of the field ambulance remaining under divisional command. A surgical team of one surgeon, one anaesthetist, and one other rank was attached to the Division and allocated to an MDS to be available for major surgery.
3. One Australian MAC servicing the whole force in the forward areas and evacuating from the field ambulances to 2/3 Australian CCS at Elasson and 24 CCS at Larisa, attached to which there was also a section of 189 Field Ambulance assisted by a surgical team.
4. Ambulance coaches from Katerini and trains from Larisa to 1 NZ General Hospital, Pharsala, or direct to 26 General Hospital at Athens.
5. Ambulance train from 1 NZ General Hospital at Pharsala to 26 General Hospital, Athens. (*Note:* A Greek ambulance train was taken over when the force arrived in Greece. It consisted of refrigeration vans fitted with sling stretchers—unfortunately our own stretchers could not be used in the train—and was able to take 250 lying cases. Wagons for orderlies, for cooking, and for latrine purposes were available, but there was no intercommunication between the wagons and, except at stations, access was by ladder. Each hospital wagon took eight lying and twelve sitting cases. The train was later split into two and accommodation for 100 sitting cases added to each half. The two trains were staffed by British and Greek personnel. Equipment and personnel for two trains had been brought from Egypt and eventually Greek rolling stock was converted and a more suitable train constituted, staffed entirely by British personnel.)
6. Special units were attached as follows:
   (*a*) 4 Field Hygiene Section was attached to the Division and carried out the duties of the prevention of infectious diseases and the control of water supply and sanitation.
   (*b*) 2 NZ Mobile Dental Unit was under command of NZ Division for the provision of dental treatment. (It was, however, the last New

Zealand medical unit to reach Greece, so was unable to join up with NZ Division before the retreat began.)

(*c*) 5 (British) Bacteriological Laboratory was available at Larisa for assistance to the Division.

(*d*) 1 (British) Malaria Field Laboratory in Athens was in charge of general malaria control in the operational areas of Greece, and was available for training personnel for work in the Division.

(*e*) 7 (British) Depot of Medical Stores was stationed at Athens and was available for medical supplies. The field ambulances drew their supplies from Athens and in cases of emergency used 1 NZ General Hospital as their base of supply.

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[1] Lt-Col L. J. Hunter, OBE, MC, m.i.d.; born Sydney, 14 Jul 1891; surgeon; medical officer AIF 1915–18, wounded Sep 1917; Registrar 1 Gen Hosp Feb 1940-Jun 1941; SMO Maadi Camp, Aug-Sep 1941; in charge surgical division 2 Gen Hosp, Oct 1941-May 1942; CO 1 Mob CCS May 1942-Oct 1943; died 26 Jun 1953.

[2] Col E. G. Sayers, CMG, Legion of Merit (US); Auckland; born Christchurch, 10 Sep 1902; physician; medical officer 1 Gen HospMay 1940; in charge medical division 1 Gen Hosp, Aug 1941-Sep 1942; 4 Gen Hosp, Oct 1942-Sep 1943; Consultant Physician 2 NZEF (IP) 1943–44; CO 4 Gen Hosp Nov 1943-Aug 1944.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GERMAN INVASION BEGINS

German Invasion Begins

On 6 April the German drive into both Greece and Yugoslavia began, and by the 9th, in spite of heroic Greek resistance, the whole of Thrace was in enemy hands and Salonika occupied. At the same time an armoured spearhead forced its way into Yugoslavia, and when Yugoslav resistance in the south collapsed, the road through the Monastir Gap was open to the Germans. The main arterial highway from Yugoslavia passed through the Monastir Gap in the Macedonian mountains to Florina and Kozani. The Central Greek Macedonian Army and the British forces (W Force) lay to the east of the gap on a front 70 to 80 miles long, and to the west the main body of the Greek Army was coping with the Italians. By 9 April German columns had reached Monastir; they were in a position to threaten the rear of the Greek forces in Albania and the rear of our own forces on the Aliakmon line and to drive an armoured wedge between the two.

The New Zealand Division was ordered on 9 April to withdraw from the Aliakmon line and the Katerini area and occupy its freshly prepared positions in the Olympus Pass and at the Platamon tunnel between the mountains and the sea. The withdrawal through the Olympus Pass defence line was completed on 14 April and demolitions closed the entrance to the pass. From Servia to the sea on the east the New Zealand and Australian positions on the Olympus- Aliakmon River line now barred the enemy's further progress into southern Greece, and fighting flared up as armoured columns thrusting along the roads came up against our defended positions.

Fourth Brigade had been ordered to Servia to strengthen the left flank, 6 Brigade had been brought back to Dholikhi to act as Anzac

Corps reserve, and 5 Brigade undertook the defence of the Olympus Pass. The plan of defence was recast in the light of the collapse of Yugoslav resistance. The small force covering the Monastir Gap was reinforced, and the left flank was withdrawn in three stages back to the Aliakmon River. The Greeks in Albania withdrew to conform with the new lines, the western end of which changed to Nimfaion, Kastoria, and then the Venetikos River. Anzac Corps was finally responsible for the sector from the east coast to the Aliakmon River west of Servia.

The enemy struck down the valley from Monastir to Servia, at the Olympus Pass, and at Platamon in that order, the New Zealand Division being involved in these three passes from the 14th.

Dispositions of New Zealand Medical Units in Greece, 8 April 1941

The withdrawal from the Katerini sector back over the Olympus Pass was begun by 4 Field Ambulance at 7 p.m. on 9 April, 4 Field Hygiene Section also being with this unit. Heavy rain was falling and it was very cold as the unit's vehicles joined the mass of transport then moving back over the wet, greasy, and dangerous road through the pass. At the summit of the pass, approximately 4000 feet above sea level, one company disengaged from the main body of the convoy and proceeded 1 ½ miles west of the village of Ay Dhimitrios to take over the ADS site previously prepared, but since vacated, by 5 Field Ambulance which had gone with 4 Brigade to Servia. The rest of the unit, after eight hours on

the road involving difficult manoeuvring of the heavy vehicles, reached the site previously occupied by the MDS of 5 Field Ambulance at Dholikhi, established an MDS, and by 9 a.m. on 10 April had begun to take in patients.

The site of the MDS on the rising slope of the south-western aspect of the foot of Mount Olympus was in no way a good one. There was no natural cover and the ground was exceedingly hard and stony. There was, however, no alternative but to dig in where possible, disperse, and camouflage. (Red Cross protection was not utilised at that time.) During 11 April the first battle casualties from 5 Brigade were received through 4 ADS. A reconnaissance of the forward area, held by the battalions of 5 Infantry Brigade, 28 (Maori) Battalion, 27 (MG) Battalion, and 4 and 5 Field Regiments, revealed extremely difficult routes of evacuation from some positions. Over one particular sector the bad tracks and steep ravines rendered impossible the passage of even Neil Robertson stretchers.

Sixth Field Ambulance cleared its dressing stations of patients when the Division began to withdraw and the two ADSs closed on 6 MDS on 10 April. All troops except the Divisional Cavalry had gone over the pass when the unit moved out that night. Near the town of Elevtherokhorion and about half a mile above the bridge at the junction of the roads leading from the Olympus and Servia passes, the unit stopped and held itself in reserve along with 6 Brigade.

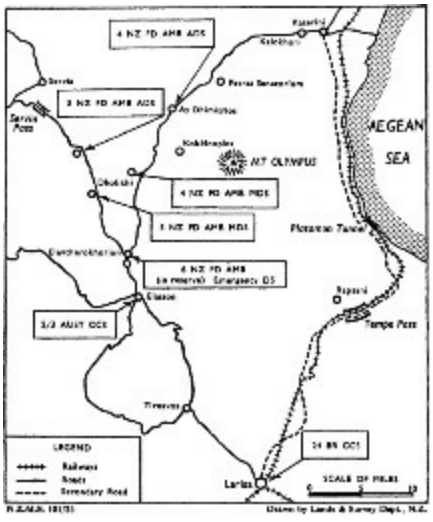
When 5 Field Ambulance moved from Dholikhi on 10 April to serve 4 Brigade at Servia, it erected its MDS some 7 ½ miles north of Elevtherokhorion under a high hill at the entrance to Servia Pass. The weather was cold with heavy rain and hail in the afternoon, and rain and snow fell on the two following days.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

5 FIELD AMBULANCE AT SERVIA PASS

5 Field Ambulance at Servia Pass

The move of 5 Field Ambulance had to be made in two lifts as there was insufficient transport on the establishment of field ambulances at that period to carry all equipment and staff. The MDS, besides serving 4 Brigade which, with 6 Field Regiment and 7 Anti-Tank Regiment attached, was taking up positions on high ground in the rear of Servia, overlooking the Aliakmon River and valley, also acted as a staging post for 7 Australian MAC which was evacuating cases from the forward areas to 2/3 Australian CCS at Elasson, some 10 miles farther to the rear. The MDS at that time was a Corps unit under Anzac Corps command. The two Australian brigades which were in the region of Ptolemais and Veroia Pass were to hold on for a few days and then fall back on Servia behind 4 Brigade.



Medical Dispositions during the fighting at Servia and Mount Olympus, 11–16 April 1941

Medical Dispositions during the fighting at Servia and Mount Olympus, 11–16 April 1941

An ADS under Major Fisher [1] was set up on the 11th alongside the winding Servia Pass road, 5 miles from the MDS. In heavy rain and snow the tents were dug in. Parties under Lieutenant Lusk [2] were sent out

regularly to the RAPs, and much hand-carrying was necessary to bring the casualties back under the difficult conditions.

The most difficult problem of the advanced medical units at Servia, that of evacuating wounded from the rugged terrain in the forward areas, was undertaken by 2/1 Australian Field Ambulance. It had to work with limited equipment and use pack donkeys to carry the casualties. Eighteen mules had also been allotted to 18 Battalion to carry ammunition up and wounded back from the line. The attachment of six motor ambulance cars to 5 MDS at that time was invaluable. On 12 April a New Zealand stretcher-bearer party spent seven and a half hours making a circuit of regimental aid posts in 4 Brigade's area. On the 5 Brigade front 4 Field Ambulance was likewise to receive battle casualties and evacuate them to 2/3 Australian CCS at Elasson.

Thus regrouped, the medical units, with the rest of the Division, were ready for the coming action as the enemy advanced. At Pharsala 1 General Hospital was gradually increasing its facilities for treating and accommodating the expected casualties. It had been admitting patients from 24 British CCS at Larisa since 2 April, and evacuating to Athens. Men recovering at the hospital were sent back to their units direct. The sisters under Miss Mackay [3] arrived on 4 April. When the German invasion of Greece began on 6 April the hospital was ready to take 490 patients. Two days later, in accordance with orders from ADMS 81 Base Sub-Area, the expansion to 1000 beds began.

Dive-bombers and fighters opened the battle for Servia and the nearby pass on 13 April with heavy attacks on 4 Brigade's positions. Here the New Zealanders were dug in on the mountain slopes overlooking Servia and Kozani, their line reaching from a point east of the village of Kastania to the Aliakmon River. Air attacks became more intense as flight after flight of heavy bombers hammered at roads and gun positions. At dawn on 15 April the first infantry attack was made by the enemy, but this and following attacks were effectively repulsed. The 19th Battalion's casualties were

[1] Col W. B. Fisher, OBE, ED, m.i.d.; born New Plymouth, 21 Jan 1898; Superintendent, Waipukurau Hospital; RMO 28 (Maori) Bn Dec 1939-Aug 1940; 2 i/c 5 Fd Amb Aug 1940-May 1941; actg CO 6 Fd Amb, May 1941; CO 21 Lt Fd Amb (NZ) Nov 1941-Dec 1942; 6 Fd Amb Feb 1943-Aug 1944; CO 1 Gen Hosp Aug 1944-Feb 1945; died 17 Jan 1956.

[2] Capt W. B. de L. Lusk, m.i.d.; Auckland; born Auckland, 28 Nov 1915; house surgeon, Auckland Hospital; medical officer 5 Fd Amb Dec 1939-Nov 1941; p.w. Nov 1941; repatriated May 1944.

[3] Matron-in-Chief Miss E. C. Mackay, OBE, RRC, m.i.d.; Wellington; born Porangahau, 13 Feb 1902; sister; sister, Ngaruawahia Camp Hosp, Jan-Mar 1940; Matron 1 Gen Hosp Jun 1940-Nov 1943; Principal Matron Nov 1943-May 1945.

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two dead and six wounded, but the German dead were numerous and about two hundred major and minor wounded passed through Captain Carswell's [1] RAP. He found that the .45 bullet of the Thompson sub-machine gun was devastating—it was responsible for most of the German dead—and the severe wounds included whole shoulders blown away and traumatic amputations of the legs. The casualties were transported to the rear by stretchers to the road, and then by Bren-gun carriers and ambulance cars which were driven through persistent shellfire to reach 5 ADS. At the ADS, while the wounded were receiving treatment in the open, the unit was dive-bombed and machine-gunned.

On the 13th 5 MDS was enlarged to take 150 patients, and a steady stream of casualties, mostly wounded, were treated and passed on to 2/3 Australian CCS. In its work the MDS was assisted by 2/1 Australian Field Ambulance with men and equipment, the Australians concentrating on evacuation, the most difficult problem. Their extra equipment was particularly welcome. Stores for the New Zealand medical units had been slow in coming to hand, and the destruction of medical stores during a bombing attack on Piraeus on 7 April was a serious setback. [2] Medical

units were thus finding it necessary to exercise the greatest economy in prescribing drugs. On the 14th, 56 casualties (British, Australian, New Zealand, Greek, and Yugoslav) were treated at the MDS and 35 were held overnight. Two nearby air attacks, with dive-bombing and machine-gunning, both produced casualties. Admissions on the 15th were 114, including 40 German prisoners, and on the 16th, 56.

The display of the Red Cross was decided on by Lieutenant-Colonel Twhigg following a discussion with a wounded German pilot, who was affronted at the suggestion that they would attack medical units marked with the Red Cross and declared that the pilots had strict orders to respect it. Colonel Twhigg had previously been informed by a New Zealander who was with the RAMC at Dunkirk that the Red Cross had been respected by the German airmen during the evacuation. From then on the MDS was spared although all-day-long air attacks were made nearby.

The ambulance cars, which at that time had only small inconspicuous crosses painted on their sides, were draped with large Red Crosses on the roofs. The drivers then found that if they pulled out from the road convoys into nearby fields they were not molested.

The German air attacks adhered to a strict timetable, and it was

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[1] Maj W. R. Carswell, MC; Palmerston North; born Dunedin, 20 Dec 1914; surgeon; RMO 19 Bn 1941–43; surgeon 1 CCS, 1 FSU, and 1 Gen Hosp, 1943–45.

[2] The bombing of Piraeus caused great destruction and disorganisation at the port following the blowing up of an ammunition ship.

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found that there was just time between the attacks for the ambulance cars to cover the distance to the ADS. The drivers fitted in with this pattern and no cars were lost. On the 15th the ADS, which was

not marked with the Red Cross, was subjected to four bombing attacks, which caused it to shift to a better-protected site in caves high up on the hillside. It dealt with 53 casualties and evacuated them that day, and with 49 the following day.

When the fighting began the wounded were evacuated to 2/3 Australian CCS at Elasson, whence they were sent on to Larisa to 24 British CCS and evacuated by ambulance train to Athens. It was at first arranged that all the cases were to be admitted to 1 NZ General Hospital, but it was rightly determined that it was undesirable to take the more seriously ill patients off the train to convey them 7 miles to a tented hospital in the fields. It was better for them to proceed to a well-established hospital in buildings at the Base, where they were readily available for evacuation by hospital ship to Egypt. No. 1 NZ General Hospital was then used for the reception of the lightly wounded and the lighter medical cases transferred from 24 CCS and 189 Field Ambulance, but the period of active work was too short to test out the best method of using the hospital.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION OF 1 GENERAL HOSPITAL

Evacuation of 1 General Hospital

On the 13th and 14th the 2/3 CCS and 24 CCS cleared patients to 1 NZ General Hospital, but the trains were sent on to Athens with the cases. On the 14th at 10.30 p.m. 1 NZ General Hospital received a signal from ADMS 81 Base Sub-Area to evacuate patients and staff forthwith and to make its own train arrangements. At this time the hospital held 428 patients, 102 being fit for discharge, such patients now being required to go to the Reinforcement Camp at Athens. There were only thirty stretcher cases in the total. The RTO at Demerli was contacted at once and a relief train with refugees from Yugoslavia was found at Demerli; the RTO arranged to reserve it for the patients, who were immediately and with great difficulty transported the 7 miles to the station. However, the RTO then stated that his orders had been countermanded by his superior officer at Larisa, who, in turn, had had orders from Athens. Further information was given by the RTO that a hospital train was being sent from Lamia to arrive at midday next day to take the patients. The train then left and the patients were transported back to the hospital.

Another order enlarging and confirming the instructions telephoned the previous evening, delivered by DADMS 81 Sub-Area and clearly instructing the unit to evacuate all patients and staff and to take valuable medical stores, was received after the train had left. The tents were to be left standing, and all ordnance equipment, with beds and bedding, left behind. The dental unit with its trucks was to leave by road, and it was suggested that the sisters should go with it.

Next day the patients and staff went again to Demerli station, but the train from Lamia did not arrive. However, there were some trucks at

the railway siding and, at the direction of Lieutenant-Colonel Boyd, the patients and staff manhandled the trucks to link them together into a train, which still lacked an engine. In the afternoon a train arrived from Larisa laden with Greek refugees in trucks, some British walking wounded and some wounded in ambulance carriages, besides a British bakery unit. The engine was driven by a New Zealander, Corporal. Morrison, [1] who had no previous engine-driving experience. Earlier that same day, at noon, the train had been standing at Larisa station when it was dive-bombed by German aircraft. The Greek engine-drivers had decamped, and the RTO at Larisa had obtained the voluntary services of Corporal Morrison to drive the train south.

When this train reached Demerli Corporal Morrison reported to the RTO, with whom was Colonel Boyd, who insisted that all the 1 General Hospital patients who were lying in trucks on the siding should join this south-bound train. Morrison, who was assisted by an Australian, Sapper C. J. Horan, as stoker, and Driver Dendy, RASC, as pointsman, then added the trucks on the siding to the train on the main line and drove off south with all the patients and staff of 1 General Hospital on board. At the bottom of one of the passes to the south an old Greek engine-driver helped to clean the firebox and refuel and stayed on the engine as it ascended the pass. About half-way up he collapsed, but by means of sign language he told the volunteer crew where to use sand on the gradients. When the train reached Thebes the RTO there found a Greek engine-driver and fireman, but told Morrison and his assistants to stay on the engine. Athens was safely reached twenty-four hours after leaving Demerli.

On arrival at Athens by the unit car, Colonel McKillop reported to Brigadier Large, who had no knowledge of the evacuation of the hospital.

The nursing sisters, including Australian sisters from their CCS, had proceeded with the Mobile Dental Unit by road to Athens on the morning of 15 April. A rear party packed up valuable equipment from the operating theatre, X-ray department, laboratory, and stores and took it by truck to Athens.

[1] **Cpl B. A. Morrison, BEM; Timaru; born NZ 28 Apr 1918; motor mechanic; p.w. Apr 1941.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BACK TO THERMOPYLAE

Back to Thermopylae

The decision had been made on 14 April, when the battle for the Olympus- Aliakmon River line had only just begun, that the force was to move back to Thermopylae, as it was realised that the poorly equipped Greeks on the flank could not hold out for long.

The 16th Australian Brigade guarding the Veroia Gap was withdrawn across the Aliakmon and took up positions in the hills north of Servia. Mackay's force, less 1 Armoured Brigade, fell back and defended the passage to the west of the river. The 4th NZ Brigade was defending the east side of the river between the two Australian forces. Mackay's force withdrew later across the river after the bridge had been destroyed, and the two flanking forces withdrew through 4 Brigade to Larisa. The whole Anzac Corps then withdrew to the Thermopylae line. The 1st Armoured Brigade protected the left flank and withdrew to Grevena and then to Kalabaka, being joined there by a part of 17 Australian Brigade under Brigadier S. G. Savige, the force then falling back steadily to the south. A rearguard was formed under Brigadier E. A. Lee south of Dhomokos from a fresh force of two Australian battalions and a battery from Athens, and this ensured the unmolested occupation of the Thermopylae line.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE WITHDRAWAL OF THE NEW ZEALAND DIVISION

The Withdrawal of the New Zealand Division

Under strong enemy pressure 5 Brigade disengaged and withdrew according to plan during the night of 16–17 April. It was followed by 4 Brigade the following night, the moves being covered by 6 Brigade which had been held in reserve, and this latter brigade fought a rearguard action as all forces withdrew to Thermopylae in accordance with the decision of 14 April. The withdrawal to the new line was completed by 20 April.

During the heavy fighting on and around Mount Olympus by 5 Brigade, the men of the medical units carried on their work of treatment and evacuation of the wounded with commendable zeal and courage, often going right up to the forward areas to bring out the wounded, and sometimes having to run the gauntlet of enemy fire.

In 4 Brigade's area at Servia the few casualties that went through 18 Battalion RAP were carried by donkeys led by the unit's stretcher-bearers. When the order came to fall back, the battalion was led back at night from Kastania across rugged country until it joined its transport on the road just before dawn. The RAP staff tried to carry some stretchers back, but the hills and ravines were so difficult to negotiate that they had to abandon them. Fortunately, no casualties occurred on the march out. Some of the men were so exhausted that they had to be pushed up the last hill to the waiting trucks on the road.

In the withdrawal the medical units retired with the brigades which they were serving.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

4 FIELD AMBULANCE

4 Field Ambulance

The 4th MDS under Lieutenant-Colonel Graves closed at Dholikhi, and in heavy rain at 11 p.m. on 16 April commenced its long withdrawal south through Larisa to Pharsala and then east over to the coast at Almiros. For this withdrawal a one-car post was attached to Headquarters 5 Brigade and another to 23 Battalion at Kokkinoplos, half-way up the slopes of Mount Olympus, for the evacuation of casualties. The car-post staffs accomplished excellent work under the most arduous conditions before they, too, withdrew.

The withdrawal had to take place with practically no RAF protection while German air activity was intensified. [1] Rain and heavy cloud all day on 17 April undoubtedly saved the units from enemy air attacks. The next day was fine and clear, and enemy aircraft were active all day attacking the crowded highway.

When 4 Field Ambulance was a few miles south of Lamia, an ADS was set up to take in the casualties occurring in convoys passing over the road from Larisa to Lamia. As 5 Brigade moved into new positions in the Thermopylae line south of Lamia, 4 Field Ambulance withdrew on 20 April further back along the coastal road to an area about 18 miles south of Molos, while one company established an ADS in a valley inland from Molos village. Casualties admitted to the ADS from 5 Brigade were sent to 5 MDS, which was then set up at a Greek hospital 3 miles away.

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[1] The RAF fought valiantly against hopeless odds but it was decimated. On 20 April twenty-two German planes were shot down for the loss of five of ours, but only ten of our planes remained.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

5 FIELD AMBULANCE

5 Field Ambulance

When 4 Infantry Brigade group began to leave the Servia area on 17 April, 5 Field Ambulance arranged for an ambulance car post to be maintained at the former location of the ADS on the Servia Pass road, while B Company under Captain Palmer formed an ADS at the site which the MDS vacated at the foot of the pass. The remainder of the unit moved off in the afternoon to the vicinity of Molos, south-east of Lamia. The car post closed on the evening of 17 April and, with the ADS, withdrew early next morning.

The weather was overcast, with heavy rain and low clouds on the 17th, making it difficult for the German planes to take off, besides obscuring the moving traffic on the roads from the view of the pilots. The field ambulance took advantage of the conditions to travel by day as well as night. The leading company, A Company under Major Fisher, proceeded south by the axis laid down for the New Zealand troops—via Larisa and Volos and thence by the coast road to Lamia. The road east to Volos proved practically impassable, not because of enemy action but because of its bad state of repair (trucks often had to be manhandled through deep mud), and subsequent convoys were diverted down the main road south from Larisa to Pharsala, the axis of the Australian troops. With the amount of traffic on the main road there was marked congestion. The main body of 5 Field Ambulance used the main road and staged at the site of 1 General Hospital at Pharsala. Collection of wounded was made difficult by the fact that the attached MAC cars were not available as they were in the forward area. One car was intercepted on the road and attached to the 5 Field Ambulance convoy for the retreat. Lack of room on the available transport prevented 5 Field Ambulance from lifting much of 1 General Hospital's abandoned stores.

Difficulties of evacuation were manifest at this stage. On 16 April 2/3 Australian CCS had retired to the Thermopylae line. The CO 5 Field Ambulance, Lieutenant-Colonel Twhigg, found on 17 April that 24 CCS at Larisa had also closed the previous day, and the only medical unit then accessible on the route of withdrawal was 2/1 Australian Field Ambulance, which had established an MDS 30 miles south of Larisa. The ADMS NZ Division, Colonel Kenrick, concerned at the position, which entailed a journey of 120 miles for ambulance cars, tried to arrange for a train to take wounded from Larisa to Athens. He was unsuccessful, as the RTO had left Larisa two days before.

On 17 April, at the hospital site at Pharsala vacated by 1 General Hospital two days previously, Colonel Kenrick, in conference with the ADMS 6 Australian Division, arranged for 2/1 Australian Field Ambulance to restock from dressings and other abandoned medical stores and act as a staging post for New Zealand wounded at the foot of the pass north of Lamia. This arrangement was most necessary because of the great difficulty ambulance cars were experiencing in returning along roads densely packed with traffic and extensively damaged by bombing.

Lieutenant Moody [1] was in charge of a car post which retired with the rearguard of 4 Brigade, and which collected and treated casualties sustained by aerial bombing, ground strafing, and motor accidents. As the party crossed bridges, sappers were at the roadside ready to blow them. They passed the Elevtherokhorion crossroads,

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[1] Capt R. F. Moody, MBE, m.i.d.; Auckland; born Auckland, 15 Oct 1915; medical practitioner; medical officer 5 Fd Amb Dec 1939-May 1941; p.w. 26 May 1941.

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where the road from Mount Olympus joined that from Servia, about five minutes before two German tanks unexpectedly appeared and engaged the rearguard of Bren carriers. Later, they were halted at the bridge over the Pinios River at Larisa while thirty dive-bombers attacked

the bridge. After passing Larisa the car post was kept very busy. There were many casualties in the long column of slowly moving and congested vehicles ahead. One of the medical staff, Private Grimshaw, [1] on an abandoned motor cycle he had repaired, patrolled up and down the slowly moving vehicles spotting casualties which were then collected in ambulance cars. The post had only two ambulance cars at the start, but Moody got five other cars to join him and formed them into a separate little convoy by the time they reached Pharsala. As a medical convoy they were not attacked from the air, although when interspersed singly among other vehicles they had been subject to attacks. At Pharsala the convoy collected a large number of seriously wounded men, as the village had been bombed and the main road temporarily blocked. These were taken to 2/1 Australian Field Ambulance, which had set up a full MDS between Dhomokos and Lamia, and the convoy continued on to reach Molos after a journey of nineteen hours, during which it had collected and treated sixty-five casualties.

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[1] **Pte T. Grimshaw; born Kaitangata, 9 Sep 1914; labourer; died, Dunedin, 7 Mar 1951.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ACTION AT PLATAMON TUNNEL AND PINIOS GORGE

Action at Platamon Tunnel and Pinios Gorge

Covering the withdrawal of the rest of the Anzac Corps from Servia and Olympus, 6 Infantry Brigade established itself just to the south of Elasson. Attached to the brigade, 6 Field Ambulance on 16 April set up an MDS near Tirnavos and one ADS in each of the two valleys between Tirnavos and Elasson. Anti-aircraft batteries had sited their gun positions around the MDS area and they attracted enemy aircraft attacks, which compelled 6 Field Ambulance to move about 1 mile away, to the north of the Tirnavos- Larisa road.

That day the enemy's furious assaults on the tiny force between Olympus and the sea reached a climax. A heavy tank and infantry attack drove 21 Battalion back to the historic Vale of Tempe, in the narrow Pinios Gorge, 10 miles to the rear. Two battalions of 16 Australian Brigade were rushed up from Larisa in support of 21 Battalion, and this enabled the right flank to be held long enough to allow the withdrawal of the Corps through the bottleneck of Larisa.

When Colonel Kenrick received word that 21 Battalion had been thrown back with heavy casualties he arranged for four ambulance cars to proceed immediately to Pinios Gorge, and for medical officers and orderlies to be sent from 6 Field Ambulance at dawn to the western end of the gorge to treat and bring back the casualties. The medical officers available to the force were the RMOs of 21 Battalion, 4 Field Regiment, and 2/2 Australian Battalion. The German attack began at dawn on 18 April and a rapid enemy advance disorganised 21 Battalion and the Australians, the RMO of 2/2 Australian Battalion being killed.

At the Platamon tunnel and Pinios Gorge, Captain Hetherington [1] spent a hazardous time with the 21 Battalion RAP. When the battalion

retreated, Hetherington was ordered to set up his RAP at Platamon station, about 2 miles south of the holding position, to service the rearguard, while the wounded were taken back by the main body of the unit. The station was shelled and the RAP moved back 400 yards to shelter under a small railway bridge. There was further shelling and, leaving behind all but the most urgently needed medical supplies, the RAP staff was forced to move farther south along with the rearguard. Eventually, after travelling about 10 miles, the survivors of the unit crossed the Pinios River in a barge to get to Tempe village, where the RAP was set up in a stone house. Here, anyone moving along the road was later subjected to machine-gun fire from the opposite village. The detachment of 6 Field Ambulance made contact with the RAP here and arranged to evacuate the wounded the following morning. When the main attack came at 11 a.m. next day the RAP moved back 1 ½ miles to a valley, where a company of 2/1 Australian Field Ambulance set up an ADS, Australians having reinforced the position.

About 2 p.m. word was received of the order to retreat. The RAP moved back under machine-gun fire from German patrols, while farther back the German main body waded across the river. Dive-bombers forced Hetherington and his staff to keep off the road as they moved towards Larisa. About 2 miles from Larisa the troops were picked up in British trucks, but Hetherington and his party were taken many miles across fields and along roads in their truck, only to find an hour before dawn that they were back near their starting point. They then made good their escape from the Germans on foot after running the truck over a precipice.

Wounded were treated and taken back by the 6 ADS detachment, under Lieutenant Sutherland, [2] and other wounded making their way across country were treated by Captain Hetherington and Captain Staveley [3] at 4 Field Regiment. The latter unit suffered casualties from

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[1] Capt O. S. Hetherington, MBE; Rotorua; born Thames, 3 Apr 1903; medical practitioner; RMO 21 Bn Jan 1940—May

1941; p.w. 23 May 1941; repatriated Sep 1944.

[2] Maj A. W. Sutherland, m.i.d.; Timaru; born Dunedin, 21 Dec 1915; surgeon; medical officer 6 Fd Amb Oct 1940–Sep 1941; RMO 24 Bn Sep 1941–Jul 1942; 3 Gen Hosp Jan 1943–Dec 1944; wounded 22 Jul 1942.

[3] Maj J. M. Staveley, MC; Auckland; born Hokitika, 30 Aug 1914; medical officer, Auckland Hospital; medical officer 6 Fd Amb Mar 1940–Jan 1942; Malariologist NZ Div, Apr–Jun 1942; OC 2 Field Transfusion Unit Aug 1943–Apr 1944; Pathologist 2 Gen Hosp Apr–Nov 1944; wounded three times.

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the intense air activity. These were treated and sent back to Larisa. At dusk Staveley moved his RAP truck back 5 miles to attend to some sixty Australian wounded who had collected on the road, and these were sent back. Later, the 4 Field Regiment convoy in which the RAP truck was travelling was ambushed by German machin-gunners, but Staveley got through to Larisa. Under the heavy enemy attacks casualties were few, but 21 Battalion was scattered and many men took to the hills; only part of the battalion managed to reach the Thermopylae line.

Until 18 April the dressing stations of 6 Field Ambulance attended to men wounded in the enemy's incessant strafing of the roads. Extra ambulance cars from the Australian MAC joined the unit and a large marquee was erected to cope with casualties. By noon on 18 April the 6 Infantry Brigade rearguard was engaged with German tanks advancing towards Elasson. With the withdrawal route so seriously threatened by the thrust through the Pinios Gorge, orders were given soon after midday for the brigade to withdraw through Larisa by midnight. It was decided that 6 MDS under Major Plimmer would fall back and that A Company (Lieutenant Ballantyne) [1] should take over and remain open in the MDS area. Lieutenant-Colonel Bull and Major Christie remained also to help with the wounded. As the convoys crawled south along the congested highway in the afternoon they were constantly harassed from the air, yet there were remarkably few casualties. The engineers were constantly

at work filling in bomb craters and clearing away debris to keep the main highway open. Larisa was a burning, deserted ruin and other towns were also badly damaged by bombing. Early on 19 April 6 Field Ambulance reached Molos, south of the Thermopylae line. Back at Tirnavos the ADS continued working until the early hours of 19 April, and then, shadowed by the enemy, moved to the south of Volos. Wounded were picked up from the infantry battalions, given treatment and, as the withdrawal continued, carried back on trucks and ambulances. The party next day passed through bombed Stilis and Lamia and over the Thermopylae Pass to join up with the unit again in the Molos area.

In the long retreat of 100 miles across Thessaly, through Larisa and Pharsala to Thermopylae, the Luftwaffe failed in its attempt to halt the withdrawal. The Anzac force remained comparatively intact. All medical units performed their tasks admirably and the wounded were always well cared for.

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[1] Capt D. A. Ballantyne, m.i.d.; Hastings; born New Guinea, 1 Sep 1911; medical practitioner; medical officer 6 Fd Amb May 1940–May 1941; p.w. 27 May 1941.

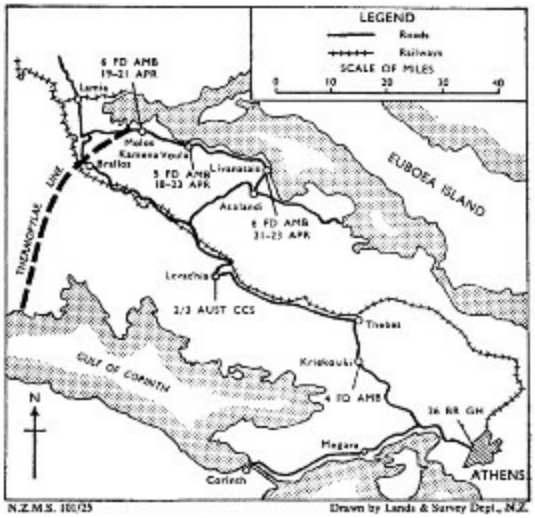
NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE THERMOPYLAE LINE

The Thermopylae Line

The Thermopylae line was based upon a spur of the Pindus Mountains, running east and west, and was cut by two main routes to the south—the central road and rail pass of Brallos, held by the Australians, and the famed Thermopylae Pass itself, guarded by the New Zealanders. On the coast, near Molos, 6 Brigade had taken up its positions, while on the left, south of Lamia, was 5 Brigade. Fourth Brigade and the Divisional Cavalry Regiment kept watch on the coast in case the enemy should attempt a landing from Euboea Island.

While the occupation of the Thermopylae line was being completed, 5 Field Ambulance established an MDS about 2 miles west of Kamena Voula. Casualties during the retreat were being sent back to 2/3 Australian CCS, situated south of Levadhia. Ambulances carrying the wounded had to take the longer route through Molos, for the more direct route through Lamia and the Brallos Pass was under constant air attack. On 19 April the MDS moved into a wing of a Greek hospital at Kamena Voula. It was a modern spa comprising a hotel and a bath-house with hot mineral baths. The unit had lost only two 30-cwt and one 12-cwt trucks and one ambulance car during the retreat.



Thermopylae Line, Greece: Medical Units and Lines of Evacuation

Thermopylae Line, Greece: Medical Units and Lines of Evacuation

The hospital was well equipped with beds, linen, and medical stores and equipment and an excellent operating theatre was set up with equipment from the Greek hospital. Air raids on the convoys, reaching a peak on 19 April, gave 5 Field Ambulance a heavy day attending to the wounded. From 4 ADS, established about 3 miles up the road, wounded came back in a steady stream and admissions for the day totalled 83. The conditions and the attachment of the surgical team under Major Christie allowed the satisfactory performance of major surgery; and the opportunity was readily made use of, numbers of serious cases being dealt with during the short period the MDS remained in the Greek hospital. Abdomen and head cases fit to travel were sent on to Athens. As far as major war surgery in field ambulances was concerned, this was the only active period in Greece.

Lieutenant-Colonel Twhigg, however, formed the opinion that the performance of major surgery at the field ambulance was inadvisable, as the serious patients could not be held the necessary time, and, if any number of patients were held, it would overload the unit transport in further withdrawals. Casualties were evacuated by the coastal road 65 miles through Livanatais and Atalandi to Levadhia, where 2/3 Australian CCS was working. On orders from Divisional Headquarters, which saw a danger of shelling from Euboea Island, the MDS was transferred on the 21st from the hospital building to sandbagged Italian

tents which it set up in a riverbed nearby. Bombing casualties were admitted steadily, and on the 23rd forty cases had to be evacuated direct to 26 British General Hospital, Athens, as 2/3 Australian CCS had closed. The Greek nursing staff, who had been most helpful, and the civilian patients had been evacuated by military transport the day before. The medical stores left behind by the Greek hospital were distributed by 5 Field Ambulance to nearby field ambulances and RAPs.

While the Anzac Corps waited for the enemy attack, the Greeks on the other side of the Pindus Mountains in Epirus capitulated on 21 April. This meant that the Allied line at Thermopylae could be outflanked. Ultimate evacuation had, however, been a probability for some days. After consultations with the Greek government the decision to evacuate Greece had been made on 19 April, although it was not conveyed to the troops in the line until the 22nd. During the second week in April the Navy had held shipping in readiness, and Rear-Admiral H. T. Baillie-Grohman was sent to Athens with a small staff to make preliminary arrangements, and found Piraeus so damaged that it was useless for the evacuation of large numbers of troops.

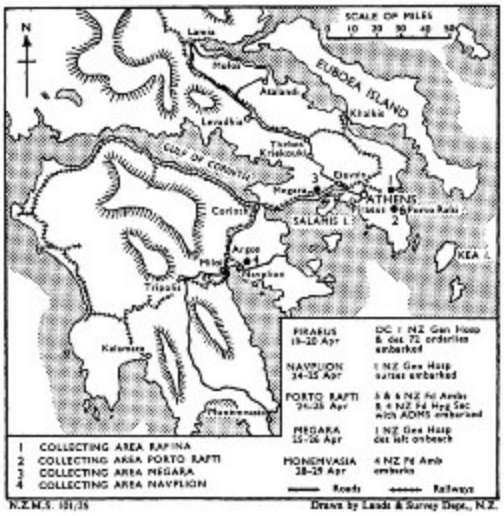
NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION OF GREECE

Evacuation of Greece

The task of evacuation had its undoubted elements of difficulty and danger. By an outflanking movement the enemy could cut off the withdrawal of the Anzacs, and his powerful air force was ready to harass the retreating force, try to destroy the ships upon which they would embark, and smash at possible points of embarkation.

On 22 April 6 Brigade took over from 5 Brigade in the Thermopylae line; 4 ADS was placed under its command and for the first time displayed the Red Cross. Fifth Field Ambulance came under command of 5 Brigade and made ready to retire with that group to beaches east and west of Athens. Sixth Field Ambulance and 4 Field Hygiene Section also came under command of 5 Brigade for the withdrawal.



The Evacuation of Medical Units from Greece

The Evacuation of Medical Units from Greece

The 2/3 Australian CCS at Levadhia having closed, some forty patients at 5 MDS were evacuated by car direct to 26 General Hospital at Kifisia, Athens.

While 6 Brigade, supported by all the divisional artillery, held the Thermopylae line, 5 Brigade moved towards embarkation points, from which the first 5000 New Zealanders were evacuated by the Royal Navy on the night of 24–25 April and later taken to Crete. That same dark, moonless night covered the move of 6 Brigade from Thermopylae, and on 4 Brigade fell the task of holding up the enemy's advance during the evacuation.

In its withdrawal from the Thermopylae line 5 Brigade, with 5 and 6 Field Ambulances and 4 Field Hygiene Section under its command, reached Athens on 24 April after a hectic night journey over congested roads, and then dispersed for the day under olive groves near the beaches of Porto Rafti, Rafina, and Marathon. Following the general Corps order of 22 April, 6 Field Ambulance destroyed all its equipment, except surgical haversacks and medical companions and any loose instruments which could be carried in battle-dress pockets. The 4th Field Hygiene Section also destroyed its trucks, disinfestor, and other equipment. A small quantity of light medical equipment was retained by 5 Field Ambulance, which dumped but did not destroy the balance, and despatched its ambulance cars to 26 General Hospital with the balance of the medical equipment and supplies, all of which were gratefully received by the hospital. Personal equipment had to be abandoned ruthlessly. Men were limited to a greatcoat and a pack with one blanket. Officers were allowed an extra valise or small case.

On the night of 24–25 April, 5 Field Ambulance moved 20 miles to the beach at Porto Rafti and embarked on the special troop-carrier *Glengyle* with the main body of 6 Field Ambulance, all transport being destroyed. The remainder of the latter unit went with the commanding officer aboard the destroyer HMS *Calcutta*, which with another destroyer, HMAS *Perth*, formed the naval escort. Members of 4 Field Hygiene Section and Colonel Kenrick and his staff were also included in the *Calcutta's* complement. By 3 a.m. as many troops as possible had been embarked, and the convoy put out to sea. Later, the convoy was joined by ships from beaches farther south. Among them was HMAS

Voyager with the nursing sisters from 1 General Hospital on board. The convoy was attacked by enemy aircraft during the day but was not damaged, and that afternoon the ships arrived at Suda Bay, Crete.

After destroying non-medical equipment and jettisoning much medical equipment to provide room in the transport for wounded, 4 Field Ambulance (less B Company) withdrew on 22 April with 4 Brigade to positions 15 miles south of Thebes, where, in company with a mixed force of Australians and field artillery, defensive lines were established to cover the passes between Boeotia and Attica. Massed convoys moving on the roads made this journey of 80-odd miles most difficult, but by 6 a.m. on 23 April the unit got under cover alongside 2/1 Australian Field Ambulance. As this latter unit had already opened up, 4 Field Ambulance remained closed and awaited further orders. Complete concealment from air activity was enforced, not so much to avoid casualties as not to give away the considerable troop concentrations in the area. At 6 a.m. on 25 April B Company rejoined the unit, having withdrawn with 6 Brigade to which it had been attached since the 22nd. One officer and 16 men of B Company, who retired with the rearguard of 6 Brigade and safely reported to Headquarters 4 Field Ambulance, overran in the night the area occupied by their own company south of Thebes and were eventually taken prisoner.

Orders from HQ NZ Division instructed 4 Field Ambulance to withdraw with 6 Brigade, while 2/1 Australian Field Ambulance was to remain to serve 4 Brigade. Fourth Field Ambulance supplemented the stretcher-bearers of 4 Brigade with an NCO and 16 men. On the afternoon of Anzac Day 4 Field Ambulance prepared to withdraw, this time south of the Corinth Canal, west of Athens. The move began at 7 p.m. and the unit crossed the canal at three o'clock next morning, passed through the bombed and burning town of Corinth, and reached a dispersal area off the main road in an irrigation area at 6.30 a.m. That morning the troops received much attention from the Luftwaffe, which combed the area, flying low over the rows of trees where the men were resting and systematically machine-gunning under them. The reason

became evident later—it was a blitz designed to keep our men grounded while the Germans dropped their parachutists by the hundred and took possession of the Corinth Canal.

As two companies of 25 Battalion were in action in the Corinth area, an ambulance car was attached to the battalion RAP. While evacuating casualties the ambulance car was machine-gunned by enemy aircraft and the driver and orderly, two brothers named Adderson, were both killed. [1]

Headquarters 6 Infantry Brigade requested that a light ADS be sited at the foot of the pass leading over the ranges to Tripolis and a company was sent to the site selected for that purpose. At 9 p.m. on 26 April the rest of the unit withdrew over the pass, a distance

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[1] Dvr A. A. Adderson; born England, 22 Feb 1913; porter; died of wounds 27 Apr 1941. Pte C. A. Adderson; born England, 5 Sep 1915; ambulance driver; killed in action 26 Apr 1941.

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of 25 miles, and sought cover in a forest reserve about 3 miles south-east of Tripolis. The area had been previously reconnoitred by two officers in a hazardous daylight trip.

At first light on 27 April the MDS was opened in a Greek church alongside the forest reserve, and the wounded from various units, who were by now concentrating in considerable numbers, were accommodated. A Greek hospital in Tripolis transferred to the MDS a number of wounded, retaining only a few cases who were in a critical condition. In turn, the most serious cases at the MDS were evacuated to this hospital, whose medical staff was to forgo the chance of evacuation from Greece in order to remain with the wounded. The last stage of the withdrawal, covering 90 miles through Sparta to a beach in the vicinity of Monemvasia in the far south-east of Greece, was effected during the night, the only remaining three 3-ton trucks and three ambulance cars carrying 37 wounded as well as the staff as comfortably as was possible.

All day long on 28 April vehicles and men lay up under every form of available cover, in areas a few miles from the embarkation beaches, hiding from patrolling enemy planes.

At 8.30 p.m. the vehicles were used to convey the New Zealanders to the immediate vicinity of the actual beach from which embarkation was to be made and the trucks and cars were then destroyed. During these last few days more and more medical equipment had been dumped, but no wilful destruction was permitted. At the last moment, medical personnel who were being evacuated took over individual custody of surgical instruments and other small items of medical equipment. (When the unit was remustered in Egypt this equipment was recovered.)

In the words of Major Speight:

At dusk on the evening of the 28th the vehicles began to collect from the olive groves where they had been lying up during the day and made their way down to the embarkation beach. The 4 Fd Amb had 37 patients in their ambulance cars, 16 of them being stretcher cases.... About midnight a landing craft was loaded with stretcher cases and moved off into the darkness of the bay, while those left on shore awaited her return with some anxiety. At last she pulled in again but to our consternation all the wounded were still aboard her. It appeared that the destroyer to which she had gone was unable to load stretcher cases as she had no suitable gear for the purpose. An appeal to the officer in charge of the embarkation brought the reply that the *Ajax* would be coming in at 0130 hours and the wounded would be able to go on her. An anxious hour followed. The troops were being rapidly embarked into other available ships and one wondered whether daylight would find a forlorn group of wounded and their attendants still sitting on the beach. However, shortly after 0130 a larger dark shape than any that had preceded it slid into the bay. It was the *Ajax*. In a remarkably short time all the wounded were embarked and accommodated in the captain's day cabin, each with a large mug of steaming cocoa in his hand. Shortly afterwards the ship set off at high speed for Suda Bay.

At Suda Bay the casualties with the ambulance detachment in charge were transferred to SS *Comely Bank* [*Comliebank*], where one hold was allotted to the wounded. That afternoon the *Comely Bank* sailed in convoy for Port Said. During the voyage wounds were re-dressed and splints adjusted. There was an RAMC officer aboard the *Comely Bank*, and the ship had been provisioned with an ample supply of blankets and medical comforts which were of great assistance in caring for the casualties.

The successful embarkation of all troops of 6 Brigade was completed by 4 a.m. on 29 April, and the vessels, including HMS *Ajax*, using all possible speed, arrived at Suda Bay by 6.45 a.m. A re-transfer to other ships was immediately effected and 4 Field Ambulance boarded the *Thurland Castle*, which was crammed with about 3000 troops. A convoy comprising similar ships left Suda Bay by midday under the escort of a dozen mixed naval vessels. During the day enemy aircraft made several attempts to interfere with the convoy and, between the Dodecanese group of islands and Crete, an E-boat made an abortive hit-and-run attack.

At 6 a.m. on 30 April the group of ships had increased to twenty-seven, the naval escort including the aircraft-carrier *Formidable* and two battleships, the *Warspite* and the *Barham*. This day passed without further serious interference by enemy forces, and at dusk the *Thurland Castle* set its course for Port Said while the rest of the convoy went to Alexandria.

Another embarkation in the Peloponnese planned for the night of 28–29 April at Kalamata was unfortunately unable to be carried out and about 7000 men (including Major Thomson [1]) were left there. Many of them made good their escape in little boats, as also did many who worked their way on foot through enemy-occupied territory to the coast.

While 5 Brigade moved to beaches near Porto Rafti, Rafina, and Marathon, east of Athens, and embarked, and 6 Brigade moved across the Corinth Canal to the Peloponnese, 4 Brigade remained in its

rearguard defensive positions at Kriekouki, south of Thebes. It was attacked by enemy forces on the morning of 26 April and during the day learned that German paratroops had landed at the Corinth Canal, across which the brigade had planned to withdraw.

The Royal Navy was able to arrange to take off all the brigade group from Porto Rafti beach on the night of 27–28 April. These troops, too, went to Crete, with 2/1 Australian Field Ambulance and the NCO and 16 stretcher-bearers from 4 Field Ambulance accompanying them.

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[1] Maj G. H. Thomson, OBE, ED; New Plymouth; born Dunedin, 5 Mar 1892; obstetrician; 1 NZEF 1914–16: Gnr 4 How Bty, Egypt and Gallipoli; RMO 4 Fd Regt Sep 1939–Apr 1941; p.w. 28 Apr 1941; repatriated Oct 1943.

The RMO of 18 Battalion, Captain Dempsey, [1] records that he went by night through Athens to Porto Rafti, made his RAP truck unserviceable, and made for the coast with a medical and surgical pannier as his only equipment. Numerous casualties were sustained at that time from aerial attacks and there were civilian casualties to treat as well. At one stage a group took cover in a wheatfield during an air attack, and the wheat caught fire and the battalion ammunition truck and four other trucks were set alight. When they were evacuated that night by destroyer, the wounded received excellent attention from the ship's surgeons.

When 1 General Hospital arrived in Athens on 16 April, the DDMS BTG (Brigadier Large) gave instructions to Colonel McKillop, CO 1 General Hospital, to detail staff to 26 General Hospital and to set up a convalescent camp hospital at Voula, where New Zealand base troops were camped. This was done and 51 orderlies went to 26 General Hospital, and 4 officers and 50 orderlies, under Captain Slater, [2] rapidly organised at Voula an efficient unit which had 450 convalescent patients, both minor sick and slightly wounded, under its charge two days later. A small holding hospital of fifty beds was also formed on 20

April for surgical cases awaiting evacuation from Greece. On the 19th Brigadier Large gave further orders for the nursing orderlies to be retained for duty at 26 General Hospital and for the staff of the convalescent hospital to remain. All other male personnel, except two officers, who were to go with the sisters on a hospital ship expected to leave that day, were to embark at Piraeus at 3 p.m. This was three days before the field ambulances definitely knew of the evacuation. It had been suggested by the medical administration that some of the nurses remain to assist 26 British General Hospital, but General Blamey insisted that all nurses be evacuated from the country. The hospital staff was on board the *Rawnsley* by 3.30 p.m. with other British Army personnel. The ship was delayed in leaving by the pilot and missed its convoy. It remained in the outer harbour overnight and next morning was machine-gunned from the air and departed for Egypt after five casualties, excluding two dead, had been evacuated to the hospital ship *Aba* nearby. The ship eventually picked up a large convoy south of Crete and went with it to Alexandria. In the convoy were elements of the Greek Navy.

The nursing sisters, unfortunately, did not board the hospital ship, which took its load of wounded out of the port of Piraeus earlier than scheduled because of heavy air attacks. Along with British and

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[1] Lt-Col J. Dempsey, m.i.d.; New Plymouth; born Wellington, 3 Oct 1912; medical practitioner; RMO 18 Bn 1940–42; 5 Fd Amb 1942; 2 CCS Aug–Oct 1943.

[2] Capt A. N. Slater; Wellington; born Dunedin, 13 Nov 1900; medical practitioner; medical officer 4 Fd Amb Oct 1939–Jan 1941; 1 Gen Hosp Jan–Apr 1941; p.w. Apr 1941; repatriated Jun 1944.

Australian sisters, they were later sent by road through Corinth to Argos and embarked from Navplion on HMAS *Voyager*. A truck carrying nineteen of the New Zealand sisters overturned during the journey and

several were slightly injured. The sisters had to lie up twice during attacks by enemy aircraft, and finally remained under cover in a little walled cemetery at Argos before embarkation. Their conduct during the trying ordeal earned the admiration of all.

Nearly all the officers and orderlies attached to the Convalescent Camp at Voula were captured following a series of misfortunes. On the 22nd they moved at very short notice with their patients to Megara. Here they had to wait for embarkation for four days. During this time they were subjected to frequent strafing from the air, and this made the patients highly nervous and hysterical and difficult to control. Difficulties arose during the embarkation, and finally an Australian brigadier with his brigade arrived on the beach and was allotted the space on the ship that the Convalescent Camp group had hoped to occupy. Most of the patients and staff, some 400, were left behind. The greater part of their transport had been destroyed according to orders, and their predicament was serious when they learnt there were to be no more evacuations from Megara. Attempts to reach the southern beaches via Corinth were blocked by the paratroop landing there, and a further effort to reach 4 Brigade through Athens resulted in capture by paratroops who had blocked that road also.

There would appear to have been some misunderstanding in the original planning of the evacuation of the camp. The difficult problem of handling the convalescents was dealt with by Captain Slater and his staff most competently, the safety of their charges being the prime consideration. After capture Slater and his staff were able to set up a hospital at Corinth to attend to the many wounded resulting from the airborne attack on the 26th.

Of the fifty-one orderlies of 1 General Hospital who were at 26 General Hospital, only twenty-one got away from Greece. In the early morning of the 22nd all were ready to leave after orders had been received by them, but the CO of the hospital directed that thirty were to stay. The party of twenty-one under Staff-Sergeant Ashworth [1] went by train from Athens to within a short distance of Corinth Canal, which

they crossed next morning, and were picked up on the main road by trucks going to Argos and embarked for Crete on the *Glencarn*.

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[1] **S-Sgt G. Ashworth; Palmerston North; born England, 10 Jan 1907; male nurse; ward-master 1 Gen Hosp Feb 1940–May 1941; p.w. Crete, 1 Jun 1941; repatriated Oct 1943.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL REVIEW OF CAMPAIGN

MEDICAL REVIEW OF CAMPAIGN

Throughout the campaign in Greece the work performed by all members of the medical units was of a very high standard, and special reference must be made to the work of the ambulance drivers and stretcher-bearers under the unusually difficult conditions. This was the first test of the units of the New Zealand Medical Corps in action, and its personnel had to adapt themselves rapidly to unaccustomed surroundings and weather conditions and to the constant movement from place to place. After three weeks' stay at one place— Katerini— where no wounded were received, the rest of the field work was interrupted by a series of withdrawals.

The establishment of the ADSs and MDSs of the field ambulances at their original sites was fraught with considerable difficulty, as at that time the general opinion held was that the Geneva Red Cross could not be relied upon for protection.

Work of the RAPs

The RMOs had to set up their RAPs sometimes in very hilly country and, by their ingenuity in the use of camouflage, protect them from the uncontested attacks of the German air arm. The wounded had to be brought in to the RAPs, sometimes from almost precipitous country and at times by long carries. Special light Neil Robertson stretchers were used with success in the steep country.

The evacuation to the ADS had often to be carried out by stretcher-bearers, but where possible ambulances and trucks were used, the small supply of Flint stretcher gear being very useful. The collection and evacuation of casualties by the regimental medical personnel was most

conscientiously and efficiently carried out.

Work of the Field Ambulances

In the quiescent period before fighting began a certain amount of surgery, including appendicectomy, was performed in the MDSs of the field ambulances. Minor cases of sickness were also held in the field ambulances for some days until they had recovered and were then discharged to their units. A surgical team from 1 General Hospital, consisting of a surgeon and an anaesthetist and equipped with some extra surgical instruments, was attached to 6 Field Ambulance to enable major surgery to be carried out in the divisional area should circumstances make this necessary. (This surgical team performed a considerable amount of major surgery in Greece and Crete and furnished a most valuable report on its experiences, with recommendations which were of great value to our medical services later in the war.)

When hostilities threatened, orders were given to the field ambulances by Colonel Kenrick not to carry out any but the most urgent surgery of the civilian type. During the campaign 4 Field Ambulance treated 350 wounded, 5 Field Ambulance 534, and 6 Field Ambulance 87.

Treatment of the Wounded

Treatment carried out by the RMOs consisted in the application of field dressings and the preliminary splintage of the limb as required. Injections of ATS in doses of 3000 units were given, and of morphine up to half a grain.

Wound treatment in the field ambulances varied according to the circumstances at the time. At the beginning of hostilities a certain amount of surgery was carried out at the MDS, especially that to which the surgical team was attached. When the withdrawal began the medical units were leapfrogged back as the combatant troops passed by them. Little but the most urgent treatment was attempted and the cases were

evacuated for definitive surgery to 2/3 Australian CCS at Elasson and later, when that unit went back south of Lamia on 14 April, to 24 CCS near Larisa. This unit, with the section of 189 Field Ambulance, remained active until all casualties had been dealt with and the army—with the exception of a rear party—had retired behind them. When 24 CCS also retired south of Lamia on 18 April, treatment was carried out either in the vehicles of the ambulances as they withdrew or at car posts temporarily set up at intervals along the lines of evacuation. It was not until stability was reached behind the Thermopylae line that an operating centre was set up by 5 Field Ambulance at Kamena Voula in a Greek hospital, and a little major surgery—including an operation for a perforating abdominal wound—was able to be carried out.

The principles of treatment adopted were the excision of the wound, the prevention of bleeding, and the provision of drainage. Dressings consisted of the field dressing, and vaseline gauze had also been supplied both to the hospitals and the field ambulances. Acriflavine was used as a local antiseptic, and in some cases sulphonamide was administered by mouth to the seriously wounded men. Thomas splints, with metal traction clips fixed to the heel of the boot, were used for fractures of the lower limbs. Kramer wire and plaster-of-paris were also used for fracture cases, mainly at the CCS. The wounded admitted to 1 NZ General Hospital at the beginning of hostilities, who had been operated on either at the field ambulances or at the CCS, were found to be in excellent condition, and did not require redressing before being sent on by ambulance train to 26 General Hospital in Athens.

The experience in the treatment of war wounds was a new one to the staffs of the ambulances, and the New Zealand medical services were strengthened by having a surgeon of considerable general and orthopaedic experience attached to a field ambulance as a member of the surgical team. The quality of the work varied very much, as was only natural, since much of the urgent and imperative surgical treatment of wounds was carried out by young medical officers with no previous experience of the treatment of war wounds, but under the circumstances

the work was well and most conscientiously done.

Special blood-transfusion panniers had been procured in Egypt for each of the field ambulances, but the rapidity of the withdrawal, and the consequent lack of stability in medical units, made it impossible to use blood transfusions for the wounded men, and dry plasma only was available, in small quantities, in one of the field ambulances. Fifth Field Ambulance was supplied with six bottles of plasma prior to the action in Greece and also picked up a considerable stock of plasma and glucose saline from the site of 1 NZ General Hospital during the withdrawal. Blood-transfusion facilities were available, but not used, at our general hospital at Pharsala. Intravenous fluid was given occasionally and a few Baxter Vacolites were available at the MDSs of the field ambulances. Morphia was used freely and doses of ½ gr. were given to seriously wounded men. Some of the medical officers in the ADSs were in the habit of administering pentothal to very severely wounded men in addition to ½ gr. doses of morphia. A solution of 5 cc. was made up and 2 cc. injected into the vein and 3 cc. into the buttock. The patient then usually slept right through to the MDS and thereby had a better chance of recovery.

Gas gangrene was comparatively rare. There were several cases of gas in the tissues, generally associated with localised gangrene of muscle or muscle groups, which responded well to free excision of the involved muscle. Serum was administered.

Evacuation by Road

The road evacuation was by means of the main axial road of Greece from Larisa through Pharsala to Lamia, then by the coastal road to Molos and Atalandi, and back again to the main road at Levadhia and then to Thebes and Athens. The roads in the mountain areas were narrow and in wet weather the surface became muddy and slippery. The main road generally was not very wide and ambulance cars returning for unit personnel, or for wounded and sick still in forward positions, found it difficult to proceed against the stream, of traffic during the

withdrawal. The bombing of the roads was an additional hazard, but the force was lucky in not having any bridges of importance destroyed ahead of it on the main roads.

The road evacuation was undertaken by the Australian MAC, which serviced the whole of the forward medical units, British, Australian, and New Zealand, and carried out their work in such a way as to win unstinted praise from the New Zealand Medical Corps. On 16 April Colonel Kenrick had arranged with DDMS Anzac Corps for six MAC cars to be attached to each field ambulance during the withdrawal, so that each medical unit had cars at its disposal for evacuation of cases to the CCSs and 1 NZ General Hospital, and also to help in the evacuation of the medical units and the many casualties, nursed and transported by all the units, during the withdrawal.

Special car posts were set up, not only to act as relaying posts between the different medical units, but also as collecting posts for the wounded and to act as extra ADSs. As a rule they were staffed by a medical officer and orderlies. The successful evacuation of medical units and casualties was due to the way the medical transport was used, and to the ability of the officers of the Medical Corps to improvise and to commandeer, and to handle the difficult problem of collecting the wounded, scattered as they were over the whole line of evacuation.

Trucks were used to a great extent to transport wounded, and Flint stretcher apparatus was used as much as possible, but the supply was very limited. The smaller 15-cwt and 30-cwt trucks were found to be not nearly as suitable as the three-tonner. The wheel base of the 30-cwt truck was not long enough, and the three-tonner could not only carry many more patients and personnel but it could also carry much more petrol—a matter of great importance.

It was stressed by 4 Field Ambulance that all trucks should be self-contained, and that all drivers should have full information as to their destination. The field ambulances were not themselves self-sufficient as regards transport. This was partly due to an excess in equipment, as

each unit had made efforts to supplement the regular army equipment with extras designed to enable more efficient surgery to be carried out. In the forward areas 15-cwt trucks were used by the RMOs, both for transport and also as RAPs.

Train Evacuation

When W Force first arrived in Greece the main railway was used extensively to transport troops to the forward areas, and a good service was arranged to Katerini. Much heavy equipment was moved in this way, including the bulky and heavy equipment of 1 NZ General Hospital. As soon as the ADMS NZ Division was stationed in Katerini, he arranged for Greek ambulance coaches to proceed daily from Katerini to evacuate cases from the field ambulances to 26 General Hospital at Athens.

When the CCSs were open at Elasson and Larisa patients were sent to them by ambulance car, and a regular evacuation by hospital train was carried out both to 1 NZ General Hospital and also to 26 General Hospital in Athens. The serious cases were, fortunately, sent direct to Athens. The train evacuation broke down soon after the fighting began. The first contact of our troops with the Germans was on 10 April. On the 17th Colonel Kenrick applied for a train from Larisa to take wounded back to Athens, but the RTO had left two days previously. On the 16th all troops had left the Larisa area except a rearguard, but 24 CCS and 189 Field Ambulance were still functioning. The daily ambulance train still continued to serve them, being worked by medical personnel and driven by anyone whom the medical officer in charge of the train could find capable of driving the engine. It seems that 16 April was the last day on which an ambulance train ran, as it is stated that on the 17th an ambulance train could not get to Brallos. It is probable that the train that left Demerli on 15 April was the last to travel with any Greek personnel, or be serviced by any Greek railwaymen. The RTO had left Larisa on the 15th and all army train organisation then ceased. The hospital train that had been promised for 1 NZ General Hospital from Lamia on the 15th at midday never arrived, possibly being a different

train from that servicing 24 CCS at Larisa. The disorganisation of the Greek railway administration and personnel unfortunately almost completely removed the railway from the scheme of operations as far as the withdrawal was concerned.

In retrospect, it would appear that 1 NZ General Hospital was extremely lucky to have been able to evacuate its patients and staff by the last possible train to Athens. Great credit is due to Lieutenant-Colonel Boyd, the officer in charge of the detachment, for his energy and persistence in combating the strong opposition of the Greek railway officials and for his success in attaching the extra trucks with his personnel and patients to the already loaded train.

Evacuation During the Retreat

Patients were transported in the ambulances and trucks of the medical units during the retreat and were sent on to Athens as opportunity offered, for example, when temporary stability occurred behind the Thermopylae line. Urgent treatment was carried out at car posts or in the ambulances on the way.

Hospital trains were used to evacuate from the Thermopylae line until the 20th, although before that date the railway line had been damaged. As far as New Zealand units were concerned, all casualties were evacuated by ambulance car from the MDS either to 2/3 Australian CCS at Levadhia or direct to Athens.

Food

Hard rations were issued for the move over to Greece and also for the forward areas. Fresh food and vegetables were made available on 1 April when conditions were more settled in the forward areas, but again, during the retreat, hard rations, consisting of M & V [1] and hard biscuits, were the staple diet.

Health of Troops

Except for a slight incidence of mild influenzal colds the health of the troops was excellent, in spite of the cold and wet weather experienced in the forward areas.

Broken dental plates, caused by the hard biscuits, gave rise to some difficulty. The Mobile Dental Unit, which was to have been attached to the Division, was late in reaching Greece, and was stopped on its way to the Division by ADMS 81 Base Sub-Area because of the general situation and was attached to 1 NZ General Hospital. A sackful of broken dental plates was left on Mount Olympus—a pathetic relic of the New Zealand Division and a strange offering to the gods.

Supplies

There was a depot of medical stores at Athens, near 26 General Hospital at Kifisia. No depot was established in 81 Base Sub-Area at Larisa and field ambulances indented for medical supplies from 1 NZ General Hospital before hostilities began. There is, however, no reference to any deficiency in supplies in any of the medical units in Greece. Some medical supplies and equipment were obtained from a tuberculosis sanatorium on the northern slopes of Mount Olympus, where 150 patients, abandoned by the Greek staff, were evacuated by a divisional unit and sent on by train to Athens.

Equipment

All of the New Zealand field ambulances were very well equipped, having not only the full army equipment but also supplementary articles acquired to enable the units to carry out surgical work more efficiently. When the evacuation of Greece was decided upon, orders were given to units to destroy all equipment and supplies in excess of the minimal quantity that they were able to carry individually on to the ships. The Anzac Corps' operation order No. 2 of 22 April gave the order of withdrawal, and included general instructions for the destruction of equipment other than that which could be carried by the men. The absence of any definite general or medical orders concerning medical

equipment led, unfortunately, to misunderstandings both with relation to regimental medical officers and field ambulance units. Fortunately, every effort was made to transport as much as possible, and surgical instruments were especially preserved, the personnel of the units assisting in taking care of much valuable equipment. The order to destroy equipment that had to be left behind was received with great regret by the units concerned and was not fully carried out in any unit. In one case, equipment was placed in a store, with a Red Cross flag on the door and a note of thanks to the German airmen for respecting the Geneva Convention. In another instance one of the field ambulances at the final port of embarkation dumped, but did not destroy, the equipment. One field ambulance also arranged to transfer its ambulance cars to 26 General Hospital instead of destroying them, and these cars were of very great service later in evacuating patients and personnel, including nurses, from the hospital.

The order for the destruction of equipment was intended to refer to the equipment of combatant units, as under the Geneva Convention medical equipment and stores should not be destroyed; it is interesting to note that the natural reaction of the New Zealand medical officers prompted them to act in the correct manner, and only with deep regret was any destruction of equipment ever carried out.

This illustrates the importance of a full knowledge of the Geneva Convention by all personnel, combatant and medical. Some combatant officers without that knowledge tended to insist on the medical officers under their command destroying their medical equipment, and the medical officers were not quite sure at times of the exact position or of their power to resist orders from combatants when the Geneva Convention was in question.

The subsequent story of the events in Greece and Crete demonstrated clearly the wisdom of the Geneva Convention in insisting on the preservation of medical equipment and supplies, as it was to the benefit of our own sick and wounded captured in Greece and Crete that

supplies should have been available for their treatment. The senior medical officers made valuable comments on the essential equipment and supplies for such a campaign.

Personnel

The personnel, both officers and other ranks, had been tested under difficult battle conditions and had not been found wanting. Already they were displaying the resource and initiative that was to be a characteristic of the forward New Zealand medical units throughout the war. The territorial training in peacetime, however slight in some cases it might have been, had proved of value, and the training in the Army itself had been efficient and practical.

The senior officers had handled the strange conditions with skill. The ADSs had been placed under brigade command, thus ensuring close contact with battalions during the rapid movement of the troops during the withdrawal. Extra car posts had been placed along the lines of evacuation, each with a medical officer in charge, and these attended to casualties and collected wounded.

The MDSs had been handled well during the long retreat and attention given to the troops wounded by bombing and machine-gunning from the air.

The detailing of personnel from 1 NZ General Hospital to 26 General Hospital, Athens, for duty and probable capture in Greece as prisoners of war was a matter of some importance and anxiety, there being no authoritative ruling on the question available for the guidance of senior officers. The matter will be further discussed in relation to the Crete campaign, in which it assumed more importance.

The Evacuation from Greece

The Divisional Medical Units: **The responsibility for the forward units rested with the Division and the units retreated with the troops**

and were evacuated to Crete as part of the main force and without any catastrophe. The whole retreat and the evacuation was excellently organised and executed in the face of great difficulties due to the powerful and efficient German air arm. The main body of all the medical units was safely evacuated to Crete, where 4 Field Ambulance was transhipped and taken to Egypt. They serviced their troops right down to the beaches and, except for loss of equipment, remained almost intact as units.

The Base Medical Units: **Owing to the fact that the New Zealand base units were under the command of Headquarters, Athens, and divorced from divisional command, difficulties of evacuation arose. Contact between the units and Headquarters was not close. The units involved were 1 NZ General Hospital, 2 NZ Mobile Dental Unit, and NZ Base Camp units in the Athens area.**

As regards 1 NZ General Hospital, the unit was an L of C unit under command of ADMS 81 Base Sub-Area at Larisa. Having no transport of its own, the unit luckily reached Athens by rail on 16 April and came under the direct command of HQ BTG, and by the very prompt action of Brigadier Large the main body of the unit was evacuated by ship to Egypt. The Mobile Dental Unit and the Base Camp medical units, however, were not so fortunate.

Evacuation from Greece of Sick and Wounded

Up to 19 April, 26 General Hospital cleared its patients satisfactorily by hospital ships from Athens. After that date walking patients were added to the base troops, and many were evacuated from the beaches. Only by the provision of more hospital ships could more of the serious casualties have been evacuated.

Visit of DDMS 2 NZEF to Greece

The DDMS, Colonel MacCormick, arrived in Greece by air on 5 April, a month after the arrival of the first New Zealand personnel. He had

come to discuss with the GOC the sending of more New Zealand medical units, including 3 NZ General Hospital and a convalescent depot, to Greece. It was also proposed to establish in Greece a convalescent home and rest home for nurses and a Red Cross depot, and to send over the Mobile Surgical Unit when ready. This proposal had the warm approval of DDMS BTG.

The critical position of the forces in Greece did not seem to have been realised, though by 9 April the New Zealand Division was withdrawing from the Aliakmon line and Salonika had fallen.

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[1] **Meat and vegetables, cooked and tinned.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

Throughout the campaign in Greece the work performed by all members of the medical units was of a very high standard, and special reference must be made to the work of the ambulance drivers and stretcher-bearers under the unusually difficult conditions. This was the first test of the units of the New Zealand Medical Corps in action, and its personnel had to adapt themselves rapidly to unaccustomed surroundings and weather conditions and to the constant movement from place to place. After three weeks' stay at one place— Katerini— where no wounded were received, the rest of the field work was interrupted by a series of withdrawals.

The establishment of the ADSs and MDSs of the field ambulances at their original sites was fraught with considerable difficulty, as at that time the general opinion held was that the Geneva Red Cross could not be relied upon for protection.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK OF THE RAPS

Work of the RAPs

The RMOs had to set up their RAPs sometimes in very hilly country and, by their ingenuity in the use of camouflage, protect them from the uncontested attacks of the German air arm. The wounded had to be brought in to the RAPs, sometimes from almost precipitous country and at times by long carries. Special light Neil Robertson stretchers were used with success in the steep country.

The evacuation to the ADS had often to be carried out by stretcher-bearers, but where possible ambulances and trucks were used, the small supply of Flint stretcher gear being very useful. The collection and evacuation of casualties by the regimental medical personnel was most conscientiously and efficiently carried out.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK OF THE FIELD AMBULANCES

Work of the Field Ambulances

In the quiescent period before fighting began a certain amount of surgery, including appendicectomy, was performed in the MDSs of the field ambulances. Minor cases of sickness were also held in the field ambulances for some days until they had recovered and were then discharged to their units. A surgical team from 1 General Hospital, consisting of a surgeon and an anaesthetist and equipped with some extra surgical instruments, was attached to 6 Field Ambulance to enable major surgery to be carried out in the divisional area should circumstances make this necessary. (This surgical team performed a considerable amount of major surgery in Greece and Crete and furnished a most valuable report on its experiences, with recommendations which were of great value to our medical services later in the war.)

When hostilities threatened, orders were given to the field ambulances by Colonel Kenrick not to carry out any but the most urgent surgery of the civilian type. During the campaign 4 Field Ambulance treated 350 wounded, 5 Field Ambulance 534, and 6 Field Ambulance 87.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TREATMENT OF THE WOUNDED

Treatment of the Wounded

Treatment carried out by the RMOs consisted in the application of field dressings and the preliminary splintage of the limb as required. Injections of ATS in doses of 3000 units were given, and of morphine up to half a grain.

Wound treatment in the field ambulances varied according to the circumstances at the time. At the beginning of hostilities a certain amount of surgery was carried out at the MDS, especially that to which the surgical team was attached. When the withdrawal began the medical units were leapfrogged back as the combatant troops passed by them. Little but the most urgent treatment was attempted and the cases were evacuated for definitive surgery to 2/3 Australian CCS at Elasson and later, when that unit went back south of Lamia on 14 April, to 24 CCS near Larisa. This unit, with the section of 189 Field Ambulance, remained active until all casualties had been dealt with and the army—with the exception of a rear party—had retired behind them. When 24 CCS also retired south of Lamia on 18 April, treatment was carried out either in the vehicles of the ambulances as they withdrew or at car posts temporarily set up at intervals along the lines of evacuation. It was not until stability was reached behind the Thermopylae line that an operating centre was set up by 5 Field Ambulance at Kamena Voula in a Greek hospital, and a little major surgery—including an operation for a perforating abdominal wound—was able to be carried out.

The principles of treatment adopted were the excision of the wound, the prevention of bleeding, and the provision of drainage. Dressings consisted of the field dressing, and vaseline gauze had also been supplied both to the hospitals and the field ambulances. Acriflavine was used as a

local antiseptic, and in some cases sulphonamide was administered by mouth to the seriously wounded men. Thomas splints, with metal traction clips fixed to the heel of the boot, were used for fractures of the lower limbs. Kramer wire and plaster-of-paris were also used for fracture cases, mainly at the CCS. The wounded admitted to 1 NZ General Hospital at the beginning of hostilities, who had been operated on either at the field ambulances or at the CCS, were found to be in excellent condition, and did not require redressing before being sent on by ambulance train to 26 General Hospital in Athens.

The experience in the treatment of war wounds was a new one to the staffs of the ambulances, and the New Zealand medical services were strengthened by having a surgeon of considerable general and orthopaedic experience attached to a field ambulance as a member of the surgical team. The quality of the work varied very much, as was only natural, since much of the urgent and imperative surgical treatment of wounds was carried out by young medical officers with no previous experience of the treatment of war wounds, but under the circumstances the work was well and most conscientiously done.

Special blood-transfusion panniers had been procured in Egypt for each of the field ambulances, but the rapidity of the withdrawal, and the consequent lack of stability in medical units, made it impossible to use blood transfusions for the wounded men, and dry plasma only was available, in small quantities, in one of the field ambulances. Fifth Field Ambulance was supplied with six bottles of plasma prior to the action in Greece and also picked up a considerable stock of plasma and glucose saline from the site of 1 NZ General Hospital during the withdrawal. Blood-transfusion facilities were available, but not used, at our general hospital at Pharsala. Intravenous fluid was given occasionally and a few Baxter Vacolites were available at the MDSs of the field ambulances. Morphia was used freely and doses of ½ gr. were given to seriously wounded men. Some of the medical officers in the ADSs were in the habit of administering pentothal to very severely wounded men in addition to ½ gr. doses of morphia. A solution of 5 cc. was made up and

2 cc. injected into the vein and 3 cc. into the buttock. The patient then usually slept right through to the MDS and thereby had a better chance of recovery.

Gas gangrene was comparatively rare. There were several cases of gas in the tissues, generally associated with localised gangrene of muscle or muscle groups, which responded well to free excision of the involved muscle. Serum was administered.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION BY ROAD

Evacuation by Road

The road evacuation was by means of the main axial road of Greece from Larisa through Pharsala to Lamia, then by the coastal road to Molos and Atalandi, and back again to the main road at Levadhia and then to Thebes and Athens. The roads in the mountain areas were narrow and in wet weather the surface became muddy and slippery. The main road generally was not very wide and ambulance cars returning for unit personnel, or for wounded and sick still in forward positions, found it difficult to proceed against the stream, of traffic during the withdrawal. The bombing of the roads was an additional hazard, but the force was lucky in not having any bridges of importance destroyed ahead of it on the main roads.

The road evacuation was undertaken by the Australian MAC, which serviced the whole of the forward medical units, British, Australian, and New Zealand, and carried out their work in such a way as to win unstinted praise from the New Zealand Medical Corps. On 16 April Colonel Kenrick had arranged with DDMS Anzac Corps for six MAC cars to be attached to each field ambulance during the withdrawal, so that each medical unit had cars at its disposal for evacuation of cases to the CCSs and 1 NZ General Hospital, and also to help in the evacuation of the medical units and the many casualties, nursed and transported by all the units, during the withdrawal.

Special car posts were set up, not only to act as relaying posts between the different medical units, but also as collecting posts for the wounded and to act as extra ADSs. As a rule they were staffed by a medical officer and orderlies. The successful evacuation of medical units and casualties was due to the way the medical transport was used, and

to the ability of the officers of the Medical Corps to improvise and to commandeer, and to handle the difficult problem of collecting the wounded, scattered as they were over the whole line of evacuation.

Trucks were used to a great extent to transport wounded, and Flint stretcher apparatus was used as much as possible, but the supply was very limited. The smaller 15-cwt and 30-cwt trucks were found to be not nearly as suitable as the three-tonner. The wheel base of the 30-cwt truck was not long enough, and the three-tonner could not only carry many more patients and personnel but it could also carry much more petrol—a matter of great importance.

It was stressed by 4 Field Ambulance that all trucks should be self-contained, and that all drivers should have full information as to their destination. The field ambulances were not themselves self-sufficient as regards transport. This was partly due to an excess in equipment, as each unit had made efforts to supplement the regular army equipment with extras designed to enable more efficient surgery to be carried out. In the forward areas 15-cwt trucks were used by the RMOs, both for transport and also as RAPs.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TRAIN EVACUATION

Train Evacuation

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train from that servicing 24 CCS at Larisa. The disorganisation of the Greek railway administration and personnel unfortunately almost completely removed the railway from the scheme of operations as far as the withdrawal was concerned.

In retrospect, it would appear that 1 NZ General Hospital was extremely lucky to have been able to evacuate its patients and staff by the last possible train to Athens. Great credit is due to Lieutenant-Colonel Boyd, the officer in charge of the detachment, for his energy and persistence in combating the strong opposition of the Greek railway officials and for his success in attaching the extra trucks with his personnel and patients to the already loaded train.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION DURING THE RETREAT

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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Hard rations were issued for the move over to Greece and also for the forward areas. Fresh food and vegetables were made available on 1 April when conditions were more settled in the forward areas, but again, during the retreat, hard rations, consisting of M & V [1] and hard biscuits, were the staple diet.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF TROOPS

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Except for a slight incidence of mild influenzal colds the health of the troops was excellent, in spite of the cold and wet weather experienced in the forward areas.

Broken dental plates, caused by the hard biscuits, gave rise to some difficulty. The Mobile Dental Unit, which was to have been attached to the Division, was late in reaching Greece, and was stopped on its way to the Division by ADMS 81 Base Sub-Area because of the general situation and was attached to 1 NZ General Hospital. A sackful of broken dental plates was left on Mount Olympus—a pathetic relic of the New Zealand Division and a strange offering to the gods.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SUPPLIES

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There was a depot of medical stores at Athens, near 26 General Hospital at Kifisia. No depot was established in 81 Base Sub-Area at Larisa and field ambulances indented for medical supplies from 1 NZ General Hospital before hostilities began. There is, however, no reference to any deficiency in supplies in any of the medical units in Greece. Some medical supplies and equipment were obtained from a tuberculosis sanatorium on the northern slopes of Mount Olympus, where 150 patients, abandoned by the Greek staff, were evacuated by a divisional unit and sent on by train to Athens.

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All of the New Zealand field ambulances were very well equipped, having not only the full army equipment but also supplementary articles acquired to enable the units to carry out surgical work more efficiently. When the evacuation of Greece was decided upon, orders were given to units to destroy all equipment and supplies in excess of the minimal quantity that they were able to carry individually on to the ships. The Anzac Corps' operation order No. 2 of 22 April gave the order of withdrawal, and included general instructions for the destruction of equipment other than that which could be carried by the men. The absence of any definite general or medical orders concerning medical equipment led, unfortunately, to misunderstandings both with relation to regimental medical officers and field ambulance units. Fortunately, every effort was made to transport as much as possible, and surgical instruments were especially preserved, the personnel of the units assisting in taking care of much valuable equipment. The order to destroy equipment that had to be left behind was received with great regret by the units concerned and was not fully carried out in any unit. In one case, equipment was placed in a store, with a Red Cross flag on the door and a note of thanks to the German airmen for respecting the Geneva Convention. In another instance one of the field ambulances at the final port of embarkation dumped, but did not destroy, the equipment. One field ambulance also arranged to transfer its ambulance cars to 26 General Hospital instead of destroying them, and these cars were of very great service later in evacuating patients and personnel, including nurses, from the hospital.

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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The personnel, both officers and other ranks, had been tested under difficult battle conditions and had not been found wanting. Already they were displaying the resource and initiative that was to be a characteristic of the forward New Zealand medical units throughout the war. The territorial training in peacetime, however slight in some cases it might have been, had proved of value, and the training in the Army itself had been efficient and practical.

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE EVACUATION FROM GREECE

The Evacuation from Greece

The Divisional Medical Units: **The responsibility for the forward units rested with the Division and the units retreated with the troops and were evacuated to Crete as part of the main force and without any catastrophe. The whole retreat and the evacuation was excellently organised and executed in the face of great difficulties due to the powerful and efficient German air arm. The main body of all the medical units was safely evacuated to Crete, where 4 Field Ambulance was transhipped and taken to Egypt. They serviced their troops right down to the beaches and, except for loss of equipment, remained almost intact as units.**

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

VISIT OF DDMS 2 NZEF TO GREECE

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The DDMS, Colonel MacCormick, arrived in Greece by air on 5 April, a month after the arrival of the first New Zealand personnel. He had come to discuss with the GOC the sending of more New Zealand medical units, including 3 NZ General Hospital and a convalescent depot, to Greece. It was also proposed to establish in Greece a convalescent home and rest home for nurses and a Red Cross depot, and to send over the Mobile Surgical Unit when ready. This proposal had the warm approval of DDMS BTG.

The critical position of the forces in Greece did not seem to have been realised, though by 9 April the New Zealand Division was withdrawing from the Aliakmon line and Salonika had fallen.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

LESSONS LEARNED FROM THE GREEK CAMPAIGN

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The Greek campaign was the first active campaign in which the 2 NZEF took part. Fortunately, all three echelons had had fairly long periods of training overseas, and the medical units had sufficient experience to enable them to face the campaign with confidence in themselves and their Division. The Second Echelon had not only arrived in Egypt in time, but it had had rigorous training in England at the time when invasion was thought probable. The medical units were keen to do their best and proved very capable in adapting themselves to the difficult conditions, both of the terrain and the harassed retreat.

The observations made by senior officers stressed the difficulties of the campaign and the capacity of the New Zealand medical units to improvise and deal with unprecedented conditions, as well as their capacity to learn from their experience. Naturally, the main recommendations dealt with the necessity of being fully mobile, and, to ensure this, the provision of adequate transport for all field medical units; but there were other very important lessons learned by the Medical Corps from the campaign. They are dealt with separately.

1. Need for Advanced Medical Planning

It was felt by the ADMS NZ Division that he should have been instructed to go to Greece with the GOC on 6 March, so as to have extra time to make medical arrangements for the Division, especially as it was going to a new country, with no previous arrangements for foreign troops and with its own special medical problems of endemic disease. There was little time to gain knowledge and to make plans and to site the field units, especially as the divisional area was far removed from

Athens, where Medical Headquarters and all base units were stationed.

The DDMS 2 NZEF did not visit Greece until a month later and was out of touch with the conditions there. [1] The difficulties that arose in the siting and utilisation of 1 NZ General Hospital might have been obviated by his presence in Greece at the outset of the campaign.

Early Arrival of Medical Units: It was considered by the senior medical officers that a higher priority should be given in the future to the medical units, so that they would be available from the beginning to service the troops and have time to site and establish their dressing stations before active operations commenced. Representations to this effect were made on 7 March by DDMS 2 NZEF, but were not supported by DMS MEF on the ground that the medical units were unlikely to be urgently required.

Consultants: There were no consultants attached to the forces in Greece. It had been planned to have the Australian consultants, Colonels N. H. Fairley and Hailes, attached to headquarters at Athens, but they did not go to Greece. Their advice would have been valuable in the placing of the hospitals and the co-ordination of the clinical work of the medical units.

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[1] Colonel MacCormick states that transport was not available sooner for him.

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2. Undesirability of 600-Bed General Hospitals as L of C Units

In the opinion of senior officers in the New Zealand force, the placing of the highly organised and elaborately equipped base hospitals as L of C units 200 miles from Athens was undesirable. The New Zealand General Hospital was adequately staffed, and very well equipped, as a stationary base hospital, with a full quota of sisters and a special bacteriological laboratory. The only location where this hospital could service the New Zealand force as a base hospital was in the region of

Athens, where it would have been handy for the evacuation of cases by hospital ship.

It is likely that the decision to use the hospitals as L of C units was influenced by the difficulty of evacuation by a single-track and very vulnerable railway, and by the possible inability of the two CCSs to cope with the work in the forward areas.

The authorities were influenced, no doubt, in their decision to place the two 600-bed hospitals in 81 Base Sub-Area, by the fact that there were no other hospitals available, the smaller units of the old 200-bed type being no longer considered of value in the Army. There were also only two CCSs, so that no unit of that type was available on the L of C over and above what was required to carry out the urgent surgery. The 26th General Hospital was well established in Athens, and 2/5 Australian Hospital was to arrive later and would be available to supplement 26 General Hospital at the base.

It was therefore decided that 1 NZ General Hospital and 2/6 Australian General Hospital should be used as L of C hospitals, and, however unfortunate the decision may have been, especially for the New Zealand unit, perhaps it was inevitable. There was no CCS in 2 NZEF at the time available for use as a staging unit on the lines of communication.

It must be realised that the DDMS BTG had been in Greece only a short time and that the only advice available to him was that of an advance body, including a physician but no surgeon. As to the 2 NZEF, the ADMS NZ Division had no control over 1 NZ General Hospital, and the DMS 2 NZEF did not arrive in Greece until some time after the question of the disposition of the hospital had been settled. The siting of 1 NZ General Hospital in 81 Base Sub-Area made it impossible for 2 NZEF to handle its own casualties at the base, and relegated the hospital itself to the role of an L of C unit, its main function being the staging of cases not able to be sent direct from the CCS to Athens, and the retention of minor cases able to be discharged back to the Division. Only in case of

the interruption of communication by possible bombing or sabotage of the railway would the hospital have functioned as a base hospital, and then its own supply and communications would have been difficult. Realisation of this situation caused a great deal of discontent among members of the unit, to whom were not explained the reasons which determined the decision of the Higher Command.

The surgical divisional officer of 1 NZ General Hospital gave as his opinion, following the Greek campaign, that the 2 NZEF should have as medical units under such circumstances: (1) Field ambulances as then constituted; (2) a CCS, with extra teams from base hospitals, or with the Mobile Surgical Unit as a light section; and (3) a base hospital where medical boarding and reclassification could be carried out.

He further recommended that all surgical units situated away from the base should be small units, as mobile as possible, and should not be called upon to deal with large numbers of minor cases. Adequate transport should be provided and, if possible, units should be self-contained, either individually or in groups, as regards transport.

He suggested that the minor cases on the lines of communication should be dealt with by a much less elaborate medical unit, and that an advanced base camp was desirable where cases could be held following discharge. (At one time patients who would have very soon been fit for return to their combatant units were discharged from 1 General Hospital, Pharsala, to Base Camp, Athens.)

3. Mobility of Forward Medical Units

It was stressed by all the divisional medical officers, especially the field ambulance commanders, that the transport on their ordnance equipment was not sufficient to enable the unit to carry all its personnel and equipment, as well as to provide room for casualties to be evacuated during the retreat. The unit had often to be moved in relays by sending back unit transport, and with the congested condition of the roads, crammed with the retreating army, this was very difficult. Although the

position was greatly relieved by the detachment of ambulances to all the units by the Australian MAC, yet further transport was deemed to be essential for the future. No. 1 New Zealand General Hospital had no transport and, though a few trucks and ambulances were attached at Pharsala, the unit was in a helpless position at the time of the withdrawal, being entirely dependent on the unstable railway system. It was strongly held that all forward medical units should be self-contained as regards transport, and that no medical unit should be placed in the forward areas without it.

4. Rapid Establishment of Field Ambulances

Fortunately, all the field ambulances had had considerable practice in setting up and dismantling their units and this stood them in good stead in Greece. If proof of the desirability of their training had been required, it was quickly given in Greece. In this connection the tarpaulin shelters attached to the 30-cwt trucks, as designed by 4 Field Ambulance in Egypt, proved to be eminently suited to the conditions in Greece, being readily handled and particularly adaptable to blackout conditions.

5. Grouping of Medical Convoys

It was quite impossible to separate the medical from the other convoys on the crowded roads and the Red Cross markings on the ambulances were too small and indistinct. This meant that the medical units and their patients were subjected to the harassing and dangerous attention of the German air force, and it was found imperative to rely on darkness for protection. A great strain was thus thrown on the drivers, but they came through the ordeal satisfactorily. Large Red Crosses on tops of vehicles were found to be necessary for protection against air attack.

6. Wireless Communication between Medical Units

At times patients were sent off by ambulance from the MDS to a CCS

or other unit and it was found on arrival that the unit had moved back, with no indication as to the subsequent location. It was felt that wireless communication between units would have been of great assistance.

7. Unreliability of Civil Employees in Foreign Countries

There was a complete breakdown in the railway administration early in the retreat, and this might have led to very serious consequences. In future, this probable eventuality must be taken into account.

8. The Geneva Convention

At the outset of the campaign there was a very general opinion that the German Army would not respect the Red Cross if displayed by our medical units. It is difficult to trace the origin of this belief, but it undoubtedly existed and led to unnecessary difficulties in the forward medical units. Partly because of this, the forward ADSs and MDSs were placed in positions chosen for their obscurity and camouflage value and the possibility of sinking the tent floors below ground level. There were no large Red Crosses displayed on the roofs of ambulances. As a result medical units were subjected to bombing and machine-gunning from the air. As the short campaign proceeded it was learnt that the Germans did respect the Red Cross.

Fifth Field Ambulance stated that on 15 April the enemy appeared to recognise the Red Cross, and that the MDS was untouched, but the ADS —purposely not marked because of the proximity to combatant units— was bombed and machine-gunned. The hospital at Kamena Voula was not molested. This so impressed the commanding officer that he left a supply of medical equipment, with a note to the German airmen thanking them for respecting the Red Cross. Fourth Field Ambulance did not make use of the Red Cross, but dug in its dressing stations efficiently. Sixth Field Ambulance did not use the Red Cross until south of Thermopylae. No. 1 General Hospital did not display the Red Cross except on the unit flag. The unit was bombed and machine-gunned. No

protection was possible to such a unit except the Geneva Convention.

There can be no doubt that the Germans did respect the Red Cross if it was adequately displayed, and that was the most important lesson learned from the campaign.

9. The Stabilisation of Medical Units

The necessity for the medical arm to have full appreciation of the strategical possibilities, and not to stabilise medical units unless conditions warranted it, was fully borne out in Greece.

There was an unreal atmosphere at 81 Base Sub-Area at the beginning of the campaign. Arrangements were being made for work to be done by the Area engineers, and contracts were let to Greek civilians, on a basis which visualised a stable front for a very long period. At 1 NZ General Hospital arrangements were made for permanent buildings built of stone, including a complete operating and X-ray block, and a contract was let to a Greek builder. There seemed to be a complete lack of appreciation of the possibilities that lay ahead of the British forces. Possibly the same lack of appreciation was present to some extent at the base, and maybe it was brought about by the secrecy of the Higher Command in a delicate diplomatic situation.

10. Base Organisation of 2 NZEF

There appeared to be some lack of proper organisation as far as the base in Athens was concerned, and there was no medical representative on the New Zealand base organisation. The Australians had a medical officer at Base Headquarters who proved of great value.

Under instructions from DDMS BTG, personnel of 1 NZ General Hospital were detailed for duty at 26 General Hospital and also to staff a convalescent depot at Voula, at a time when the evacuation of Greece had been decided upon. The evacuation had been definitely determined by Generals Wavell and Wilson on 19 April. The decision was kept secret

because of the fear of its effect on the morale of the Greeks, especially the civilian population, and the possibility that there might be some interference with the arrangements for evacuation. The Greek higher command, however, was in favour of the evacuation in order to save unnecessary damage and loss of life. The attitude of the Greeks when evacuation was actually taking place belied the fears of the British staffs.

The main body of 1 NZ General Hospital embarked on 19 April in the afternoon, yet part of its personnel was left behind to run a convalescent camp under command of 80 Base Sub-Area. The New Zealand Reinforcement Camp was also situated at Voula.

In retrospect, it might have been possible, if the base authorities could have been informed of the position earlier, to have evacuated from the Athens area both the New Zealand personnel in the reinforcement camp and the convalescents and medical staff from the convalescent camp by the same convoy on which the staff of 1 NZ General Hospital was taken to Egypt.

Evacuation from Greece—Action taken in Egypt

On 19 April DDMS 2 NZEF offered DMS MEF medical officers for duty on ships which were being sent to help in the evacuation of the troops from Greece. The offer was declined, but it was repeated on the 20th and again on the 21st. Colonel MacCormick stressed the importance of having New Zealand personnel on the evacuation ships and of providing comforts for the troops when they landed in Egypt.

On the 22nd he was informed of the decision to evacuate Greece, and at a conference at GHQ MEF that evening the whole position was discussed and arrangements made for the despatch of medical officers and other ranks on the troop-carriers. Later, the DDMS Alexandria area asked for six medical officers and twelve medical orderlies at Alexandria, and DMS MEF requested that six medical officers and twelve medical orderlies be sent to Port Said. Both groups were promptly despatched to

the ports and were embarked for duty on transports. Medical posts were set up at the disembarkation camps at Amiriya, and at Tahag on the Ismailia road; a large reception station was also set up at Port Said and a small port section at Alexandria.

All the transports on which New Zealand medical personnel were embarked proceeded to Greece and back safely except for the *Slamat* which, on its return journey from Greece on 27 April, was attacked by machine-gun fire from the air at 6.30 a.m. The evacuation had been slowed up by the obstruction of the channel by the *Ulster Prince*, which had been bombed and sunk the night before. While the two New Zealand medical officers on board were proceeding towards the bridge to give medical aid an incendiary bomb struck the ship. The troops launched the lifeboats and these, too, were machine-gunned by the enemy. Some of the men were taken on board a destroyer. This destroyer was torpedoed at 2.30 p.m. that day. There was only one survivor of the New Zealand medical duty party of eight. [1] The two medical officers, Captain Douglas [2]

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[1] There were only 50 survivors out of 1000 personnel, naval and army.

[2] Capt L. Douglas; born Oamaru, 2 Aug 1901; surgeon; medical officer 2 Gen Hosp May 1940-Apr 1941; killed in action 27 Apr 1941.

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and Lieutenant Newlands, [1] were the first of the small number of medical officers to be killed in action.

At the conference at GHQ MEF on 22 April it was decided that, owing to lack of transport facilities, it would not be possible to deviate from arrangements that severe casualties of all forces, including New Zealanders, would be held in hospitals at Alexandria or the Canal area. Light cases would be sent to Cairo area as soon as transport arrangements permitted.

For the New Zealand casualties it was arranged that all officers and surgical cases would be admitted to 2 NZ General Hospital and all medical cases to 3 NZ General Hospital. Following this decision, some 130 medical cases were transferred from 2 General Hospital to 3 General Hospital, the first patients that hospital had received. No. 2 General Hospital was thus prepared to receive battle casualties as soon as they were transferred from hospitals on the coast. The 1st NZ Convalescent Depot was emptied as far as possible and extra tentage erected so that light cases could be admitted.

In view of the fact that most of the New Zealand troops, including lightly wounded, went to Crete, and that seriously wounded men remained in hospital in Athens, these arrangements for the reception of troops proved ample. There was a low incidence of wound infection and no strain was thrown on 2 General Hospital, the only properly equipped New Zealand general hospital in Egypt at the time, as 3 General Hospital was still awaiting the arrival of its equipment from England. The New Zealand troops evacuated to Egypt were mainly from 6 Brigade, with 4 Field Ambulance attached, all three artillery regiments, and the anti-tank regiment. Most of the battle casualties were taken directly to British hospitals in Alexandria and the Canal Zone. The first patients from Greece received by 2 General Hospital (apart from the injured nursing sisters of 1 General Hospital who arrived on 1 May via Crete) were a convoy of 131, mostly transferred from British hospitals in the Canal Zone on 20 May. Altogether, some 300 casualties were ultimately admitted to 2 and 3 NZ General Hospitals from Greece.

Contrary to expectations the condition of the troops themselves on arrival was remarkably good, and there were few cases of exhaustion and nervous breakdown. A divisional rest station was established at Helwan Camp and allowance made there for 600 cases, but only some thirty were admitted.

Red Cross stores sent by the Joint Council from New Zealand had proved invaluable at the ports of disembarkation and in the medical

units for the tired men, just as they were to do later for the more severely exhausted men from Crete.

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[1] **Lt J. W. Newlands; born Oamaru, 17 Aug 1915; medical practitioner; medical officer Maadi Camp, 1941; killed in action 27 Apr 1941.**

As they left Greece the New Zealanders were very tired—mentally and physically exhausted by long days and longer nights of constant strain. They were bitter about the tragedy they had been unable to prevent, the enemy occupation of Greece. But they were not beaten. Only once in the campaign had they withdrawn before the scheduled time, and on that occasion they were overwhelmed by superior numbers. Unfortunately, the struggle to hold Crete was to take place on even more unequal terms.

The campaign in Greece put our medical units and personnel, as yet inexperienced in active warfare, to a severe test. They were called upon suddenly to cope with very difficult conditions of terrain and with a rapid and continually harassed withdrawal before an enemy infinitely superior in numbers and equipment, and with unchallenged command of the air. They had to be evacuated under cover of darkness from many beaches in southern Greece, taking their patients with them as they went and leaving behind their valuable equipment. They were called upon to improvise and evolve new methods of coping with the unusual conditions. They did this with great success, and laid the foundations for their future efficiency which was unquestioned throughout the war.

Fortunately, there was little or no disease to cope with and the wounded could all be evacuated to the base, and many were taken off with the units to Crete. There were some errors of judgment, due to ignorance, such as the failure to display the Red Cross adequately, but no lack of meticulous attention to the wounded men.

***Casualties in Medical Units* (Officers in brackets)**

Unit	*Killed*	*Wounded*	*Prisoners of War*

4 Field Ambulance	**1**	**2**	**(1)16**
5 Field Ambulance		**2**	**20**
6 Field Ambulance		**1**	**7**
RMOs			**(1)**
1 General Hospital	**2**		**(4)57**
2 General Hospital	**(1)** *		
Maadi Camp Hospital	**(1)4** *		
4 Field Ambulance	**1** *		
	(2)8	**5**	**(6)100**

Casualties in New Zealand Division

Killed (including died of wounds)	**261**
Prisoners of war (including died of wounds while p.w.)	**1856**
Wounded (safe)	**387**
	2504

* **In sinking of *Slamat***

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

The Greek campaign was the first active campaign in which the 2 NZEF took part. Fortunately, all three echelons had had fairly long periods of training overseas, and the medical units had sufficient experience to enable them to face the campaign with confidence in themselves and their Division. The Second Echelon had not only arrived in Egypt in time, but it had had rigorous training in England at the time when invasion was thought probable. The medical units were keen to do their best and proved very capable in adapting themselves to the difficult conditions, both of the terrain and the harassed retreat.

The observations made by senior officers stressed the difficulties of the campaign and the capacity of the New Zealand medical units to improvise and deal with unprecedented conditions, as well as their capacity to learn from their experience. Naturally, the main recommendations dealt with the necessity of being fully mobile, and, to ensure this, the provision of adequate transport for all field medical units; but there were other very important lessons learned by the Medical Corps from the campaign. They are dealt with separately.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

1.NEED FOR ADVANCED MEDICAL PLANNING

1. Need for Advanced Medical Planning

It was felt by the ADMS NZ Division that he should have been instructed to go to Greece with the GOC on 6 March, so as to have extra time to make medical arrangements for the Division, especially as it was going to a new country, with no previous arrangements for foreign troops and with its own special medical problems of endemic disease. There was little time to gain knowledge and to make plans and to site the field units, especially as the divisional area was far removed from Athens, where Medical Headquarters and all base units were stationed.

The DDMS 2 NZEF did not visit Greece until a month later and was out of touch with the conditions there. [1] The difficulties that arose in the siting and utilisation of 1 NZ General Hospital might have been obviated by his presence in Greece at the outset of the campaign.

Early Arrival of Medical Units: **It was considered by the senior medical officers that a higher priority should be given in the future to the medical units, so that they would be available from the beginning to service the troops and have time to site and establish their dressing stations before active operations commenced. Representations to this effect were made on 7 March by DDMS 2 NZEF, but were not supported by DMS MEF on the ground that the medical units were unlikely to be urgently required.**

Consultants: **There were no consultants attached to the forces in Greece. It had been planned to have the Australian consultants, Colonels N. H. Fairley and Hailes, attached to headquarters at Athens, but they did not go to Greece. Their advice would have been valuable in the placing of the hospitals and the co-ordination of the clinical work of the medical units.**

[1] **Colonel MacCormick states that transport was not available sooner for him.**

2. UNDESIRABILITY OF 600-BED GENERAL HOSPITALS AS L OF C UNITS

2. Undesirability of 600-Bed General Hospitals as L of C Units

In the opinion of senior officers in the New Zealand force, the placing of the highly organised and elaborately equipped base hospitals as L of C units 200 miles from Athens was undesirable. The New Zealand General Hospital was adequately staffed, and very well equipped, as a stationary base hospital, with a full quota of sisters and a special bacteriological laboratory. The only location where this hospital could service the New Zealand force as a base hospital was in the region of Athens, where it would have been handy for the evacuation of cases by hospital ship.

It is likely that the decision to use the hospitals as L of C units was influenced by the difficulty of evacuation by a single-track and very vulnerable railway, and by the possible inability of the two CCSs to cope with the work in the forward areas.

The authorities were influenced, no doubt, in their decision to place the two 600-bed hospitals in 81 Base Sub-Area, by the fact that there were no other hospitals available, the smaller units of the old 200-bed type being no longer considered of value in the Army. There were also only two CCSs, so that no unit of that type was available on the L of C over and above what was required to carry out the urgent surgery. The 26th General Hospital was well established in Athens, and 2/5 Australian Hospital was to arrive later and would be available to supplement 26 General Hospital at the base.

It was therefore decided that 1 NZ General Hospital and 2/6 Australian General Hospital should be used as L of C hospitals, and, however unfortunate the decision may have been, especially for the New Zealand unit, perhaps it was inevitable. There was no CCS in 2 NZEF at

the time available for use as a staging unit on the lines of communication.

It must be realised that the DDMS BTG had been in Greece only a short time and that the only advice available to him was that of an advance body, including a physician but no surgeon. As to the 2 NZEF, the ADMS NZ Division had no control over 1 NZ General Hospital, and the DMS 2 NZEF did not arrive in Greece until some time after the question of the disposition of the hospital had been settled. The siting of 1 NZ General Hospital in 81 Base Sub-Area made it impossible for 2 NZEF to handle its own casualties at the base, and relegated the hospital itself to the role of an L of C unit, its main function being the staging of cases not able to be sent direct from the CCS to Athens, and the retention of minor cases able to be discharged back to the Division. Only in case of the interruption of communication by possible bombing or sabotage of the railway would the hospital have functioned as a base hospital, and then its own supply and communications would have been difficult. Realisation of this situation caused a great deal of discontent among members of the unit, to whom were not explained the reasons which determined the decision of the Higher Command.

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advanced base camp was desirable where cases could be held following discharge. (At one time patients who would have very soon been fit for return to their combatant units were discharged from 1 General Hospital, Pharsala, to Base Camp, Athens.)

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Fortunately, all the field ambulances had had considerable practice in setting up and dismantling their units and this stood them in good stead in Greece. If proof of the desirability of their training had been required, it was quickly given in Greece. In this connection the tarpaulin shelters attached to the 30-cwt trucks, as designed by 4 Field Ambulance in Egypt, proved to be eminently suited to the conditions in Greece, being readily handled and particularly adaptable to blackout conditions.

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION FROM GREECE—ACTION TAKEN IN EGYPT

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For the New Zealand casualties it was arranged that all officers and surgical cases would be admitted to 2 NZ General Hospital and all medical cases to 3 NZ General Hospital. Following this decision, some 130 medical cases were transferred from 2 General Hospital to 3 General Hospital, the first patients that hospital had received. No. 2 General Hospital was thus prepared to receive battle casualties as soon as they were transferred from hospitals on the coast. The 1st NZ Convalescent Depot was emptied as far as possible and extra tentage erected so that light cases could be admitted.

In view of the fact that most of the New Zealand troops, including lightly wounded, went to Crete, and that seriously wounded men remained in hospital in Athens, these arrangements for the reception of

troops proved ample. There was a low incidence of wound infection and no strain was thrown on 2 General Hospital, the only properly equipped New Zealand general hospital in Egypt at the time, as 3 General Hospital was still awaiting the arrival of its equipment from England. The New Zealand troops evacuated to Egypt were mainly from 6 Brigade, with 4 Field Ambulance attached, all three artillery regiments, and the anti-tank regiment. Most of the battle casualties were taken directly to British hospitals in Alexandria and the Canal Zone. The first patients from Greece received by 2 General Hospital (apart from the injured nursing sisters of 1 General Hospital who arrived on 1 May via Crete) were a convoy of 131, mostly transferred from British hospitals in the Canal Zone on 20 May. Altogether, some 300 casualties were ultimately admitted to 2 and 3 NZ General Hospitals from Greece.

Contrary to expectations the condition of the troops themselves on arrival was remarkably good, and there were few cases of exhaustion and nervous breakdown. A divisional rest station was established at Helwan Camp and allowance made there for 600 cases, but only some thirty were admitted.

Red Cross stores sent by the Joint Council from New Zealand had proved invaluable at the ports of disembarkation and in the medical units for the tired men, just as they were to do later for the more severely exhausted men from Crete.

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[1] Lt J. W. Newlands; born Oamaru, 17 Aug 1915; medical practitioner; medical officer Maadi Camp, 1941; killed in action 27 Apr 1941.

As they left Greece the New Zealanders were very tired—mentally and physically exhausted by long days and longer nights of constant strain. They were bitter about the tragedy they had been unable to prevent, the enemy occupation of Greece. But they were not beaten. Only once in the campaign had they withdrawn before the scheduled time, and on that occasion they were overwhelmed by superior numbers.

Unfortunately, the struggle to hold Crete was to take place on even more unequal terms.

The campaign in Greece put our medical units and personnel, as yet inexperienced in active warfare, to a severe test. They were called upon suddenly to cope with very difficult conditions of terrain and with a rapid and continually harassed withdrawal before an enemy infinitely superior in numbers and equipment, and with unchallenged command of the air. They had to be evacuated under cover of darkness from many beaches in southern Greece, taking their patients with them as they went and leaving behind their valuable equipment. They were called upon to improvise and evolve new methods of coping with the unusual conditions. They did this with great success, and laid the foundations for their future efficiency which was unquestioned throughout the war.

Fortunately, there was little or no disease to cope with and the wounded could all be evacuated to the base, and many were taken off with the units to Crete. There were some errors of judgment, due to ignorance, such as the failure to display the Red Cross adequately, but no lack of meticulous attention to the wounded men.

Casualties in Medical Units **(Officers in brackets)**

Unit	*Killed*	*Wounded*	*Prisoners of War*
4 Field Ambulance	1	2	(1)16
5 Field Ambulance		2	20
6 Field Ambulance		1	7
RMOs			(1)
1 General Hospital	2		(4)57
2 General Hospital	(1) *		
Maadi Camp Hospital	(1)4 *		
4 Field Ambulance	1 *		
	(2)8	5	(6)100

Casualties in New Zealand Division

Killed (including died of wounds)	261
Prisoners of war (including died of wounds while p.w.)	1856

Wounded (safe)	**387**
	2504

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 5 — CRETE

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

THE New Zealand troops who were evacuated from Greece were taken to the island of Crete, except 6 Infantry Brigade which proceeded to Egypt. From the afternoon of Anzac Day, 25 April 1941, until the arrival on 1 May of the last-planned evacuation, convoys from Greece moved into the harbour at Suda Bay. The ships which embarked the troops from the various harbours in southern Greece on the night of 24–25 April joined up in one convoy which arrived at Suda Bay on the afternoon of 25 April. Among the nine ships of this convoy were the destroyers HMAS *Voyager* and HMS *Calcutta* and the troop-carrier *Glengyle*, all of which had New Zealand medical units on board, including ADMS NZ Division and his staff, 5 Field Ambulance, 6 Field Ambulance, 4 Field Hygiene Section, and also the matron and fifty-one sisters from 1 General Hospital. None of the units was up to full strength, but in subsequent days some groups left behind in Greece rejoined their parent units, while small parties from 4 Field Ambulance and 1 General Hospital also found their way to Crete, some in Greek caiques and rowing boats.

Upon disembarkation the British, Australian, and New Zealand nursing sisters, totalling 150, were taken to 7 General Hospital while the troops marched to a transit camp near Perivolia, a distance of 6 miles inland from the port of Suda. Along the road leading to this camp was a refreshment centre operated by the Welch Regiment, part of the garrison of Crete. From this improvised canteen free issues were made of tea, biscuits, chocolate, oranges, and cigarettes, which were a godsend to the weary and hungry troops. It was the morning of 26 April before all of the many parties had arrived at the transit camp.

At Perivolia camp there were unit mustering sites, 5 and 6 Field Ambulances being located in one medical concentration area where, with a scanty supply of medical stores, treatment and dressings were

given to the slightly injured among the nearby New Zealand troops. The 4th Field Hygiene Section was also quartered in the area and later moved out with 5 Field Ambulance.

When our troops landed on Crete the spring weather was warm but the nights were cold and dewy, and those without blankets on the first night awoke not a little damp and stiff next morning for any further march to dispersal areas. Of the Cretan rivers only the Platanias carried any volume of water, and New Zealand units enjoyed its refreshingly cool waters after a dusty march from Suda Bay. In Canea the produce market was but scantily supplied for the needs of a greatly increased local population swollen by refugees from the mainland, and soon after the arrival of the troops eating-houses were more or less restricted to civilians as supplies were short.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BRITISH GENERAL HOSPITAL

British General Hospital

The only military hospital on the island was 7 General Hospital—a 600-bed tented hospital established only a week before. This was situated on a promontory on the seashore about 2 ½ miles west of Canea, the site having been selected long before it was apparent that Crete would be invaded. There was a fairly large stretch of level, open land leading inland from the beach to the main coastal road from Canea to Maleme, and the hospital tents were widely dispersed in the area close to the road. The tents for the staff were placed nearer the sea. On the shore were several large caves capable of holding a considerable number of men.

The hospital accommodation at 7 General Hospital was quite inadequate to deal with all the wounded arriving from Greece, and in the early stages hundreds of men were sheltered under olive trees in transit camps, where dressings and treatment were undertaken by field ambulances. Besides 5 and 6 Field Ambulances, there were three Australian and two British field ambulances from Greece and also 189 Field Ambulance. The last-named had been stationed in Crete for a considerable period and was the only field ambulance with a stock of medical equipment, as the medical units from Greece had little equipment and no transport.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INITIAL NEW ZEALAND ARRANGEMENTS

Initial New Zealand Arrangements

On 26 April Colonel Kenrick went to Crete Force headquarters to make medical arrangements, and, having acquainted himself with the overall medical situation, instructed 6 Field Ambulance to open a dressing station at Perivolia transit camp and evacuate serious cases to 7 General Hospital. As 5 Infantry Brigade Group was to move out on the following day to occupy a defensive position on high ground some 6 miles west of Canea, 5 Field Ambulance was detailed to service this brigade.

During the night some 400 walking wounded arrived at 6 MDS without warning, and in many cases their dressings had not been changed for a week. These men were all treated, the ADMS of the Crete garrison having provided two tents and two surgical panniers, and additional dressings were obtained from 189 Field Ambulance. More than 700 casualties were treated in twenty-four hours.

On the morning of 27 April 5 Field Ambulance marched 8 miles to Ay Marina, west of Canea on the coast, and set up a skeleton MDS. The New Zealand force in Crete had taken up defensive positions from Canea to Maleme against invasion by air and sea. The 4th Field Hygiene Section had been attached to 5 Field Ambulance, and one staff-sergeant and 20 orderlies from 1 General Hospital, who had escaped to Crete after the bulk of their unit had gone to Egypt, were also attached for the move. On the arrival of the ambulance at Ay Marina these orderlies were posted to 7 General Hospital.

One company of 6 Field Ambulance also moved on 27 April and established an MDS for 4 Infantry Brigade right at the junction of the Canea and Galatas roads, not far from 7 General Hospital, and

arrangements were made for 6 Field Ambulance to supply 24 nursing orderlies and 30 general duty men for daily duty at 7 General Hospital. On the following day, after 168 Light Field Ambulance had taken over the dressing station at Perivolia, the remainder of 6 Field Ambulance moved out and joined the rest of the unit.

The weather was fine at this stage but the nights were cold. All ranks lived in olive groves; most of the troops were near enough to the coast to be able to enjoy a swim, and to some extent were able to relax and recuperate after the ordeal of the final days in Greece.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NZANS AT 7 GENERAL HOSPITAL

NZANS at 7 General Hospital

On their arrival at 7 General Hospital the New Zealand sisters immediately volunteered for duty and were posted to the nursing staff. The Matron of 1 General Hospital (Miss Mackay) was asked to take charge of all the nurses, including British and Australian sisters who had also arrived from Greece. When ADMS NZ Division visited the hospital on 26 April he ascertained that the Officer Commanding wished to retain the services of the New Zealand sisters as his own nursing sisters had not arrived from Egypt. Colonel Kenrick informed him that the New Zealand sisters must proceed to Egypt at the first available opportunity, but that they would work at the hospital in the meantime.

Miss Mackay had taken up the duties of Matron of 7 General Hospital and organised the nursing staff from all the available nurses with outstanding success. The hospital was then receiving 300 to 400 patients daily. With her cheerfulness, tact, and coolness at the most difficult times, the matron set a standard which could not fail to be an inspiration to all who were associated with her. All the nurses, including those who had been injured in the truck accident in Greece, frequently had to take shelter in crops and under olive trees during air raids, but not one of them offered a complaint. In fact, it was difficult to persuade anyone to admit an injury. Excellent work was also done by Sister Jackson [1] in charge of the operating theatre. The surgical wards and theatres were staffed entirely by New Zealand nurses, and the officer in charge of the surgical division stated that he had never been so well served by any other theatre staff either in civilian practice or in the Army.

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[1] **Matron Miss M. E. Jackson, RRC; born Auckland, 11 Jan 1900;**

sister, Auckland Hospital; sister 1 Gen Hosp May 1940–Apr 1942; charge sister 3 Gen Hosp Apr 1942–Nov 1943; Matron 3 Gen Hosp Nov 1943–Jul 1945.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DEPARTURE OF NZANS

Departure of NZANS

On 28 April New Zealand Divisional Headquarters moved to a new site in Galatas, a village about a mile and a half south-west of the hospital, and the New Zealand nursing sisters were moved into billets in the village as they had vacated their tents at 7 General Hospital to make room for patients the previous night and had themselves slept on the ground.

The stay of the sisters at Galatas was short, for they were called at four o'clock the following morning and taken by truck to Suda Bay. Here, with 130 British and Australian nurses and some 500 walking wounded and 200 troops, they embarked during the early morning on the small Greek ship *Ionia*. The crew, fearful of air raids, had fled to the hills, so volunteers from among the troops manned the ship. Australians were in charge and gave the sisters the few available cabins. The voyage to Egypt was a slow one and the first night was one of apprehension, for there were enemy attacks; but later the ship joined up in convoy with a naval escort and the rest of the voyage was uneventful, Alexandria being reached on 1 May.

The decision to evacuate the nursing sisters forthwith to Egypt was both prompt and wise, as their presence during the attack would have created much anxiety and trouble to the command—more than their valuable services warranted.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BELATED ARRIVALS

Belated Arrivals

Until the end of April large bodies of troops were still arriving from Greece. On 28 April 6 officers and 57 men rejoined their unit, 5 Field Ambulance, at Ay Marina. At the embarkation beach at Porto Rafti on the night of 24–25 April they had boarded a tank landing craft too late to reach the ships of the convoy, which had put to sea. The naval authorities sent the party in the landing craft to the small island of Kea offshore, whence they were taken back to Porto Rafti in a tank landing craft on the evening of 26 April and put aboard HMS *Carlisle*, which put them ashore at Suda Bay on 27 April. The NCO and 16 men from 4 Field Ambulance who had been attached to 2/1 Australian Field Ambulance, which was serving with 4 Infantry Brigade at the time of the final withdrawal in Greece, embarked at Porto Rafti on the night of 26–27 April on a destroyer and landed on Crete the following day. They were sent to 6 Field Ambulance and became members of the groups on duty at 7 General Hospital, whence they accompanied to Egypt the wounded who were evacuated by the hospital ship *Aba* on 5 May. An officer of 1 General Hospital, Captain Kirk, reached Crete on 29 April in a small boat, having been three nights and two days en route. A party of twenty-one members of 1 General Hospital, on duty at 26 General Hospital, Kifisia, and the Convalescent Hospital at Voula, also escaped to Crete and on their arrival were sent to 7 General Hospital, where they performed valuable service.

Major-General Freyberg arrived from Greece on 29 April, having been embarked on HMS *Ajax* at Monemvasia the previous night with the last detachments of New Zealand troops to be withdrawn under the Navy's organised evacuation. Fourth Field Ambulance had also been aboard HMS *Ajax*, but on arrival at Suda Bay was transferred to the *Thurland*

Castle **which took it to** **Egypt**.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF TROOPS

Health of Troops

In the first week on Crete it was noted by ADMS NZ Division that the general health of the troops was good, in spite of only four-fifths of the standard food ration being available and most troops being without a change of clothing. Hygiene and sanitation were not up to standard. The normal water supply came from wells which generally were reliable, although many of them became contaminated during the campaign. There was a lack of facilities for water-testing and sterilising and no water carts were available. Water was boiled and individual water tablets supplied, but unfortunately, although these were given out to units in Greece, many had never been distributed to the individual soldiers and were not available in Crete. A serious shortage of spades, picks, and shovels interfered with proper sanitary arrangements, especially as trenches had to be dug for the protection of personnel from air attack. Fifth Field Ambulance was able to commandeer six shovels and six picks or adzes at Ay Marina and these proved invaluable. Instructions were given, however, to dig deep trenches for latrines. After the evacuation of Crete, dumps of picks, shovels, and rifles were found which could have been available to Creforce. Evidently, the handover to the new Creforce Headquarters had been incomplete.

No transport was available and troops had to march considerable distances, with the result that many men suffered from sore feet. On 30 April there were 126 New Zealanders, wounded and sick, among the patients at 7 General Hospital.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL MILITARY SITUATION

General Military Situation

General Wavell flew to Crete on 30 April and held a conference with the senior officers of all forces to discuss the defence of Crete, it having been decided that it was vital to hold the island. General Freyberg was anxious to get the New Zealand troops to Egypt and there reform the Division, but the Commander-in-Chief decided that the troops on the island should all remain, and General Freyberg was appointed to take command as GOC Crete. The ill-equipped force, with an acute shortage of transport, faced immensely difficult problems in the defence of the island.

Crete is a long, narrow island running east-west for about 160 miles, with a maximum width of 40 miles. It has a backbone of mountains up to 8000 feet high running parallel and quite close to the southern coast, which has steep cliffs and no harbours. From the mountains the land to the north falls gradually, with valleys running in a north-south direction to the coast. The country is covered with olive groves, with some orange and lemon plantations at intervals.

The rich coastal plain of Canea is dissected by deeply cut riverbeds and surrounded by a harsher upland country whose slopes are covered with a thin, stony soil. These slopes made the construction of slit trenches and other field works difficult. Beyond the city of Canea and its villa-studded environs, western Crete is essentially a land of small villages and isolated farming hamlets, while the high uplands are peopled only in summer.

Roads are not well developed. The main road runs close to and parallel with the north coast, with many river bridges. There are four roads crossing the island from north to south, all narrow and over hilly

country. The southern end of the Sfakia road, used for the evacuation, was very narrow and precipitous, being described as a “goat track”. There were no railways, except for two or three local Decauville lines.

Suda Bay, on the north coast, is the best natural harbour in the eastern Mediterranean. Other harbours, with artificial protection, are at Heraklion and Canea, although the latter had to be worked with lighters. Coastal boats can use Retimo.

Crete is less than 70 miles from Greece and a combined sea and airborne landing, supported by the Italian fleet and by the German and Italian air forces, threatened the island. On Crete there were six Hurricanes, sixteen other obsolete planes and no safe aerodromes, and there was no chance of improving the air position. The defending force was relatively large, but there were few real fortifications and an acute shortage of transport, artillery, armoured fighting vehicles, weapons of all kinds, ammunition, signal equipment, and medical supplies. Equipment and supplies had to come from Egypt. Ships bringing them were attacked by enemy aircraft and some were sunk. In spite of the anti-aircraft defence, ships unloading in the port at Suda Bay were attacked at their moorings every day by large formations of dive-bombers. In the end the force was dependent for supplies on what cruisers and destroyers could bring in after dark and unload before they left again before daylight.

Since the outbreak of war Crete had been considered by the British Cabinet as an important strategical position. Offers of help in the protection of the island had been made to Greece when Italy entered the war. When Italy attacked Greece a small force was sent to Crete, and this force was strengthened but was never very large, amounting only to about 5000 men. The function allotted to it varied from time to time between that of holding the island against attack to that of providing a base of operations against the Italian Dodecanese. The command changed several times.

Cretan recruits were withdrawn for the fighting in Albania and

finally all Greek military equipment except 300 rifles was taken away, leaving the small British garrison as the only protective force. There were 15,000 Italian prisoners on the island and a large number of Cypriots and Palestinians, as well as young Greek recruits, unarmed and untrained.

The RAF found it impossible to send any but a very small number of planes to Crete. It developed landing grounds at Heraklion, Retimo, and Maleme, and although the administrative officers left the island at the beginning of May, the last planes were not withdrawn until the 19th—the day before the invasion began. This complicated the question as to what was to be done to the airfields to make them unfit for use.

It was originally intended that all troops from Greece should be sent to Egypt, and that Crete should be defended by fresh troops; but this was found to be impossible and General Freyberg was called upon to assume command in Crete and to use the troops recently evacuated from Greece for the defence of the island. These men were without any equipment other than what they had been able to carry from the beaches and so were severely handicapped in their task. The force at 20 May numbered 42,547 (7702 New Zealanders, 6540 Australians, 18,047 British, and 10,258 Greeks).

For defence, Crete was split up into four sectors covering the main vulnerable areas but not the whole island. These areas were—from east to west— Heraklion, Retimo, Suda Bay, and the Canea- Maleme area. New Zealand troops were allotted the defence of the Canea- Maleme sector, which included a long stretch of coast suitable for seaborne attack and areas suitable for airborne landings, particularly the Maleme airfield and a large flat area behind Galatas in the region of the prison. The 4th and 5th Infantry Brigades were available, and in addition there were some Greek troops, quite inadequately equipped, and a composite force (10 Infantry Brigade) of 20 Battalion, New Zealand Artillery, Divisional Cavalry, and NZASC personnel, all acting as infantry.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE MEDICAL PLAN

The Medical Plan

There was available in Crete before the arrival of the force from Greece two British medical units and a field hygiene section. The medical units were 7 General Hospital and 189 Field Ambulance, the latter without one company, which had been functioning in Greece. The general hospital had only been set up for a week before the arrival of our troops, although 189 Field Ambulance had been on Crete for a longer period. The 7th General Hospital was sited on the seashore just to the west of Canea, unfortunately in a position very vulnerable to both seaborne and airborne attack. The 189th Field Ambulance was sited in the vicinity of Suda Bay. Thus both were able to serve the New Zealand sector.

The New Zealand units available were 5 and 6 Field Ambulances and 4 Field Hygiene Section, all without the minimum equipment. When the ADMS NZ Division, Colonel Kenrick, was appointed DDMS Crete Force on 7 May and the CO 6 Field Ambulance, Lieutenant-Colonel Bull, became ADMS NZ Division, the administration of the New Zealand medical services was, for the first and only time during the war, completely under the control of its own medical personnel. The units worked in the utmost harmony with the British and Australian medical units and personnel, especially with 7 General Hospital, the major hospital unit on Crete. New Zealand personnel worked on the staff of 7 General Hospital and a surgeon was on the staff of 189 Field Ambulance, which also ran a large extemporised hospital during the campaign.

The medical plan as it affected our troops consisted in the servicing of 5 Infantry Brigade by 5 Field Ambulance and of 4 Infantry Brigade and the composite 10 Infantry Brigade by 6 Field Ambulance. Both field

ambulances evacuated to 7 General Hospital, which used 6 Field Ambulance as a convalescent depot. Later, 189 Field Ambulance Hospital was used for the overflow from 7 General Hospital. A tented naval hospital, landed on 10 May and sited south of Canea, was also very actively employed during the campaign, treating mainly Australians and New Zealanders.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL COMMAND

Medical Command

A reorganisation of the forces in Crete followed General Freyberg's appointment as GOC. On the medical side Colonel Kenrick was succeeded as ADMS NZ Division by Lieutenant-Colonel Bull, Major J. K. Elliott became DADMS, Crete Force, and Major W. B. Fisher, DADMS NZ Division.

British and Greek troops in the Heraklion sector were commanded by Brigadier B. H. Chappel, with Major C. R. Croft, RAMC, as SMO; Australian troops at Retimo were commanded by Brigadier G. Vasey, 2 AIF, with Lieutenant-Colonel L. E. Le Soeuf, AAMC, as SMO; Royal Marines and other British troops were at Suda Bay under the command of Major-General C. E. Weston, with Lieutenant-Colonel S. O. Dolan, RAMC, as ADMS; and in the Canea- Maleme area Brigadier Puttick commanded the New Zealanders.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DIFFICULTIES OF MEDICAL ORGANISATION

Difficulties of Medical Organisation

The difficulties of medical organisation were enormous on account of lack of equipment, lack of transport, the mixed composition of the combined forces, and the general disorganisation following the evacuation of Greece.

In the New Zealand sector five tents and some medical equipment were obtained from 7 General Hospital and supplied to 5 and 6 Field Ambulances on 1 May to enable them to extend the facilities of their dressing stations. The 5th MDS was merely a protected area in a dry riverbed, with three tents set up and a tent-fly extended as cover for patients from 5 Brigade, while 6 Field Ambulance was similarly situated in providing medical services for 4 Brigade.

On 5 May the situation was relieved when the hospital ship *Aba* arrived at Canea Bay and embarked 602 patients, including 102 New Zealanders, by means of small boats. Loading was carried out without incident and the ship sailed for Egypt the same day.

In the second week of May small supplies of equipment became available, more especially personal clothing such as shirts and shorts, groundsheets, extra blankets, and underclothing. The weather was becoming more unsettled and all manner of ingenious forms of bivouacs were constructed by the men. Fifth Field Ambulance received additional tentage and medical stores and expanded the MDS, also making provision for an officers' ward.

The 7th General Hospital staff continued to be extremely busy and found themselves very shorthanded after the departure of the nursing sisters. Fifty-four men from 6 Field Ambulance were attached daily to

the hospital. The CO 5 Field Ambulance, Lieutenant-Colonel Twhigg, also offered the services of some of his nursing orderlies, and sixteen of them were attached to the hospital from 10 May. Major Christie, a surgeon who had been attached to 5 Field Ambulance from 1 General Hospital in Greece, also offered his services to the hospital, and advantage was later taken of this offer.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL STORES AND EQUIPMENT

Medical Stores and Equipment

The sadly depleted condition of the New Zealand medical units on arrival in Crete was ameliorated by drawing upon 7 General Hospital for both extra equipment—such as tents, stretchers, and blankets—and drugs and medical stores. It was fortunate that the hospital had such adequate supplies. Later, further supplies were sent from Egypt by sea and air.

A major setback occurred when the SS *Rawnsley* (which had previously taken the male staff of 1 General Hospital from Greece to Egypt) was sunk by enemy action with 25 tons of medical supplies aboard. (A further reverse was to be suffered on 20 May when the entire reserve of medical stores in a tent at 7 General Hospital was lost following a direct hit by a bomb and subsequent fire.) Local civilian supplies were commandeered and gauze and flannelette obtained from ordnance stores to fulfil requirements. The 7th General Hospital eventually resorted to using sheets for bandages. The DDMS 2 NZEF, Brigadier MacCormick, was responsible for sending extra medical supplies from Egypt direct to the New Zealand force, together with some very welcome medical comforts.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TRANSPORT

Transport

When the troops arrived from Greece there were eight motor ambulances available in Crete, six being attached to 189 Field Ambulance and two to the Royal Air Force. Later, some more ambulance cars were landed, making eleven all told for the medical units on the island.

Ordinary lorry transport was in even shorter supply and so could not be used to make up for the shortage of ambulances. Each field ambulance had to rely on one 15-cwt truck and had great difficulty in arranging for the transport of patients, which had to be carried out in relays.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

COMMUNICATIONS

Communications

The number of field telephones in the New Zealand sector totalled only about twelve so that inter-communication was exceedingly difficult. The lack of motor cycles or other vehicles meant that messages and orders had to be taken on foot. For instance, when movement by day came to be restricted by enemy aircraft, the ADMS NZ Division found it necessary to spend most of each night travelling across country on foot to visit the field ambulances, which had no telephones.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

AIR ATTACK

Air Attack

From 1 to 12 May the enemy air force had concentrated on shipping to and from Crete and on the port of Suda Bay. Then, on 13 May and onwards, with the completion of new airfields in Greece and on the island of Milos, the Germans increased the scale of their attack to include the airfields at Heraklion and Maleme. The enemy had a preponderance of fighter aircraft, which either carried out low-flying attacks or provided a heavy escort for the bombers and dive-bombers. Eventually our air force was gradually eliminated, and on 19 May the few remaining pilots and planes were withdrawn from the unequal struggle and returned to Egypt.

At dusk on 13 May enemy aircraft heavily "blitzed" the aerodrome at Maleme for an hour, and that evening several casualties were admitted to 5 MDS. Again next morning, from 5.30 a.m., further air attacks were made on the same area and two Hurricanes and one Gloucester were lost. The expected invasion was drawing steadily nearer.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

5 FIELD AMBULANCE RE-LOCATED AT MODHION

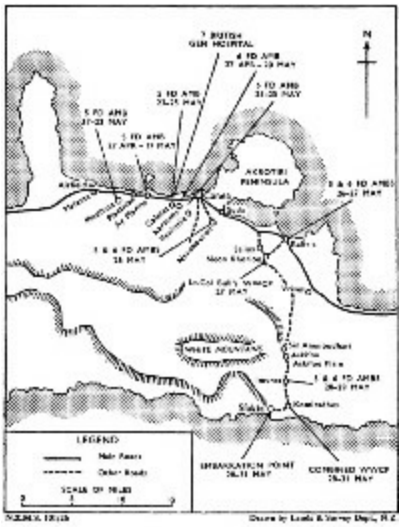
5 Field Ambulance re-located at Modhion

With the dispositions of New Zealand units provisionally settled, 5 Field Ambulance was situated near the threatened coast at Ay Marina, between 4 Brigade around Canea in the east and 5 Brigade in the Platanias- Maleme area to the west.

At Ay Marina, in the coastal foothills of the western end of the plain of Canea, 5 Field Ambulance established its dressing station in a stream bed which was already dry, although it must have carried a considerable torrent of water in the winter. The operative section of the unit occupied the stream bed with A and B Companies settling on its slopes, some of which were steep and rocky. Early admissions before hostilities were treated in well-sited tents.

As the field medical unit attached to 5 Brigade, it was responsible for the collection of casualties in and around its sector, namely the Maleme airfield and the surrounding country. It was obvious from the outset that the main west-east road from Maleme through Platanias to Canea would be expected to carry most, if not all, of the military traffic. The back roads were few and very poor. It was also obvious that this road would be very effectively patrolled by the Luftwaffe, certainly by day, so that movement of most vehicle traffic would be impossible. (This proved to be so.) In addition, ambulance cars and other transport with which casualties could be evacuated were very limited. For these reasons Lieutenant-Colonel Twhigg decided that alternative methods of evacuation would have to be seriously considered and that a thorough reconnaissance of the back country should be made. The country covered was from Ay Marina inland across to Modhion, and thence over hill and dale to the areas around Maleme airfield which had been allotted

to 21, 22, and 23 Battalions.



Medical Units and Lines of Evacuation, Crete, May 1941

Medical Units and Lines of Evacuation, Crete, May 1941

Lieutenant-Colonel Bull visited the ambulance on 16 May and recommended a change of location of the MDS, as the site at Ay Marina was likely to prove untenable if active operations developed in that area. It was suggested that the valley of the Platanias River, about one mile west of Headquarters 5 Brigade, would be suitable. The CO 5 Field Ambulance made a reconnaissance of this area but found that it also might prove unsatisfactory, as the flat country was suitable for the landing of parachute troops. This appreciation of the problem was reported back to Headquarters 5 Brigade, where it was also learned that the intelligence services had advised that enemy landings by airborne troops might be expected at any time, probably on 19 May.

On 17 May, at a conference at Headquarters 5 Brigade, it was agreed that the location of the MDS at Ay Marina was too insecure and insufficiently protected by the troops deployed in the defensive positions, and that CO 5 Field Ambulance should reconnoitre a site in the region of the village of Modhion, where 5 Brigade units would be between the MDS and the coast. As a pillion-rider on a motor cycle, Lieutenant-Colonel Twhigg surveyed the area and chose a site on the outskirts of Modhion, near the road running south from the main Canea-Maleme road. The distance in a straight line from Maleme airfield was

about two and a half miles, and on the forward slopes of undulating hills troops of 7 Field Company, 19 Army Troops Company, and 28 (Maori) Battalion were dug in, a section of the Maoris also being to the rear of the location. To the south was a very old olive grove, with hollow trees and recumbent lower branches which afforded excellent and shaded shelter for staff not immediately required in the work of the dressing station.

A two-storied house, the police station, was taken over to accommodate the receiving and dressing sections and the more serious cases; further accommodation was made available in the basements of nearby houses and in tents. The unit moved in on the afternoon of 17 May after a march from Ay Marina. The unit's transport then consisted of one 15-cwt truck only, but vehicles of an ASC unit were also used to convey what equipment the unit had gathered together.

In the main the medical equipment was that carried out of Greece and consisted of some fifteen surgical haversacks and three medical companions, supplemented by sets of surgical instruments salvaged by various medical officers, and compressed dressings carried by all ranks. Some supplies of dressings had been obtained on the island, but these were very limited, and an allotment of Red Cross stores, mainly bandages and dressings, had arrived just a few days previously. Only twenty stretchers had been retained along with a proportionate quota of blankets, but these had been supplemented by some 50 stretchers and 100 blankets from 7 General Hospital, which also supplied bandages and dressings and an invaluable drum of plaster-of-paris. Upon the establishment of 5 MDS in the house at Modhion, this equipment enabled the medical officers to do major surgery.

The operating theatre at Modhion was a room of the house, the table a door on trestles and boxes. There was only one bowl, the other utensils being cut-down petrol and ration cans. There were two primus stoves on which instruments were sterilised. Water was boiled for the most part on open fires. The instruments carried from Greece were sufficient, but

anaesthetics were short. Intravenous anaesthetics (including pentothal) were mainly used. The kits dropped by the enemy from the air contained some anaesthetics, mainly pentothal. These kits also contained some intravenous glucose saline, which was the only supply for transfusions and was very inadequate. There were no splints, so all fractures were immobilised in plaster, of which there were ample stocks. There were no rubber gloves, and records were made on latrine paper in single sheets.

At Modhion many of the villagers were organised by a young Cretan woman, Frosso Parasoulioti, into a hard-working team to make dressings such as many-tailed bandages and Red Cross signs for 5 Field Ambulance. Throughout the first two days of parachute landings and low-level air attacks they continued to make dressings and other essential comforts. The villagers also brought supplies of citrus fruit, sultanas, wine, and oil.

Sixth Field Ambulance continued to function as an MDS in tents in its original location below Galatas, to render assistance to 7 General Hospital by supplying staff, and also acted as a convalescent depot. Sharply conscious of their experiences in Greece, the staff dug slit trenches, which were made more comfortable and sheltered by the use of straw, branches, and other miscellaneous material.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

4 FIELD HYGIENE SECTION ATTACHED TO 5 FIELD AMBULANCE

4 Field Hygiene Section Attached to 5 Field Ambulance

The 4th Field Hygiene Section moved to Modhion with 5 Field Ambulance and set up in a neighbouring location under olive trees. The section had been doing a limited amount of hygiene work, the limiting factors being lack of sterilising agents for water supplies and lack of transport for inspection of unit hygiene conditions, which themselves could not be completely satisfactory with the shortage of spades and other implements. The Officer Commanding, Captain B. T. W. Irwin, traversed much ground on foot, discussed health matters with ADMS NZ Division, and organised a mosquito survey, taking appropriate steps to prevent the breeding of malarial mosquitoes where possible.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ASC DRIVERS JOIN 10 INFANTRY BRIGADE

ASC Drivers Join 10 Infantry Brigade

On 17 May all except a few of the ASC drivers attached to the field ambulances were marched out to join a composite battalion being formed as part of 10 Infantry Brigade. This new brigade was formed on 14 May under the command of Colonel Kippenberger, [1] and consisted of 20 Battalion, the Composite Battalion of drivers and artillerymen, a Divisional Cavalry detachment, and 6 and 8 Greek Regiments. The brigade was to defend the high ground in the Galatas area, protecting the approach to Canea from the west and covering the Canea valley to the south-west, including the area around Lake Aghya.

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[1] **Maj-Gen Sir Howard K. Kippenberger, KBE, CB, DSO and bar, ED, m.i.d., Legion of Merit (US); Wellington; born Ladbrooks, 28 Jan 1897; barrister and solicitor; 1 NZEF 1916–17; CO 20 Bn Sep 1939–Apr 1941, Jun–Dec 1941; comd 10 Bde (Crete) May 1941; 5 Bde, Jan 1942–Jun 1943, Nov 1943–Feb 1944; 2 NZ Div, 30 Apr–14 May 1943, 9 Feb–2 Mar 1944; 2 NZEF Prisoner-of-War Reception Group in UK, 1944–45; twice wounded; Editor-in-Chief, NZ War Histories.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HOSPITAL SHIP ABA

Hospital Ship Aba

The British hospital ship *Aba* made a return trip to Crete on 16 May. General Freyberg asked that 7 General Hospital be cleared as completely as possible in anticipation of enemy action. The loading of the *Aba* was no mean feat. It was not considered wise to bring the ship into Suda Bay where, because of the presence of warships and port installations, the risk of bombing was great. Therefore, the ship anchored in the open sea off Canea. The DDMS Creforce, Colonel Kenrick, who supervised the loading operations, arranged for 189 Field Ambulance to provide transport for the patients from 7 General Hospital to the loading point on the shore. From here 561 patients were taken out to the hospital ship in two caiques and two ship's lifeboats, the latter towed by a launch.

Fortunately, the sea was calm and within eight hours the patients were embarked, an operation which involved raising the ship's lifeboats from the water to deck level with patients aboard. Loading was completed by 6 p.m. without interruption from the enemy. The enemy carried out an air raid over Canea at 5.45 p.m., but although planes dived over the hospital ship, she was not attacked and sailed at 6.40 p.m. The next day, however, the ship was twice attacked by enemy aircraft, in spite of her Red Cross markings, and in the second attack at 6.40 p.m. dive-bombers hit her, causing considerable damage and some casualties, resulting in the death amongst others of one New Zealand soldier. The ship later reached port safely at Haifa.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

7 GENERAL HOSPITAL BOMBED

7 General Hospital Bombed

On Sunday, 18 May, at 6.5 p.m., 7 General Hospital area was attacked from the air at low altitude, some bombs (four at least, possibly twelve) being dropped on the hospital area and towards the beach. Three British medical officers and two orderlies were killed, while another three orderlies were wounded. Among those killed was the surgical specialist; a New Zealand surgeon, Major Christie, was appointed in his place.

Arrangements were made on 19 May for 5 MDS to evacuate casualties to 7 General Hospital at 9.30 a.m. and 2 p.m. daily. This schedule could not be adhered to in later days, as convoys of ambulance cars and trucks were invariably halted on the road over very long periods while enemy aircraft strafed everything that moved. That very afternoon, as a prelude to bigger happenings next day, enemy planes flew to and fro over all areas occupied by troops, machine-gunning and bombing without restraint.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INVASION BEGINS

Invasion Begins

The usual blitz of Maleme airfield took place in the early morning of 20 May, but it was longer and heavier than usual, being directed especially against the anti-aircraft defences. Then, at 8 a.m. the sirens and bells from Canea to Maleme again sounded warnings and from that moment there was no "all clear" for the British forces on Crete. The invasion had begun. [1]

Maleme airfield and the hospital area near Canea were the two primary objectives of the enemy's concentrated air attack, which persisted for an hour and a half as part of the "softening-up process". The hospital was marked with a Red Cross, 30 ft by 20 ft, formed by red-painted stones laid out on the ground, as well as by Red

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[1] Preparations for the invasion of Crete had been made from the beginning of April and aerodromes in Bulgaria and Greece had been allotted for this purpose. Parachute, glider, and mountain troops and large numbers of planes of all kinds were detailed for the operation. Altogether an original force of 22,750 men was selected and eventually about 23,000 Germans were landed. There were 650 bombers and fighters, some 500 transport planes, and 80 gliders.

Crosses on the roofs of the officers' mess, the cookhouse and another building, and a large cloth Red Cross on the ground; yet it was subjected to the same intensive bombing and ground strafing as Maleme. Wounded were machine-gunned in their tents by low-flying aircraft. When the blitz lifted, gliders crash-landed to disgorge more enemy troops. Then in came lumbering troop-carrying planes, from which hundreds of paratroops jumped at a height of about 500 feet and swung

to earth.

The two main centres of these landings soon became obvious – Maleme airfield and the area to the west of it along the Tavronitis River, [1] and, secondly, the prison and lake area south-west of Galatas. The paratroops were engaged by 5 and 10 Brigades in the respective areas. Landings were also made around Canea between Galatas and the sea but these troops were quickly mopped up by 4 Brigade. Fierce battles developed as the enemy concentrated on reinforcing the troops establishing themselves at Maleme airfield. In the hospital area west of Canea the enemy at first had it all his own way in attacking the unarmed medical units – 6 Field Ambulance and 7 General Hospital.

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[1] Captain Stewart, RMO 23 Battalion, reported later that he visited the Tavronitis riverbed when a prisoner of war and found it full of crashed gliders and Ju52s. To the west for one kilometre on the flat ground were still more. He counted 100 [*] between the main road and the coast. Beyond them was a solitary AA gun spiked and surrounded by empty shell cases.

[*] This figure is now known to be too high—approximately 75 gliders were used in the invasion of Crete.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

6 FIELD AMBULANCE CAPTURED

6 Field Ambulance Captured

The men of 6 Field Ambulance were at breakfast when the blitz started and immediately dived to cover. While the bombers and fighters of the Luftwaffe roared incessantly overhead, the men lay hidden in their dugouts and slit trenches listening to the fury that was loosed above for an hour and a half or more. Some wards and the dispensary and medical stores at 7 General Hospital were seen burning after the attack.

Then, with the cessation of the bombing and strafing, came the paratroopers and the sound of voices. Coming out of their trenches the men found themselves faced with the muzzles of Schmeisser guns, and the grim, set countenances behind them. Lieutenant-Colonel Plimmer and Major Lovell, [2] who were occupying the same slit trench, were ordered by an enemy parachutist to surrender, and raised their hands. As he was getting out of the slit trench Colonel Plimmer was suddenly fired upon; he was shot through the abdomen and died within a short time. It was the ruthless killing of a non-combatant. Fortunately, it was an isolated incident. Within the next hour most of the staff and the forty patients were herded into a clearing round the Red Cross flag.

At 7 General Hospital, to which some New Zealanders were attached, staff and patients were likewise rounded up. A German pilot, who had been wounded and was a patient, gained possession of a tommy gun and assisted the paratroops. In the burnt-out wards were the charred bodies of patients. The medical staff remonstrated without effect against being removed from their care of the wounded. They, too, were herded round the Red Cross flag in 6 Field Ambulance area, although some were able to avoid capture and remained with the more seriously ill hospital

patients who could not be moved.

The captive party, several hundred in all, remained out in the open for several hours. The padre and a small party were permitted to conduct a burial service for Colonel Plimmer. Several of the medical officers and men of 6 Field Ambulance attended to the wounded in the area—British, German, and civilian alike—and two officers and two sergeants from the unit were sent under guard to 7 General Hospital to carry out further treatment of a German with a severe chest wound.

About 12.30 p.m. the large group at the MDS was shepherded up the valley under cover of the olive trees towards Karatsos, [1] where 19 Battalion had its lines. A patrol from 19 Battalion opened fire on the party as they were on the ridge, in an attempt to shoot the escort. One of the Germans bringing up the rear of the party was caught in the machine-gun fire, but bursts of fire also struck the party. Three men from 6 Field Ambulance were killed and three others wounded. The infantrymen were therefore obliged to hold their fire while the Germans hurried their captives over the hill.

After several halts they approached the village of Karatsos. At 4 p.m., when they were near the top of a terraced hillside, they were met by another patrol from 19 Battalion and some Greeks. Taking cover behind a low stone wall, the paratroops – numbering about a dozen at this stage – went into action, with the patients and men of the medical units hugging the ground between the two opposing forces. Rifle and machine-gun bullets flew just overhead in a continuous fire. One burst went into the middle of the party, killing two and wounding about twelve, none being members of 6 Field Ambulance. Despite the fusillade the wounded were attended to on the spot by medical officers and orderlies. After an action lasting about an hour and a half the German patrol retreated to avoid being encircled, leaving some killed, while five Germans were taken prisoner.

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[2] Lt-Col A. A. Lovell; Tanganyika; born England, 10 Feb 1910;

medical practitioner; medical officer, Fanning Island, 1940; 6 Fd Amb Aug 1940–Dec 1941; 1 Gen Hosp Dec 1941–Nov 1944; OC NZ Mil Hosp (UK) 1944–46.

[1] **Also known at the time as Daratsos and shown as such on some maps.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

6 FIELD AMBULANCE RELEASED AND RE-ESTABLISHED

6 Field Ambulance Released and Re-established

The released medical group was then conducted to 19 Battalion lines about 6 p.m., and late that night reached 20 Battalion's positions near Canea.

The progress of the small party sent to 7 General Hospital was interfered with by a counter-attack by two tanks of 3 Hussars and a patrol from 18 Battalion, but they were eventually ushered into the RAP tent at 7 General Hospital, where they treated the wounded German. Later, a patrol from 18 Battalion recaptured the hospital area and escorted the ambulance personnel to Headquarters 4 Infantry Brigade.

It was then decided to set up an ADS in a culvert under the main Canea- Maleme road, about a mile and a half nearer Canea than the previous location. The site had been used as an RAP for 18 Battalion. In the afternoon 18 Battalion provided an armed escort for one officer and the two sergeants to return to the MDS to salvage as much medical supplies as possible. They found the area clear of the enemy and returned to the culvert with an assortment of medical supplies. Here the remainder of 6 Field Ambulance reassembled at 11 p.m. on 21 May.

With the coming of dawn they found they were on the seaward side of the coast road about half a mile from the beach. Through the centre of the area, which could almost be termed a valley because of the low hills on either side which swept down to the beach, ran a deep zigzag watercourse, dry and fairly wide. This passed under the road in a large concrete culvert, and over the greater part of the grass-covered area were the inevitable olive trees in their orderly rows. Towards the sea, at the edge of the olive grove, stood a small two-roomed cottage, and about fifty yards nearer Maleme was a larger one on the hillside; both were

occupied by Cretan civilians. The culvert was "transformed" into an operating theatre and the watercourse into a ward, using scraps of salvaged canvas for cover, camouflaged with leaves and soil.

A camp stretcher, placed in the centre of the culvert, formed the table with just space enough on either side for the surgeons; there was little head room. A small fish kettle on a primus stove and an enamel plate formed the sterilising unit and was adequate for the few instruments salvaged from 7 General Hospital that were available. Anaesthetics consisted of a small stock of pentothal sodium and some Greek brandy and whisky provided by 18 Battalion. Blood was, of course, not available.

Incredible as it may seem, successful operations of a major type were performed and the patients transported in a 15-cwt truck to the naval hospital on the other side of Canea. Rations were collected on the return trip. These consisted mainly of bully beef, which the cooks turned into some excellent stews, biscuits, and tea – water being obtained from a nearby well. For the patients there was also some tinned milk and beef-extract broth.

7 GENERAL HOSPITAL RELEASED AND RE-ESTABLISHED

7 General Hospital Released and Re-established

At 1 p.m. on 20 May the hospital area and the patients, with whom a small staff, including New Zealanders, had remained, was recaptured. The hospital was re-established immediately in large sandstone caves on the foreshore and an improvised operating theatre was functioning the same evening. In all, five large caves were used and as many as 500 patients accommodated. Four of the caves were used for surgical and the other for medical cases, and a great deal of work was very efficiently done there until the hospital was involved in the retreat.

New Zealand orderlies from the staff of 1 NZ General Hospital continued to be attached to the hospital and there was the utmost co-operation with New Zealand ambulance units.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE RMOS OF 5 BRIGADE—TREATMENT AND EVACUATION OF WOUNDED

The RMOs of 5 Brigade—Treatment and Evacuation of Wounded

Prior to the invasion the regimental medical officers set up their RAPs in the most convenient positions in their battalion areas. For instance, 23 Battalion RAP was sited in a dry watercourse under olive trees close to Headquarters 23 Battalion, on a side road branching off the main Canea– Maleme road about half a mile east of Maleme village. The stretcher-bearer section constructed some dugouts in the banks of this watercourse and dug a ledge in the dry bank to serve as a table for dressing patients. Until 20 May patients from the RAPs of 5 Brigade were evacuated by ambulances borrowed from the RAF at Maleme.

Few stretchers were available to the RAPs and medical equipment was very limited. It was impossible to bring any large medical panniers from Greece, although most RMOs had anticipated this and divided their kits into small first-aid outfits. The 23 Battalion RAP staff arrived in Crete with eight haversacks of shell dressings, gauze, and wool. The RMO had a small case of surgical instruments and two hypodermic syringes and needles. He found it difficult to get supplies from 7 British General Hospital. Later, two stretchers and two rubber-capped 10 cc. bottles of morphine solution, some dressings, iodine, and acriflavine were received from 5 Field Ambulance. In some cases, especially in 5 Brigade area, it was possible after the German attack to replenish supplies from medical equipment dropped with, or for, the German parachutists. Splints had to be improvised for the wounded and many men were transported in blankets used as stretchers. Little transport of any. sort was available.

From the beginning of the invasion the RMOs of 5 Brigade near Maleme had very few of the wounded cleared from their RAPs in the

hectic and confused three days before the area was overrun by the enemy. Captain Hetherington, RMO 21 Battalion, who received about sixty casualties into his RAP (including Germans, but not including dead or those who died shortly after admission) was not contacted at all by the field ambulance, and could evacuate no casualties. He was painfully short of medical supplies and depended almost entirely on German equipment dropped by parachute. When 21 Battalion retired about 7 a.m. on 23 May some walking wounded went off, but the RMO and the medical orderlies remained with the more seriously wounded.

A stretcher-bearer party from 5 Field Ambulance under Lieutenant Moody was sent forward with a company of 28 (Maori) Battalion to 22 Battalion on the night of 20–21 May.

In Moody's words:

> **We left the MDS at Modhion about 8 p.m. and joined up with Captain Rangi Royal's [1] company of the Maori Battalion. I was told to do this because this company was going forward as reinforcement to 22 Bn and it gave protection to my small medical party as isolated machine-gun posts and snipers were still active on the main east-west coast road. It was fortunate indeed that we had this protection as the Company successfully engaged and overwhelmed two German machine-gun posts on the north and south sides of the road. About 9 p.m. we arrived at 23 Bn HQ where we found an air of excitement and confusion; this was quite understandable as the military situation was very obscure. A runner from 23 Bn who was reputed to know this countryside well was told to take us forward and to link up with 22 Bn. On several occasions I told Capt Royal that the guide had lost us, but the guide persistently maintained that he knew his bearings. (I had made long treks through this part of the island as Bearer Officer of B Company in connection with 5 Field Ambulance's plans for collection of casualties.) About midnight we came out on to the main road and proceeded through the village of Maleme, but the guide asserted that it was not that village. We continued on our**

way walking westwards. The next thing we heard was a voice speaking in English and saying "Come on Tommy it is alright". Then some hand grenades exploded. We had walked into a machine-gun post guarding the eastern end of Maleme aerodrome itself. With this rude awakening we dived flat on the ground, waited for the burst of machine-gun fire which fortunately never came, and then collected ourselves in a culvert to take stock of the situation. Captain Royal's orders were that he was to keep clear of the

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[1] Maj R. Royal, MC and bar; Wellington; born Levin, 23 Aug 1897; civil servant; served in Maori Pioneer Bn in First World War; 28 (Maori) Bn 1940–41; 2 i/c 2 Maori Bn in (NZ) 1942–43; CO 2 Maori Bn May–Jun 1943; wounded 14 Dec 1941.

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aerodrome as the German strength there was unknown. For this reason we decided to retrace our steps to HQ 23 Bn. (Little did we then realise that this incident may possibly have contained the seeds of victory in the battle of Crete. We were subsequently to learn, when we were prisoners of war, that a mere handful of the Wehrmacht hung on to the vital airfield of Maleme that first night.)

We arrived back at HQ 23 Bn about 5 a.m.... Capt. R. S. Stewart, [1] the RMO, was doing a tremendous job on his own ... I remained with him on Wednesday 21st and Thursday 22nd. During these two days my men gave splendid service.... They were constantly exposed to ground fire, as well as machine gunning and bombing from the air, and they never once flinched or failed in collecting casualties from the battlefield.

Captain Longmore, [2] RMO 22 Battalion, in his situation close to Maleme airfield had a desperate two days prior to his capture on 21 May, when he was endeavouring to make his way with stretcher wounded

from his RAP at the airfield to 23 Battalion's area.

He had attended to numerous casualties, both at his tactical RAP and farther forward in the Fleet Air Arm encampment, when he received orders in the late afternoon of 20 May to move back, taking the wounded with him. Returning to his RAP he set out, guided by the Intelligence Officer, with 160 stretcher cases and walking wounded. Some of the wounded were carried on boards. After travelling up hill and down dale for about half a mile the party stopped to await further orders. By daylight no orders had been received; the Intelligence Officer had already left to bring help. He reached 21 Battalion's lines but decided that it would not be possible to bring the large party of wounded out over a ridge that was exposed to some enemy fire. In a clearing the RMO and the wounded waited. The German wounded in the party made a white circle from RAP gear and all the crowd sat inside it, being unmolested by the enemy planes that were active all around. Attempts to contact 22 Battalion or the RAP of 23 Battalion failed. At 5 p.m. on 21 May the group was surrounded and captured and taken back to a dressing station set up in Tavronitis village, where Flying Officer Cullen, an RAF medical officer, was already at work.

At his RAP on 20 May Captain Stewart of 23 Battalion received wounded mostly from his own unit, and early on the morning of the 21st he was able to evacuate thirty sitting and lying cases on two 15-cwt trucks which, escorted by a Bren carrier, were returning to Canea after bringing up ammunition. These wounded were taken to the MDS of 6 Field Ambulance. On 22 May Stewart treated a

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[1] Capt R. S. Stewart; Gore; born NZ 17 Mar 1906; medical practitioner; RMO 23 Bn May 1940–May 1941; p.w. 23 May 1941.

[2] Maj L. H. V. Longmore; Christchurch; born NZ 18 Nov 1909; medical practitioner; RMO 22 Bn Dec 1940–May 1941; p.w. 21 May 1941; repatriated Nov 1943; medical officer 1 Gen Hosp Apr–Oct 1944; Prisoner-of-War Reception Group (UK) Oct 1944–Dec 1945.

number of wounded from 22 Battalion, which had retired partly on to 23 Battalion's area and was then without the services of its RMO; from 28 (Maori) Battalion, whose RMO, Captain Mules, [1] had been wounded; and from 20 Battalion, whose RMO, Captain Gilmour [2] had been forced to remain mobile and had marched to the attack with his battalion and had evacuated stretcher wounded to 23 Battalion, the nearest stationary RAP.

That day sixty walking wounded were evacuated under the care of the personnel from 5 Field Ambulance. Unfortunately, some of the walking wounded found the rough, steep track leading parallel to the main road over the hilly country to 5 MDS too much for them. These returned to 23 Battalion RAP in a desperate plight on 23 May after the RAP had been captured.

Early on the morning of the 23rd 5 Brigade and 20 Battalion withdrew to a position east of the Platanias River, the rearguard retiring at 7 a.m. Lieutenant Moody withdrew with 23 Battalion. There then remained at 23 Battalion RAP some sixty serious stretcher cases from 20, 22, 23, and 28 (Maori) Battalions and twenty Germans. With these stayed Captain Stewart, the padre, R. J. Griffiths, [3] their two orderlies, and Corporal Collie [4] from 20 Battalion.

They had the unenviable task of informing the wounded, particularly personnel of the Maori Battalion, that no evacuation was possible and capture inevitable. Arms and ammunition left in the RAP area were destroyed or hidden and on the earnest entreaty of the German wounded, who realised the situation only too well, a large captured German Red Cross flag was erected. German patrols entered the RAP area at approximately 8.30 a.m. on 23 May without incident, except that steel helmets had hastily to be removed by the New Zealanders.

Longmore, Stewart, and Hetherington worked together in a dressing station in a stable attached to an inn in the Tavronitis valley, and they put through 500 to 700 cases with only seven deaths. The German field

ambulances had ample and excellent equipment, including a water sterilising plant, and what they could spare they gave to the captured MDS. It was noted that our wounded suffered in the main multiple wounds inflicted by submachine gun, grenade, and mortar.

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[1] **Capt C. M. Mules; Dargaville; born Woodville, 24 Oct 1909; medical practitioner; RMO 28 Bn Aug 1940–May 1941; wounded 21 May 1941.**

[2] **Capt W. L. M. Gilmour; born Scotland, 19 Dec 1914; medical practitioner; RMO 20 Bn Jan–Nov 1941; killed in action 1 Dec 1941.**

[3] **Rev R. J. Griffiths, MBE; Waimate; born Gisborne, 26 Jul 1905; Presbyterian minister; p.w. 23 May 1941.**

[4] **L-Cpl A. F. Collie; Bayswater, Southland; born Otautau, 7 Oct 1913; dairy assistant; p.w. 23 May 1941; repatriated Oct 1943.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

5 FIELD AMBULANCE AFTER INVASION

5 Field Ambulance after Invasion

When the invasion began in the morning of 20 May many parachutists dropped in the vicinity of 5 Field Ambulance, followed by parachutes bringing equipment and stores. Throughout the morning this phase continued, and during this time the members of 5 Field Ambulance remained under cover, their only activity being to transfer the sick to the basement. A lull occurred about noon, but enemy activity was soon resumed. Almost total interruption of road movement resulted. The wounded from forward units could not be moved back in daylight. Casualties began coming in only from nearby units, and were supplemented by a number of wounded German parachutists.

No distinguishing signs identifying the site as that of a medical unit were displayed at first as it was considered undesirable to disclose the disposition of the fighting troops and their defensive positions. However, about two hours after the airborne landings had commenced, Red Cross signs were put out – one on the roadway in front of the MDS and another on the roof of the house. Thereafter, there was no bombing or machine-gunning in the immediate vicinity, although cooking fires were in full view of enemy planes and the staff went openly about their duties, though not wearing steel helmets. This latter point was most important – captured Germans had advised that steel helmets were likely to be taken as evidence of fighting troops and therefore it would be wise not to wear them. It appears that German protected personnel did not wear steel helmets in their dressing stations.

At 4 p.m. on 20 May casualties began to arrive, these including several German prisoners. The first convoy of wounded was evacuated by truck to 7 General Hospital at 6.30 p.m., but while the truck was en

route there it was first learned that German troops had captured the hospital. A medical officer and reserve stretcher-bearer parties from 5 Field Ambulance had been sent forward to the RAPs, and the evacuation of casualties to the MDS was arranged during the night. Bren carriers of 23 Battalion convoyed some trucks of wounded through to 5 Field Ambulance. At 2 a.m. on 21 May 7 General Hospital got a message through to 5 Field Ambulance that the unit could then take serious cases, but that it would be advisable for all evacuations to be carried out during the hours of darkness. It was possible to evacuate only four stretcher cases before daylight owing to the limited transport. In many cases additional operative treatment was given to patients at the MDS, as it was obvious that there would be some delay in getting them back to the hospital. Battle casualties admitted in the twenty-four hours up to 7 a.m. on 21 May totalled 35, including six prisoners and two civilians.

Throughout 20 May hard fighting among the olive trees at Maleme and Galatas had held the German parachutists, although 22 Battalion's hold on the western side of Maleme airfield had been lost. Such resistance had not been expected by the enemy. Further attack from the air and the reinforcement of parachutists began at dawn on 21 May. Battle casualties streamed into 5 MDS, and surgical operations were carried out throughout the day and well into the night, extra accommodation for the patients being provided in tents, earlier obtained from 7 General Hospital.

During the day paratroops were dropped near 5 Field Ambulance and at 4.30 p.m. the advance of the parachute troops had brought them to slopes and ridges adjoining the valley in which the MDS was situated. The enemy were held by the Maori Battalion and 19 Army Troops Company, but such was their proximity to the MDS that the CO deemed it advisable to destroy all codes and secret papers.

It was not possible to make any evacuations from the MDS during the night of 21–22 May, and by the evening of the 22nd there were more than 130 casualties held, many of a serious nature. By this time medical supplies were getting very low. Throughout 21 and 22 May unit

stretcher-bearers had continued with their task of evacuating wounded from the battalions, having a particularly difficult time through being subject to air attacks and attacks by wandering groups of paratroops, as well as having to make long and strenuous hand carries over uneven ground. Fortunately, the weather remained clear and fine.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CASUALTIES FROM 4 AND 10 BRIGADES

Casualties from 4 and 10 Brigades

The RMOs in the Galatas area suffered from the same deficiencies of equipment and supplies as did their fellow officers attached to 5 Brigade, and relied largely on captured German supplies when the fighting began. Captain Lomas of the Composite Battalion, however, had been able to procure adequate supplies from 7 General Hospital before the invasion, and after the hospital had withdrawn to the caves an abundant supply of stretchers and blankets was obtained from the abandoned site. The capture of 7 General Hospital and 6 Field Ambulance on 20 May upset evacuation arrangements. Instead of the field ambulance receiving casualties from the brigades, the position was temporarily reversed. Captain Dempsey of 18 Battalion had his RAP under a culvert on the main coast road next to his unit's area, and this culvert was given over to Captain Lovell for a dressing station for 6 Field Ambulance. The 19th Battalion was farther inland in rougher country, and Captain Carswell found it best to treat the wounded in trenches in the front-line positions. There were German snipers everywhere, in front, behind, and in between the New Zealand positions. In local positions it was estimated that German dead and wounded outnumbered New Zealand casualties by about twelve to one. After the first confused day German paratroops did not snipe at the medical officer or stretcher-bearers wearing Red Crosses. Evacuation of wounded was impossible by day, but was carried out at night in the single ration truck which visited the positions and took the wounded down the road direct to the dressing station. For lack of stretchers, the wounded had at first to be collected in blankets.

Captain Lomas had his Composite Battalion RAP at battalion headquarters, midway between Ruin Hill and Red Hill, in a ditch beside a track which ran from Galatas north-west to the coast. The wounded

were brought in to this main RAP from the first-aid posts of the various companies of the Composite Battalion and 10 Brigade. This medical station, receiving as it did from the perimeter companies and battalions of 10 Brigade, was virtually an ADS, although owing to efficient evacuation by the truck drivers not much surgery was undertaken.

Headquarters 10 Brigade had two light trucks for all purposes, and these were used to evacuate the wounded. Later, the ASC drivers secured two more abandoned light trucks for the purpose. For several nights these drivers had to run the gauntlet of a machine-gun post manned by enemy paratroops, but they were never deterred and performed a magnificent task throughout the whole of the fighting in the Galatas area.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DEVELOPMENTS IN THE BATTLE

Developments in the Battle

The days that were vital in the battle for Crete were 21 and 22 May. On 20 May the enemy had met with far more opposition and far less success than he expected. The next day there was a renewed air attack, and following that up at night was an attempted landing from the sea, when a force of some 1200 troops with heavy equipment got within 18 miles of Canea in small steamers and caiques before it was dispersed by the Royal Navy, with heavy losses. In the early morning of 22 May a second attempted seaborne landing was broken up, not without some loss to the Navy, whose ships were bombed by the Luftwaffe. (In a space of thirty-six hours the Navy lost two cruisers and four destroyers and had two battleships and two cruisers damaged.)

It was on 22 May that one of the bitterest battles was fought. The fate of Maleme – indeed, the fate of Crete – was in the balance. A counter-attack was launched by the New Zealanders in the early morning to recover ground lost the previous day when they were forced off Maleme airfield. At dawn, when success seemed almost within their grasp, the enemy's distress signals brought fighters and bombers to unleash a blitz which made the hard-won ground untenable. Regardless of casualties, the Germans poured in reinforcements by troop-carrier aircraft. Fifth Brigade was in danger of being cut off and started to withdraw towards Canea early in the morning of 23 May. By ten o'clock that morning a line was established along the Platanias River. At night it was found necessary to withdraw further – this time right through 4 Brigade's positions to the divisional reserve area just west of Canea. Maleme airfield had been lost with the first withdrawal, and the second withdrawal enabled the enemy to effect a junction between two hitherto separated forces – the force landed in the Maleme area and that landed

in the Alikianou reservoir-prison area to the south-west of Galatas. In the other sectors at Heraklion and Retimo the enemy had paid a heavy price for small successes and was now precariously held. The balance of the battle had now turned in the enemy's favour.

5 FIELD AMBULANCE WITHDRAWS TOWARDS CANEA

5 Field Ambulance Withdraws towards Canea

From 5 Field Ambulance at Modhion some of the wounded were evacuated by ambulance car, and the first party of walking wounded and some of the staff of the unit set off on foot at 3 a.m. on 23 May for the former site of 6 Field Ambulance at the junction of the Canea and Galatas roads. The coastal road to the east was pitted here and there with small craters, littered with dead donkeys and telephone wires and the debris of shattered farm vehicles and of damaged houses in which isolated groups of parachutists had sought to control the road. Transport had been arranged by Headquarters 5 Brigade for the stretcher cases, but because of the bombing of the road some Cypriot drivers had abandoned their trucks or else had not proceeded to Modhion. An officer of Headquarters 5 Brigade, Captain Coutts, [1] managed to marshal trucks by dawn, just when preparations were being made for some of the wounded to be left behind under the care of a section of the medical staff. It was then possible to clear the dressing station entirely. The convoy proceeded in broad daylight, under Red Cross flags, unmolested by enemy aircraft which were already about in fair numbers. The walking wounded were taken to 7 General Hospital

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[1] **Maj P. E. Coutts, MBE, ED, m.i.d.; Auckland; born Auckland, 4 Dec 1903; salesman; OC 1 Amn Coy Oct 1941–Jan 1943, Feb–Oct 1945; 18 Tk Tptr Coy Jan 1943–Mar 1944.**

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in the caves on the foreshore, while the stretcher cases were unloaded at 189 Field Ambulance hospital at Khalepa, a northeastern suburb of Canea. (This British field ambulance had been called upon to establish a temporary hospital to take the overflow of wounded from 7 General Hospital. By utilising a school, a convent, and a number of

adjacent houses, the unit eventually held as many as 460 cases. Major Christie, NZMC, was transferred from 7 General Hospital to do the surgical work and succeeded in improvising a first-class operating theatre.)

Fifth Field Ambulance occupied the area used by 6 Field Ambulance up to the time of its capture; the latter unit at this time was functioning in a culvert about a mile further along the road towards Canea. During the morning the 5 Field Ambulance site was subjected to a particularly heavy attack of bombing and machine-gunning, the site being near an important road junction. One death was sustained by the unit as a result of the attack. Information had been received that heavy casualties were to be expected from 5 Brigade's front and, as it was impossible for the unit to carry on where it was, it was decided to open up in the officers' mess building, well down towards the beach, on the 7 General Hospital site. The changeover was made by midday on the 23rd.

Casualties arrived in a steady stream throughout the afternoon and night, and before dawn the total admissions were over 200. Good work was done by the drivers of the trucks, some from 5 Field Ambulance and some from other units in the line, in carrying on unceasingly through the hours of daylight and darkness bringing in the wounded; and also by the ambulance orderlies who went out with the trucks. All trucks and ambulance cars were provided with Red Crosses and drivers and patients frequently derived considerable confidence, when negotiating the open roads, from the presence of lightly wounded German prisoners, who volunteered to accompany them so that in the event of interference they could intercede as far as they were able in having the convoy regarded as a protected service.

In the evening a small convoy of five trucks with two medical officers set out to evacuate wounded from 23 Battalion and from the Maori Battalion at Platanias. The Maori Battalion being well forward, the trucks going to evacuate their wounded were to rendezvous with those clearing 23 Battalion before returning to the MDS. Once again

circumstances intervened. Before reaching Platanias the ambulance vehicles passed those of the withdrawing Maori Battalion just east of the village. To an accompaniment of doubts as to the direction, they drew up in the lower village at Platanias where Captain Royal's rear party was still firing spasmodically down the road. Most of the lightly wounded had already gone out with the battalion. Several serious cases which had remained were placed in two trucks, and the third vehicle was instructed to wait at the rendezvous to meet those being evacuated from 23 Battalion, with a message that the 23 Battalion abdominal cases were being taken directly through to Khalepa.

The clearing of the 23 Battalion casualties was a more difficult task. With orders to pick up wounded from that battalion, Lieutenant Gray [1] took two small trucks and four stretcher-bearers; he had only a vague idea where the battalion headquarters was and was to be stopped by a sentry along the road.

The country was quite familiar to them as they had explored much of it in the three weeks before the invasion. At the rendezvous they found several wounded, some walking and other more severe cases, on the side of the road. Taking several stretchers, they followed a guide up a dry riverbed. This descended steeply, with heavy growth along the banks and overhanging its course, boulders strewn on the short level stretches, and small waterfalls every few yards. They soon met tired troops staggering under the burden of their severely wounded comrades in improvised stretchers of two poles and a blanket, and as time was short no time was lost in carrying out first aid. The orderlies took over from the troops wherever assistance was needed and very soon no orderlies were left.

Lieutenant Gray and a corporal kept on up the stream and after some time met the rear party. They were carrying in a blanket a badly wounded man, who had compound fractures of both legs below the knee. Helping to carry the man down that riverbed was most difficult. Already tired after four days of confused fighting and weary through lack of sleep, the party made slow, stumbling progress over boulders, on slippery

shingle, gently lifting him over rocky falls every few yards, tripping and falling over trees and wood in their path, bearing the burning pull of the rolled edge of a blanket on aching fingers and hands.

In the shelter of the riverbed the strenuous work soon had them in a bath of perspiration, mouths and tongues dry from laboured breathing. It was too much for their unconscious burden and he was dead when they reached the truck.

Both trucks were by then piled with wounded. Conscious and unconscious men were piled on the floor – there were as many stretchers as could be carried, and the departure of the medical

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[1] Capt W. G. Gray, m.i.d.; Auckland; born Auckland, 13 Jul 1913; medical practitioner; medical officer 5 Fd Amb Dec 1939–Nov 1941; p.w. Nov 1941; escaped to Switzerland, Nov 1943.

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party and the wounded now had to be hasty. There was no time for a second trip. The rough road back to the MDS was a nightmare for all, and too much for two more of the wounded. It was well after midnight before they reached the MDS, which was already overcrowded with wounded from other units.

On the way through Canea, the darkness and smoke enhanced by flashes of a 6-inch gun from HMS *York*, a call was made at a Greek Red Cross dressing station in the square where several British wounded and a Maori were picked up. At Khalepa not another lying case could be taken. Every possible space was occupied by stretchers and palliasses. At 2 a.m. operating was still in progress. A guide was found and the two vehicles were redirected to the naval tented hospital at Mournies, where the naval hospital orderlies had some trouble with Maori names. A speedy return was made to the MDS, but it was dawn when the vehicles arrived.

Valuable assistance was given to 5 Field Ambulance in dealing with casualties by the surgical team from 7 General Hospital (Lieutenant-

Colonel Debenham, Captain Gourevitch, and Captain Holt) which took over the operative work during the night. Evacuations from the dressing station were carried on throughout the night, 60 of the more serious cases going to 189 Field Ambulance hospital and 50 serious stretcher cases and 120 walking wounded going to the caves of 7 General Hospital. Bearer parties went out after dusk to assist in the evacuation of casualties from 5 Brigade. The lightly wounded were sent to 6 Field Ambulance and, of the serious cases, twenty went to 189 Field Ambulance hospital and ten to 1 Marine Tented Hospital at Mournies, 2 miles south of Canea. (This 60-bed naval unit had arrived on 10 May, and when 7 General Hospital was pressed for space it found accommodation for more than 400 cases, the surgical staff continuing to operate day and night in spite of enemy snipers in the neighbouring foothills.)

At dawn on 24 May 5 MDS had been cleared of all casualties with the exception of eight wounded prisoners of war. This complete evacuation had followed a visit from Colonel Bull, acting ADMS NZ Division, the previous evening, with news that an attack on the area was expected. While the remainder of the staff went to caves on the foreshore for much-needed rest, a nucleus of the MDS staff – including the CO – remained in the building during 24 May, a quiet day on which only eight casualties were admitted. Aerial activity had continued throughout the day, but the Germans were waiting for further reinforcements for their ground forces to come from Maleme airfield before making a major attack.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BOMBING OF 6 MDS

Bombing of 6 MDS

On 23 May the site of 6 Field Ambulance, along with surrounding areas, was subject to severe aerial attacks which lasted practically all day. Two of the members of the unit were killed when two bombs dropped on the site. At this stage the unit was using the concrete culvert under the road as a reception centre and a narrow, deep, and dry riverbed for accommodating patients. The location was in an olive grove, where concealment was almost perfect and Red Crosses were not displayed. The unit, however, was becoming an unseen target in the general attack by enemy planes on roads and troop movements, and during the night a move was made to one of two cottages in a cleared area two or three hundred yards away from the road.

"About midday next day," said Corporal P. Curtis, [1] "... a machine-gun crackled through the camp followed by a bomb which narrowly missed the cottage, and another which landed near the watercourse fatally wounding two members of the unit. Those of us in the theatre were covered by a cascade of mud, bricks and tiles. Almost immediately after we had extricated ourselves from the debris an officer arrived for morphia saying that the two unit members had been caught standing one on either side of the ditch. We buried them after a short service later in the afternoon.

"It so happened that the patient on the table at the time was a German who asked us whether we were displaying any red crosses, and on being told no and why, said that if we did we would be left alone. As it was now obvious that we had been spotted and thus further attacks could be expected, this advice was followed and some ground flags were made from sheeting and red blankets, the

area being mapped out with two of them and one on the roof of the cottage. It must be admitted that no further attacks were made on us after that although low flying, presumably for demoralising effects, continued.

"Shortly after this a signal was received saying that no further casualties could be taken by the Naval hospital so that it became imperative to find alternative accommodation and shelter, the nights being too cold in the open for badly shocked cases. Accordingly it was decided to take over the larger cottage for this purpose and it too was marked with the red cross.

"Time seemed to stand still and one day was very like another. The morale of the unit and patients remained high and at no time did the position seem hopeless, at least to those of us in the ranks without official knowledge. A rumour even reached us that the Germans were about to evacuate despite Lord "Haw Haw's" continued gloom about our prospects.

"Gradually the intake of casualties slackened until by Sunday they had practically ceased to come in. This, our first Sunday after the invasion, was particularly memorable for two reasons. In the mid-afternoon twelve of our bombers passed overhead to off-load over Maleme, accompanied by prolonged cheering which could be heard for a considerable distance. These were the first aircraft carrying our insignia that we had seen since the invasion began. Later the same evening orders came through for our withdrawal and evacuation."

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[1] **WO I P. H. Curtis; Auckland; born Timaru, 16 Mar 1919; medical student; NCO 6 Fd Amb 1940–41; 1 Mob CCS Oct 1941–May 1945.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BATTLE FOR GALATAS

Battle for Galatas

On the afternoon of the sixth day, 25 May, the Germans attacked in force in the Galatas sector following intensive mortar and air bombing, which reached a terrific climax about 4 p.m. For more than two hours the New Zealanders held their line intact, but extreme pressure forced a fighting withdrawal and the Germans took Galatas. But as darkness fell the New Zealanders launched a counter-attack which drove the Germans out of the village, with heavy casualties to both sides. The troops, dog-tired after days of fighting and continuous bombardment, with their ranks thinned by casualties, were not in a position to follow up their advantage. During the night 4 Brigade withdrew through 5 Brigade, which had reformed and moved into a new line east of Galatas, alongside 19 Australian Brigade and also east of the hospital area.

On 24 May Captain Lomas, moving with Headquarters 10 Brigade, resited his RAP on the northern outskirts of Galatas. During the battle of Galatas many of the casualties from the Divisional Cavalry RAP run by Captain Stevenson-Wright [1] went through this RAP, and some of the casualties from the 18 Battalion RAP under Captain Dempsey were also sent on by Captain Lomas. On some days the number evacuated from Lomas's RAP reached ninety. It is estimated that there was an average of seventy casualties a day for the six days' fighting at Galatas.

The 18th Battalion had been moved forward to the west of the Composite Battalion on 24 May and from the fighting near Wheat Hill, west of Galatas, many wounded came in to its RAP, which was situated in a depression about 200 yards from Battalion Headquarters. Many were severely wounded by mortar fire, and Captain Dempsey thought the proportion of killed to wounded was abnormally high. The serious cases

were loaded on to a small truck and rushed back to 6 MDS in daylight. The truck was strafed on its journeys and had to run off the road many times, but it was not thought that any of the wounded received further wounds. The walking wounded made their way back on foot.

When 18 Battalion retired behind Galatas, Captain Dempsey and Padre Dawson [2] at the RAP were unaware of the move until they discovered there was no one between them and their forty wounded and the Germans. There was still time to move the wounded back – many could walk but some were carried on stretchers; three had to be left behind. Captain Dempsey was not, therefore, in touch with his unit in the final fighting at Galatas.

On the afternoon of 25 May the enemy's fierce attacks produced about ninety casualties, which were evacuated with great speed once the defence line was broken. Here again the drivers of the light trucks did splendid work in the daylight, being subjected to aerial attacks most of the time. All the casualties had been evacuated by the time of the start of our counter-attack which led to the recapture of Galatas. In the withdrawal the Divisional Cavalry did not inform its RAP, but Captain Stevenson-Wright became aware of the position and managed to bring back the few wounded he held and rejoin his unit near Canea.

In the retirement towards Suda Bay 18 Battalion suffered many casualties from air strafing. Its headquarters was hiding under some trees when one of its officers crossed the road to the hiding place while a plane was overhead. The plane came down and strafed the area, killing some, including the stretcher-bearer sergeant, and wounding a number. There were other such incidents on a smaller scale. First field dressings were applied to the wounded, but those who could not walk had to be left behind. They were well treated by the Germans.

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[1] Capt E. Stevenson-Wright, MBE; Wellington; born Dannevirke, 16 Feb 1909; medical practitioner; medical officer 1 Gen Hosp Mar 1940–Feb 1941; RMO 2 Div Cav Mar–May 1941; p.w. May 1941.

[2] **Ven Archdeacon F. O. Dawson, MC; Morrinsville; born London, 23 Feb 1909; Anglican minister; SCF 2 NZ Div 1944–45.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE LINE BREAKS

The Line Breaks

Enemy pressure increased on this new line at Canea on 26 May and by nightfall enemy parties had infiltrated behind the lines. Further withdrawal was necessary during the night and a new line was established early on 27 May on 42nd Street – a dirt road running north and south about one mile west of Suda township. Enemy aircraft attacked the Anzac positions and ground troops began to work round the southern flank, threatening the road of retreat.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL UNITS DURING THE WITHDRAWAL

Medical Units during the Withdrawal

By 25 May the front line was only a few miles away from the medical units, which continued to receive casualties. During the day casualties from the air offensive were only moderate, but towards evening both 5 and 6 Field Ambulances began to receive a steady stream of heavy casualties from the fighting for Galatas. By evening, also, mortar bombs were falling within a few hundred yards of 5 MDS and machine guns were spraying the vicinity of the buildings with bullets. An endeavour was made to collect trucks which had been abandoned and five vehicles were obtained, one of them being set on fire by a passing aircraft. This was taken to be an objection to the numbers of vehicles collected together, or more likely as a hint to move farther back. Preparations for a move were continuing when Colonel Bull arrived at 7 p.m. with instructions for both 5 and 6 Field Ambulances and 7 General Hospital to go to the region of Nerokourou, south-east of Canea and some 7 miles away, where a site had already been prepared for the reception of casualties. It was reached by sunken lanes and rough roads across the outskirts of Canea.

The evacuation was planned so that all equipment and the stretcher cases in the dressing station would be moved by transport, which necessitated three trips in the vehicles available, but the situation was further complicated by the necessity of detailing one truck to collect more wounded from forward areas. Delay also occurred because the prepared site at Nerokourou could not be found in the darkness. Patients and equipment were offloaded at a church, and when dawn broke this was found to be exactly opposite the area where the tents had been pitched. Although the tents had been pitched under olive trees and were widely dispersed, they had received the attention of enemy aircraft the

previous day and some had been destroyed by fire. This was largely attributable to bad concealment by the Cypriot pioneer company when preparing the site.

The three marching parties, comprising the more lightly wounded walking cases and most of the staffs of 5 Field Ambulance and 7 General Hospital, halted within 500 yards of the church, but the tentage by the roadside was not found till dawn though one party, unable fully to resist sleep at the halt, were within a hundred yards of it in the darkness. Lieutenant-Colonel Twhigg and Captain Palmer and four or five others began to move stores to the selected site whilst awaiting the return of the transport. More tents were erected, Red Crosses displayed, and after hasty consultations the church was utilised as an operating theatre. The hamlet was deserted. Casualties soon came in, and those awaiting attention had, it seemed, the utmost faith in the Red Cross: none of the waiting casualties showed a steel helmet nor did they permit others to do so without protest.

At first many were reluctant to remain in the tents while aircraft dived above them, but after the third dive without incident confidence in enemy respect for the Red Cross was restored. There were no attacks on the MDS. Within the church, by late afternoon, twenty-seven operations with anaesthetic had been performed.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL STAFFS REMAIN WITH WOUNDED

Medical Staffs Remain with Wounded

Through these unforeseen delays only two trips were carried out by the trucks before dawn. The first trucks left at 10.30 p.m. and were expected back for the second load at 1 a.m. on 26 May. When no trucks came, those remaining expected to be prisoners of war, and well they might have been had the Germans advanced during the night, as the New Zealanders withdrew from Galatas about midnight to lines in the rear of the hospital. However, three trucks returned at 3.30 a.m. and loaded all but some twenty or thirty seriously wounded cases from 5 MDS. Two medical officers, Major S. G. de Clive Lowe [1] and Lieutenant Moody, and a padre, J. Hiddlestone [2] and fourteen men, decided to stay to attend them.

As 7 General Hospital had had to leave 300 stretcher patients in their caves adjacent to 5 Field Ambulance and had detailed two medical officers and twenty men to look after them, the CO 5 Field Ambulance considered that an attempt should be made to evacuate the balance of his ambulance staff and as many of the patients as possible. The three truck drivers volunteered for this mission, but as a result of the air activity with the coming of daylight only one truck got through, the others being attacked and forced to return. The one truck, flying a Red Cross flag, was kept under constant observation by an enemy reconnaissance aircraft, which left it immediately it turned in to the hospital area. While preparations for departure were being made, a German patrol entered the dressing station and captured the medical staff and the wounded. The truck driver, Driver Jenkins, [3] made his escape by climbing down the cliff and clambering round the rocks to get behind the New Zealanders' front line. He returned to the MDS at Nerokourou at 11 a.m.

At midnight the CO 6 Field Ambulance (Major Fisher) had received orders from the ADMS NZ Division to evacuate 250 walking wounded, and as the unit still possessed only a single light truck, the majority of these men also had to walk. They reached the naval hospital and most of them were taken off by destroyers on 26–27 May. Then, at 4 a.m. on 26 May, Colonel Bull met Major Fisher and instructed him to move his unit to Nerokourou immediately to establish an MDS along with 5 Field Ambulance. Some 150 stretcher cases were to remain at the ADS in the charge of a medical officer and twenty orderlies. Sixth Field Ambulance moved out at 4.15 a.m. leaving one medical officer, Lieutenant D. A. Ballantyne, a padre, H. I. Hopkins, [4] and twenty nursing orderlies with the wounded. At 7 a.m. the unit reached the MDS which 5 Field Ambulance had already established in the church.

Lieutenant Ballantyne and his small staff at the old site of 6 MDS found it was essential to bring all the 160 casualties into the

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[1] Maj S. G. de Clive Lowe, m.i.d.; England; born NZ 27 Feb 1904; medical practitioner; medical officer 5 Fd Amb Mar–May 1941; p.w. May 1941.

[2] Rev J. Hiddlestone, MBE, ED; Tasman, Nelson; born Christchurch, 19 Mar 1893; Baptist minister; p.w. May 1941.

[3] L-Cpl B. Jenkins; Gisborne; born Gisborne, 3 Sep 1914; taxi proprietor; p.w. 28 Nov 1941.

[4] Rev H. I. Hopkins, m.i.d.; Temuka; born Dunedin, 30 Aug 1908; Anglican minister; p.w. 27 May 1941.

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smallest possible area, for they were in the direct line of advance of the enemy. Before dawn on the 26th all cases, mostly lying, had been collected and transferred to a large house on a hill overlooking the sea and situated on the Canea side of a ridge which was held by 21 Battalion Group. All day long the Germans made unsuccessful attempts to take

this ridge but were repulsed, and during the day more casualties arrived. Although there was machine-gun and mortar fire on all sides, and the building at times was hit by splinters, no one was injured. At dusk forty walking cases were sent off with instructions to make their way as best they could towards Suda Bay. Having organised the departure of these patients, Ballantyne searched the immediate area for transport. An abandoned truck refused to start, but a motor cycle was persuaded to function and Private Collett [1] went off towards the rear to ascertain the situation. Ballantyne still hoped that the evacuation of patients and staff might yet be possible. During the night Private Collett returned with news of a general evacuation, but he had been unable to make contact with anyone of authority.

About 8 a.m. on the 27th the German advance was resumed, this time unopposed, and about an hour later the medical staff and Padre Hopkins were rounded up at the point of tommy guns by excited German soldiers and marched over to 7 General Hospital. En route an ugly situation developed when an English-speaking enemy officer accused the prisoners of shooting from the hospital building on his men. However, after the enemy had stolen their wrist watches, they were marched on until they came to an enemy RAP established at 7 General Hospital, and there they met the captured remnants of 5 Field Ambulance and 7 General Hospital.

A short time afterwards Lieutenant Ballantyne and some of the staff went back to the dressing station and found that one of the orderlies had been killed and another wounded in the assault on it. Driver Hunt, [2] who had escaped the round-up, had taken upon himself the direction of the ADS and, by a nice combination of authority and tact, had induced the Germans, who had by this time calmed down considerably, to assist in the care of the many wounded. The German RMO, who spoke good English, paid a courteous visit, and said that although German wounded had prior right of evacuation, he would do his best to assist and evacuate the worst British cases before evening. The Germans kept their word, and in three days all the patients were sent by air to Greece.

[1] **Pte J. P. C. Collett, BEM; Nelson; born Australia, 5 Nov 1899; carpenter; p.w. Jun 1941.**

[2] **Dvr M. F. H. Hunt, m.i.d.; Auckland; born NZ 24 Aug 1912; labourer; p.w. May 1941; repatriated Aug 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOVE TO KALIVIA

Move to Kalivia

At Nerokourou 6 Field Ambulance cared for walking wounded and received any evacuations from the New Zealand line, while 5 Field Ambulance functioned as an MDS with ninety-four patients who had been transferred to the new site, assistance being given by Lieutenant-Colonel Debenham and his surgical team from 7 General Hospital.

At 6 p.m. on 26 May instructions were received from Colonel Bull to move at dusk to Kalivia, some 15 miles to the south-east, along the coast. The front-line troops were steadily falling back and a general move was being made towards the south coast, from which evacuation from the island was possible. For the move 5 and 6 Field Ambulances, 4 Field Hygiene Section, and 7 General Hospital were all placed under the command of Lieutenant-Colonel Twhigg, CO 5 Field Ambulance. The more seriously wounded were taken by the available transport in two trips; the walking wounded were assisted over part of the journey, but the staffs of the units all had to walk, arriving at Kalivia shortly before daybreak on 27 May.

During the night 2/1 Australian Field Ambulance had, on receipt of orders from DDMS Creforce, established a temporary hospital in the school buildings in the village of Kalivia and received 100 cases from 5 Field Ambulance and stretcher cases and walking wounded from 6 Field Ambulance as they reached the village. This Australian unit was soon coping with 530 patients. Approximately 300 of these patients had to be left behind during the withdrawal, and Colonel Kenrick deputed an Australian medical officer and some medical orderlies to stay with them.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL WITHDRAWAL TOWARDS SFAKIA

General Withdrawal towards Sfakia

The New Zealand medical units proceeded to a transit camp about a mile and a half away on the Kalivia– Sfakia road and there dispersed under olive trees to lie up and rest, hidden from the air. However, there was a continual movement along the road of vehicles and men on foot, the latter mainly Greeks and Cypriots; and this attracted enemy planes which strafed the road and the shelter alongside. In the late afternoon of the 27th an order was received from the OC of the transit camp that all medical units were to move out at 9 p.m. and proceed by night as far as possible along the road towards Sfakia, on the south coast, and disperse and lie up at dawn.

At the same time all walking wounded were directed to proceed from 2/1 Australian Field Ambulance along the same route and to follow similar instructions in respect to concealment at daylight. Two trucks were made available to assist with the more seriously wounded walking cases with the unit, with medical equipment, and with any unfit medical personnel in the party. Lieutenant-Colonel Twhigg in one truck returned to 2/1 Australian Field Ambulance to collect walking wounded and rations. Later, at Neon Khorion, [1] 3 miles south-west of Kalivia, he contacted Lieutenant-Colonel Bull, who had established there a walking wounded collecting post and dressing station, where previously it had been intended that 5 Field Ambulance should establish an MDS. (For this move the orders were issued but 5 Field Ambulance did not receive them.) Rations, a field medical pannier, and some equipment were left at this post, and it was arranged to send a vehicle back with more equipment and a medical officer from 7 General Hospital to relieve Colonel Bull. Conditions on the narrow road were extremely trying all through the night because of delay brought about by vehicles frequently

breaking down, and by others, such as a recovery truck, which were incapable of moving above 6 m.p.h. Where delays were caused by such difficulties, the vehicles were ordered off the road in order to speed up the progress of those capable of moving more rapidly.

Between Alikambos and Ay Ioannis two trucks evacuating light cases from Khalepa, under the charge of Major Christie, turned off at dawn into a small valley at the side of the road. The wounded were dispersed among the scrub and rocks whilst the trucks were concealed beside some stunted trees. Signs were posted on the roadside.

The party was joined shortly afterwards by another vehicle, also carrying a capacity load of sitting wounded in charge of Lieutenant-Colonel Twhigg. All the wounded were dispersed and, with limited means, dressings were adjusted and renewed, stimulants given, and a search made for water. The wells proved to be nearly three-quarters of a mile from the dispersal point. The only water available was what could be carried in water-bottles by those able to scramble to the wells. A truck was sent back for Colonel Bull but could not reach Neon Khorion as a road demolition had been prematurely blown south of Vrises. During the day it was found that there was considerable troop movement along the roads, and it was decided to try to proceed further by day with the wounded in these trucks. Red Cross flags were made from red blankets and white sheets, and, with these emblems prominently displayed, the two vehicles moved off, filled to capacity. This convoy successfully reached Ammoudhari (the location of Headquarters NZ Division) without interference from enemy aircraft, and later continued to the end of the road two miles from the beach.

In the later afternoon the party passed the divide and began to descend past Imvros, debussing all casualties in a new dispersal area about half a mile north of where the road commenced its final zigzag and spiral descent to the point at which it ended uncompleted some two miles or so from the village of Sfakia. Major Christie and Captain Palmer were instructed to continue down the road to a group of caves situated on a small ledge on which was a stonewalled well. Another well lay to

the south. A narrow, deep ravine lay on either flank. They were to assist in the collection of walking wounded and to take charge of those who were to proceed to the embarkation point that night.

Other trucks from 5 and 6 Field Ambulances under the command of Major Fisher, CO 6 Field Ambulance, had proceeded beyond Imvros until they were in sight of the sea, and near the end of the road at Komitadhes, by 6 a.m. on 28 May. Here the patients were unloaded to disperse and shelter during the day. Major Fisher made preliminary arrangements with the British embarkation staff for the disposal of walking wounded and for the early embarkation of medical personnel.

About a mile south of Imvros Captain Lomas had established a walking wounded collecting post, where there were 400 to 500 walking wounded hiding up. He had the assistance of members of 5 and 6 Field Ambulances.

The trucks conveying the CO 5 Field Ambulance and patients arrived at the end of the road about 3 p.m. and there deposited the walking wounded at a walking wounded collecting post, under the charge of Captain A. C. Rumsey, RAMC, and a New Zealand staff.

At this point near Komitadhes the road ended abruptly at the edge of a 500-foot escarpment. From there a precipitous goat track led down for two miles to Sfakia, where there was a shingle beach. The difficulties attending evacuation were apparent, and Major Christie and Captain Palmer were sent to the beach to reconnoitre the route.

Immediately the walking wounded had been unloaded from the trucks, the vehicles were sent back along the same route to make contact with Colonel Bull and party should they have negotiated the road demolition south of Vrises. Alternatively, they were to pick up wounded.

Colonel Bull and his small staff of Captain A. J. King, AAMC, and eight NZMC orderlies remained at Neon Khorion on the morning of 28

May with forty-six seriously wounded men. Events during the morning provided a striking commentary on the extreme difficulties experienced during a retreat. Between 10 a.m. and 11 a.m. an Australian battalion passed through the dressing station from the direction of Kalivia. Two officers informed Colonel Bull that there were still between him and the enemy two commando battalions which were not due to retire before nightfall. It was, therefore, somewhat of a surprise to him to find the enemy arriving in force about midday to capture the dressing station. (Later, it was learned that the two commando battalions had retired before dawn on 28 May.)

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[1] **Two places with closely similar names, Nerokourou, south-west of Suda, and Neon Khorion, south-west of Kalivia, were both the sites of medical units during the withdrawal.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DRESSING STATION AT IMVROS

Dressing Station at Imvros

At 5 p.m., a small group, Lieutenant-Colonel Twhigg and Major Fisher and some orderlies, established an MDS, on a previous order of Colonel Bull, in a church half a mile north of the embarkation control post at Imvros. As more of the road parties of 5 and 6 Field Ambulances and 7 General Hospital arrived they were added to the staff, and members of 2/2 Australian Field Ambulance who were located nearby gave assistance during the night.

As Corporal P. Curtis says:

We had gone about half a mile from the village when we came upon what seemed to be a stone church with a red cross painted on the roof, nestling in a sharp bend in the road. The roof was almost level with the road.

An officer was standing near the entrance, and as we were still wearing arm brassards, he told us to go in and help with the wounded. We had seen no other dressing stations on our way across the island or any wounded either, although we might easily have missed them in the darkness.

The stone floor of the church was covered with wounded on blankets and ambulance stretchers ranged all round the walls and down the centre. The altar, in an alcove at one end, was covered with shell and field dressings and a little food—cocoa, tinned milk, sugar and biscuits. There were quite a number of medical officers and personnel there and we set to work bandaging, applying splints and making the patients as comfortable as possible. Some were walking cases but many appeared to be more severely wounded and

could not be moved.

Later in the night we were split into sections, each working for two hours and then changing over and sleeping outside.

In the morning we had our first wash and shave for several days—there were two or three razors to go round with a few extra blades. It worked wonders with our morale. The weather too was a help, fine, sunny days and cool nights.

This dressing station afforded a good example of what could be done by improvisation. The medical equipment which had previously been gathered together was in a truck that had since completely disappeared. This loss of equipment was very serious, for when the MDS opened there were only two surgical haversacks, an assortment of mixed dressings, and a German medical kit containing a few items which were suitable for use. The staff of 5 and 6 Field Ambulances had, however, by a careful search in vehicles and houses over a wide area, gathered together within a few hours a variety of medical equipment, bedding, lamps, timber, and other material, which fulfilled immediate needs beyond expectations. A problem that had always been of some concern, owing to frequent moves, was insufficiency of rations, but a supply, which included a box of tea and cigarettes, was obtained from abandoned vehicles on the road. An assortment of carpenter's tools was also found in the village and with these splints and splinting were made. It was found that arm rests of pews, the type peculiar to Greek churches, made excellent crutches. The MDS was very soon overwhelmed with patients, both walking wounded and many others of a more serious nature. At the outset all were given attention and food, but such was the concentration of men about the medical area that it was decided to open a walking wounded collecting post in a valley opposite the site of the MDS, and early next morning, 29 May, the CO 2/2 Australian Field Ambulance, Lieutenant-Colonel D. M. Salter, took over command of this post. Throughout 29 May the intake of fresh casualties was not great, although many walking wounded seemed to be wandering aimlessly about, a result of their experiences over the previous few days.

For those on foot the march across the island was a test of endurance even for the fitter members of the ambulance staffs, apart from the sick and wounded. They set off in small sections at intervals, and each man carried two tins of meat and vegetables. In the cool of the first evening, and while the road was still good, the pace was steady and most parties had made good progress by morning, when they halted and hid in obedience to orders that they were not to show themselves during daylight. On the second evening the going was harder as the road gave way to a rough track, only wide enough for one vehicle, which wound up into the hills in the interior of the island. During that night the groups began to break up as they grew tired and became mixed with other troops on the road. By daylight they were all dog-tired and a bit bewildered as to their whereabouts and destination. They kept on till forced by enemy aircraft to take cover. The surrounding country was extremely rough and rocky, mostly covered in scrub, but with small clumps of trees growing here and there.

Lying dispersed among the olive trees on the roadside during the day while the Luftwaffe raged continuously overhead, the troops moved on by night in a weary march through damaged villages and across the mountain pass, three thousand feet high, which barred the way to the south. Ten miles of winding hill road led to the pass and then the road turned down again into the Askifou basin. Food and water were both scarce, sleep was difficult during the day because of air activity, and everyone suffered from hunger, thirst, and fatigue.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FIRST EVACUATION FROM BEACH

First Evacuation from Beach

Proceeding to the beach on the afternoon of 28 May, Major Christie and Captain Palmer, the two reconnoitring officers, found that Creforce Headquarters had recently been set up in a cave on the side of a deep gully on the way to the shore. In other caves there were one hundred patients and some medical officers from 189 Field Ambulance, which had established an RAP for the wounded, many of whom were in a state of collapse. Another party of one hundred walking wounded arrived under the charge of a medical officer of 4 Light Field Ambulance. All the wounded were held back in an assembly area two miles from the embarkation point, in order not to betray details of evacuation to the enemy, squadrons of whose planes ranged overhead all day, repeatedly bombing the road and surrounding ridges.

The Royal Navy's first evacuation from Sfakia took place on the night of 28–29 May. All walking wounded and stretcher cases, totalling 300, were sent forward from the assembly area.

At dusk all wounded able to walk – and it was amazing the determination which was shown to complete the journey – were led in three columns down the steep, dry gully among the scattered boulders and clumps of oleander bushes, to what in winter must have been the bed of a sizeable torrent. About three miles or less from Sfakia, on level ground, the columns were halted and strong efforts made to maintain both good cheer and cohesion. An unexpected delay so close to the beach tried the remnants of the patience of men who were tired, thirsty, and hungry. All were sick to a greater or lesser degree and many were in the early stage of diarrhoea and exhaustion.

There was little disturbance from the air. A light mist descended in

the hollows. After what seemed a very long pause parties of fifty were allowed to proceed, but there appeared some hitches in communications over the three miles between the beach and the waiting columns. As the night wore on an urgent message came for another 200 to proceed, and then for as many as possible to get forward with all speed. The going was rough and the pace too slow.

Some time before dawn the remainder were instructed to go back and disperse in the original area. Some, however, reluctant to reclimb the steep hillside, elected to remain nearer the embarkation point. All but seventy of the wounded were embarked, as well as 800 British troops from the Suda Bay sector, before the destroyers *Napier*, *Nizam*, *Kelvin*, and *Kandahar* pulled out from Sfakia.

On the morning of 29 May Major Christie was attached to the staff of 189 Field Ambulance to assist with the treatment of wounded and Captain Palmer established an RAP in a cave used by RAF personnel, 600 yards from Creforce Headquarters, in order to treat other wounded.

At the MDS at Imvros the staff was also kept busy. During the twenty-four hours that it was open the dressing station handled 94 serious cases, and where it was possible to do so, some of these were taken nearer to the control points above the beaches so that they would have priority in embarkation. The medical staff in this area managed to hold together a large number of patients, numbering some 700, reassuring and cheering up those who were jittery during enemy bombing attacks. During the day rations and water, the latter always difficult to obtain, were taken forward by the transport drivers. By then 5 Field Ambulance had built up its transport from one 15-cwt truck to two ambulance cars, three 3-ton trucks, and one Buick car, all marked with Red Cross flags. On the Buick car Driver Burling [1] loaded a number of Italian water tanks and ran a regular water delivery service.

On the afternoon of 29 May walking wounded were transported in trucks, flying Red Cross flags, to the end of the road, where they were held until permitted by those in charge of the embarkation to go down

to the beach. By late afternoon dispersal was excellent and all had more or less accepted the tedium of daytime concealment. The march down to Sfakia on the second night was more effectively organised than on the previous evening. The assembly point above the beach was two miles further on, whence it was easier to call forward parties as they were required. A long line sat down on the slope running down over the ridge near the village and waited their turn.

A hasty muster showed that some hundred more were in the column than had set out from the caves below the road end. With the naval guard, arrangements were made for a final scrutiny of the bona fides of all in the walking wounded party. Over 600 walking casualties had been passed through the collecting post above Sfakia in two days. These men had been scattered over an area of more than two miles and dispersed in small parties among the scrub and caves, the sole water supply being from the wells. These by the end of the first day were becoming foul, as many of the men were already suffering from an incipient diarrhoea, which was aggravated by drinking the fouled water.

By nightfall on the 29th almost all the patients were on the move to the point at which they were to be concentrated for the final move to the beach, and sections of medical units were gathered for embarkation, including 5 and 6 Field Ambulances, 4 Field Hygiene Section, 2/2 and 2/7 Australian Field Ambulances, 7 General Hospital, and part of 2/1 Australian Field Ambulance. To assist the walking wounded, a proportion of one medical officer and five medical orderlies to each group of fifty patients was allowed by the embarkation authorities. It turned out that this proportion was inadequate, as many of the patients required assistance and the track to the beach was a nightmare even for those able-bodied and fit. This track had to be negotiated in the dark, and many of the patients, who had been subjected to severe ordeals and privations, found it extremely hard going to keep up, and all were apprehensive that they might be left behind. It could quite well have been arranged to attach one medical orderly to each three patients, and this would also have afforded a means of getting more of the medical

personnel down to the beaches in time. However, the instructions of the embarkation authorities were observed, and only a portion of the staff of the medical units reached the beach in time to embark that night.

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[1] **Dvr C. J. Burling, MM; born Upper Hutt, 16 Mar 1916; transport driver.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MAIN EMBARKATION, 29-30 MAY

Main Embarkation, 29-30 May

There was some difficulty with the embarkation authorities on the beaches that night, as they were endeavouring to single out the fighting troops with first priority for evacuation.

The medical parties which had reached the beach, although massed together, had to be identified by Lieutenant-Colonel Twhigg before the beach master would allow them to embark. In the darkness and the confusion among the massed troops some members of the medical units who had strayed, or who did not report to the medical post at the beach, were left behind. A number of NZMC personnel, mostly belonging to 5 Field Ambulance, were embarked on the *Glengyle*, which took many wounded aboard. Altogether, some 550 wounded were embarked that night. All cases requiring treatment were cared for by the ships' medical staffs and army medical personnel, and officers and men of the Royal Navy excelled themselves in the attention they gave to the wounded.

About six thousand troops were also taken off that night by the naval force comprising, besides the *Glengyle*, the cruisers *Phoebe*, *Perth*, *Calcutta*, and *Coventry* and the destroyers *Jervis*, *Janus*, and *Hasty*. The convoy was subjected to several air attacks during 30 May, but all were beaten off, although HMAS *Perth* received a hit amidships, causing a fire. This, however, did not prevent her from continuing with the convoy, which reached Alexandria early on the morning of 31 May.

GOC and DMS 2 NZEF, Maadi Camp, March 1943 – Lieutenant-General Sir Bernard Freyberg, Brigadier K. MacCormick and Colonel W. B. Fisher

GOC and DMS 2 NZEF, Maadi Camp, March 1943 – Lieutenant-General Sir Bernard Freyberg, Brigadier K. MacCormick and Colonel W. B. Fisher

Colonel F. M. Spencer

Colonel F. M. Spencer

Brigadier G. W. Gower

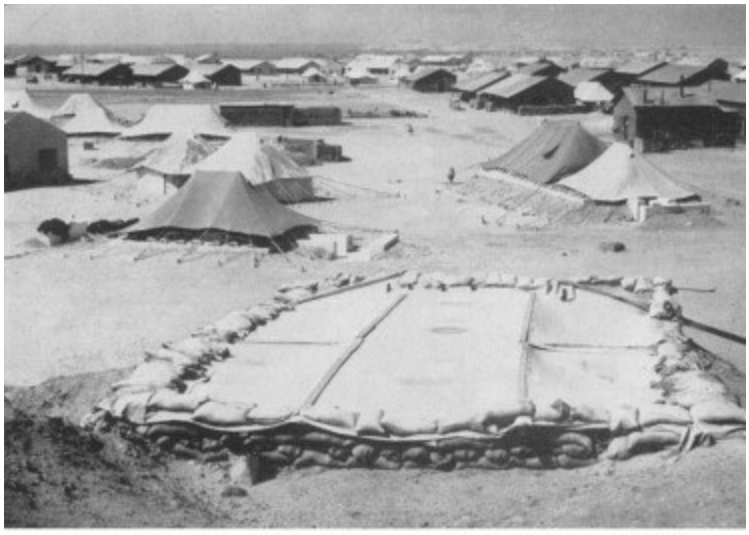
Brigadier G. W. Gower

Lieutenant-Colonel
J. L. R. Plimmer

Lieutenant-Colonel J.L.R. Plimmer

First NZ MDS tent in the desert – 4 NZ Field Ambulance at Baggush, September 1940

First NZ MDS tent in the desert – 4 NZ Field Ambulance at Baggush, September 1940



Camp Hospital and Medical Depot, Maadi Camp, March 1942

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Visit of Her Majesty the Queen to 1 NZ General Hospital, Pinewood, England, September 1940 – Matron Miss E. C. Mackay, Lieutenant-Colonel J. R. Boyd, Colonel A. C. McKillop, Major A. H. Kirker

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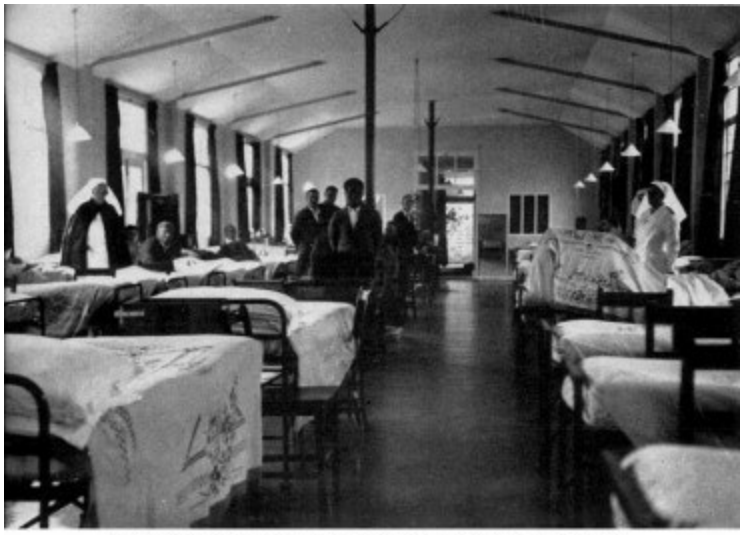


Ward of 1 NZ General Hospital, Pinewood, England

Ward of 1 NZ General Hospital, Pinewood, England

1 NZ General Hospital at Pharsala, Greece, April 1941

1 NZ General Hospital at Pharsala, Greece, April 1941

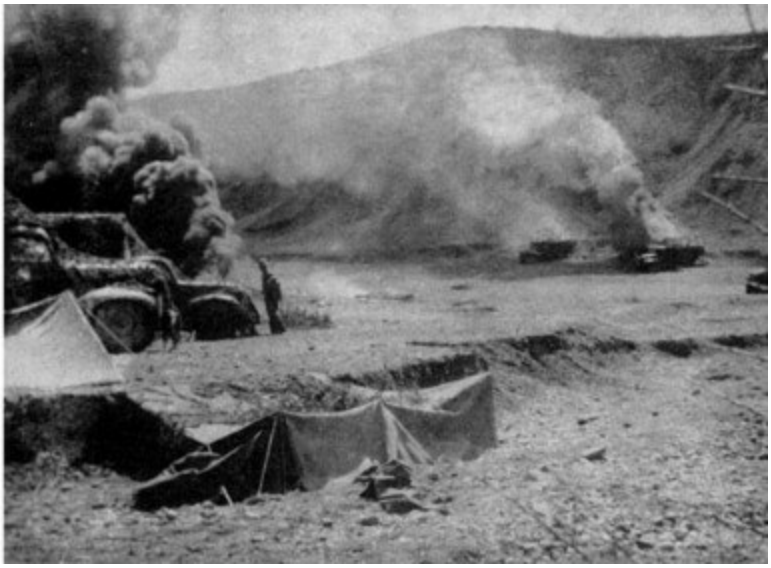
4 Field Ambulance MDS on slopes below Olympus Pass, Dholikhi, April 1941

4 Field Ambulance MDS on slopes below Olympus Pass, Dholikhi, April 1941

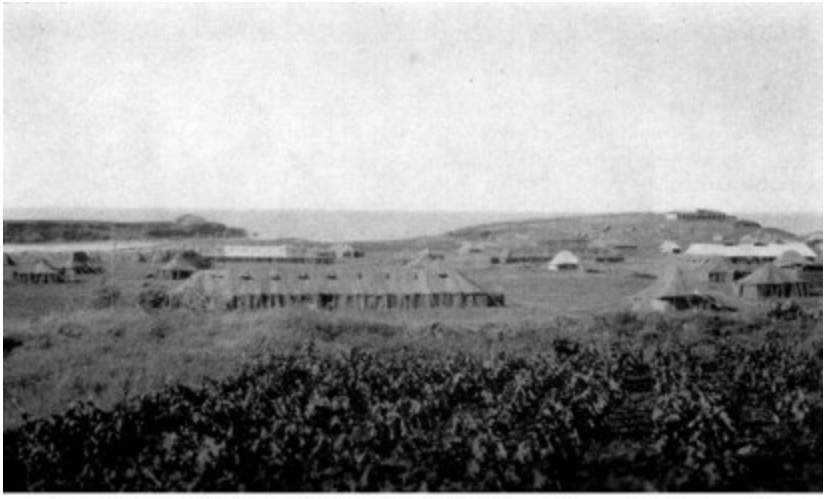
Field Ambulance DS, Servia Pass, April 1941

5 Field Ambulance ADS, Servia Pass, April 1941

Field Ambulance, elestinon, April 941, after being trafed by enemy aircraft



6 Field Ambulance, Velestinon, April 1941, after being strafed by enemy aircraft



7 British General Hospital near Canea, Crete, May 1941. The building on the hill was used as an MDS by 5 Field Ambulance

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Wounded German par troops at 5 Field Amb lance dressing statio Modhion, Crete, May 19

Wounded German paratroops at 5 Field Ambu- [gap — reason: unclear]

Helwan Hospital. The New Zealand Base Hospital, July 1940 – November 1945. The new operating theatre is at the right

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Helmieh Hospital, Cairo, January 1941. The tents have been given protection from bombing

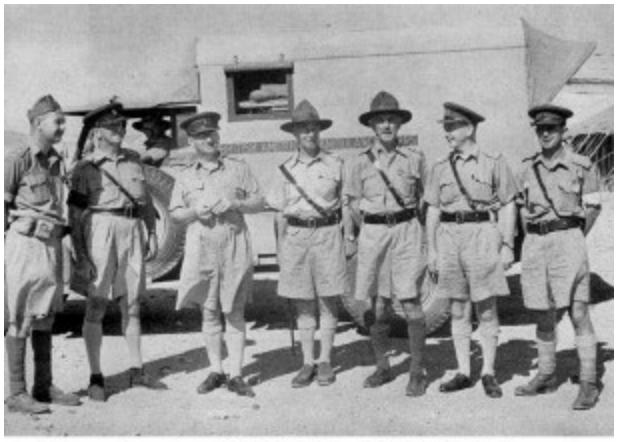
Helmieh Hospital, Cairo, January 1941. The tents have been given protection from bombing

The Netherlands Hospital Ship *Oranje* which carried New Zealand personnel and casualties

The Netherlands Hospital Ship *Oranje* which carried New Zealand personnel and casualties

A ward in the New Zealand Hospital Ship *Maunganui*

A ward in the New Zealand Hospital Ship *Maunganui*



Group at inspection of NZ Mobile Surgical Unit, Maadi Camp, August 1941. Colonel F. P. Furkert, Major-General D. C. Monro, Consultant Surgeon, Middle East Force, Brigadier K. MacCormick, Lieutenant-Colonel L. J. Hunter, Colonel T. D. M. Stout, Brigadier P. A. Ardagh, Lieutenant-Colonel S. L. Wilson

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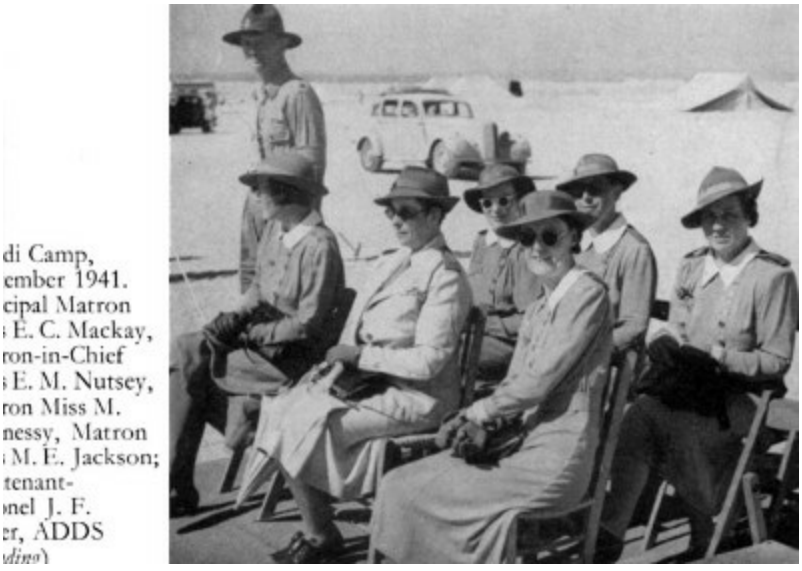

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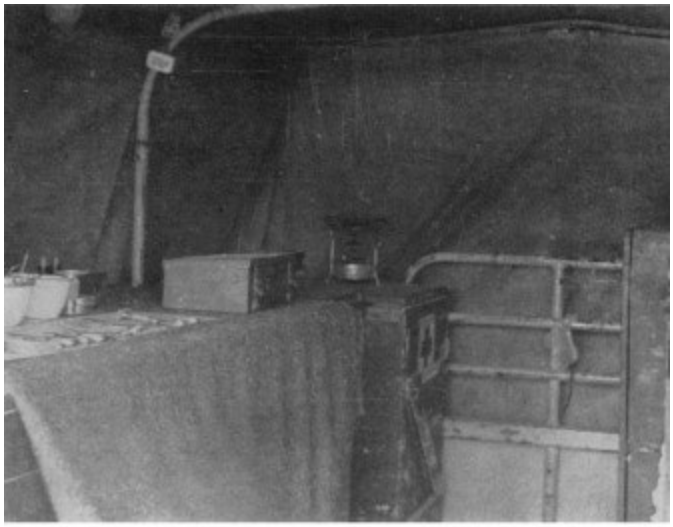
Maadi Camp, September 1941. Principal Matron Miss E. C. Mackay, Matron-in-Chief Miss E. M. Nutsey, Matron Miss M. Hennessy, Matron Miss M. E. Jackson; Lieutenant-Colonel J. F.



21 Battalion RAP truck, Libya, 1941

21 Battalion RAP truck, Libya, 1941

20 Battalion RAP, Bir el Chleta, Libya, 1941. Captain W. L. M. Gilmour is shown at right, wearing wrist watch

20 Battalion RAP, Bir el Chleta, Libya, 1941. Captain W. L. M. Gilmour is shown at right, wearing wrist watch

4 ADS near Belhamed, November 1941

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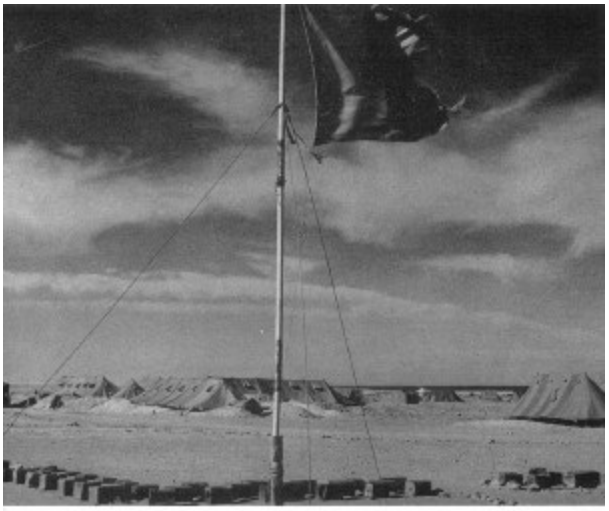

2 NZ General Hospital, Garawla, November 1941 – March 1942.
The tents are dug in for protection against bombing

2 NZ General Hospital, Garawla, November 1941 – March 1942. The tents are dug in for protection against bombing

1 NZ CCS at Zahle, Syria, March – April 1942

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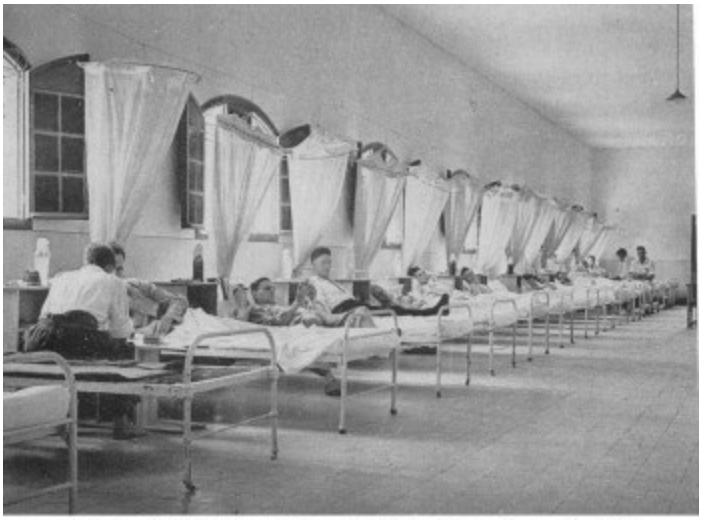

Ward of 3 NZ General Hospital, Beirut, Syria, September 1942

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6 ADS, Ruweisat Ridge, July 1942

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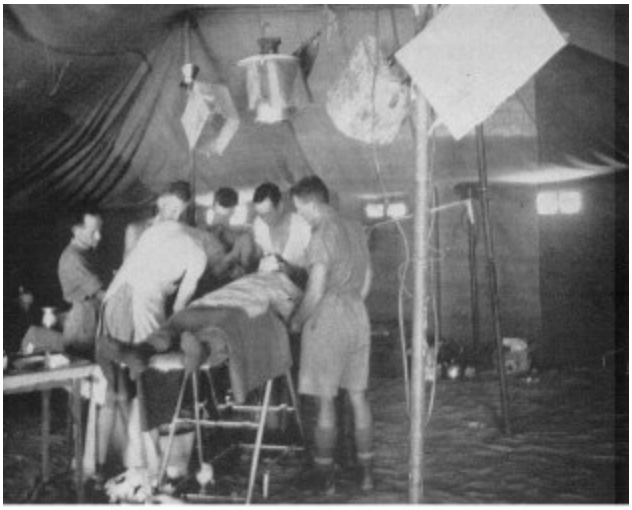

4 MDS, Alamein Line, July 1942 – operating theatre (Major T. W. Harrison)

4 MDS, Alamein Line, July 1942 – operating theatre (Major T. W. Harrison)

21 Battalion RAP, Alamein Line, August 1942

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4 MDS at El Mreir, July 1942 – reception ward showing New Zealand and Indian casualties

4 MDS at El Mreir, July 1942 – reception ward showing New Zealand and Indian casualties

4 MDS at Alam Halfa, September 1942 – Lieutenant-Colonel G. A. H. Buttle, RAMC, Captain Muir, RAMC (transfusion officers); Lieutenant-Colonel S. L. Wilson, Major T. W. Harrison, Brigadiers P. A. Ardagh, ADMS, Phillips, RAMC, and W. H. Ogilvie, Consultant Surgeon MEF

4 MDS at Alam Halfa, September 1942 – Lieutenant-Colonel G. A. H. Buttle, RAMC, Captain Muir, RAMC (transfusion officers); Lieutenant-Colonel S. L. Wilson, Major T. W. Harrison, Brigadiers P. A. Ardagh, ADMS, Phillips, RAMC, and W. H. Ogilvie, Consultant Surgeon MEF

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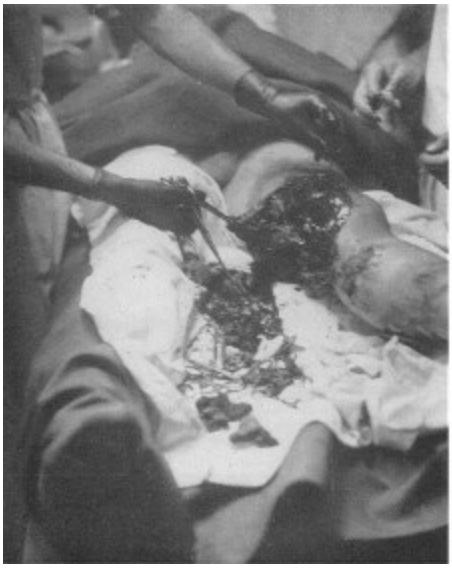

Large soft-tiss wound, 1 NZ CC Alamein, Nover ber 1942

Large soft-tissue wound, 1 NZ CCS, Alamein, November 1942

Mobile shower unit, 4 NZ Field Hygiene Section, Agedabia, December 1942

Mobile shower unit, 4 NZ Field Hygiene Section, Agedabia, December 1942

During the night of 29–30 May the staffs of 5 and 6 Field Ambulances and 4 Field Hygiene Section set off from Imvros along, the road to the beach, taking with them some more walking wounded. Some forty stretcher cases had to be left behind. An Australian medical officer and two New Zealand and two Australian orderlies remained with them, straws being drawn among the unmarried men to decide who should stay. By daylight on 30 May this marching party was still some miles away from the embarkation beach, having made slow progress during the night. The wounded were treated during the day in caves, which were machine-gunned from the air, and after dark on 30 May the party reached the beach, where an RAP was established for further treatment.

On the night of 30–31 May few wounded and no medical staffs were embarked.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FINAL EMBARKATION

Final Embarkation

On the morning of 31 May arrangements were made with the embarkation authorities to evacuate those patients and medical personnel who had arrived overnight. At 4 p.m. eighty walking wounded were conducted to Sfakia, and taken on to the beach at 9 p.m. That night the Royal Navy with all the ships available – the cruiser *Phoebe*, the minelayer *Abdiel*, and the destroyers *Jackal*, *Kimberley*, and *Hotspur* – carried out the last organised evacuation from the beach. All the walking wounded were embarked in the early hours of 1 June. Fighting troops in organised units and wounded were given priority. A number of medical personnel, including a party of fifty whose embarkation had been arranged, had to give place to other units; and when the evacuation ceased, they, with a large number of British, Australian, and New Zealand troops, remained on the island. Most of these men became prisoners on 1 June, but a few escaped to live in hiding assisted by the Cretans, or to continue the battle in the hills. Odd members of medical units made a belated escape in landing craft used to embark the evacuees, and after a most trying voyage in these open boats reached the coast of Africa behind the British lines in the Western Desert.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

COURAGE OF THE WOUNDED

Courage of the Wounded

When the evacuation of Crete was ordered it became apparent to those concerned that the Navy would not be able to embark the stretcher cases held in hospitals, even if these patients could have been transported some 40 miles to the south coast.

It was agreed that these cases would have to be left with a proper proportion of medical personnel to look after them, while walking wounded only would be evacuated. On the news of this difficult decision filtering down to all ranks, many severely wounded made efforts to be classified as "walking wounded" in order to escape becoming prisoners of war. Men with severe injuries displayed almost unbelievable fortitude in marching a distance of 35 to 40 miles over rough and stony roads at night in order to reach Sfakia. Men with foot wounds covered long distances on crutches; some, shot in the chest, chose to proceed as walking wounded rather than be left. In one case a man, whose arm had been amputated only a few days before, got up and walked over the stony goat tracks to the embarkation beach, at times falling in the dark on his injured stump. In blankets, in slung greatcoats, on a door which had come from no one knows where, and on improvised stretchers, many men in varying states of incapacity were assisted over the last part of the march. They had managed the steep scramble from the caves but could not complete the last stretch unaided. At least three blanket carries were made over the whole route from the most southerly group of caves. There was little grousing and no lack of determination.

In the words of the DDMS British Forces on Crete, Colonel Kenrick, "it can truly be said that the wounded at Gallipoli and in the mud at Passchendaele suffered no greater horrors than those of the Imperial

Forces in Crete. And just as a donkey was used at Gallipoli for carrying wounded, so a donkey was used in Crete to convey wounded down the final stony, precipitous slope to the beach.” [1]

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[1] Colonel Kenrick had served as an infantry officer at Passchendaele.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL STAFFS VOLUNTEER TO REMAIN

Medical Staffs Volunteer to Remain

As the stretcher cases were left in the caves of 7 General Hospital and in the wards of other temporary hospitals, more than the required number of medical personnel volunteered to remain and become prisoners of war with them; so much was this the case that Colonel Kenrick had to issue an instruction that additional medical officers and nursing orderlies would not remain unless given a direct order by superior authority to do so.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RECEPTION IN EGYPT OF BATTLE CASUALTIES

Reception in Egypt of Battle Casualties

With the ever-increasing gravity of the news from Crete, it became evident in Egypt towards the end of May that another evacuation was imminent. Once again it was doubtful what proportion of the New Zealand Division would get away and whether it would be possible to evacuate any seriously wounded. With 1 General Hospital out of operation as a hospital after its losses of staff and equipment in Greece, and with a high percentage of hospital cases expected among troops able to escape from Crete, it was likely that New Zealand hospital accommodation would be taxed to the utmost, or might even prove insufficient.

No. 2 General Hospital had also been receiving convoys of Australians from Tobruk during May, and by the middle of the month had patients in excess of its establishment of 600 beds. Authority was given by the DDMS 2 NZEF on 29 May for this hospital to expand to 900 beds, although official approval was not received until some weeks later. The erection of extra tented wards was pushed ahead on a half-acre field near the main building at Helwan.

Battle casualties from Crete were therefore admitted first to 3 General Hospital at Helmieh, shortly after the isolation period for 5th Reinforcement influenza patients ended. On 29 May 97 battle casualties were admitted and the following day 290, which brought the number of patients to 619, some having to sleep on palliasses on the floor. There were few seriously ill cases, as nearly all such cases could not be evacuated from Crete. If it had been possible to bring out all the severely wounded men from Greece and Crete it would have been impossible, as was the declared policy, to deal with all New Zealand patients in New

Zealand hospitals. [1]

When information was received that evacuation from Crete had been decided upon, DDMS 2 NZEF made arrangements – similar to those in the evacuation from Greece – for emergency medical parties to be stationed at the ports of disembarkation and transit camps. Three parties were despatched from 1 Camp Hospital and 1 General Hospital staffs. Their duties were not heavy. The hospital ship *Aba* had cleared 602 cases of sick and wounded from Crete on 5 May and another 561 on a return trip on 16 May. The minor wounds of walking cases from the final evacuations had mostly healed in the intervening ten to fourteen days from the time of wounding, in spite of the men having marched 35 to 40 miles to the embarkation point.

A few of the more seriously wounded from Crete were admitted to British hospitals in Alexandria, but most of the wounded were admitted direct to New Zealand hospitals. There were 97 and 290 patients received at 3 General Hospital on 29 and 30 May respectively, and 60 and 382 at 2 General Hospital on 29 May and 1 June. A large proportion were battle casualties, and all showed signs of having passed through a very trying ordeal. On 13 May 114 walking wounded had also been admitted direct to 1 Convalescent Depot.

In spite of the severe bombing and fighting to which the troops had been subjected in Greece and Crete, there were comparatively few cases of anxiety neurosis. Acute symptoms of panic cleared up with rest, care, and good food.

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[1] The quota of hospital beds required by the War Office from 2 NZEF was 2400, plus a casualty clearing station. The arrangements for hospitals within 2 NZEF were for three 600-bed hospitals and no casualty clearing station. Before this time pressure had been exerted from Army Headquarters, New Zealand, for the combining of the three hospitals into two of 900 beds each, but the retention of three hospitals in 2 NZEF was wisely defended. The quota of 2400 beds was available when the arrival of equipment from England and reinforcements from New

Zealand enabled 1 General Hospital to reopen in September 1941. The casualty clearing station was finally formed in 1942, after a long battle by DDMS 2 NZEF.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FOOD AND WATER IN CRETE

Food and Water in Crete

In the very early stages of the occupation of Crete the food ration was only four-fifths of the normal scale. In the latter stages heavy bombing of the port of Suda Bay made a further reduction to two-thirds of the normal scale necessary. In the last few days, because of the difficulty of distribution, some of the troops went without rations altogether. At first oranges, eggs, and bread were available locally to supplement the rather scanty ration, but the supply of these soon became exhausted. When the flour mills were destroyed by bombing and a ship with a cargo of flour was sunk, the bread supply was cut off altogether.

An adequate water supply was available in most areas from wells, but some of these became fouled owing to poor water discipline. In the withdrawal water was not readily available and some of this was contaminated, but lack of individual water sterilising tablets prevented purification. At the time of evacuation cases of dysentery became manifest.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DISEMBARKATION OF TROOPS IN EGYPT

Disembarkation of Troops in Egypt

On their disembarkation at Alexandria from Crete the medical-units along with other troops were moved by rail to Amiriya Camp. Here they were rested and received issues of fresh clothing as well as chocolate, cigarettes, and toilet hold-alls provided by the New Zealand Red Cross Society and National Patriotic Fund Board. From Amiriya the troops went to Helwan Camp, where considerable reorganisation of the Division was carried out.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CASUALTIES SUFFERED AND WORK DONE

Casualties Suffered and Work Done

The campaign in Greece had resulted in considerable losses in medical personnel and the battle for Crete added substantially to this depletion. About half of the medical personnel on Crete became casualties. One medical officer was killed, another wounded, and the acting ADMS NZ Division and seven medical officers were taken prisoner. [1] Of the other ranks of the medical units, 5 Field Ambulance lost 1 killed and 63 as prisoners; 6 Field Ambulance lost 6 killed and 83 as prisoners; 4 Field Hygiene Section lost 17 as prisoners; and 1 General Hospital lost 17 as prisoners. These figures are exclusive of those who were temporarily missing and who later escaped to rejoin their units, and also of attached ASC drivers.

In the short but fierce battle for Crete the medical units were called upon to treat large numbers of wounded. Fifth Field Ambulance admitted 1274 patients and 6 Field Ambulance 1400 (half of the latter being casualties from Greece), and in most localities urgent surgery was done by surgical teams attached to the main dressing stations, with a limited amount of medical equipment and supplies. The staff of 4 Field Hygiene Section gave assistance at 5 Field Ambulance, to which they were attached, and the party from 1 General Hospital, in the words of the Registrar, "worked admirably" for 7 General Hospital, to which unit 6 Field Ambulance also gave valuable help.

In a survey of all the medical services on Crete, Colonel Kenrick remarked that to him the outstanding points were: firstly, the amazing fortitude displayed by the walking wounded under the most ghastly conditions; and, secondly, the universal courage and devotion to duty shown by all ranks of the medical services under conditions of warfare

such as had never before been experienced by our troops.

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[1] **Lt-Col W. H. B. Bull, acting ADMS NZ Division, Major S. G. de Clive Lowe and Lt R. F. Moody of 5 Field Ambulance, Lt D. A. Ballantyne of 6 Field Ambulance, Captain O. S. Hetherington, RMO 21 Battalion, Capt L. H. V. Longmore, RMO 22 Battalion, Capt R. S. Stewart, RMO 23 Battalion, and Capt E. Stevenson-Wright, RMO 2 Divisional Cavalry Regiment, were taken prisoner. In addition, Lt-Col Plimmer, acting CO 6 Field Ambulance, was killed, and Capt Mules was wounded, losing an eye.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF CRETE CAMPAIGN

REVIEW OF CRETE CAMPAIGN

Geneva Convention

After the experiences in Greece some confidence was felt in the use of the Red Cross for the protection of medical units, although there was still much doubt as to the extent the enemy respected it. The attack on 7 General Hospital and 6 Field Ambulance caused some loss of confidence again, though the enemy's behaviour in the campaign thereafter indicated a respect for the Geneva Convention.

The display of Red Crosses on the site of the hospital could not be described as inadequate. Red Crosses were painted on the three buildings, a large one in stones was laid out between the officers' mess and the sea, and one of similar size in cloth was spread out in the area occupied by the hospital expanding tents. The weather was mostly fine and the crosses could be seen from a fairly high altitude.

Yet captured enemy orders indicate that those who planned the attack on Crete may have been unaware that it was a hospital site. It may be that German intelligence reports were defective, as indeed they were in their estimate of the number of troops in the sector. Orders of *3 Parachute Regiment* issued on 18 May describe the area as a "tent encampment" with a "hospital barracks" and "hospital huts". The regiment was to land in the Galatas area, clear the ground around Canea, and capture the town. A full battalion was committed to attacking the hospital site, but only one company of parachutists actually reached the scene. Air Corps reports later reported the capture of 500 prisoners but omitted to mention they were hospital patients and staff.

The Germans verbally stated they had seen troops in steel helmets traversing the area before the attack. It seems to have been a German practice to forbid the wearing of steel helmets in medical units, and although this had no basis in the Geneva Convention, the Germans seem to have assumed that other forces should follow the same practice. Steel helmets were worn in the area, and troops did pass along the road running through the area to the beach. A study of German orders does not indicate that the area was required for further air or sea landings, which was one of the conclusions earlier drawn from the attack. The aim seems to have been to eliminate any opposition from troops expected to be in the neighbourhood of the camp. But this hardly excuses the sustained attack on 20 May on what must have been perceived to be a medical unit.

From all the evidence at our disposal it would seem that the German Air Force did otherwise respect the Geneva Convention when the medical units were distinctly marked by the Red Cross, when steel helmets were not worn, and when medical units were sited away from main roads and from any fighting unit.

Medical Transport

There was insufficient transport for the conveyance of the wounded. Walking wounded had not only to walk between the dressing stations and the hospital, but most of them had eventually to walk across the island during the evacuation. Lying cases had to be left behind at the medical units, both because of lack of vehicles and the impossibility of embarking stretcher cases at Sfakia.

Constant machine-gunning of the roads after the invasion made conditions still more difficult and often caused serious delay; it was only by strenuous efforts on the part of medical officers and drivers that the essential work was carried out. At times lorries were found abandoned and were brought into service when urgently required. Patients had to be moved in the darkness to escape the bombing and machine-gunning of

the roads. Some of the cars were damaged in this way.

It was found that, generally, the German airmen respected the Red Cross if it was effectively displayed, and this eventually led to the use by 5 Field Ambulance of transport furnished with large Red Cross markings. During the evacuation this method was used in the transport of wounded, with great success. It was stated that six ambulances, marked with small crosses only, were destroyed, whereas those marked with large crosses proceeded unharmed through the same area.

The Work of the RMOs

The RMOs, especially those attached to 5 Infantry Brigade, experienced great and unprecedented difficulties during the violent and confused attack, particularly in the Maleme area. They found themselves called upon to deal with heavy casualties, with very little in the way of equipment and medical supplies. Although attempts were made by the field ambulances to contact them by parties of medical officers and stretcher-bearers, these were unsuccessful and the RMOs had to carry on as best they could.

Fortunately, their medical supplies were supplemented by German supplies dropped by parachute, and these were found to be of excellent quality, both as regards drugs and dressings, even containing tubes of glucose saline and surgical operating equipment. The RMO of 21 Battalion stated that he obtained adequate supplies of opium by this means when his own supply of morphia was exhausted.

All the RMOs of 5 Infantry Brigade, with the exception of the RMO of 28 Battalion (who was wounded, losing an eye), were captured. They remained behind with the seriously wounded, including a large number of Germans, when their battalions withdrew. Many walking wounded were able to retire with the brigade.

Owing to the nature of the fighting and the ground fought on, the regimental medical officers could expect little Red Cross immunity. By

and large, Red Crosses were not displayed at RAPs as these aid posts were, after all, in the main in strictly combatant areas. Indeed, in such fighting the more the aid post was surrounded by armed troops the safer were the wounded. No deliberate attacks on the wounded were reported by the regimental medical officers who, with their staffs, all performed most gallantly at their posts and did everything in their power to assist the wounded.

The collection of wounded in the forward areas was carried out only with great difficulty in the chaos brought about by the scattered landing of the paratroops. Nevertheless, the work was conscientiously and efficiently done, and the seriously wounded had the benefit of continued attention during the difficult period of early captivity.

Siting of Medical Units

Difficulty was experienced in the siting of field ambulances, dressing stations, and hospitals. Neither the force nor the individual units had had any experience of an airborne attack. The 7th General Hospital had been established before any such attack was seriously thought of. The lack of transport and the conditions of the terrain made the siting of the dressing stations near the main roads a natural decision. It thus came about that the main hospital (7 General Hospital) was erected close to the shore in an area peculiarly liable to both airborne and seaborne attack. One MDS was originally placed at a crossroads and then under a culvert on the main road, positions certain to be subjected to air attack. The selection of sites was thus made very difficult, as the dressing stations had to be kept away from main roads and also from any open space where paratroops could be readily landed. The dressing stations had also to be placed in positions where they could be defended by the combatant troops. The differences of opinion which arose between the senior medical officers with regard to the siting of the units exemplify the difficulties of the problem.

Fifth Field Ambulance set up a very efficient dressing station in the officers' mess building of 7 General Hospital and did excellent work

there, although the ADMS considered the site unsuitable. The 189th Field Ambulance established a large hospital in buildings at Khalepa, a suburb of Canea, where it carried out operative treatment on a large number of casualties. The town, however, was subjected to heavy bombing and the unit was lucky to evacuate the site just before one of the buildings was demolished by a bomb.

Health of Troops

The men arrived in Crete very tired and with little personal equipment. There had, however, been no sickness in Greece and the troops rapidly recovered in the peaceful conditions and excellent climate of Crete, probably helped considerably by the facilities for sea-bathing that were available. In spite of a reduction in the rations, made necessary by the unexpected number of troops to be supplied, the health of the troops remained very good throughout the campaign. There was very little sickness and practically no endemic disease, except dysentery.

Shortly after the arrival of the troops many of them suffered from a transient attack of diarrhoea, and towards the end of the campaign mild dysentery was also present, but not to any marked extent.

A British hygiene section had been stationed in Crete for some time before the arrival of the troops from Greece. A malarial survey had recorded widespread infection by malaria in the villages and measures were taken to control the spread of the disease. The 4th Field Hygiene Section under Captain Irwin began at once to investigate the local conditions and to carry out a mosquito survey in our area, finding several areas infested with mosquitoes. The troops had no individual protection – such as nets, cream, or sprays – yet very few cases of malaria occurred. Fortunately, the malaria season had not really commenced before the troops left Crete.

There were no cases of typhoid. Venereal disease had been very prevalent among the garrison troops, but the incidence in our troops in

the short and active period that they remained on Crete was not high. There is no mention of any other disease.

Treatment of the Wounded

The casualties on Crete were very heavy, much heavier than in Greece, [1] and thus threw a heavy burden on the ill-equipped New Zealand Medical Corps. Medical officers had, however, managed to save many essential parts of their equipment, such as surgical instruments, drugs, and dressings. They were helped considerably by equipment and supplies readily obtained from 7 General Hospital. The lack of transport and the difficulty of evacuating casualties by the one road, which was bombed and machine-gunned incessantly in daylight hours, made it necessary for the MDSs of the ambulances to carry out surgical work, sometimes of a major nature. The surgical team from 1 NZ General Hospital under Major Christie, which had been attached to the ambulances in Greece, was available in Crete; Major Christie performed excellent work and furnished a valuable report on the work carried out under such difficult conditions.

The team was first attached to 5 MDS and then to 7 General Hospital to fill the place of a specialist surgeon killed by a bomb on 18 May. The team was then attached to 189 Field Ambulance hospital at Khalepa until it ceased to function. The force was lucky in having available at 7 General Hospital surgeons of sound training and experience, the senior of them, Lieutenant-Colonel Debenham, later becoming a consultant surgeon on the Western European Front.

Fifth Field Ambulance was called upon to perform a considerable amount of surgical work, both at Modhion and at the site of 7 General Hospital. Sixth Field Ambulance attended to large numbers of wounded from Greece immediately after its arrival in Crete, and later assisted 7 General Hospital by relieving it of its burden of lighter cases and also by setting up a convalescent depot to look after the cases discharged from the hospital. It also treated wounded from the fighting in the Galatas area. Both units assisted the wounded during the evacuation with

transport, dressings and rations, and, finally, at the evacuation itself. They nursed and shepherded along large numbers of wounded, some with relatively severe wounds, who normally would not have been permitted to make the trip.

The actual wound treatment varied according to the skill and knowledge of the medical officer and it was natural that some of the surgery was not up to the highest standards. The surgical team reports instances of wounds sutured at the field ambulances with unsatisfactory results. Luckily, there was available our own surgical team and the skilled surgeons at 7 General Hospital, who coped with the greater number of the heavier cases and who had knowledge of the best surgical wound treatment. The wound treatment carried out by our surgical team consisted of *débridement*, with removal of all soiled and damaged tissue – particularly muscle – with free opening of the wounds and with acriflavine dressings. The serious loss of serum was noted in the large wounds, and also the relative freedom from injury of the nerves and blood vessels.

Fractures: **After the usual wound treatment the cases were splinted as follows:**

1. **Femur: The Thomas knee splint was used and our surgical team employed a special technique. From ankle to mid-thigh was enclosed by two Cellona plaster bandages. A strong calico bandage was laid on this, passing over a spreader below the foot and coming up on the other side of the limb. Three more Cellona bandages were put on over this. The limb, complete with its plaster casing and extension, was now placed in the Thomas knee splint, the calico attached to the end with rubber tubing – if available – the splint slung from the Thomas crossbar on the stretcher, the footpiece applied, and finally the foot of the stretcher raised to provide extension by the counter body-weight method. This illustrates how one surgeon worked out a combination of plaster and Thomas splintage, which as the Tobruk splint was to become the universal practice later.**
2. **Tibia: Plaster closed splint applied.**
3. **Humerus: Plaster back slab with collar and cuff, or Kramer wire splints. In fractures of the lower end of the humerus, extension of the**

elbow below 90 degrees was carried out.

Amputations: **These were usually carried out for gross destruction of bone and joint. No guillotine amputations were performed, short anterior and posterior flaps were used, and the site of election was selected. The ends of the wound were sutured, but the central part was left open for drainage. No tubes were used. Main vessels were doubly-ligated and the nerves were simply cut across in the upper part of the wound. In amputations of the lower limb the tourniquet was used, but in the upper limb only digital control of the brachial or subclavian was employed.**

In the case of shattered limbs the surgeon employed a simple rubber band just above the lacerated end, to be left on during resuscitation to control haemorrhage, leaving undamaged all the tissue above, through which the amputation would be performed.

Head Wounds: **These were excised and the wound closed by use of an S-shaped flap. A head tourniquet was used and an improvised table formed from a stretcher, with a bandage between the bars forming a head rest.**

Chest Wounds: **These were dealt with very conservatively by aspiration and air replacement. Open sucking wounds, if not already sutured at the field ambulance, were closed, but few of such cases were seen. Detached pieces of rib were removed. No open exploration of the chest was carried out, nor was it ever considered necessary.**

Thoraco-abdominal Wounds: **All such cases produced by the German explosive bullets were noted to be fatal.**

Abdominal Wounds: **These were not very frequent. They were all explored at once. The small bowel was generally damaged, the large bowel frequently escaping in a surprising manner, especially in transverse wounds. It was noted that resection of the small intestine caused a heavy mortality. The mesentery and omentum were often found damaged, producing an abdomen full of blood. The rectum was noted to be often injured in sacral wounds, and these cases were generally fatal**

from toxaemia and probable peritoneal infection. No such case survived, although one lived for five days after a transverse colostomy. The bladder was sometimes injured and catheterisation was always resorted to if any doubt existed, and an in-dwelling catheter left in if any bladder injury was present. No cases of liver, stomach, or splenic injury were encountered.

Shock and Haemorrhage: **Treatment consisted of the application of warmth by hot bottles, the relief of pain by morphia (gr. ½) and the splintage of fractures, the elevation of the foot of the stretcher, and the giving of fluids by mouth, rectally, subcutaneously, and intravenously. Some Baxter vacolites were available at the MDS.**

Dried plasma in limited amounts was available at one field ambulance. It was necessary to cut down on the vein and use a cannula. Blood was not used, though transfusion sets and citrate were available at 189 Field Ambulance. The intensity of the surgical inundation precluded its use. The suggestion was made that a special blood transfusion team, consisting of a medical officer and two orderlies, should be attached to the Division, with supplies of dried plasma, a portable refrigerator, and a few pints of blood ready for use.

Gas Gangrene: **Only one fulminating case was seen by Major Christie, with infection spreading up to the umbilicus; death occurred twelve hours after admission to hospital. Several cases of limb wounds showed gas in the tissues. These were treated by excision of muscle and muscle groups, and freely opened to facial planes. No amputations were necessary for this condition. Serum was given.**

Lieutenant Ballantyne saw several severe cases at 6 ADS and cases were seen later after evacuation of prisoners to Greece.

Sulphonamides: **A dosage of 2 grammes, followed by 1 gramme in two hours and then four-hourly for forty-eight hours, was given by the mouth to seriously wounded cases. No sulphonamide was used locally on the wounds.**

Foreign Bodies: **These were removed when readily accessible or large, but otherwise no time-consuming search was made.**

Severity of Wounds: **It was noted that the German wounded had much less severe wounds than our own men. The German aerial bomb, trench mortars, explosive machine-gun and cannon-gun shells inflicted more severe wounds than our .303 bullets. The Schmeisser bullet was as severe as a machine-gun wound, if fired at close quarters.**

The Leaving Behind of Medical Personnel

In Crete this problem again arose and on a much more serious scale than in Greece. Altogether, there were eight medical officers and 176 other ranks of the NZMC left behind as prisoners in Crete. Four of the medical officers were attached as battalion medical officers and elected to stay behind in their RAPs with the wounded under their care. One of these officers, Captain Stewart, later said: "Unfortunately on 23 May Hetherington and I, under the stress of events, both decided to remain, not realising until we met later in the day that we were only half a mile apart, and as we had information that Longmore was a prisoner of war, probably unwounded, one of us would have sufficed. Of course, too, our judgement was biased by the belief that exchange of protected personnel would eventuate early allowing us to rejoin our own side". (This belief was based on the Geneva Convention.) Three medical officers attached to field ambulance dressing stations also chose to remain with seriously wounded men. The ADMS NZ Division was also captured, having delayed his departure to set up a dressing station for walking wounded; he could not be contacted before the engineers blocked the road.

It was not until the later stages of the battle that it was known at Creforce Headquarters that so many medical personnel were remaining with the wounded. An order was then issued by the DDMS Creforce that no more medical officers or other ranks were to remain behind unless detailed by their commanding officer to do so; but it is very doubtful if this order reached more than a limited number of those for whom it was

intended. Medical officers, padres, and men unselfishly sacrificed their liberty in their anxiety for the welfare of their patients.

In the hurried retreat to the southern coast close contact between medical units and with headquarters was difficult, and danger arose of two medical units both leaving personnel in the same area. This happened when, at 5 Field Ambulance MDS, two medical officers on their own initiative remained behind, and the nearby 7 General Hospital also left behind medical officers and personnel – a needless duplication. The medical officers generally acted without orders from higher authority, as they felt their individual responsibility keenly, and no definite ruling was available. Circumstances were such that instant decisions had to be made.

These officers showed a noble spirit of self sacrifice and are to be commended for their altruistic zeal, but the policy determining their actions should be clearly laid down by higher authority to prevent unnecessary loss of valuable personnel. Such was the lesson that was learned in the campaigns in Greece and Crete. The British and Australian Medical Corps suffered in the same way, and their officers made the personal sacrifice in a similar unselfish manner.

As regards the other ranks of the NZMC, a large number likewise remained behind with the medical officers to tend the wounded, but many were unable to be evacuated, either because of their loss of contact during the retreat, or, at the end, because it was impossible to evacuate the whole force. Priority had been given to combatant troops, a decision which could not be questioned. It is open to question, however, whether a complement of medical personnel should not always accompany the combatant troops to which they are normally attached as they provide a highly specialised service essential to the well-being of the troops.

Evacuation

The problem of the shepherding of the walking wounded across the

island and giving them medical attention during that period was fraught with considerable difficulties. The majority of the slightly wounded had to make the trip on foot, travelling during the night on a road crowded with a rather disorganised medley of troops and refugees and a variety of vehicles, and lying up under the olive trees during the day. The force orders were that road traffic should cease during the day, but it was impossible to enforce the order strictly, particularly during the last days of evacuation. There were thousands of Cypriots, Palestinians, and Greeks making their way across the island, and this added to the confusion due to the number of separate forces involved. It was extremely difficult in the weary march across the mountains for the wounded, and even the personnel of the medical units, to keep contact. The best that could be done was to set up medical dressing and rest posts at intervals along the route, where the wounded and the staffs could be collected together again to have wounds attended to and rations supplied.

Large dressing stations were set up by our New Zealand units as well as by British and Australian medical units, especially near the coast, where the men could be collected and helped during the embarkation. The steep and narrow road down the cliff to Sfakia led to great difficulties in embarking wounded men and also brought about a serious delay, with the result that many, who would otherwise have been accommodated on the ships, were unable to be picked up in the time allowed.

The embarkation would have been speeded up – had it been realised at the time – if a larger proportion of medical personnel had been detailed to help the wounded down the cliff; this would have had the added advantage of allowing a large number of personnel of the medical units to be embarked when extra space in the ships was available. It was so very much a question of the speed of the embarkation, as the naval ships had to be as far as possible out of bomber range before daylight.

The troops who were policing the embarkation had an exceedingly hard task, since in the darkness they had to check all troops for their

priority, as laid down by GOC Creforce. The large number of Greeks and Cypriots who had to be turned back also caused serious delay. Slips were issued to wounded by the medical units at the staging posts and, as far as possible, order was maintained and the men checked.

In considering all the circumstances the percentage of the force evacuated was satisfactory, and the number of wounded men, some of them seriously wounded, who got away from Crete showed the virility and sturdiness of our own and other Commonwealth troops.

LESSONS FROM CRETE

The Crete campaign taught our army valuable lessons and made a lasting impression on those who had the honour to take part in it:

1. ***Graded Men:*** **The most important outcome, as far as our New Zealand force was concerned, was the attitude thereafter of the senior officers of all units towards the use of graded men in the Division. The severe strain thrown on men marching across the rough and hilly road so impressed itself on these officers that they considered that, in future, none but Grade I men should ever be accepted in any divisional unit – even if normally transport would be available. Men with foot disabilities, who had been detailed for duty in the ASC and other units with transport, were considered especially unsatisfactory in the Division. This attitude was so prevalent that the name "Creteitis" was given to it. It perhaps brought about some unnecessary transfers of personnel with minor disabilities from the divisional units. Fortunately, never again during the war was the Division faced with a similar problem, so the over-anxiety regarding the use of slightly disabled men proved to be unnecessary.**
2. ***The Geneva Convention:*** **It was recognised as a result of the experiences in Crete that the only adequate protection for a medical unit was the generous display of large and distinct Red Cross markings. It was proved that the Germans respected the Geneva Convention provided that the medical unit was not sited in an area suitable for airborne landing. The wearing of steel helmets was recognised by the Germans as a sign of combatant troops, and therefore they had to be discarded by medical staffs.**
3. ***Value of Surgical Teams Attached to Divisional Units:*** **There is no doubt that the attachment of a surgical team from 1 NZ General**

Hospital to the Division in Greece was of inestimable value in the campaigns in both Greece and Crete. The presence of a senior surgeon, with an all-round surgical experience and a special knowledge of orthopaedic surgery, enabled knowledge of the best treatment of the wounded man to be passed on to those working with him, and in addition his own operative ability and judgment were available. He himself noted the difference between the cases passed on from the ambulance in which he had been working and those coming from its fellow.

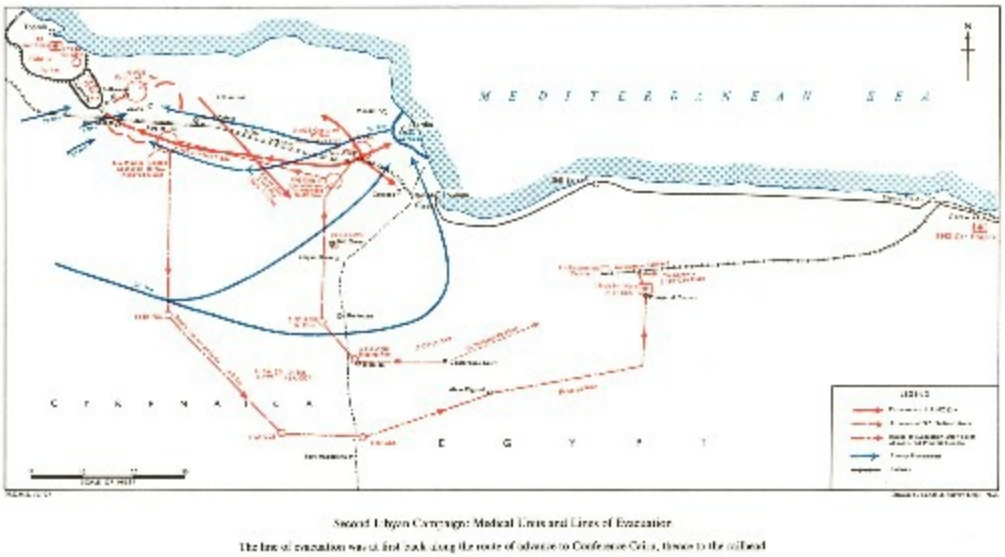
The loss of a specialist surgeon attached to 7 General Hospital made the team doubly valuable, and a second team would have been most welcome. The problem of whether the forward surgery should be done in the ambulances or at the CCS did not arise here, as there were no official casualty clearing stations and the general hospital was itself a field unit, so that there was little or no distinction between any of the medical units, each one in turn dealing with whatever work came into its area. The 5th MDS carried out a good deal of operative work. The surgical team operated with both 7 General Hospital and 189 Field Ambulance hospital. British and Australian units also dealt with a considerable number of casualties, including New Zealanders.

4. ***Improvisation:*** **The New Zealand units landed in Crete with minimal equipment and supplies, but nevertheless carried out their work under most difficult conditions with quiet efficiency. They showed their ability to improvise, to collect together essential implements, and to work in makeshift quarters. The younger RMOs did a great deal of work single-handed, one RMO putting through nearly 700 cases during the campaign. The lessons learned by those who escaped were of great value to the Medical Corps later in the Desert campaign.**
5. ***Blood Transfusion Team:*** **The impossibility of carrying out blood transfusions during a rush of casualties, without there being any special team available for that purpose, was recognised. Transfusion sets were available in 189 Field Ambulance hospital, but no transfusions were given. Our surgical team attached to this hospital recommended that a team of one medical officer and two other ranks should be established and attached to the Division, and that equipment, such as portable kerosene-operated refrigerators, should be obtained.**
6. ***Transport:*** **Naturally, in Crete the supply of transport was of paramount importance and the necessity in modern warfare of having**

adequate means to transport the wounded from the forward areas to the operating centres only too obvious. Even if it had been possible to embark stretcher cases from Sfakia, ambulances to carry them were not available. It is remarkable how well the medical work was carried out with a minimum of transport.

7. *Dispersal of Medical Stores:* The stores of 7 General Hospital were all kept in one tent – in which it was stated that ether was also kept – and unfortunately this tent caught fire during the attack on the hospital. The dispensary tent was also burnt, so that nearly all the medical supplies were destroyed. The dispersal of all essential equipment and stores should be carried out under any circumstances, and especially where damage by the enemy is likely to occur.

There was every reason to be proud of the New Zealand Medical Corps in Crete and of the fact that the medical administration was under our own command. All sections of the Corps did excellent work, including the sisters during their brief stay on the island, and the men of the medical units showed their ability to sacrifice their liberty in the interests of their patients.



Second Libyan Campaign: Medical Units and Lines of Evacuation

The line of evacuation was at first back along the route of advance to Conference Cairn, thence to the railhead

WOUNDED ON

Embarkations (British, Australian, and New Zealand)

Date	*Port*	*Number*
29 Apr	Suda Bay	500 (On *Ionia*—walking wounded ex- Greece)

5 May	Canea	602 (On *Aba*—sick and wounded ex- Greece)
16 May	Canea	561 (On *Aba*—sick and wounded ex- Greece)
		1663
24 May	Suda Bay	60 (on destroyers bringing medical supplies)
25 May	Suda Bay	50 (on destroyers)
26 May	Suda Bay	150 (on destroyers—from Naval Hospital)
28–29 May	Sfakia	230 (on destroyers)
29–30 May	Sfakia	550 (On *Glengyle*)
30–31 May	Sfakia	10
31 May-1 Jun	Sfakia	80 (Final embarkation)
		1130

Wounded Taken Prisoner (New Zealanders and others)

Date	*Number*	*Place*
23–25 May	270	Maleme area, with RMOs 5 Bde—22 Bn, 160; 21 Bn, 50; 23 Bn, 60.
26 May	200 (? 300)	7 Gen Hosp caves with British MOs
26 May	20	Near Canea, with 5 Fd Amb rear party
26 May	100 (? 150)	Near Canea, with Lt Ballantyne, 6 Fd Amb
27 May	200 (? 300)	Kalivia, with part 2/1 Aust Fd Amb
28 May	46	Neon Khorion, with Lt-Col Bull
30 May	40	Imvros, with Australian MO.
		876–1110

Total of New Zealand Wounded	
Embarked	967
Prisoners of war	525

Casualties

New Zealand Medical Corps (Officers in parentheses)

Unit	*Killed*	*Wounded*	*PW*
5 Field Ambulance	1	1	(2) 63
6 Field Ambulance	(1) 6	8	(2) 83
4 Field Hygiene Section			17
1 General Hospital			17
Regimental medical officers		(1)	(4)
	(1) 7	(1) 9	(8) 180

2 NZEF

	Officers	*Other Ranks*	*Total*
Killed (incl. died of wounds)	36	598	634
Wounded	56	911	967
Prisoners of war	74	2143	2217
	166	3652	3818

Of the prisoners of war, 15 officers and 510 other ranks were wounded, and of these 1 officer and 36 other ranks died of wounds.

Strength of New Zealand Medical Corps on Crete

	Officers	*Other Ranks*
5 Field Ambulance	8	146
6 Field Ambulance	8	179
4 Field Hygiene Section	1	30
1 General Hospital	21	
ADMS	2	5
	19	381
Also RMOs	8	

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[1] In numbers of killed, casualties in Crete were far higher, in proportion to the total of New Zealanders who took part, than in any other campaign of 2 NZ Division.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENEVA CONVENTION

Geneva Convention

After the experiences in Greece some confidence was felt in the use of the Red Cross for the protection of medical units, although there was still much doubt as to the extent the enemy respected it. The attack on 7 General Hospital and 6 Field Ambulance caused some loss of confidence again, though the enemy's behaviour in the campaign thereafter indicated a respect for the Geneva Convention.

The display of Red Crosses on the site of the hospital could not be described as inadequate. Red Crosses were painted on the three buildings, a large one in stones was laid out between the officers' mess and the sea, and one of similar size in cloth was spread out in the area occupied by the hospital expanding tents. The weather was mostly fine and the crosses could be seen from a fairly high altitude.

Yet captured enemy orders indicate that those who planned the attack on Crete may have been unaware that it was a hospital site. It may be that German intelligence reports were defective, as indeed they were in their estimate of the number of troops in the sector. Orders of *3 Parachute Regiment* issued on 18 May describe the area as a "tent encampment" with a "hospital barracks" and "hospital huts". The regiment was to land in the Galatas area, clear the ground around Canea, and capture the town. A full battalion was committed to attacking the hospital site, but only one company of parachutists actually reached the scene. Air Corps reports later reported the capture of 500 prisoners but omitted to mention they were hospital patients and staff.

The Germans verbally stated they had seen troops in steel helmets traversing the area before the attack. It seems to have been a German

practice to forbid the wearing of steel helmets in medical units, and although this had no basis in the Geneva Convention, the Germans seem to have assumed that other forces should follow the same practice. Steel helmets were worn in the area, and troops did pass along the road running through the area to the beach. A study of German orders does not indicate that the area was required for further air or sea landings, which was one of the conclusions earlier drawn from the attack. The aim seems to have been to eliminate any opposition from troops expected to be in the neighbourhood of the camp. But this hardly excuses the sustained attack on 20 May on what must have been perceived to be a medical unit.

From all the evidence at our disposal it would seem that the German Air Force did otherwise respect the Geneva Convention when the medical units were distinctly marked by the Red Cross, when steel helmets were not worn, and when medical units were sited away from main roads and from any fighting unit.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL TRANSPORT

Medical Transport

There was insufficient transport for the conveyance of the wounded. Walking wounded had not only to walk between the dressing stations and the hospital, but most of them had eventually to walk across the island during the evacuation. Lying cases had to be left behind at the medical units, both because of lack of vehicles and the impossibility of embarking stretcher cases at Sfakia.

Constant machine-gunning of the roads after the invasion made conditions still more difficult and often caused serious delay; it was only by strenuous efforts on the part of medical officers and drivers that the essential work was carried out. At times lorries were found abandoned and were brought into service when urgently required. Patients had to be moved in the darkness to escape the bombing and machine-gunning of the roads. Some of the cars were damaged in this way.

It was found that, generally, the German airmen respected the Red Cross if it was effectively displayed, and this eventually led to the use by 5 Field Ambulance of transport furnished with large Red Cross markings. During the evacuation this method was used in the transport of wounded, with great success. It was stated that six ambulances, marked with small crosses only, were destroyed, whereas those marked with large crosses proceeded unharmed through the same area.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE WORK OF THE RMOS

The Work of the RMOs

The RMOs, especially those attached to 5 Infantry Brigade, experienced great and unprecedented difficulties during the violent and confused attack, particularly in the Maleme area. They found themselves called upon to deal with heavy casualties, with very little in the way of equipment and medical supplies. Although attempts were made by the field ambulances to contact them by parties of medical officers and stretcher-bearers, these were unsuccessful and the RMOs had to carry on as best they could.

Fortunately, their medical supplies were supplemented by German supplies dropped by parachute, and these were found to be of excellent quality, both as regards drugs and dressings, even containing tubes of glucose saline and surgical operating equipment. The RMO of 21 Battalion stated that he obtained adequate supplies of opium by this means when his own supply of morphia was exhausted.

All the RMOs of 5 Infantry Brigade, with the exception of the RMO of 28 Battalion (who was wounded, losing an eye), were captured. They remained behind with the seriously wounded, including a large number of Germans, when their battalions withdrew. Many walking wounded were able to retire with the brigade.

Owing to the nature of the fighting and the ground fought on, the regimental medical officers could expect little Red Cross immunity. By and large, Red Crosses were not displayed at RAPs as these aid posts were, after all, in the main in strictly combatant areas. Indeed, in such fighting the more the aid post was surrounded by armed troops the safer were the wounded. No deliberate attacks on the wounded were reported by the regimental medical officers who, with their staffs, all performed

most gallantly at their posts and did everything in their power to assist the wounded.

The collection of wounded in the forward areas was carried out only with great difficulty in the chaos brought about by the scattered landing of the paratroops. Nevertheless, the work was conscientiously and efficiently done, and the seriously wounded had the benefit of continued attention during the difficult period of early captivity.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SITING OF MEDICAL UNITS

Siting of Medical Units

Difficulty was experienced in the siting of field ambulances, dressing stations, and hospitals. Neither the force nor the individual units had had any experience of an airborne attack. The 7th General Hospital had been established before any such attack was seriously thought of. The lack of transport and the conditions of the terrain made the siting of the dressing stations near the main roads a natural decision. It thus came about that the main hospital (7 General Hospital) was erected close to the shore in an area peculiarly liable to both airborne and seaborne attack. One MDS was originally placed at a crossroads and then under a culvert on the main road, positions certain to be subjected to air attack. The selection of sites was thus made very difficult, as the dressing stations had to be kept away from main roads and also from any open space where paratroops could be readily landed. The dressing stations had also to be placed in positions where they could be defended by the combatant troops. The differences of opinion which arose between the senior medical officers with regard to the siting of the units exemplify the difficulties of the problem.

Fifth Field Ambulance set up a very efficient dressing station in the officers' mess building of 7 General Hospital and did excellent work there, although the ADMS considered the site unsuitable. The 189th Field Ambulance established a large hospital in buildings at Khalepa, a suburb of Canea, where it carried out operative treatment on a large number of casualties. The town, however, was subjected to heavy bombing and the unit was lucky to evacuate the site just before one of the buildings was demolished by a bomb.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF TROOPS

Health of Troops

The men arrived in Crete very tired and with little personal equipment. There had, however, been no sickness in Greece and the troops rapidly recovered in the peaceful conditions and excellent climate of Crete, probably helped considerably by the facilities for sea-bathing that were available. In spite of a reduction in the rations, made necessary by the unexpected number of troops to be supplied, the health of the troops remained very good throughout the campaign. There was very little sickness and practically no endemic disease, except dysentery.

Shortly after the arrival of the troops many of them suffered from a transient attack of diarrhoea, and towards the end of the campaign mild dysentery was also present, but not to any marked extent.

A British hygiene section had been stationed in Crete for some time before the arrival of the troops from Greece. A malarial survey had recorded widespread infection by malaria in the villages and measures were taken to control the spread of the disease. The 4th Field Hygiene Section under Captain Irwin began at once to investigate the local conditions and to carry out a mosquito survey in our area, finding several areas infested with mosquitoes. The troops had no individual protection – such as nets, cream, or sprays – yet very few cases of malaria occurred. Fortunately, the malaria season had not really commenced before the troops left Crete.

There were no cases of typhoid. Venereal disease had been very prevalent among the garrison troops, but the incidence in our troops in the short and active period that they remained on Crete was not high. There is no mention of any other disease.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TREATMENT OF THE WOUNDED

Treatment of the Wounded

The casualties on Crete were very heavy, much heavier than in Greece, [1] and thus threw a heavy burden on the ill-equipped New Zealand Medical Corps. Medical officers had, however, managed to save many essential parts of their equipment, such as surgical instruments, drugs, and dressings. They were helped considerably by equipment and supplies readily obtained from 7 General Hospital. The lack of transport and the difficulty of evacuating casualties by the one road, which was bombed and machine-gunned incessantly in daylight hours, made it necessary for the MDSs of the ambulances to carry out surgical work, sometimes of a major nature. The surgical team from 1 NZ General Hospital under Major Christie, which had been attached to the ambulances in Greece, was available in Crete; Major Christie performed excellent work and furnished a valuable report on the work carried out under such difficult conditions.

The team was first attached to 5 MDS and then to 7 General Hospital to fill the place of a specialist surgeon killed by a bomb on 18 May. The team was then attached to 189 Field Ambulance hospital at Khalepa until it ceased to function. The force was lucky in having available at 7 General Hospital surgeons of sound training and experience, the senior of them, Lieutenant-Colonel Debenham, later becoming a consultant surgeon on the Western European Front.

Fifth Field Ambulance was called upon to perform a considerable amount of surgical work, both at Modhion and at the site of 7 General Hospital. Sixth Field Ambulance attended to large numbers of wounded from Greece immediately after its arrival in Crete, and later assisted 7 General Hospital by relieving it of its burden of lighter cases and also by

setting up a convalescent depot to look after the cases discharged from the hospital. It also treated wounded from the fighting in the Galatas area. Both units assisted the wounded during the evacuation with transport, dressings and rations, and, finally, at the evacuation itself. They nursed and shepherded along large numbers of wounded, some with relatively severe wounds, who normally would not have been permitted to make the trip.

The actual wound treatment varied according to the skill and knowledge of the medical officer and it was natural that some of the surgery was not up to the highest standards. The surgical team reports instances of wounds sutured at the field ambulances with unsatisfactory results. Luckily, there was available our own surgical team and the skilled surgeons at 7 General Hospital, who coped with the greater number of the heavier cases and who had knowledge of the best surgical wound treatment. The wound treatment carried out by our surgical team consisted of *débridement*, with removal of all soiled and damaged tissue – particularly muscle – with free opening of the wounds and with acriflavine dressings. The serious loss of serum was noted in the large wounds, and also the relative freedom from injury of the nerves and blood vessels.

Fractures: **After the usual wound treatment the cases were splinted as follows:**

1. **Femur: The Thomas knee splint was used and our surgical team employed a special technique. From ankle to mid-thigh was enclosed by two Cellona plaster bandages. A strong calico bandage was laid on this, passing over a spreader below the foot and coming up on the other side of the limb. Three more Cellona bandages were put on over this. The limb, complete with its plaster casing and extension, was now placed in the Thomas knee splint, the calico attached to the end with rubber tubing – if available – the splint slung from the Thomas crossbar on the stretcher, the footpiece applied, and finally the foot of the stretcher raised to provide extension by the counter body-weight method. This illustrates how one surgeon worked out a combination of plaster and Thomas splintage, which as the Tobruk splint was to become the universal practice later.**

2. **Tibia: Plaster closed splint applied.**
3. **Humerus: Plaster back slab with collar and cuff, or Kramer wire splints. In fractures of the lower end of the humerus, extension of the elbow below 90 degrees was carried out.**

Amputations: **These were usually carried out for gross destruction of bone and joint. No guillotine amputations were performed, short anterior and posterior flaps were used, and the site of election was selected. The ends of the wound were sutured, but the central part was left open for drainage. No tubes were used. Main vessels were doubly-ligated and the nerves were simply cut across in the upper part of the wound. In amputations of the lower limb the tourniquet was used, but in the upper limb only digital control of the brachial or subclavian was employed.**

In the case of shattered limbs the surgeon employed a simple rubber band just above the lacerated end, to be left on during resuscitation to control haemorrhage, leaving undamaged all the tissue above, through which the amputation would be performed.

Head Wounds: **These were excised and the wound closed by use of an S-shaped flap. A head tourniquet was used and an improvised table formed from a stretcher, with a bandage between the bars forming a head rest.**

Chest Wounds: **These were dealt with very conservatively by aspiration and air replacement. Open sucking wounds, if not already sutured at the field ambulance, were closed, but few of such cases were seen. Detached pieces of rib were removed. No open exploration of the chest was carried out, nor was it ever considered necessary.**

Thoraco-abdominal Wounds: **All such cases produced by the German explosive bullets were noted to be fatal.**

Abdominal Wounds: **These were not very frequent. They were all explored at once. The small bowel was generally damaged, the large bowel frequently escaping in a surprising manner, especially in transverse wounds. It was noted that resection of the small intestine caused a heavy mortality. The mesentery and omentum were often found**

damaged, producing an abdomen full of blood. The rectum was noted to be often injured in sacral wounds, and these cases were generally fatal from toxaemia and probable peritoneal infection. No such case survived, although one lived for five days after a transverse colostomy. The bladder was sometimes injured and catheterisation was always resorted to if any doubt existed, and an in-dwelling catheter left in if any bladder injury was present. No cases of liver, stomach, or splenic injury were encountered.

Shock and Haemorrhage: **Treatment consisted of the application of warmth by hot bottles, the relief of pain by morphia (gr. ½) and the splintage of fractures, the elevation of the foot of the stretcher, and the giving of fluids by mouth, rectally, subcutaneously, and intravenously. Some Baxter vacolites were available at the MDS.**

Dried plasma in limited amounts was available at one field ambulance. It was necessary to cut down on the vein and use a cannula. Blood was not used, though transfusion sets and citrate were available at 189 Field Ambulance. The intensity of the surgical inundation precluded its use. The suggestion was made that a special blood transfusion team, consisting of a medical officer and two orderlies, should be attached to the Division, with supplies of dried plasma, a portable refrigerator, and a few pints of blood ready for use.

Gas Gangrene: **Only one fulminating case was seen by Major Christie, with infection spreading up to the umbilicus; death occurred twelve hours after admission to hospital. Several cases of limb wounds showed gas in the tissues. These were treated by excision of muscle and muscle groups, and freely opened to facial planes. No amputations were necessary for this condition. Serum was given.**

Lieutenant Ballantyne saw several severe cases at 6 ADS and cases were seen later after evacuation of prisoners to Greece.

Sulphonamides: **A dosage of 2 grammes, followed by 1 gramme in two hours and then four-hourly for forty-eight hours, was given by the**

mouth to seriously wounded cases. No sulphonamide was used locally on the wounds.

Foreign Bodies: **These were removed when readily accessible or large, but otherwise no time-consuming search was made.**

Severity of Wounds: **It was noted that the German wounded had much less severe wounds than our own men. The German aerial bomb, trench mortars, explosive machine-gun and cannon-gun shells inflicted more severe wounds than our .303 bullets. The Schmeisser bullet was as severe as a machine-gun wound, if fired at close quarters.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE LEAVING BEHIND OF MEDICAL PERSONNEL

The Leaving Behind of Medical Personnel

In Crete this problem again arose and on a much more serious scale than in Greece. Altogether, there were eight medical officers and 176 other ranks of the NZMC left behind as prisoners in Crete. Four of the medical officers were attached as battalion medical officers and elected to stay behind in their RAPs with the wounded under their care. One of these officers, Captain Stewart, later said: "Unfortunately on 23 May Hetherington and I, under the stress of events, both decided to remain, not realising until we met later in the day that we were only half a mile apart, and as we had information that Longmore was a prisoner of war, probably unwounded, one of us would have sufficed. Of course, too, our judgement was biased by the belief that exchange of protected personnel would eventuate early allowing us to rejoin our own side". (This belief was based on the Geneva Convention.) Three medical officers attached to field ambulance dressing stations also chose to remain with seriously wounded men. The ADMS NZ Division was also captured, having delayed his departure to set up a dressing station for walking wounded; he could not be contacted before the engineers blocked the road.

It was not until the later stages of the battle that it was known at Creforce Headquarters that so many medical personnel were remaining with the wounded. An order was then issued by the DDMS Creforce that no more medical officers or other ranks were to remain behind unless detailed by their commanding officer to do so; but it is very doubtful if this order reached more than a limited number of those for whom it was intended. Medical officers, padres, and men unselfishly sacrificed their liberty in their anxiety for the welfare of their patients.

In the hurried retreat to the southern coast close contact between

medical units and with headquarters was difficult, and danger arose of two medical units both leaving personnel in the same area. This happened when, at 5 Field Ambulance MDS, two medical officers on their own initiative remained behind, and the nearby 7 General Hospital also left behind medical officers and personnel – a needless duplication. The medical officers generally acted without orders from higher authority, as they felt their individual responsibility keenly, and no definite ruling was available. Circumstances were such that instant decisions had to be made.

These officers showed a noble spirit of self sacrifice and are to be commended for their altruistic zeal, but the policy determining their actions should be clearly laid down by higher authority to prevent unnecessary loss of valuable personnel. Such was the lesson that was learned in the campaigns in Greece and Crete. The British and Australian Medical Corps suffered in the same way, and their officers made the personal sacrifice in a similar unselfish manner.

As regards the other ranks of the NZMC, a large number likewise remained behind with the medical officers to tend the wounded, but many were unable to be evacuated, either because of their loss of contact during the retreat, or, at the end, because it was impossible to evacuate the whole force. Priority had been given to combatant troops, a decision which could not be questioned. It is open to question, however, whether a complement of medical personnel should not always accompany the combatant troops to which they are normally attached as they provide a highly specialised service essential to the well-being of the troops.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION

Evacuation

The problem of the shepherding of the walking wounded across the island and giving them medical attention during that period was fraught with considerable difficulties. The majority of the slightly wounded had to make the trip on foot, travelling during the night on a road crowded with a rather disorganised medley of troops and refugees and a variety of vehicles, and lying up under the olive trees during the day. The force orders were that road traffic should cease during the day, but it was impossible to enforce the order strictly, particularly during the last days of evacuation. There were thousands of Cypriots, Palestinians, and Greeks making their way across the island, and this added to the confusion due to the number of separate forces involved. It was extremely difficult in the weary march across the mountains for the wounded, and even the personnel of the medical units, to keep contact. The best that could be done was to set up medical dressing and rest posts at intervals along the route, where the wounded and the staffs could be collected together again to have wounds attended to and rations supplied.

Large dressing stations were set up by our New Zealand units as well as by British and Australian medical units, especially near the coast, where the men could be collected and helped during the embarkation. The steep and narrow road down the cliff to Sfakia led to great difficulties in embarking wounded men and also brought about a serious delay, with the result that many, who would otherwise have been accommodated on the ships, were unable to be picked up in the time allowed.

The embarkation would have been speeded up – had it been realised

at the time – if a larger proportion of medical personnel had been detailed to help the wounded down the cliff; this would have had the added advantage of allowing a large number of personnel of the medical units to be embarked when extra space in the ships was available. It was so very much a question of the speed of the embarkation, as the naval ships had to be as far as possible out of bomber range before daylight.

The troops who were policing the embarkation had an exceedingly hard task, since in the darkness they had to check all troops for their priority, as laid down by GOC Creforce. The large number of Greeks and Cypriots who had to be turned back also caused serious delay. Slips were issued to wounded by the medical units at the staging posts and, as far as possible, order was maintained and the men checked.

In considering all the circumstances the percentage of the force evacuated was satisfactory, and the number of wounded men, some of them seriously wounded, who got away from Crete showed the virility and sturdiness of our own and other Commonwealth troops.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

LESSONS FROM CRETE

LESSONS FROM CRETE

The Crete campaign taught our army valuable lessons and made a lasting impression on those who had the honour to take part in it:

1. ***Graded Men:*** **The most important outcome, as far as our New Zealand force was concerned, was the attitude thereafter of the senior officers of all units towards the use of graded men in the Division. The severe strain thrown on men marching across the rough and hilly road so impressed itself on these officers that they considered that, in future, none but Grade I men should ever be accepted in any divisional unit – even if normally transport would be available. Men with foot disabilities, who had been detailed for duty in the ASC and other units with transport, were considered especially unsatisfactory in the Division. This attitude was so prevalent that the name "Creteitis" was given to it. It perhaps brought about some unnecessary transfers of personnel with minor disabilities from the divisional units. Fortunately, never again during the war was the Division faced with a similar problem, so the over-anxiety regarding the use of slightly disabled men proved to be unnecessary.**
2. ***The Geneva Convention:*** **It was recognised as a result of the experiences in Crete that the only adequate protection for a medical unit was the generous display of large and distinct Red Cross markings. It was proved that the Germans respected the Geneva Convention provided that the medical unit was not sited in an area suitable for airborne landing. The wearing of steel helmets was recognised by the Germans as a sign of combatant troops, and therefore they had to be discarded by medical staffs.**
3. ***Value of Surgical Teams Attached to Divisional Units:*** **There is no doubt that the attachment of a surgical team from 1 NZ General Hospital to the Division in Greece was of inestimable value in the campaigns in both Greece and Crete. The presence of a senior surgeon, with an all-round surgical experience and a special knowledge of orthopaedic surgery, enabled knowledge of the best treatment of the wounded man to be passed on to those working with him, and in addition his own operative ability and judgment were**

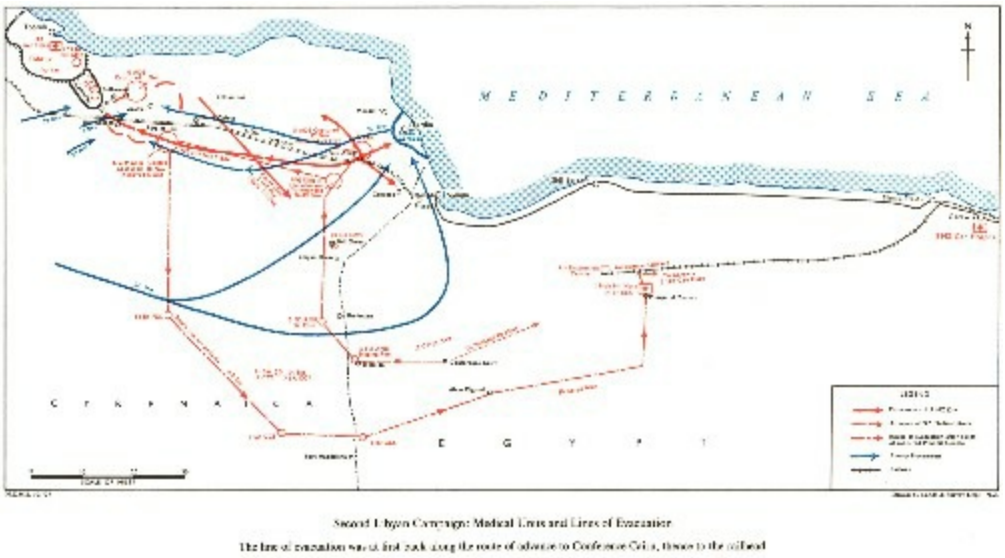
available. He himself noted the difference between the cases passed on from the ambulance in which he had been working and those coming from its fellow.

The loss of a specialist surgeon attached to 7 General Hospital made the team doubly valuable, and a second team would have been most welcome. The problem of whether the forward surgery should be done in the ambulances or at the CCS did not arise here, as there were no official casualty clearing stations and the general hospital was itself a field unit, so that there was little or no distinction between any of the medical units, each one in turn dealing with whatever work came into its area. The 5th MDS carried out a good deal of operative work. The surgical team operated with both 7 General Hospital and 189 Field Ambulance hospital. British and Australian units also dealt with a considerable number of casualties, including New Zealanders.

4. ***Improvisation:*** **The New Zealand units landed in Crete with minimal equipment and supplies, but nevertheless carried out their work under most difficult conditions with quiet efficiency. They showed their ability to improvise, to collect together essential implements, and to work in makeshift quarters. The younger RMOs did a great deal of work single-handed, one RMO putting through nearly 700 cases during the campaign. The lessons learned by those who escaped were of great value to the Medical Corps later in the Desert campaign.**
5. ***Blood Transfusion Team:*** **The impossibility of carrying out blood transfusions during a rush of casualties, without there being any special team available for that purpose, was recognised. Transfusion sets were available in 189 Field Ambulance hospital, but no transfusions were given. Our surgical team attached to this hospital recommended that a team of one medical officer and two other ranks should be established and attached to the Division, and that equipment, such as portable kerosene-operated refrigerators, should be obtained.**
6. ***Transport:*** **Naturally, in Crete the supply of transport was of paramount importance and the necessity in modern warfare of having adequate means to transport the wounded from the forward areas to the operating centres only too obvious. Even if it had been possible to embark stretcher cases from Sfakia, ambulances to carry them were not available. It is remarkable how well the medical work was carried out with a minimum of transport.**
7. ***Dispersal of Medical Stores:*** **The stores of 7 General Hospital were all**

kept in one tent – in which it was stated that ether was also kept – and unfortunately this tent caught fire during the attack on the hospital. The dispensary tent was also burnt, so that nearly all the medical supplies were destroyed. The dispersal of all essential equipment and stores should be carried out under any circumstances, and especially where damage by the enemy is likely to occur.

There was every reason to be proud of the New Zealand Medical Corps in Crete and of the fact that the medical administration was under our own command. All sections of the Corps did excellent work, including the sisters during their brief stay on the island, and the men of the medical units showed their ability to sacrifice their liberty in the interests of their patients.



Second Libyan Campaign: Medical Units and Lines of Evacuation

The line of evacuation was at first back along the route of advance to Conference Cairn, thence to the railhead

WOUNDED ON

Embarkations (British, Australian, and New Zealand)

Date	*Port*	*Number*
29 Apr	Suda Bay	500 (On *Ionia*—walking wounded ex- Greece)
5 May	Canea	602 (On *Aba*—sick and wounded ex- Greece)
16 May	Canea	561 (On *Aba*—sick and wounded ex- Greece)
		1663

24 May	Suda Bay	60 (on destroyers bringing medical supplies)
25 May	Suda Bay	50 (on destroyers)
26 May	Suda Bay	150 (on destroyers—from Naval Hospital)
28–29 May	Sfakia	230 (on destroyers)
29–30 May	Sfakia	550 (On *Glengyle*)
30–31 May	Sfakia	10
31 May-1 Jun	Sfakia	80 (Final embarkation)

1130

Wounded Taken Prisoner (New Zealanders and others)

Date	*Number*	*Place*
23–25 May	270	Maleme area, with RMOs 5 Bde—22 Bn, 160; 21 Bn, 50; 23 Bn, 60.
26 May	200 (? 300)	7 Gen Hosp caves with British MOs
26 May	20	Near Canea, with 5 Fd Amb rear party
26 May	100 (? 150)	Near Canea, with Lt Ballantyne, 6 Fd Amb
27 May	200 (? 300)	Kalivia, with part 2/1 Aust Fd Amb
28 May	46	Neon Khorion, with Lt-Col Bull
30 May	40	Imvros, with Australian MO.

876–1110

Total of New Zealand Wounded	
Embarked	967
Prisoners of war	525

CASUALTIES

New Zealand Medical Corps (Officers in parentheses)

Unit	*Killed*	*Wounded*	*PW*
5 Field Ambulance	1	1	(2) 63
6 Field Ambulance	(1) 6	8	(2) 83
4 Field Hygiene Section			17
1 General Hospital			17

Regimental medical officers	(1)	(4)	
	(1) 7	(1) 9	(8) 180

2 NZEF

	Officers	*Other Ranks*	*Total*
Killed (incl. died of wounds)	36	598	634
Wounded	56	911	967
Prisoners of war	74	2143	2217
	166	3652	3818

Of the prisoners of war, 15 officers and 510 other ranks were wounded, and of these 1 officer and 36 other ranks died of wounds.

Strength of New Zealand Medical Corps on Crete

	Officers	*Other Ranks*
5 Field Ambulance	8	146
6 Field Ambulance	8	179
4 Field Hygiene Section	1	30
1 General Hospital	21	
ADMS	2	5
	19	381
Also RMOs	8	

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 6 — REORGANISATION IN EGYPT AND BASE ADMINISTRATION

Contents

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

FROM Greece and Crete the field medical units and 1 General Hospital came back to Egypt with their ranks thinned by casualties and with next to nothing of the equipment which had been slowly built up during the previous year. Little did anyone realise that before the end of 1941 the field medical units were to suffer further crippling losses of personnel and equipment.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

1 GENERAL HOSPITAL

1 General Hospital

Colonel McKillop, 13 officers, and 69 men of 1 General Hospital arrived at Alexandria from Greece on 23 April. They disembarked and entrained for Amiriya, where they were marched into a staging camp. The next day they proceeded to Maadi Camp and were quartered in the camp hospital area. On 29 April a detachment under Major Hunter went to Helwan Camp to assist in the establishment of a rest centre there for troops returning from Greece, and other officers and men were attached to 2 and 3 General Hospitals to assist them to cope with the expected added pressure of work. The ophthalmic and ENT surgeon and the radiologist were attached to 3 General Hospital as that unit was deficient in these specialist services, and the orthopaedic surgeon was attached to 2 General Hospital to help both in the wards and the out-patient department.

The matron and the fifty-one nursing sisters arrived in Cairo from Crete, accompanied by Captain King [1] and Captain Sayers, on 1 May. The six more seriously hurt of the nineteen involved in the truck accident prior to embarkation in Greece were admitted to 2 General Hospital. The remainder were quartered at 2 General Hospital, where they carried out nursing duties, and all had leave in rotation, special extra leave being granted them.

An inquiry was held by Headquarters 2 NZEF into allegations that the evacuation of 1 General Hospital from Pharsala had been precipitate and that the sisters should have been evacuated from Greece before or with the unit. Colonel McKillop was completely exonerated, it being definitely established that the evacuation of Pharsala was carried out in compliance with definite and specific orders from ADMS 80 Base Sub-

Area, and that Brigadier Large had made definite arrangements before the departure of the unit from Greece for the sisters to be evacuated by hospital ship from Athens.

Colonel McKillop was admitted to hospital shortly after the return of the unit to Egypt and was medically boarded and returned to New Zealand on HS *Maunganui* on 10 June 1941. Lieutenant-Colonel Stout assumed temporary command of the unit and strenuous efforts were immediately made to replace the lost equipment.

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[1] **Brig R. D. King, CBE, DSO, m.i.d., Greek Medallion for Distinguished Deed; Timaru; born Timaru, 25 Feb 1896; medical practitioner; 1 NZEF 1918–19, Private, NZMC, England and Hospital Ship; physician 1 Gen Hosp Feb 1940–Jun 1941; 2 i/c 4 Fd Amb Jun 1941–Jan 1942; CO 4 Fd Amb Jan 1942–Jun 1943; ADMS 2 NZ Div Jun 1943–Dec 1944; DDMS NZ Corps Feb–Mar 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FIELD MEDICAL UNITS

Field Medical Units

When 6 Infantry Brigade Group, with 4 Field Ambulance attached, arrived in Egypt from Greece the group went to Helwan Camp. Here 4 Field Ambulance staffed a camp reception hospital and camp convalescent depot and underwent routine training, which was possible as the unit had suffered fewer losses than the other field medical units.

At the end of May those members of 5 and 6 Field Ambulances and 4 Field Hygiene Section who were evacuated from Crete joined 4 Field Ambulance at Helwan Camp, and during June were located either there or in the adjoining Garawi Camp.

A training schedule was arranged as fully as limited equipment would allow, and the units carried out some interesting work on camouflage in the open desert. It was found that slit trenches could be effectively hidden from air observation by the use of coarse netting and less effectively by scrim. In addition, arrangements were made for nursing orderlies to undergo refresher courses at 2 General Hospital, Helwan.

The 4th Field Hygiene Section supervised a course of instruction in hygiene and sanitation for representatives of divisional units and supervised the hygiene of the camp. Major Williams, OC Base Hygiene Section, took over the command of this unit, changing appointments with Major Irwin.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL HEALTH

General Health

Considering the trying nature of operations in Greece and Crete the health of the troops had remained good, in spite of some general loss of weight. In June there was a minor outbreak of acute anterior poliomyelitis, against which appropriate measures were taken in the isolation of contacts, the ensuring of adequate ventilation of huts, and enforcement of the instruction regarding the boiling of eating utensils. It was considered that the effective enforcement of these measures limited the spread of the outbreak. (It was noted that a few cases were occurring regularly in the Division before it went to Greece but that there were no cases in Greece and Crete. More fresh cases arose on return to Egypt.)

On 5 May DDMS 2 NZEF directed Lieutenant-Colonel Boyd to go to Helwan Camp to investigate the statement that troops returning from Greece were suffering from vitamin deficiency. In his report Colonel Boyd stated that the allegation seemed to have been based on one medical officer's statement that he had seen an unduly large proportion of septic scratches, abrasions, boils, and diarrhoea. On inquiry it was found that the consensus of opinion was that the health of the troops in Greece was in every respect better than it had been at any time previously in the Western Desert. Colonel Boyd reported that the diet of the troops in Helwan contained an abundance of protective foodstuffs, that no general alteration in it was considered necessary, and that there was no cause for anxiety.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INFLUENZA EPIDEMIC – 5TH REINFORCEMENTS

Influenza Epidemic – 5th Reinforcements

Word was received by DDMS 2 NZEF that there was a considerable number of influenza patients among the 5th Reinforcements due to arrive in Egypt on 12 May. It was decided that the best course to follow was to isolate the whole contingent until the epidemic abated, and also to transfer all patients from 3 General Hospital to 2 General Hospital and use 3 General Hospital as an isolation hospital. Twenty sisters were transferred from 2 General Hospital to 3 General Hospital, and camp reception hospitals and convalescent camps were established in segregated areas at Maadi and Garawi to deal with cases arising in camp after the arrival of the troops.

The number of cases from the transports for actual admission to hospital was fewer than was at first indicated as the epidemic was on the wane, but it was decided to adhere to the arrangements already made. After admitting 290 infectious patients on 13 May, 3 General Hospital was isolated until 26 May, and as a result of the precautions taken the epidemic did not spread to the rest of the New Zealand force in Egypt.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

3 NZ GENERAL HOSPITAL, HELMIEH

3 NZ General Hospital, Helmieh

This unit under Colonel Gower had arrived in Egypt on 23 March 1941 with the third section of the 4th Reinforcements and detrained at Zeitoun siding on 28 March, taking over the site at Helmieh recently vacated by 1 General Hospital, which had proceeded to Greece, leaving a small holding party in occupation. On the site at that time there were erected nine marquees, sixteen huts, the roofs of which were being repaired after having been blown off in a storm, and thirty-three tents for officers' and sisters' quarters. The operating block of army design was nearing completion, electric wiring was being installed in marquees and huts, mud-brick walls were still being built round some tents and buildings, and a comprehensive roading scheme had been begun.

As equipment arrived the hospital was gradually established, although it was well into April before medical equipment was received. On 24 April the first 134 patients were transferred from 2 General Hospital, a further convoy of 57 arrived from the Western Desert on 28 April, and there were 209 patients in hospital at the end of the month.

On 12 May all patients except seven were transferred to 2 General Hospital to make room for the admission and isolation of 261 influenza cases from the 5th Reinforcements, following the epidemic experienced on the voyage from New Zealand. The hospital and staff were isolated from 13 to 26 May.

On 29 and 30 May 387 battle casualties from Crete were admitted, increasing the number of patients to 619. These were accommodated with some difficulty; 59 men had to be placed on palliasses on the floor, but they were only too thankful to be safely back in Egypt and well looked after by the willing staff.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

VISIT OF PRIME MINISTER

Visit of Prime Minister

The Prime Minister of New Zealand, the Rt. Hon. P. Fraser, was in Egypt from 15 May to 8 June and he made extended visits to the New Zealand hospitals and to all New Zealand patients in British hospitals. He expressed to the DDMS 2 NZEF, Matron-in-Chief 2 NZEF, and officers commanding the units his very high appreciation of the medical arrangements made and of the standard of care given to the sick and wounded. He emphasised that, as Minister of Health, he had been in the habit of visiting institutions in New Zealand and interviewing patients, and considered it noteworthy that nowhere throughout 2 NZEF medical units had he received any complaint.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REINFORCEMENTS

Reinforcements

A survey of the strength of the medical units of the New Zealand Division on 12 June showed that, as a result of the operations in Greece and Crete, the following reinforcements were required.

		Other Ranks		
	Officers	*Medical*	*ASC*	
4 Field Ambulance	**1**	**23**	**10**	
5 Field Ambulance	**6**	**102**	**34**	
6 Field Ambulance	**6**	**113**	**40**	
4 Field Hygiene Section		**17**	**6**	
	13	**255**	**90**	**Total: 358**

In the following three weeks medical and ASC reinforcements were posted from Base, and these, together with thirty-nine volunteers (graded men) transferred from the infantry to the Medical Corps, resulted in the units being only sixty men short of full establishment. (This figure excluded first reinforcements of seven to each field ambulance.) The strength of units at the end of June was:

4 Field Ambulance	**239**
5 Field Ambulance	**221**
6 Field Ambulance	**214**
4 Field Hygiene Section	**28**

In base units there was a deficiency of seventy-three other ranks in 1 General Hospital and of twelve in the Base Hygiene Section. Nos. 2 and 3 General Hospitals were fully staffed for 600-bed hospitals, but an expansion to 900 beds was pending in each case. Until the arrival of the 6th Reinforcements at the end of July, it was not possible to build the medical units up to full strength.

A similar position obtained as regards medical officers. Divisional units were made up to strength at the expense of the base units, principally of 1 General Hospital which, though not functioning, was short of thirteen medical officers. When due allowance was made for the imminent increases of war establishments for 2 and 3 General Hospitals and 1 Camp Hospital, as well as the extra full-time appointments of a Consultant Physician and a Consultant Surgeon, it was assessed by the DDMS 2 NZEF that, even after the arrival of seventeen medical officers with the 6th Reinforcements, there would still be a deficiency of fifteen. In addition, this did not take account of wastage through sickness.

Strong representations were therefore made by DDMS 2 NZEF to the DGMS Army Headquarters, New Zealand, in order to ensure that adequate medical staff should be made available. It had been possible to carry on only through the dispersal of the staff of 1 General Hospital.

The DDMS 2 NZEF expressed himself as confident that, in view of the amount of injury and sickness which the New Zealand troops were called upon to endure, it would be the wish of the Government and the people of New Zealand that an adequate medical service should be maintained; and further, that the people of New Zealand would be very ready to accept some further slight shortcoming in the service to themselves in favour of their own kith and kin who, after all, were making a greater sacrifice. In New Zealand the DGMS in his turn had to make appropriate representations to the National Medical Committee for the release of more medical practitioners to the Army.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

POSTING OF MEDICAL OFFICERS

Posting of Medical Officers

At a conference of senior medical officers called by DDMS 2 NZEF on 12 June, the reconstruction of the medical units was discussed. Officers commanding hospitals stated which officers it was essential to retain on hospital staffs by reason of age, special training, or disabilities. All other officers were to be made available for exchange with officers of divisional medical units.

The exchanges were limited in number as the ADMS NZ Division did not wish to part with his own officers just as they had become most efficient in field work. Some medical officers made requests for particular positions on the basis of alleged undertakings given to them in New Zealand. Such adjustments could not always be easily achieved and Brigadier MacCormick reported to DGMS Army Headquarters that, in his opinion, the only condition on which officers should proceed overseas was that they should undertake duties irrespective of time, place, or conditions. In his reply the DGMS maintained that he had made no promises of specific duties.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RE-EQUIPMENT

Re-equipment

Re-equipment was a question of major importance for the medical units who had lost almost all their equipment in Greece and Crete. All the Division's medical equipment was lost in Greece with the exception of that which could be carried on the men. This residual equipment was expended in Crete. The units concerned were 4, 5, and 6 Field Ambulances, 4 Field Hygiene Section, and 1 General Hospital, and also the regimental medical officers. The reserves in the Middle East were not sufficient for all the demands, and the New Zealand units had to wait many weeks pending the arrival of more equipment from England.

The staffs of the medical units had also lost considerable personal kit as well as some personal medical instruments and books during the campaigns in Greece and Crete. Representations for replacements were made and compensation was granted, adjusted to the extent of the individual loss.

The question of the loss of books brought up the larger matter of hospital libraries. In a report in June Lieutenant-Colonel Stout said:

I submit that a medical library of books recognised as authoritative on their different subjects is a necessity for the proper functioning of a hospital either in peace or war. In peacetime the individual physician or surgeon has at his command a personal library of such books without which he could hardly function. He also has access to medical libraries and also to the individual libraries of his colleagues. The books are required for two cardinal purposes. Firstly, for reference in cases of difficulty, especially when the disease or injury is an uncommon one; and secondly, for post-graduate study so as to supplement the knowledge already possessed by the practitioner. In war, authoritative books are, if

anything, required still more as no reference libraries are available and conditions are encountered which are not normally met with in civilian practice.

Brigadier MacCormick instructed the hospitals that it was a legitimate use of the funds placed at their disposal by the Joint Council of the Order of St. John and New Zealand Red Cross Society to provide libraries of standard textbooks and periodicals. Few such books, however, were obtainable in Egypt.

By the end of June 4 Field Ambulance had its medical equipment complete, but none had been issued to the other units. Indent had been made for a limited amount of medical equipment for training purposes only. None of the field ambulances had any ordnance equipment, and training without transport was necessarily limited in scope.

During June 1 General Hospital was able to draw the major part of its G. 1098 equipment from ordnance. No medical equipment had come to hand and the unit had nothing except the surgical instruments brought back from Greece, but during July some progress was made. In September when it moved to Helwan, 1 General Hospital took over all the equipment of 2 General Hospital, which then fell heir to 1 General Hospital's problems. When 2 General Hospital was suddenly called upon to move to the Western Desert at the end of October its equipment was still not quite complete, but the few deficiencies were immediately made up.

On 14 July both 5 and 6 Field Ambulances received their I. 1248 equipment, so that all three field ambulances then had complete medical equipment. At the same time fifteen sets of medical equipment for RMOs were delivered, completing the Division's requirements in this connection. During July and August each of the field ambulances received eight motor ambulance cars, and in August the medical units also drew most of their ordnance equipment. It was also approved that each field ambulance should be issued with eight light tarpaulins (30 ft. by 40 ft.) and six 160-pound tents to facilitate the rapid erection of

dressing stations in desert warfare. This tentage was not, however, immediately available.

Before returning to the Western Desert the field ambulances were issued with 3-ton trucks in place of 30-cwt trucks, and so were able to carry all their own personnel and equipment. Thus, the deficiencies in tentage and transport that had been observed in Greece were rectified. Considering the very serious losses of medical equipment in other forces beside the New Zealand force, it was remarkable that the deficiencies were made up so rapidly; our New Zealand units were treated with the utmost consideration by the British Army medical depots.

The question of the open display of Red Cross signs was still very undecided at this time in spite of the experience in Greece and Crete, so provision was made for the blotting out of the Red Cross in the event of camouflage being called for. Arrangements were made for the motor ambulance cars to be marked with the Red Cross.

Difficulties arose at this stage in obtaining an adequate supply of expendable medical stores for use in divisional units. This state of affairs continued for some months, but was, of course, due to the difficult supply position in the Middle East because of the long shipping route from the United Kingdom round the Cape of Good Hope.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CEREMONIAL PARADE OF DIVISIONAL MEDICAL UNITS

Ceremonial Parade of Divisional Medical Units

On 15 July 4, 5, and 6 Field Ambulances and 4 Field Hygiene Section took part in a ceremonial parade for inspection by the GOC 2 NZEF. After the parade the medical units were addressed by the GOC, who praised the work of all the medical units in Greece and Crete, and stated that in killed, wounded, and missing the New Zealand medical units sustained 18 casualties among officers and 289 among other ranks. The GOC also made appreciative mention of the fact that no wounded were left behind without medical attention, and in every case officers and men volunteered for this duty and did not have to be detailed to remain.

This was a noteworthy occasion in that it was the first time during the war that all three field ambulances and the field hygiene section had been on parade together. The Mobile Surgical Unit was also present to give a demonstration of its exceptional equipment and efficient transport. The unit by this time could within an hour and a half erect all tentage and be prepared to admit patients.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HYGIENE AND SANITATION IN DIVISIONAL CAMPS

Hygiene and Sanitation in Divisional Camps

Special efforts had to be made to raise the standards of hygiene and sanitation in Helwan and Garawi camps early in June. Conditions responsible for the lower standard were the loss of trained sanitary men in Greece and Crete, the abnormal circumstances brought about by the reorganisation of the Division and the influx of a large number of reinforcements, the lack of camp equipment and tools, and a certain amount of inertia regarding sanitation in troops returned from the campaigns.

The latrines in Helwan Camp were of the bucket type, but the new camps of Garawi and Mahfouz (a new camp immediately north of Helwan Camp) had a boxed-in deep-pit type. With a certain amount of re-design and adequate supervision, this type worked satisfactorily and did away with the difficulties associated with the employment of unsatisfactory native contractors.

The general standard in cookhouses and messrooms was fair. Extensive fly-proofing was undertaken although the flies were not as numerous as in 1940. The water supply at Helwan of 24 gallons per man per day was adequate if care was exercised. The water supply for Helwan, Garawi, and Mahfouz camps came from the Nile, being first treated with alum and then filtered through sand. Repeated bacteriological examinations had shown very satisfactory results. The amount of water supplied, however, was barely adequate and some restriction was placed on showers. The Helwan Camp swimming bath was provided with a water circulation system through a sand filter and the water was chlorinated twice daily. Because of shortage of water it could be emptied only once weekly, and contamination by dust and wind-borne rubbish made it

difficult to keep the water properly purified.

Mosquitoes were scarce but anti-malaria control was instituted. The issue of cresol for disinfection was cut down to 1 ½ gallons per 100 men per month; it was also of poor quality and was conserved for use outside latrines and messrooms for sterilisation of the hands.

Although it was summer and 5 Infantry Brigade and the 4th and 5th Reinforcements were comparative newcomers to Egypt, there was not much diarrhoea or dysentery. Considering this lessened degree of acclimatisation throughout the Division, improved sanitation must have played an important part in lessening the incidence of disease.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF TROOPS

Health of Troops

The general health of the troops remained satisfactory during July, although many men felt the effects of training in an Egyptian summer and the number attending sick parades with minor ailments remained large, an average of 700 a day. Malaria showed a seasonal increase, but the number of cases would undoubtedly have been much reduced had mosquito nets been available. It was noted that the incidence was almost equally divided between divisional troops in Helwan and non-divisional troops in Maadi Camp.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DRESS

Dress

The troops were issued with drill shirts and shorts for wear during the daytime throughout the summer and long trousers for wear during the evenings. This dress proved very suitable in every way. Pith helmets were on issue on return from Crete, but the issue was not continued for the following summer as their use was found to be unnecessary.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FOOD

Food

This was always adequate in amount and variety. Difficulties arose in the supply of fresh vegetables in the hot weather as much of the ration was unfit for use. Locally killed Sudanese buffalo beef was in normal supply.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INOCULATION STATES

Inoculation States

Inoculations were brought up to date for the whole of the Division at the end of June, and blood groupings were also checked.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TRAINING

Training

Intensive training was carried out during July and was especially valuable for the more recent reinforcements. Each field ambulance submitted a weekly training syllabus to ADMS NZ Division, who in turn submitted a summary of training to G Branch, Headquarters New Zealand Division.

Training during July included the following:

1. **Route marching.**
2. **Erection of dressing stations in desert warfare.**
3. **Contents of medical panniers and use of recently issued equipment.**
4. **Water testing.**
5. **Gas:**
   (*a*) Gas casualties;
   (*b*) Protection of food supplies against gas; and
   (*c*) Medical aspects of gas warfare.
6. **Technical training.**

   Treatment of wounds.

   Use of plaster.

   Drugs, injections, etc.

   Blood transfusions.

7. **Nursing – nursing orderlies trained at 2 General Hospital.**
8. **Anti-malarial measures – practical work under direction of OC 4 Field Hygiene Section.**
9. **Treatment of VD – course at 1 Camp Hospital for three specially selected officers and six men.**
10. **Recreational training and interior economy.**

11. **Map-reading and message writing – for officers and NCOs.**

The 4th Field Hygiene Section, in addition to the supervision of hygiene and sanitation of both Helwan and Garawi camps, carried out training and duties in:

1. **Water testing.**
2. **Anti-malarial measures (including a survey of the cultivated area on the banks of the Nile one mile from the camp where anopheles pharoensis were breeding).**
3. **Disinfestation.**
4. **Supervision and chlorination of swimming baths, Helwan Camp.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HOSPITAL SHIP MAUNGANUI

Hospital Ship Maunganui

On 22 May 1 NZHS *Maunganui* arrived at Port Tewfik on her first voyage to Egypt as a hospital ship. Representations by the GOC 2 NZEF and the DDMS 2 NZEF to Army Headquarters in New Zealand had reinforced the arguments put forward by the DGMS (Army and Air), Colonel Bowerbank, in April 1940, and renewed up till September 1940, on the need for a hospital ship. Although Colonel Bowerbank's appreciation of April 1940 clearly set out the need for a hospital ship, any positive action was deferred until it was known what campaigning 2 NZEF was likely to undertake. As it happened, New Zealand did have its own hospital ship in time to evacuate to New Zealand the casualties from Crete, but this position was reached only by expeditious work in the conversion of the ship and the fortunate procurement of equipment, some of which was not available in New Zealand. Had the Division been engaged in the Libyan campaign of 1940 and suffered casualties, the need for a hospital ship would have been severely felt. (The British hospital ship *Somersetshire* had transported invalids to New Zealand from the Middle East in March 1941, following on two small drafts of 93 and 50 taken by hospital ship as far as India and Australia respectively.)

The *Maunganui* was a ship of 7527 tons and, though thirty years old, was larger than both the *Maheno* and *Marama* which were the New Zealand hospital ships of the First World War. She was fitted with 379 cots, a number which was later reduced to 365 – 22 fracture cots, 84 single tier cots, and 139 two-tier cots. Some of the cots were of the swinging type.

The theatre block was exceptionally well appointed and comprised the main theatre, plaster room, and rooms for X-ray, sterilising,

massage, laboratory, dispensary, and diathermy, with a dental surgery nearby. All essential lighting was duplicated on emergency circuits and the whole theatre block was ideally situated forward under the bridge. The electric lifts were also connected to the emergency circuit. An adequate hot and cold water-supply to wards was fed from a huge tank specially installed to hold between 700 and 800 tons of water. There were refrigerators in every ward. Altogether, the ship was impressively equipped. Some of the special equipment had not been available in New Zealand and was secured urgently from America by Brigadier Bowerbank by special authority of the Prime Minister in order to expedite the conversion of the ship to medical needs. At Port Tewfik HS *Maunganui* was described by the commander of a British hospital ship as the best-appointed hospital ship he had seen during the war, and Colonel MacCormick reported that it was the unanimous opinion of all officers from the GOC down that New Zealand had every reason to be proud of its hospital ship. The ship was staffed by 104 medical officers, nursing sisters, and orderlies under the command of Colonel Murray, [1] with Miss Lewis [2] as Matron.

The ship was held at Port Tewfik until 10 June in order to take a number of the wounded from the campaigns of Greece and Crete. Hospitals were instructed to board for return to New Zealand any patients likely to occupy hospital beds for longer than three months. On 10 June 338 New Zealand invalids were embarked, as well as 40 Australians. The Australian authorities had taken fifty New Zealand invalids on HS *Manunda* in November 1940 and had agreed that some 2 NZEF invalids would be taken on each voyage of HS *Wanganella*, so it was a pleasure to be able to reciprocate on HS *Maunganui*. The co-operation of the Australian and New Zealand authorities in sharing hospital ship facilities was a feature of the medical services throughout the war. HS *Maunganui* evacuated invalids from the Middle East regularly throughout the war and was assisted by the Netherlands hospital ship *Oranje* as well as the *Wanganella*.

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[1] Col D. N. W. Murray, CMG, DSO, m.i.d.; born Auckland, 28 Aug

1876; medical practitioner; South African War 1900, Corporal, RAMC; 1 NZEF 1914–19, Egypt, Gallipoli, France, Germany; CO Mounted Fd Amb; CO 2 Fd Amb; President Travelling Medical Board, Anzac Corps, France; ADMS NZ Div, Germany; Commandant, Second Army Medical School, France; CO Military Hospital, Auckland, 1919; OC Troops HS *Maunganui* Apr 1941–Feb 1942; died Auckland, 4 Sep 1945.

[2] Matron Miss E. M. Lewis, RRC, m.i.d.; (now Mrs Rudd); born England, 14 Feb 1882; Matron, Blenheim Hospital; served First World War Dec 1915–Jan 1920 (Egypt and England); Trentham Hosp 1920–21; Matron HS *Maunganui* Apr 1941–Feb 1942, Aug 1942–Nov 1944; Trentham, 1944–45.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NETHERLANDS HOSPITAL SHIP ORANJE

Netherlands Hospital Ship Oranje

The Netherlands hospital ship *Oranje* arrived at Port Tewfik on 6 August 1941 and on the next two days embarked 641 patients for Australia and New Zealand. Early in 1941 the Netherlands Government offered Australia and New Zealand the MV *Oranje* for use as a hospital ship to bring back sick and wounded from their forces in the Middle East. This generous offer was gladly accepted, and the ship was partially converted to her new purpose in Batavia and then sailed to Sydney to be completely converted and equipped as a hospital ship. The *Oranje* was a luxury liner of 20,000 tons completed only in 1939 and had made her maiden voyage to the Dutch East Indies just after the outbreak of war. She was a fast ship able to average 26 knots and had a water plant able to produce 300 tons of fresh water daily. As a hospital ship she was probably the world's largest and fastest.

The Netherlands Government was responsible for the cost of the conversion of the *Oranje* and for her upkeep, including surgical equipment and medical stores. The ship's staff comprised 327 officers and crew of the Netherlands mercantile marine, and the medical staff consisted of 123 medical officers, sisters, and orderlies of the Netherlands military medical service, and 18 Australian and 16 New Zealand medical personnel. (After her second voyage the Dutch medical staff was reduced when some members were posted to serve in the East Indies after Japan's entry into the war, and the number of New Zealanders on the staff increased. In 1943, when the AIF was withdrawn from the Middle East, the Australian staff was replaced by a British staff and the number or New Zealanders again increased to reach 76. In 1944 the ship's bed accommodation was expanded to take 870 patients and in 1944 and 1945 the *Oranje*, as a member of the Allied shipping pool,

made most of her voyages between the Middle East and Italy and the United Kingdom with British invalids, but made another voyage to New Zealand at the end of the war. The service of the *Oranje* and the assistance of the Australian ship *Wanganella* enabled HS *Maunganui* to cope with the evacuation of sick and wounded from the Middle East without another New Zealand hospital ship being required.)

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DIVISIONAL UNITS IN CANAL ZONE

Divisional Units in Canal Zone

Divisional combatant units went to the Suez Canal zone for training after they had been rested and reorganised. Sixth Infantry Brigade Group occupied an area near Ismailia but no separate medical unit accompanied it. Towards the end of July 5 Infantry Brigade Group moved to Kabrit Camp, and 5 Field Ambulance accompanied it on 26 and 28 July to participate in training and to provide medical services.

Kabrit Camp was situated 20 miles north of Suez on a promontory between the Great and Little Bitter lakes and was adjacent to Kabrit aerodrome and combined operations school. There were good bathing facilities for troops but no fresh-water showers were available. The camp water supply was pumped from the Sweetwater Canal and was chlorinated before it passed into the water tower in the centre of the camp area.

Typical desert conditions existed in the camp area, which was subjected to frequent dust-storms. Drainage was most unsatisfactory. There was very little depth of surface sand and beneath it was a deep layer of impervious strata which precluded the deep soakage of ordinary drainage. The existing shallow soakpits were filled to overflowing within a few days of the occupation of the camp. It became obvious that the only effective system would have been the construction of covered drains leading down to the Bitter Lake, but the Division moved on before this could be done. The latrines were of deep trench pattern and functioned satisfactorily.

Fifth Field Ambulance established a camp reception station and arranged for the evacuation of patients to 19 British General Hospital, Geneifa. This hospital also supplied issues of expendable medical stores

and undertook laboratory examinations. Another British hospital in the area, 13 General Hospital, agreed to provide ambulance transport for evacuation of certain cases to 1 Camp Hospital, Maadi. The only sickness of moment was an outbreak of diarrhoea in 21 Battalion stationed at Geneifa.

In view of possible amphibious operations in the future, swimming instruction was given to members of 5 Field Ambulance, especially as it was found that 30 per cent of the men were unable to swim. Training in combined operations with 5 Brigade was also undertaken, this involving crossing the canal in landing craft in assault exercises, landing, and establishing medical aid posts at a bridgehead. Amphibious operations, however, were not destined to be included in the roles of medical units in active warfare.

Fifth Field Ambulance returned with 5 Brigade to Garawi Camp on 17 August and its bivouac area at Kabrit was taken over by 4 Field Ambulance, attached to 4 Infantry Brigade Group. The camp reception station at Helwan was then staffed by 6 Field Ambulance. Fourth Field Ambulance followed the same programme as 5 Field Ambulance at Kabrit, while 6 Field Ambulance participated in exercises with 6 Infantry Brigade Group in the El Saff area out in the desert from Helwan. The 4th Field Hygiene Section assisted with the difficult problem of sanitation at Kabrit as well as carrying on with duties and training at Helwan.

In September the Division moved back to the Western Desert and again camped at Baggush. The move was the prelude to a campaign in Libya.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL WORK AT BASE HOSPITALS

MEDICAL WORK AT BASE HOSPITALS

2 NZ General Hospital

During the summer of 1941 the greater part of the work of 2 NZ General Hospital at Helwan consisted in the normal care of base troops, including those of other forces in the surrounding area and Italian prisoners of war from a camp nearby. Battle casualties were not admitted in large numbers.

Infectious diseases endemic in Egypt accounted for the majority of the medical cases, and bacillary dysentery generally supplied the largest quota of cases every month, being more prevalent in the early and late summer. The majority of the cases were Flexner in type, but some seriously ill cases with some deaths followed Shiga infection. Other cases were due to infection by Sonne, Schmitz, Para Shiga, and Boyd I bacilli. It was not till May 1941 that sulphaguanidine began to be used in small quantities, but by August it was realised how successful it was in the treatment of the more severe type of case, and thereafter sulphaguanidine became the routine treatment in all cases of bacillary dysentery, and was even used by RMOs in camps for the lighter cases. There were only a very few cases of amoebic dysentery admitted, including one with abscess of the liver.

Slightly fewer than three hundred malaria cases were admitted during the summer months from both the base camps of Maadi and Helwan. In May and June 15 cases were admitted following infection in Crete. All the cases except two were of the benign tertian type and responded well to treatment.

Infective hepatitis had been common in mild form in November

1940, but there were few further cases till June 1941 and a minor peak of 77 cases in July. Convalescence was noted to be slow, the average case requiring five to six weeks before return to his unit. It was noteworthy that no cases occurred in Greece and Crete and that most cases arose in 4 Brigade, which had suffered from the disease in the previous September.

Skin conditions accounted for a high proportion of minor sickness in unit lines and also for many admissions to hospitals, where their chronicity kept many beds occupied. Seborrhoeic conditions were especially troublesome and fungus infection was common at times. Desert sores were noted to be common in September, when bacteriological examination showed the common presence of haemolytic streptococci as well as staphylococcus aureus and diphtheroids. In hospital these cases cleared well with local sulphonamide, rest, and vitamins.

Dyspepsia was a common complaint, the majority of the cases being functional in origin, though there was a small proportion of ulcer cases, most of them with a pre-war history. Unfortunately, the careful investigation of these cases in hospital tended to fix the neurosis and few of the hospital cases were subsequently of any use in the Army.

Psychoneurosis became a major problem and appeared in many forms. The large majority of the cases arose at the base in men either with a previous history of nervous disorder or with an unstable personality which could not stand the strain of disruption from their civilian surroundings. Anxiety states were common but hysterical states were not often seen. Exaggeration of minor disabilities such as flat feet was noted. Colonel Spencer drew attention to the danger of implanting ideas of disability in the soldier.

In May attention was drawn to the prevalence of functional disorders of the eye, with signs of diminution of visual acuity, contraction of visual fields, blepharospasm, photophobia, and weakness of accommodation. In May 28 cases were seen at Helwan hospital. Half of

them were severe, all with hysterical amblyopia, only four of whom had been in Greece. Of the other half six had some degree of hysterical amblyopia, and one had been in Greece and two Australians at Tobruk. Major Coverdale [1] considered that these men were hysteria prone and that severe cases were seldom really cured, and their disposal was made difficult by the wide diversity of views on this matter held by the senior medical officers. He considered these men should not be exposed to combatant service since, at the best, they would be useless and a source of weakness in their units.

3 NZ General Hospital

At Helmieh 3 General Hospital's medical admissions were similar in type to those of 2 General Hospital. The staff of the hospital was afflicted with sandfly fever in June, and the epidemic later spread to the base camps, from which further patients were admitted until September. The early diagnosis of the cases presented some difficulty, and convalescence was apt to be slow, with many patients suffering from lassitude and depression. Preventive measures were vigorously carried out at Helmieh. It was noted that there was a notable absence of anxiety neurosis among battle casualties from Crete. In September the hospital was authorised to expand to 900 beds.

1 NZ Convalescent Depot

This unit proved very valuable for the convalescence of senior officers after Greece and Crete, and also for servicing the divisional units in the Canal Zone at Kabrit. It reached a peak of 815 patients after the Crete campaign. All convalescents were made dentally fit before discharge.

Maadi Camp Hospital

The camp hospital dealt with the minor infectious diseases and minor cases in the camps not likely to be in hospital for many days, as well as the cases of venereal disease. It eased the load of the general

hospitals considerably as well as simplifying the isolation of infectious cases. Measles, mumps, influenza, and sandfly fever patients were admitted, and in May a special emergency hospital and convalescent area was set up to deal with the influenza cases among the 5th Reinforcements.

The number of venereal disease patients admitted to Maadi Camp Hospital gave rise to some concern, especially when in June and July the total number of cases in 2 NZEF rose to 190, or seven cases for every thousand troops each month. The incidence had been almost as high the previous year when all the troops were in the Cairo area, but the attention drawn to the matter by Captain Platts, and the action taken by the 2 NZEF authorities, resulted in this high incidence not being reached again until after the conclusion of hostilities in Italy. A count was made of the New Zealand soldiers using the PA centre in the legalised brothel area in Cairo for a week in July and was found to be 2164. This did not include those who used other places and means of prophylaxis, and those who took no precautions at all. It was pointed out that it was necessary to correct the unwitting but dangerous sentiments conveyed by non-medical lecturers which tended to recommend the use of legalised brothels. Their existence presupposed freedom from infection, but most of the prostitutes had venereal disease. Captain Platts, after witnessing the regular examination of prostitutes, considered that every prostitute probably suffered from chronic gonorrhoea, and he found that every third prostitute had a syphilis treatment card.

The problem was one common to all forces in Egypt, and the closing of the brothel area to troops the following year resulted in a reduction in the incidence of venereal disease.

In July and August 1941 a follow-up system was organised to ensure that all patients completed their surveillance at field ambulances after their discharge from Maadi Camp Hospital, especially as regards syphilis patients who now numbered 51, and that case records were sent to the DGMS Army Headquarters for any troops who returned to New Zealand

while still under treatment. One medical officer in each field ambulance was given special training in the treatment of venereal disease so as to enable the follow-up to be satisfactorily carried out. By October 1941 the incidence in venereal disease in 2 NZEF had dropped below three per thousand troops per month, and did not rise above this figure during the rest of the time 2 NZEF was in Egypt.

A blood bank was formed at the Camp Hospital in July 1941, and thereafter blood was drawn off by arrangement with Lieutenant-Colonel S. R. Buttle, in charge of the blood transfusion service at 15 General Hospital, to supply the needs of the forces in the Western Desert.

Infectious Disease in Reinforcements

Of the three reinforcements arriving during this period, the 5th and 7th brought many cases of infectious disease with attendant problems for the medical services in Egypt. The influenza epidemic of the 5th Reinforcements, and the measures taken to prevent its spread, has been described. Some influenza was also present in the 7th Reinforcements, and mumps and measles cases were brought over by both the 5th and 7th Reinforcements. Although a very few cases of mumps were reported for three months following the arrival of the 5th Reinforcements, there was no record of any spread to the troops in Egypt of any of the infectious diseases brought over in the transports. This is rather remarkable and is associated with the experience that the ordinary infectious diseases prevalent in New Zealand developed to little or no extent in our troops in the Middle East.

The following table shows the number of sick patients admitted to hospital for the period June–December 1941:

Month	*Dysentery*	*Sandfly Fever*	*VD*	*Pneumonia*	*Malaria*	*Infective Hepatitis*
Jun	124	?	190	14	10	45
Jul	103	134	192	49	39	77
Aug	157	205	144	49	66	48

Sep	**99**	**205**	**119**	**14**	**117**			**27**
Oct	**102**	**73**	**95**	**16**	**71**			**41**
Nov	**255**	**30**	**59**	**26**	**8**			**41**
Dec	**75**	**3**	**60**	**26**	**8**			**23**

Month	*Diphtheria*	*Mumps*	*Poliomyelitis*	*Strength of Force*	*Total admiss.*	*Daily Rate per 1000 Officers*		*ORs*
Jun		**22**	**2**	**27,203**	**2190**			**2.7**
Jul		**27**	**2**	**30,981**	**1384**			**1.4**
Aug	**3**	**18**		**30,840**	**1900**		**2.4**	**2.03**
Sep	**1**	**2**		**30,566**			**1.9**	**1.6**
Oct	**6**	**35**		**36,220**			**2.0**	**2.2**
Nov	**2**	**104**		**35,102**	**?**			
Dec	**15**	**10**		**32,871**	**1540**		**1.4**	**1.4**

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[1] **Lt-Col H. V. Coverdale; Auckland; born Christchurch, 19 Oct 1898; ophthalmic surgeon; 2 Lt RFC 1918; 3 Gen Hosp Jan–Mar 1941; 2 Gen Hosp Mar–Sep 1941; 1 Gen Hosp Sep 1941–Nov 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

2 NZ GENERAL HOSPITAL

2 NZ General Hospital

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INFECTIOUS DISEASE IN REINFORCEMENTS

Infectious Disease in Reinforcements

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGICAL WORK AT BASE HOSPITALS

SURGICAL WORK AT BASE HOSPITALS

2 NZ General Hospital

The surgical work performed in the hospitals during the period consisted largely of the treatment of ordinary conditions as met with in a civilian population of healthy young males, such as the repair of herniae, operations for appendicitis, the treatment of piles and varicose veins. More serious conditions such as malignant disease were seen only in small numbers. There were three cases of seminoma testes. Some cases of tubercular epididymitis showed acute symptoms with early abscess formation. Genito-urinary cases were common, and it was fortunate that Lieutenant-Colonel Ardagh [1] had taken overseas his own special instruments, as these were not otherwise available.

After the Libyan campaign of December 1940 and January 1941 there was a lull in admissions, and in May 1941 the hospital had reached a low bed state of 256 in preparation for casualties from Greece and Crete. During the month two convoys of Australians were admitted from Tobruk, and two convoys of 131 and 375 from Greece and Crete raised the bed state to 967 on 1 June. In spite of these numbers only 58 battle casualties were operated on during May. Most of the casualties admitted during June were light cases and nearly all the heavy cases were evacuated to New Zealand on HS *Maunganui* on 10 June, so that only 32 operations on battle casualties were performed in July. The battle casualties did not call for the expected volume of work following the campaigns in Greece and Crete, as comparatively few of the serious cases were brought back. Altogether, 371 of the wounded (three-fifths of the total) became prisoners of war in Greece, and 1039 (two-thirds of the total) became prisoners of war in Crete.

A report by Lieutenant-Colonel Ardagh on the 617 battle casualties admitted to 2 NZ General Hospital from Tobruk, Greece, and Crete in April, May, and June 1941 shows that there were 849 main wounds. Of these 592 were of the soft tissues, 347 being of the limbs. There were 167 fractures, 67 being of the hand and forearm, and only five of the femur. There were only seven major amputations, none of the lower limb. There were no penetrating wounds of the head and only two penetrating abdominal wounds. There were 12 penetrating wounds of the chest, one of which developed an empyema. There were 18 injuries to the peripheral nerves, only one being in the lower limb. One death occurred in the hospital from secondary haemorrhage in the large veins of the neck. One case of tetanus from Crete recovered. A high percentage of the ruptured eardrum cases developed suppurative otitis media. There were only three cases of fracture of the jaw, all with excellent results following inter-maxillary wiring and later dental splinting.

The review shows quite clearly the very small number of serious casualties admitted, mainly due to the impossibility of evacuating the heavy cases from Greece and particularly from Crete, and also because such cases reaching Egypt were retained in British hospitals, particularly in Alexandria.

Lieutenant-Colonel Ardagh said:

We have again watched with great interest the effect of the early application of sulphanilamide paste to battle casualty wounds. The vast majority of the group had no sulphanilamide paste and it is the unanimous opinion of our surgical staff that so far as our close and controlled observations indicate, there is no reason to believe that sulphanilamide paste offers any advantage whatever: on that point we are quite convinced. Although we do not feel justified in condemning its use, we are firmly of the opinion that it causes unhealthy and sluggish granulating wounds without in any way preventing suppuration and infection. These remarks apply only to the use of sulphanilamide as a

local application. In cases where sulphanilamide chemotherapy plus sulphanilamide local has been employed, we believe the beneficial results can be ascribed to chemotherapy alone.

During the period from July to September our hospitals admitted only 77 battle casualties, many of them being re-admitted from the Convalescent Depot and the majority light cases. There was only one fracture of the femur and three amputations, one of the thigh, and two of the upper arm. Four operations were successfully carried out for aneurysm. The total number of battle casualties of all forces admitted to the Helwan hospital from October 1940 to August 1941 was 1268, and there were six deaths.

Due to climatic conditions there was more than the ordinary percentage of ear, nose, and throat conditions. It was thought that swimming, especially in the fresh-water baths at Maadi and Helwan, was responsible for much of the infection. Otitis externa was very common, as was sinus infection. It had early been noted that old otitis media cases with perforation of the drum frequently flared up in Egypt with fresh discharge, and advice was sent to the New Zealand authorities to exclude such cases from drafts for overseas service. In battle casualties ruptured eardrums from blast commonly occurred and it was soon learnt that active treatment, especially syringing, in the forward areas produced infection in the majority of cases, but with simple toilet, and the active treatment delayed until the arrival at base under the control of a specialist, the cases did well and little deafness resulted.

There was little acute eye trouble, but a great deal of work was concerned with the supply of glasses for defective eyesight and in the treatment of eye infections. Eye wounds were not very common.

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[1] Brig P. A. Ardagh, CBE, DSO, MC, m.i.d.; born Ngapara, 30 Aug 1891; surgeon; 1 NZEF 1917–19, Capt 3 Fd Amb; wounded three times; in charge surgical division 2 Gen Hosp, Aug 1940–Oct 1941; CO 1 CCS Nov 1941–May 1942; ADMS 2 NZ Div May 1942–Feb 1943; DDMS 30 Corps Feb 1943–Apr 1944; died (England) 6

Apr 1944.

Auxiliary Departments of Hospitals

At Helwan 2 General Hospital had an X-ray department and full investigations could be carried out, though difficulty arose with fluctuations in the local power supply. The bacteriological laboratory was kept busy and steadily increased the scope of the work undertaken. It proved to be a very essential service to assist with the treatment of tropical disease, especially of dysentery. From April 1941 biochemical estimations were also carried out. It is interesting to note that only one positive diphtheria case was found during the year. A specialist anaesthetist was on the staff at Helwan and full use was made of intravenous and spinal anaesthetics, which proved very suitable in the hot climate. Pentothal was very much used. Physiotherapy was available with trained staff and full use was made of the massage department for orthopaedic and other cases. An ultratherm was presented to Helwan at that time by Watson Victor, Ltd. A dietitian was appointed to the hospital staff in April 1941 and proved of great value in the preparation of special diets for such cases as diabetes and dysentery. There was at first some difficulty in arranging smooth working with the army cooks, but this was soon overcome.

A dental department which was started in December 1940 was very fully employed. Extractions were frequently referred to the hospital from the camps, and conservative dentistry was carried out to render dentally fit as many of the patients as possible before discharge. A great deal of extra work was entailed in the replacement of artificial dentures lost in Greece and Crete. Fractured jaws were dealt with by inter-maxillary wiring for two weeks, followed by the application of a modification of the Hammond splint. The results drew high praise from Colonel W. A. Hailes, Consultant Surgeon to the AIF.

A splint-maker was posted to the staff in April 1941, and gradually a small department was set up and proved very useful in the making and

adjustment of splints, adjustments to boots, and in metal and leatherwork generally. Such a department is indispensable in a hospital with an overseas force. Provision for one was made by 1 General Hospital when the unit left New Zealand, but the lack of any provision in the army establishment prevented its development, though the very experienced mechanic was able to gain further experience in England in a special orthopaedic hospital under Brigadier Bristow, RAMC.

The out-patient service was very extensively developed at Helwan and covered all branches – surgery, medicine, orthopaedics, eye, ear, nose, throat, massage, and dental. The service was open to the RMOs at the NZEF camps as well as to other forces in the area. It was thought at first that too much use was made of the department by RMOs and that some patients relished the day's visit to the hospital, but undoubtedly it was of great value that cases of doubtful diagnosis or those needing specialist treatment should have had the opportunity of seeing specialists under conditions allowing of first-class treatment. RMOs were later encouraged to attend the clinics and undoubtedly benefited thereby.

The institution of an occupational therapy service was started in December 1940 by Colonel Spencer, who was very enthusiastic in its development for psychoneurotic as well as physically disabled patients. He advocated occupational therapy for the treatment of psychological disorders such as anxiety neurosis, as a distraction for patients with mental disorders, for orthopaedic surgery to train individual muscle groups, and for patients confined to bed over long periods for the preservation of morale and provision of escape from tedium. Fortunately, an enthusiastic group of women resident around Cairo, under the leadership of Mrs Washbourn, undertook the work, which was at first confined to the anxiety neurosis cases and proved very successful. Colonel Spencer considered that wholetime officers for this work were necessary both in the general hospitals and at the Convalescent Depot. The work developed considerably at Helwan, and later was instituted at the other hospitals and the Convalescent Depot as recommended by

Colonel Spencer.

At Helmieh, where it had taken over the site of 1 General Hospital at the end of March, 3 General Hospital spent some months developing the hospital site and setting up its special departments. The laboratory and physiotherapy departments were opened in April, the operating block in May, the X-ray department in June, and the dental department in October. The hospital was disorganised by a widespread sandfly fever epidemic amongst the staff in June, the effects persisting into August and necessitating restriction of admissions. Some 400 battle casualties from Crete, mostly lighter cases, were admitted in May.

Patients in British Hospitals

Considerable numbers of New Zealand patients were admitted to British hospitals at this and all periods while the Division was in North Africa. In September the daily average was 11 officers and 211 other ranks, while in October it was 7 officers and 293 other ranks. This necessitated periodical visits by our consultants to the British hospitals to facilitate the return of the more serious cases to our own hospitals, and with a view to the boarding of cases for return to New Zealand. The scattering of our patients caused some administrative difficulties, including the despatch of mail.

Activities of the Consultants

On their return from Greece the Consultant Surgeon and Consultant Physician visited the different medical units, and when their appointments were made full-time the scope of the work increased. Regular weekly visits were paid to the hospitals, convalescent depot, and camp units; regular visits were also paid to British hospitals where New Zealand patients were being treated; and contact was kept with the consultants of other forces. Visits to the British hospitals, besides ensuring the early transfer or boarding of patients requiring return to New Zealand by hospital ship, were also of value as a liaison and in the exchange of ideas, especially with regard to new developments of

treatment or technique. The scope of work undertaken by our hospitals, particularly with regard to surgical operations, was kept under review, and consultation on doubtful cases arranged with the staffs concerned. For instance, secondary operations on nerve injuries in Egypt, which were banned by the AIF, required the prior authority of the consultant, and similar arrangements were made concerning goitre and some orthopaedic cases. In general, it was agreed that operations of no urgency on patients who would have to be evacuated to New Zealand in any case were better postponed until they reached New Zealand.

Extra equipment required or desired by medical units was listed and efforts made to procure supplies either through the army channels or from commercial firms in Cairo, though supplies from the latter source were very poor. Fortunately, the army equipment was quite sufficient except for some exceptional items.

Both consultants were busily occupied with boarding and the approval of boards, and in October, on their recommendation, the boarding form was altered.

Joint Council of Order of St. John and Red Cross Society

The administration of the supplies and money sent over by the Patriotic Fund Board and the Joint Council of the Order of St. John and Red Cross Society from New Zealand was in the hands of Colonel MacCormick till May 1941, when Colonel Waite [1] arrived to set up a separate department which functioned till the end of the war. The supplies were of the greatest value to the hospitals in supplementing the regular army medical stores. Linen for the operating theatres, special dressings, invalid food, bags with toilet necessities to replace those lost by casualties, and very many other items were all invaluable. Grants of money were also made to medical units to buy articles locally, and also at times to obtain equipment not procurable from army sources. Some furnishings for patients' and sisters' common rooms were bought in this way.

The sick and wounded fund of the Joint Council proved especially valuable in procuring extra equipment for the rest homes and other units not on ordinary army establishment.

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[1] Col the Hon. F. Waite, CMG, DSO, OBE, VD, m.i.d.; MLC; farmer; born Dunedin, 20 Aug 1885; NZ Engineers (Capt) 1914–17 (DSO); Commissioner, National Patriotic Fund, Middle East; died Balclutha, Aug 1952.

Dental Services

The many dentures lost or broken on hard biscuits in Greece and Crete were all quickly replaced in Egypt. From May to July 18,000 troops were examined and half were found to require treatment. Over six thousand fillings and 1200 extractions were performed, while 1500 new dentures were supplied and a similar number repaired. By August the whole Division was dentally fit and all dentures replaced. The equipment lost in Greece was replaced from New Zealand and the Mobile Dental Unit was reconstituted by 1 August.

Re-formation of 1 General Hospital

Considerable reorganisation of hospital units took place in August. The arrival of the 6th Reinforcements allowed the re-formation of 1 General Hospital as an active hospital, and steps were taken to effect this. The male staff was gathered together from their relieving duties with other medical units and began training. Following the disruption of the hospital during the evacuation of Greece, and the loss of so many medical personnel in 2 NZEF, the authorities in New Zealand suggested that the hospital should not be re-established. Brigadier MacCormick, however, with the strong support of DMS MEF, stood out strongly for the retention of the three hospitals, and fortunately for the future of the medical services of 2 NZEF the hospital was retained. The staff of the hospital had been very usefully employed in the meantime reinforcing other medical units.

On 10 August Lieutenant-Colonel Stout and Lieutenant-Colonel Boyd were appointed full-time consultants with the rank of colonel and were attached to DDMS, Headquarters 2 NZEF. They had been acting part-time in these capacities from January 1941 and remained as consultants until 1945. Colonel Pottinger [1] became the new officer commanding 1 General Hospital on 10 August, while Majors H. K. Christie and E. G. Sayers were placed in charge of the surgical and medical divisions.

Other appointments made at this time were Lieutenant-Colonel Cottrell as officer-in-charge medical division 2 General Hospital, Major Russell [2] as DADMS HQ 2 NZEF, Major Kirker as Registrar 2 General Hospital, and Major Noakes [3] as Senior Medical Officer, Maadi Camp, while on 26 June the DDMS 2 NZEF, Colonel MacCormick, had been promoted to the rank of brigadier.

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[1] Col D. Pottinger, MC; Invercargill; born Orkney Is., 20 Sep 1890; physician; in charge medical division 2 Gen Hosp Apr 1940–Aug 1941; CO 1 Gen Hosp Aug 1941–Aug 1944.

[2] Lt-Col J. Russell, m.i.d.; born Scotland, 28 Oct 1896; Deputy Director-General, Mental Hospitals, Wellington; Captain 1st Gordon Highlanders, First World War; Registrar Gen Hosp Oct 1940–Aug 1941; DADMS 2 NZEF Aug 1941–Nov 1945.

[3] Lt-Col A. L. de B. Noakes, ED, m.i.d.; Auckland; born Waitekauri, 21 Jul 1900; medical practitioner; Registrar 2 Gen Hosp Apr 1940–Sep 1941; SMO Maadi Camp Sep–Oct 1941; CO 1 Conv Depot Oct 1941–Aug 1945.

Shortage of Specialists

Reorganisation presented many difficulties, especially, as was inevitable, when more of the most capable and experienced surgeons and physicians were promoted to administrative positions. This was found to

be a recurring feature in later years. At this stage there was a pressing shortage of physicians. No. 3 General Hospital had only one general physician on its staff, after a rearrangement of physicians following a conference called by DDMS 2 NZEF on 28 August. For the Division the ADMS was asking for more senior officers instead of the very junior type he had been receiving, although many of the latter eventually proved most successful regimental and field ambulance medical officers.

There arose in the medical services of the 2 NZEF a feeling that an insufficient number of senior and specialist physicians was being sent overseas. DDMS 2 NZEF had no doubt that a similar position would arise very shortly in regard to trained surgeons, and suggested to DGMS Army Headquarters that representations on the matter be made to the ONS Medical Committee. He thought that if the New Zealand branches of the Australasian Colleges of Surgeons and Physicians were to review the number of trained specialists in 2 NZEF and eliminate those who were necessarily engaged in administrative capacities, they would not be satisfied that an adequate proportion of skilled clinicians had been supplied. The position as regards specialists in eye, ear, nose, and throat, radiologists, and bacteriologists would also be serious if any one of these became a casualty.

An effort was made in September to obtain medical officers from England, and two surgeons were obtained.

The senior members of the hospital staffs were promoted to the rank of major at this time, thus removing some of the anomalies inherent in the rigid establishments. In the New Zealand Medical Corps there was no provision for specialist appointments dependent on the qualifications of the officer such as existed in the RAMC, the only appointments being those defined in the hospital establishments, such as that of divisional officer, and the provision for a limited number with the rank of major in the unit.

In the RAMC, on the other hand, officers were given the rank of major when they were qualified as specialists in different branches of

the profession by the possession of senior academic qualifications such as the FRCS. This resulted in many young officers with recent qualification and short experience holding the rank of major, whereas in the New Zealand Medical Corps, in which a considerable number of older men volunteered early for service, there were several leading practitioners of the highest qualifications and with long experience who held the rank of captain; the majority of them later became divisional or commanding officers of hospitals. In course of time, with the recruiting mainly of the younger men, the position rectified itself, though some anomalies still remained, such as the inability of any of the specialists to be ranked higher than major if they could not function as divisional officers.

Clinical meetings were held regularly in our general hospitals and addresses were given both by visiting medical officers and members of our own corps. This had an educative and stimulating effect, undoubtedly improving the quality of our professional work.

1 NZ General Hospital Takes Over Helwan Hospital

At least one New Zealand general hospital was required to change its location in view of the impending offensive in the Western Desert. As 1 General Hospital had been in the Greek campaign, it was proposed that that unit should take over the Helwan hospital from 2 General Hospital, whose staff would open a hospital on the lines of communication at Garawla in the Western Desert.

The DDMS 2 NZEF attended a ceremonial parade of 1 General Hospital on 8 September, and remarked that the occasion was a particularly pleasing one as it marked a definite stage in the reconstruction of a valued unit of the New Zealand Medical Service. No. 1 General Hospital had given good service in the United Kingdom and in Greece, but for a time it was doubtful if the unit could be re-formed. The original members of the unit left no doubt about their desire in the matter and the gaps in the ranks had been filled by well-trained reinforcements.

Prior to the taking over of the administration of the Helwan hospital by 1 General Hospital, the DDMS paid a tribute to the work done by 2 General Hospital during the previous twelve months. Each month he was able to report to DGMS at Army Headquarters the hospital's smooth running and its staff's cheerful acceptance of all extra responsibilities and a high standard of nursing and clinical care. The reason for the move was that constant and sometimes monotonous duty under conditions of the Egyptian climate made a change advisable, and it was also desired to give 2 General Hospital a turn as a 'mobile' general hospital of 2 NZEF.

No. 1 General Hospital then began to take over Helwan hospital, the advance party going there on 15 September and an equal proportion of 2 General Hospital's staff going to Maadi. The changeover was completed smoothly three days later and the work of the hospital continued without interruption. The NZANS posted to 2 General Hospital remained at Helwan, while the officers and other ranks went to Maadi. The number of patients admitted to the hospital during the year had approached ten thousand.

At their new site on the northern boundary of Maadi Camp the staff of 2 General Hospital benefited greatly from the change to an open-air life.

Review of Work at Helwan

When 2 General Hospital came to hand over to 1 General Hospital at Helwan, a review was made of the hospital's work over eleven months from October 1940 to September 1941. Total admissions were 9501, and discharges 9212. Patients came from the following forces: 2 NZEF 7598; 2 AIF 1125; British Army 273; RAF 108; RAAF 7; Union Defence Force 19; Royal Navy 1; and Italian prisoners of war 367. Operations performed amounted to 3172. New Zealand deaths were 28 out of a total of 41. Causes of death were battle wounds 6, accidents 6, and disease 29. Outpatient department consultations were given in 6997 cases, with

6446 subsequent visits. There were 2213 massage treatments given.

In his review Colonel Spencer made the following interesting comment:

It took us medical officers many weeks to become acquainted with ways and means, channels of communication, adapting our therapeutic ideas and demands to the supplies available to an Army hospital on active service, particularly in a sphere where supplies were of necessity almost always short. There were times when some felt that medical and surgical considerations were being sacrificed to the insatiable demand made by some Army department for returns and still more returns. But, as time passed, the reason for these returns became more and more obvious; and now it is realised by all that with a turnover of patients that exceeds by far that of civil hospitals; of patients, moreover, who are here today and gone tomorrow, and whose whole economic future may be altered by the care with which their cases have been recorded while under treatment in hospital, the clerical side of our work has taken on a new interest, and is no longer regarded as a burden.

After the unit had moved from the hospital at Helwan to Maadi Camp temporarily, Colonel Spencer further said:

There is always the danger of a unit becoming too 'set', and we realised that the conditions under which we had been working had been as near to those of a civilian hospital as would be possible in an Army on active service. Since the unit moved out to their new camp we are unanimous that the change-over has been for the good of all concerned. Officers and men alike have already lost that feeling of staleness that was becoming apparent due to the sameness of work day after day under the trying conditions of an Egyptian summer. This applied perhaps more to the Other Ranks who had carried the weight of the hospital work, which had to go on whether the staff were up to establishment or not.

Provision of Mobile Surgical Unit

A mobile surgical unit, based on the head and chest units organised in England at the beginning of the war by Professor H. Cairns and Mr A. Tudor Edwards, was equipped in England in 1940. The unit was formed as a result of a generous gift of £2500 by Mr A. Sims of Christchurch. The senior surgeon 1 NZ General Hospital, later Consultant Surgeon 2 NZEF, Lieutenant-Colonel Stout, was given authority to purchase equipment in England and make arrangements for the construction of a special van fitted up to hold all the equipment. The surgical instruments and appliances as listed in the British units were supplemented so as to render it possible for the unit to undertake any type of forward surgery, as it was appreciated that head and chest cases would form only a portion of the cases to be dealt with.

Operating theatre equipment was obtained from Morris Motors at Oxford; surgical instruments were purchased from several firms in London, with the permission of the Ministry of Health; a lighting unit and an electric suction apparatus was also obtained. A diathermy machine was not purchased as at that time it was held that the machine would interfere with wireless transmission from aeroplanes. Special water tanks were obtained. The special van was built in Cairo on an army truck chassis, being designed to carry the equipment and to provide lighting and a generous supply of water.

The surgical instruments and other equipment were fitted into separate boxes so that, if necessary, all the equipment could be taken out of the van and carried in an ordinary truck.

There was no similar unit in the British Army, and all the original British head and chest units had been lost in France. The surgical units organised in Spain for forward surgery were used as a basis for the establishment considered necessary for the new unit, and eventually a special establishment was finalised on 1 May 1941. Autoclaves from captured Italian stocks and an X-ray plant purchased with Red Cross funds were added.

An establishment of 5 officers and 29 other ranks, as well as 9 *ASC*

drivers, was drawn up and tentage and ordnance equipment for a self-contained unit were requisitioned. Transport consisted of four lorries in addition to a staff car, a motor cycle, and the special van. A water cart was also supplied. The unit was able to work two surgical teams with full equipment for all types of forward surgery. It was first set up in Maadi Camp, where it carried out preliminary training. It was inspected on 22 July 1941 by the Consultant Surgeon, MEF, Major-General Monro, who reported that: 'I regard it as a "war surgeon's dream" from the surgical point of view. Its advantage lies in its mobility, independence in regard to transport and the excellent power plant in the surgical lorry.... A closer study of the economic factors is still necessary.... It is my opinion, however, that the answer to many of the problems can be found in this N.Z. unit or one on the lines of the British unit recently assembled at 15 Gen. Hosp.'

The DMS 2 NZEF also reported that, 'Inspection shows—

1. That the unit is very handsomely equipped for doing surgery,
2. Has ample transport,
3. Has reached a high state of efficiency in all departments of its work.'

The unit rapidly reached a high degree of keenness and efficiency. Some doubt, however, was expressed by British administrative officers concerning the desert-worthiness of the van. The unit was ready for service during the Second Libyan Campaign. It was agreed by the DDMS Western Desert Force that the unit should function close to an MDS. He was impressed by its completely desert-worthy conditions, and this estimate proved correct. The unit worked alongside the MDS during the fateful Second Libyan Campaign, was captured along with the other main medical units but carried on unmolested by the enemy till rescued, and then, after evacuating its patients to the medical centre behind the frontier, was attached to the British forces for the remainder of the campaign.

The unit which resembled the New Zealand MSU most was 1 Mobile Military Hospital, a gift to the British Army from the United States of America. This consisted of several very elaborately fitted-up special vans

providing operating theatre, sterilising equipment, X-rays, cooking van, and supply vans, all on wheels with tentage for personnel and patients. This unit was utilised in the desert, but never in the divisional area, and was not entirely satisfactory.

The establishment of the Mobile Surgical Unit is given below:

Detail	*Personnel Offrs*	*WO II*	*S-Sgt*	*Sgt*	*R and F*	*Total*
Surgeons (Majors or Capts) (*a*)	2					2
Anaesthetists (Capts or Lt)	2					2
Medical Officer (Capt or Lt) (*b*)	1					1
CSM and Wardmaster		1				1
CQMS			1			1
Sergeant				1		1
Corporals					5	5
Privates					21 (*c*)	21
Total	5	1	1	1	26	34
Attached NZASC Drivers					9 (*d*)	9
Total— Mobile Surgical Unit, including attached	5	1	1	1	35	43

Transport	
Motor cycle	1
Car, 4-seater, 4-wheeled	1
Lorry, 3-ton, 4-wheeled, special body	1
Lorries, 3-ton, 4-wheeled	4
Truck, water cart	1
	8

Formation of CCS

The 7th Reinforcements arrived in Egypt on 19 October and comprised 18 NZANS, 15 medical officers, and 166 other ranks, all of

whom were sorely needed to strengthen existing units and form new units in the Medical Corps.

It was now possible to finalise the long-deferred formation of a casualty clearing station which, as 1 NZ CCS, was officially gazetted as a unit of 2 NZEF on 1 November 1941. The medical and ordnance equipment of the unit had not been received by this date, but it was known to have left the United Kingdom some time previously, and six trucks had arrived from New Zealand. The staff of the unit, except the medical officers and sisters, was assembled under Lieutenant-Colonel Ardagh. It was attached to 2 General Hospital at Garawla and underwent valuable training in setting up a tented hospital under desert conditions.

Anzac War Relief Ambulances

Towards the end of June ten ambulances provided by the Anzac War Relief Committee of New York arrived in Egypt. They were suitable only for base duties, but they filled a long-felt want, especially in Maadi Camp, where transport for medical requirements had been a harassing matter ever since 4 Field Ambulance had moved out with its transport in September 1940. All camp and hospital work had had to be done with two to four ambulances only.

Abolition of Rank of Staff Nurse

The Matron-in-Chief 2 NZEF, in her report on the NZANS for June 1941, mentioned that a Royal Warrant had abolished the rank of staff nurse. This, it was thought, would bring about greater contentment in the nursing service and would greatly simplify the choice of suitable ward sisters by enabling them to be drawn from a larger pool. Some sisters were excellent nurses but not good administrators in large wards.

Promotion of NCOs

It was also decided at the conference of senior medical officers on 10 June that future promotions of NCOs above the rank of corporal should

be on a corps and not a unit basis. Various anomalies had arisen through: (*a*) excessive losses in some units; (*b*) formation of new units; (*c*) arrival of reinforcement NCOs. The new system would ensure that the claims of all suitable men were considered for promotions. For the purpose a complete nominal roll was compiled. The system could not be of complete general application in that certain NCOs were specialists such as dispensers and radiological and laboratory technicians.

Promotion of NCOs was always a vexed question. In order to prevent difficulties and disappointments DDMS 2 NZEF had recommended to DGMS Army Headquarters on 8 October 1940 that all reinforcement NCOs should be given temporary rank only. This would allow for reduction of rank if need be in fairness to experienced men who had preceded them overseas.

When the 6th Reinforcements arrived at the end of July 1941 a high proportion of NCOs was noted, namely 28 to 197 other ranks. Even though the ranks were temporary there was considerable difficulty, and some disappointment, to the reinforcement NCOs who were reduced in rank, as well as to established units who had to absorb these NCOs, even at reduced rank, and so block promotion to men who had done good work in the unit. As was understandable, the units who had served throughout Greece and Crete had quite marked feeling on the matter, although some of the new arrivals had served with 8 Brigade in Fiji. DDMS 2 NZEF had to ask that the number and rank of reinforcement NCOs be kept as low as possible after their arrival by a board nominated by him which, as far as possible, should consist of OC 1 Camp Hospital, the Officer-in-Charge NZMC Training Cadre, an officer with experience of field ambulance work, and an officer from one of the general hospitals.

This system was applied fairly successfully with the 7th Reinforcements, but with a break of over a year before the arrival of the 8th Reinforcements, some of whom had substantive rank, the system was not so rigorously applied then or at later dates. Consequently, there were always grounds for a certain measure of discontent on the

question. Unit promotion also came to be the accepted rule instead of corps promotion, except for first appointments to commissions.

Problem of Down-Graded Men

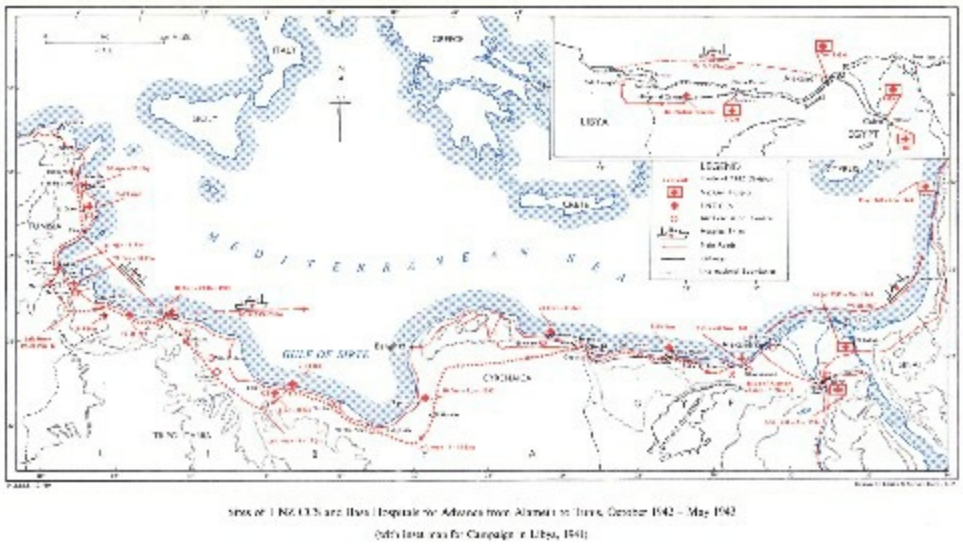
A new medical position was established on 9 May when Major Kirker was instructed to assume the duties of senior medical officer Maadi Camp. In addition to the supervision of regimental medical officers with base units, he was responsible to DDMS 2 NZEF for the administration of medical boarding at Maadi.

New forms were introduced at that time. Form NZEF 22 was printed and used from 12 May onwards in place of Form NZ 179 previously used for medical boarding, and Form NZEF 51 introduced to get confirmation from his unit of statements made by a man relating to injuries sustained in the forward areas.

Graded Men

A conference of senior officers convened by the DDMS 2 NZEF in Maadi Camp on 27 June studied the question of graded men. The DDMS represented that he had never been satisfied that due regard had been taken of the recommendations of medical boards as to employment of Grade III men. He thought that there should be a special officer appointed to see that men were employed as soon as possible in suitable capacities, thus avoiding disappointment and deterioration in the graded men due to periods of inactivity. It was decided that a return should be secured from all base units indicating the number of Grade II and Grade III men employed. Later, it would be decided whether the least employable of the graded men should be returned to New Zealand on the grounds of 'services no longer required' as well as of medical unfitness.

As opposed to conditions in England in the First World War, there was no doubt that the morale of graded men tended to deteriorate in Egypt. The long delays before shipment of some of those actually placed on the New Zealand roll also led to some degree of resentment.



Sites of 1 NZ CCS and Base Hospitals for Advance from Alamein to Tunis, October 1942 – May 1943 (with inset map for Campaign in Libya, 1941)

Numbers of soldiers of the 5th Reinforcements appeared before medical boards soon after their arrival in Egypt, and it was obvious that many men who should never have been passed for service out of New Zealand had been sent overseas. A list prepared on 4 July 1941, which was not claimed to be complete by any means, showed seven who had been immediately graded IV for return to New Zealand on account of pre-enlistment disabilities. It was pointed out at the time that, quite apart from the waste of the country's money and the time of those charged with the men's training, the sending of unfit troops overseas caused great inconvenience, and the efficiency of units was impaired.

During July 155 men were sent by commanding officers to ADMS NZ Division for regrading, and of these 149 were transferred to Base for reboarding. Orthopaedic cases, particularly flat feet, predominated and an unduly high proportion were cases from late reinforcements. This suggested the necessity for stricter medical examinations in New Zealand. The ADMS NZ Division commented that, to say the least, it was most uneconomic to train and equip men, send them overseas, and then, as soon as they reached the Division, start them on their homeward journey to New Zealand.

Instances were still brought to notice of men who should never have

been accepted for service overseas. Cases with histories of head injuries, epilepsy, asthma, and peptic ulcer were quite common. The DDMS was of the opinion that there should be used in New Zealand on medical examination a questionnaire covering the more common pre-enlistment disabilities.

Major Coverdale at that time stressed the desirability of retaining in the Division the many men whose eyesight was unsatisfactory for shooting but who could be used for other or non-combatant duties. He stated that the men deteriorated badly if sent back to Base, and further suggested that ophthalmic investigation at mobilisation camps in New Zealand would result in the elimination of unsatisfactory men from overseas drafts.

Graded men presented a problem in the Middle East from 1941 onwards. Their numbers steadily increased and it became more and more difficult to provide them with congenial employment. From 1 April to 30 June medical boards were held on 594 soldiers, of whom 36 were placed in Grade I, 44 in Grade I A, 102 in Grade II, 42 in Grade III, and 370 in Grade IV for return to New Zealand. The analysis of only two months' medical boards—for July and August 1941—shows that 892 men appeared before medical boards in this period, and of these 86 were placed in Grade I, 56 in Grade I A, 247 in Grade II, 38 in Grade III, while 465 were graded for return to New Zealand. The most common disabilities in the last group of 465 were: functional nervous disease 76; organic nervous disease 29; accidental injuries 33; battle casualties 31; arthritis 37; gastro-intestinal disorders 25; peptic ulcer 17; otitis media 24; asthma 21; skin disease 21; respiratory disease 23; and rheumatic fever 11.

An analysis of the 600 graded men, other than those already on the New Zealand roll, at Maadi Camp on 30 September 1941 showed that 113 were Grade I A, 415 Grade II, and 72 Grade III. Their disabilities were: foot disabilities 126; functional nervous diseases 70; accidental injuries 66; arthritis 41; cardio-vascular disorders 36; eye disabilities 33; otitis media 25; deafness 24; fibrositis 20; mental dullness 19; dermatitis 15;

asthma 14; battle casualties 12; respiratory diseases 11; organic nervous diseases 11; gastro-intestinal disorders 10; others 67—total 600.

Medical Boarding

This was regularly carried out both by the staffs of the general hospitals and also by specially constituted boards at Maadi Camp Hospital where, at first, the consultants acted on the boards till they took over the approval of the boards from the DDMS. From 250 to 500 cases were boarded or reboarded each month. Reboards might take place after three or six months. That the graded men held in base camps were always a problem in Egypt is not surprising considering that a large proportion of them had a functional basis. Suitable employment at Base was difficult to arrange, and deterioration was inevitable when a man had no interest in his work, especially in the debilitating climate. Knowledge of conditions in the forward areas proved highly desirable in the medical men constituting the boards and they had to be carefully chosen.

Attention was drawn to another aspect of the unfitness of troops by CO 2 General Hospital, Colonel Spencer, in July when, referring to the numerous out-patient attendances for opinions of specialists at the hospital, he said:

.... It would appear that COs of units are still very apt to try to get rid of men on medical grounds who are unsuitable as soldiers, or for other reasons. Pressure thus applied on a junior RMO is very difficult to resist. On the other hand, we feel that it cannot be too strongly impressed upon newly appointed RMOs that their mana with their troops depends to a large extent on the care with which they look after them in sickness; that they will not always have consultants handy to whom to refer their cases, and that the sooner they develop independence in diagnosis and initiative in treatment, the quicker they will gain the confidence of officers and men of their unit. The assessment of character is not so easy. Close harmony between combatant and medical

officers is of the greatest value in this respect, but here again the sooner an RMO learns to distinguish between real and feigned illness, the greater will be the respect in which he is held by all ranks.

Enemy Air Raids on Canal Zone

During the greater part of 1941, especially after the close of the Crete campaign, the Canal Zone was subjected to sporadic and sometimes relatively intensive nuisance raids from enemy aircraft based on Crete and the Dodecanese. No sooner had the Convalescent Depot's equipment been brought up to strength and the physiotherapy department developed, than this disturbing and locally disruptive enemy activity made itself felt in the Moascar region. There was sporadic night bombing of the Ismailia district during the full moon. Other nearby areas suffered and attempts were made by the enemy to sow mines in the Suez Canal. This led to considerable disruption of the Convalescent Depot's routine, and also to a call by Canal Zone Headquarters for convalescent personnel to supply larger armed parties for security duties. The bombing of Ismailia was rapidly followed by the mass evacuation of Egyptian civilians and the almost total cessation of contract services such as dhobi, swill, garbage, and the like. The Egyptian staff in Naafi canteens, supply depots, and other installations was similar depleted, until emergency transport could be arranged to take them nightly to the purely Egyptian towns like Zagazig which were immune from enemy attack. Those who witnessed the evening trains pulling out of Ismailia station, with the native camp employees, their families, and impedimenta clinging to every available space from the couplings of the carriages to the cooler parts of the engine, may well have occasion to recall this as affording a sense of humour and relief from the irritations of the disturbed tempo of convalescent life. Nevertheless, a nuisance value was attained by the enemy. With the increasing intensity of the raids, the Convalescent Depot itself suffered direct hits, as for example that on the MI Room, and its staff helped to extinguish fires in nearby lines and RE dumps, the New Zealanders distinguishing themselves in the course of these duties.

On the night of 4–5 August bombing raids on Ismailia called for assistance from members of the staff of the Convalescent Depot to help the Egyptian hospital cope with the influx of civilian casualties. Surgical teams arrived later from British military hospitals outside the area.

On 11 August there was a concentrated and sustained air raid on Abu Suweir aerodrome nearby. At the Convalescent Depot slit trenches had been prepared, tents were dug in, and considerable attention was given to PAD preparations. On 14 August flares and two sticks of bombs were dropped in the area around the depot headquarters and a direct hit was scored on the medical inspection room, which was completely wrecked except for the end housing the dental department. A fire which began in a group of native shops near the massage department was dealt with, and this undoubtedly saved the depot from considerable bombing which subseqently was concentrated around a fire in an adjacent area.

Despite the ordeal, personnel in the depot behaved with extreme coolness. Stretcher parties functioned normally between bombings and brought into the treatment centre the five casualties which occurred in the depot. These were mainly light wounds from shell fragments, but one man received a serious chest wound. Three of the more serious cases were evacuated to 54 General Hospital by ambulance. In no case did casualties occur among men in slit trenches.

After these raids the Area Commander instructed that as many troops as possible should be dispersed at night (an instruction which one group of New Zealand convalescents had earlier anticipated). Some 300 convalescents with a small cadre of staff were transferred each night to Chevalier Island, where a reception hospital was subsequently opened to obviate sending patients to general hospitals in the district for minor sickness. Under these conditions the depot scarcely functioned along intended lines. Sleep was interrupted and a few men started to sleep out of camp. Morale tended to suffer, and some who might otherwise have readjusted themselves well from mild anxiety states were found to

exhibit marked exacerbations of their symptoms. A decision was made to return the less stable of these to the quieter Maadi area, 180 in this category being evacuated in three days. This reduced the numbers in the Convalescent Depot to a point at which there were barely sufficient A grade or B1 grade men to supply the necessary number of pickets and guards for depot buildings, stores, and other duties for which the Convalescent Depot had been made locally responsible.

At the end of the first week in September there were heavy air raids. The 54th British General Hospital was severely damaged and rendered untenable. The continued bombing raids, apart from the risk to personnel, had minimised the value of 1 Convalescent Depot as an institution for recuperation from injury and illness. The main factors were the loss of sleep and a general atmosphere of disturbance and uneasiness. The expedient of removing some of the patients and staff to another location at night afforded only partial relief. It was felt that removal of the whole depot to Maadi Camp would provide, at least for the time being, a location free from air raids. No other site being available, it was decided that the depot should be established at Maadi during the winter months and that possibly by March 1942 some alternative location might be found. The move took place on 10 October 1941.

Coinciding with the transfer of the depot, Lieutenant-Colonel Tennent was appointed CO 4 Field Ambulance and relinquished his command to Lieutenant-Colonel Noakes, whose appointment was to continue until the end of the war in Italy in 1945.

An investigation of the functioning of the Convalescent Depot with regard to the type of case likely to benefit by treatment there was carried out by the Consultant Surgeon and Consultant Physician in September. They considered that patients who were incompletely diagnosed, severe cases with disabilities difficult to assess, hysterical cases and possible malingerers, and those for whom no special treatment was required and whose ultimate fitness was doubtful, should not be sent by the hospitals to the depot. Those thought suitable were the more normal cases likely to make uninterrupted progress and men awaiting

return to New Zealand. It was considered that it was unfair to the staff of the depot to send them chronic and difficult cases, which were much better retained and dealt with at the hospitals.

A visit was paid at that time to 2 British Convalescent Depot at El Ballah, where no sick men were admitted and massage was not encouraged, but where all men were fit for concentrated physical training prior to return to their units. The distinction in the administration of the RAMC depots and our own persisted throughout the war, both systems having their special advantages.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

2 NZ GENERAL HOSPITAL

2 NZ General Hospital

The surgical work performed in the hospitals during the period consisted largely of the treatment of ordinary conditions as met with in a civilian population of healthy young males, such as the repair of herniae, operations for appendicitis, the treatment of piles and varicose veins. More serious conditions such as malignant disease were seen only in small numbers. There were three cases of seminoma testes. Some cases of tubercular epididymitis showed acute symptoms with early abscess formation. Genito-urinary cases were common, and it was fortunate that Lieutenant-Colonel Ardagh [1] had taken overseas his own special instruments, as these were not otherwise available.

After the Libyan campaign of December 1940 and January 1941 there was a lull in admissions, and in May 1941 the hospital had reached a low bed state of 256 in preparation for casualties from Greece and Crete. During the month two convoys of Australians were admitted from Tobruk, and two convoys of 131 and 375 from Greece and Crete raised the bed state to 967 on 1 June. In spite of these numbers only 58 battle casualties were operated on during May. Most of the casualties admitted during June were light cases and nearly all the heavy cases were evacuated to New Zealand on HS *Maunganui* on 10 June, so that only 32 operations on battle casualties were performed in July. The battle casualties did not call for the expected volume of work following the campaigns in Greece and Crete, as comparatively few of the serious cases were brought back. Altogether, 371 of the wounded (three-fifths of the total) became prisoners of war in Greece, and 1039 (two-thirds of the total) became prisoners of war in Crete.

A report by Lieutenant-Colonel Ardagh on the 617 battle casualties

admitted to 2 NZ General Hospital from Tobruk, Greece, and Crete in April, May, and June 1941 shows that there were 849 main wounds. Of these 592 were of the soft tissues, 347 being of the limbs. There were 167 fractures, 67 being of the hand and forearm, and only five of the femur. There were only seven major amputations, none of the lower limb. There were no penetrating wounds of the head and only two penetrating abdominal wounds. There were 12 penetrating wounds of the chest, one of which developed an empyema. There were 18 injuries to the peripheral nerves, only one being in the lower limb. One death occurred in the hospital from secondary haemorrhage in the large veins of the neck. One case of tetanus from Crete recovered. A high percentage of the ruptured eardrum cases developed suppurative otitis media. There were only three cases of fracture of the jaw, all with excellent results following inter-maxillary wiring and later dental splinting.

The review shows quite clearly the very small number of serious casualties admitted, mainly due to the impossibility of evacuating the heavy cases from Greece and particularly from Crete, and also because such cases reaching Egypt were retained in British hospitals, particularly in Alexandria.

Lieutenant-Colonel Ardagh said:

We have again watched with great interest the effect of the early application of sulphanilamide paste to battle casualty wounds. The vast majority of the group had no sulphanilamide paste and it is the unanimous opinion of our surgical staff that so far as our close and controlled observations indicate, there is no reason to believe that sulphanilamide paste offers any advantage whatever: on that point we are quite convinced. Although we do not feel justified in condemning its use, we are firmly of the opinion that it causes unhealthy and sluggish granulating wounds without in any way preventing suppuration and infection. These remarks apply only to the use of sulphanilamide as a local application. In cases where sulphanilamide chemotherapy plus sulphanilamide local has been employed, we believe the beneficial

results can be ascribed to chemotherapy alone.

During the period from July to September our hospitals admitted only 77 battle casualties, many of them being re-admitted from the Convalescent Depot and the majority light cases. There was only one fracture of the femur and three amputations, one of the thigh, and two of the upper arm. Four operations were successfully carried out for aneurysm. The total number of battle casualties of all forces admitted to the Helwan hospital from October 1940 to August 1941 was 1268, and there were six deaths.

Due to climatic conditions there was more than the ordinary percentage of ear, nose, and throat conditions. It was thought that swimming, especially in the fresh-water baths at Maadi and Helwan, was responsible for much of the infection. Otitis externa was very common, as was sinus infection. It had early been noted that old otitis media cases with perforation of the drum frequently flared up in Egypt with fresh discharge, and advice was sent to the New Zealand authorities to exclude such cases from drafts for overseas service. In battle casualties ruptured eardrums from blast commonly occurred and it was soon learnt that active treatment, especially syringing, in the forward areas produced infection in the majority of cases, but with simple toilet, and the active treatment delayed until the arrival at base under the control of a specialist, the cases did well and little deafness resulted.

There was little acute eye trouble, but a great deal of work was concerned with the supply of glasses for defective eyesight and in the treatment of eye infections. Eye wounds were not very common.

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[1] Brig P. A. Ardagh, CBE, DSO, MC, m.i.d.; born Ngapara, 30 Aug 1891; surgeon; 1 NZEF 1917–19, Capt 3 Fd Amb; wounded three times; in charge surgical division 2 Gen Hosp, Aug 1940–Oct 1941; CO 1 CCS Nov 1941–May 1942; ADMS 2 NZ Div May 1942–Feb 1943; DDMS 30 Corps Feb 1943–Apr 1944; died (England) 6 Apr 1944.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

AUXILIARY DEPARTMENTS OF HOSPITALS

Auxiliary Departments of Hospitals

At Helwan 2 General Hospital had an X-ray department and full investigations could be carried out, though difficulty arose with fluctuations in the local power supply. The bacteriological laboratory was kept busy and steadily increased the scope of the work undertaken. It proved to be a very essential service to assist with the treatment of tropical disease, especially of dysentery. From April 1941 biochemical estimations were also carried out. It is interesting to note that only one positive diphtheria case was found during the year. A specialist anaesthetist was on the staff at Helwan and full use was made of intravenous and spinal anaesthetics, which proved very suitable in the hot climate. Pentothal was very much used. Physiotherapy was available with trained staff and full use was made of the massage department for orthopaedic and other cases. An ultratherm was presented to Helwan at that time by Watson Victor, Ltd. A dietitian was appointed to the hospital staff in April 1941 and proved of great value in the preparation of special diets for such cases as diabetes and dysentery. There was at first some difficulty in arranging smooth working with the army cooks, but this was soon overcome.

A dental department which was started in December 1940 was very fully employed. Extractions were frequently referred to the hospital from the camps, and conservative dentistry was carried out to render dentally fit as many of the patients as possible before discharge. A great deal of extra work was entailed in the replacement of artificial dentures lost in Greece and Crete. Fractured jaws were dealt with by inter-maxillary wiring for two weeks, followed by the application of a modification of the Hammond splint. The results drew high praise from Colonel W. A. Hailes, Consultant Surgeon to the AIF.

A splint-maker was posted to the staff in April 1941, and gradually a small department was set up and proved very useful in the making and adjustment of splints, adjustments to boots, and in metal and leatherwork generally. Such a department is indispensable in a hospital with an overseas force. Provision for one was made by 1 General Hospital when the unit left New Zealand, but the lack of any provision in the army establishment prevented its development, though the very experienced mechanic was able to gain further experience in England in a special orthopaedic hospital under Brigadier Bristow, RAMC.

The out-patient service was very extensively developed at Helwan and covered all branches – surgery, medicine, orthopaedics, eye, ear, nose, throat, massage, and dental. The service was open to the RMOs at the NZEF camps as well as to other forces in the area. It was thought at first that too much use was made of the department by RMOs and that some patients relished the day's visit to the hospital, but undoubtedly it was of great value that cases of doubtful diagnosis or those needing specialist treatment should have had the opportunity of seeing specialists under conditions allowing of first-class treatment. RMOs were later encouraged to attend the clinics and undoubtedly benefited thereby.

The institution of an occupational therapy service was started in December 1940 by Colonel Spencer, who was very enthusiastic in its development for psychoneurotic as well as physically disabled patients. He advocated occupational therapy for the treatment of psychological disorders such as anxiety neurosis, as a distraction for patients with mental disorders, for orthopaedic surgery to train individual muscle groups, and for patients confined to bed over long periods for the preservation of morale and provision of escape from tedium. Fortunately, an enthusiastic group of women resident around Cairo, under the leadership of Mrs Washbourn, undertook the work, which was at first confined to the anxiety neurosis cases and proved very successful. Colonel Spencer considered that wholetime officers for this work were necessary both in the general hospitals and at the Convalescent Depot.

The work developed considerably at Helwan, and later was instituted at the other hospitals and the Convalescent Depot as recommended by Colonel Spencer.

At Helmieh, where it had taken over the site of 1 General Hospital at the end of March, 3 General Hospital spent some months developing the hospital site and setting up its special departments. The laboratory and physiotherapy departments were opened in April, the operating block in May, the X-ray department in June, and the dental department in October. The hospital was disorganised by a widespread sandfly fever epidemic amongst the staff in June, the effects persisting into August and necessitating restriction of admissions. Some 400 battle casualties from Crete, mostly lighter cases, were admitted in May.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PATIENTS IN BRITISH HOSPITALS

Patients in British Hospitals

Considerable numbers of New Zealand patients were admitted to British hospitals at this and all periods while the Division was in North Africa. In September the daily average was 11 officers and 211 other ranks, while in October it was 7 officers and 293 other ranks. This necessitated periodical visits by our consultants to the British hospitals to facilitate the return of the more serious cases to our own hospitals, and with a view to the boarding of cases for return to New Zealand. The scattering of our patients caused some administrative difficulties, including the despatch of mail.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ACTIVITIES OF THE CONSULTANTS

Activities of the Consultants

On their return from Greece the Consultant Surgeon and Consultant Physician visited the different medical units, and when their appointments were made full-time the scope of the work increased. Regular weekly visits were paid to the hospitals, convalescent depot, and camp units; regular visits were also paid to British hospitals where New Zealand patients were being treated; and contact was kept with the consultants of other forces. Visits to the British hospitals, besides ensuring the early transfer or boarding of patients requiring return to New Zealand by hospital ship, were also of value as a liaison and in the exchange of ideas, especially with regard to new developments of treatment or technique. The scope of work undertaken by our hospitals, particularly with regard to surgical operations, was kept under review, and consultation on doubtful cases arranged with the staffs concerned. For instance, secondary operations on nerve injuries in Egypt, which were banned by the AIF, required the prior authority of the consultant, and similar arrangements were made concerning goitre and some orthopaedic cases. In general, it was agreed that operations of no urgency on patients who would have to be evacuated to New Zealand in any case were better postponed until they reached New Zealand.

Extra equipment required or desired by medical units was listed and efforts made to procure supplies either through the army channels or from commercial firms in Cairo, though supplies from the latter source were very poor. Fortunately, the army equipment was quite sufficient except for some exceptional items.

Both consultants were busily occupied with boarding and the approval of boards, and in October, on their recommendation, the

boarding form was altered.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

JOINT COUNCIL OF ORDER OF ST. JOHN AND RED CROSS SOCIETY

Joint Council of Order of St. John and Red Cross Society

The administration of the supplies and money sent over by the Patriotic Fund Board and the Joint Council of the Order of St. John and Red Cross Society from New Zealand was in the hands of Colonel MacCormick till May 1941, when Colonel Waite [1] arrived to set up a separate department which functioned till the end of the war. The supplies were of the greatest value to the hospitals in supplementing the regular army medical stores. Linen for the operating theatres, special dressings, invalid food, bags with toilet necessities to replace those lost by casualties, and very many other items were all invaluable. Grants of money were also made to medical units to buy articles locally, and also at times to obtain equipment not procurable from army sources. Some furnishings for patients' and sisters' common rooms were bought in this way.

The sick and wounded fund of the Joint Council proved especially valuable in procuring extra equipment for the rest homes and other units not on ordinary army establishment.

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[1] Col the Hon. F. Waite, CMG, DSO, OBE, VD, m.i.d.; MLC; farmer; born Dunedin, 20 Aug 1885; NZ Engineers (Capt) 1914–17 (DSO); Commissioner, National Patriotic Fund, Middle East; died Balclutha, Aug 1952.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DENTAL SERVICES

Dental Services

The many dentures lost or broken on hard biscuits in Greece and Crete were all quickly replaced in Egypt. From May to July 18,000 troops were examined and half were found to require treatment. Over six thousand fillings and 1200 extractions were performed, while 1500 new dentures were supplied and a similar number repaired. By August the whole Division was dentally fit and all dentures replaced. The equipment lost in Greece was replaced from New Zealand and the Mobile Dental Unit was reconstituted by 1 August.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RE-FORMATION OF 1 GENERAL HOSPITAL

Re-formation of 1 General Hospital

Considerable reorganisation of hospital units took place in August. The arrival of the 6th Reinforcements allowed the re-formation of 1 General Hospital as an active hospital, and steps were taken to effect this. The male staff was gathered together from their relieving duties with other medical units and began training. Following the disruption of the hospital during the evacuation of Greece, and the loss of so many medical personnel in 2 NZEF, the authorities in New Zealand suggested that the hospital should not be re-established. Brigadier MacCormick, however, with the strong support of DMS MEF, stood out strongly for the retention of the three hospitals, and fortunately for the future of the medical services of 2 NZEF the hospital was retained. The staff of the hospital had been very usefully employed in the meantime reinforcing other medical units.

On 10 August Lieutenant-Colonel Stout and Lieutenant-Colonel Boyd were appointed full-time consultants with the rank of colonel and were attached to DDMS, Headquarters 2 NZEF. They had been acting part-time in these capacities from January 1941 and remained as consultants until 1945. Colonel Pottinger [1] became the new officer commanding 1 General Hospital on 10 August, while Majors H. K. Christie and E. G. Sayers were placed in charge of the surgical and medical divisions.

Other appointments made at this time were Lieutenant-Colonel Cottrell as officer-in-charge medical division 2 General Hospital, Major Russell [2] as DADMS HQ 2 NZEF, Major Kirker as Registrar 2 General Hospital, and Major Noakes [3] as Senior Medical Officer, Maadi Camp, while on 26 June the DDMS 2 NZEF, Colonel MacCormick, had been

promoted to the rank of brigadier.

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[1] **Col D. Pottinger**, MC; **Invercargill**; born Orkney Is., 20 Sep 1890; physician; in charge medical division **2 Gen Hosp** Apr 1940–Aug 1941; CO **1 Gen Hosp** Aug 1941–Aug 1944.

[2] **Lt-Col J. Russell**, m.i.d.; born **Scotland**, 28 Oct 1896; Deputy Director-General, Mental Hospitals, **Wellington**; Captain 1st Gordon Highlanders, First World War; Registrar Gen Hosp Oct 1940–Aug 1941; DADMS **2 NZEF** Aug 1941–Nov 1945.

[3] **Lt-Col A. L. de B. Noakes**, ED, m.i.d.; **Auckland**; born Waitekauri, 21 Jul 1900; medical practitioner; Registrar **2 Gen Hosp** Apr 1940–Sep 1941; SMO **Maadi Camp** Sep–Oct 1941; CO **1 Conv Depot** Oct 1941–Aug 1945.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SHORTAGE OF SPECIALISTS

Shortage of Specialists

Reorganisation presented many difficulties, especially, as was inevitable, when more of the most capable and experienced surgeons and physicians were promoted to administrative positions. This was found to be a recurring feature in later years. At this stage there was a pressing shortage of physicians. No. 3 General Hospital had only one general physician on its staff, after a rearrangement of physicians following a conference called by DDMS 2 NZEF on 28 August. For the Division the ADMS was asking for more senior officers instead of the very junior type he had been receiving, although many of the latter eventually proved most successful regimental and field ambulance medical officers.

There arose in the medical services of the 2 NZEF a feeling that an insufficient number of senior and specialist physicians was being sent overseas. DDMS 2 NZEF had no doubt that a similar position would arise very shortly in regard to trained surgeons, and suggested to DGMS Army Headquarters that representations on the matter be made to the ONS Medical Committee. He thought that if the New Zealand branches of the Australasian Colleges of Surgeons and Physicians were to review the number of trained specialists in 2 NZEF and eliminate those who were necessarily engaged in administrative capacities, they would not be satisfied that an adequate proportion of skilled clinicians had been supplied. The position as regards specialists in eye, ear, nose, and throat, radiologists, and bacteriologists would also be serious if any one of these became a casualty.

An effort was made in September to obtain medical officers from England, and two surgeons were obtained.

The senior members of the hospital staffs were promoted to the rank

of major at this time, thus removing some of the anomalies inherent in the rigid establishments. In the New Zealand Medical Corps there was no provision for specialist appointments dependent on the qualifications of the officer such as existed in the RAMC, the only appointments being those defined in the hospital establishments, such as that of divisional officer, and the provision for a limited number with the rank of major in the unit.

In the RAMC, on the other hand, officers were given the rank of major when they were qualified as specialists in different branches of the profession by the possession of senior academic qualifications such as the FRCS. This resulted in many young officers with recent qualification and short experience holding the rank of major, whereas in the New Zealand Medical Corps, in which a considerable number of older men volunteered early for service, there were several leading practitioners of the highest qualifications and with long experience who held the rank of captain; the majority of them later became divisional or commanding officers of hospitals. In course of time, with the recruiting mainly of the younger men, the position rectified itself, though some anomalies still remained, such as the inability of any of the specialists to be ranked higher than major if they could not function as divisional officers.

Clinical meetings were held regularly in our general hospitals and addresses were given both by visiting medical officers and members of our own corps. This had an educative and stimulating effect, undoubtedly improving the quality of our professional work.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

1 NZ GENERAL HOSPITAL TAKES OVER HELWAN HOSPITAL

1 NZ General Hospital Takes Over Helwan Hospital

At least one New Zealand general hospital was required to change its location in view of the impending offensive in the Western Desert. As 1 General Hospital had been in the Greek campaign, it was proposed that that unit should take over the Helwan hospital from 2 General Hospital, whose staff would open a hospital on the lines of communication at Garawla in the Western Desert.

The DDMS 2 NZEF attended a ceremonial parade of 1 General Hospital on 8 September, and remarked that the occasion was a particularly pleasing one as it marked a definite stage in the reconstruction of a valued unit of the New Zealand Medical Service. No. 1 General Hospital had given good service in the United Kingdom and in Greece, but for a time it was doubtful if the unit could be re-formed. The original members of the unit left no doubt about their desire in the matter and the gaps in the ranks had been filled by well-trained reinforcements.

Prior to the taking over of the administration of the Helwan hospital by 1 General Hospital, the DDMS paid a tribute to the work done by 2 General Hospital during the previous twelve months. Each month he was able to report to DGMS at Army Headquarters the hospital's smooth running and its staff's cheerful acceptance of all extra responsibilities and a high standard of nursing and clinical care. The reason for the move was that constant and sometimes monotonous duty under conditions of the Egyptian climate made a change advisable, and it was also desired to give 2 General Hospital a turn as a 'mobile' general hospital of 2 NZEF.

No. 1 General Hospital then began to take over Helwan hospital, the

advance party going there on 15 September and an equal proportion of 2 General Hospital's staff going to Maadi. The changeover was completed smoothly three days later and the work of the hospital continued without interruption. The NZANS posted to 2 General Hospital remained at Helwan, while the officers and other ranks went to Maadi. The number of patients admitted to the hospital during the year had approached ten thousand.

At their new site on the northern boundary of Maadi Camp the staff of 2 General Hospital benefited greatly from the change to an open-air life.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF WORK AT HELWAN

Review of Work at Helwan

When 2 General Hospital came to hand over to 1 General Hospital at Helwan, a review was made of the hospital's work over eleven months from October 1940 to September 1941. Total admissions were 9501, and discharges 9212. Patients came from the following forces: 2 NZEF 7598; 2 AIF 1125; British Army 273; RAF 108; RAAF 7; Union Defence Force 19; Royal Navy 1; and Italian prisoners of war 367. Operations performed amounted to 3172. New Zealand deaths were 28 out of a total of 41. Causes of death were battle wounds 6, accidents 6, and disease 29. Outpatient department consultations were given in 6997 cases, with 6446 subsequent visits. There were 2213 massage treatments given.

In his review Colonel Spencer made the following interesting comment:

It took us medical officers many weeks to become acquainted with ways and means, channels of communication, adapting our therapeutic ideas and demands to the supplies available to an Army hospital on active service, particularly in a sphere where supplies were of necessity almost always short. There were times when some felt that medical and surgical considerations were being sacrificed to the insatiable demand made by some Army department for returns and still more returns. But, as time passed, the reason for these returns became more and more obvious; and now it is realised by all that with a turnover of patients that exceeds by far that of civil hospitals; of patients, moreover, who are here today and gone tomorrow, and whose whole economic future may be altered by the care with which their cases have been recorded while under treatment in hospital, the clerical side of our work has taken on a new interest, and is no longer regarded as a burden.

After the unit had moved from the hospital at Helwan to Maadi Camp temporarily, Colonel Spencer further said:

There is always the danger of a unit becoming too 'set', and we realised that the conditions under which we had been working had been as near to those of a civilian hospital as would be possible in an Army on active service. Since the unit moved out to their new camp we are unanimous that the change-over has been for the good of all concerned. Officers and men alike have already lost that feeling of staleness that was becoming apparent due to the sameness of work day after day under the trying conditions of an Egyptian summer. This applied perhaps more to the Other Ranks who had carried the weight of the hospital work, which had to go on whether the staff were up to establishment or not.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PROVISION OF MOBILE SURGICAL UNIT

Provision of Mobile Surgical Unit

A mobile surgical unit, based on the head and chest units organised in England at the beginning of the war by Professor H. Cairns and Mr A. Tudor Edwards, was equipped in England in 1940. The unit was formed as a result of a generous gift of £2500 by Mr A. Sims of Christchurch. The senior surgeon 1 NZ General Hospital, later Consultant Surgeon 2 NZEF, Lieutenant-Colonel Stout, was given authority to purchase equipment in England and make arrangements for the construction of a special van fitted up to hold all the equipment. The surgical instruments and appliances as listed in the British units were supplemented so as to render it possible for the unit to undertake any type of forward surgery, as it was appreciated that head and chest cases would form only a portion of the cases to be dealt with.

Operating theatre equipment was obtained from Morris Motors at Oxford; surgical instruments were purchased from several firms in London, with the permission of the Ministry of Health; a lighting unit and an electric suction apparatus was also obtained. A diathermy machine was not purchased as at that time it was held that the machine would interfere with wireless transmission from aeroplanes. Special water tanks were obtained. The special van was built in Cairo on an army truck chassis, being designed to carry the equipment and to provide lighting and a generous supply of water.

The surgical instruments and other equipment were fitted into separate boxes so that, if necessary, all the equipment could be taken out of the van and carried in an ordinary truck.

There was no similar unit in the British Army, and all the original British head and chest units had been lost in France. The surgical units

organised in Spain for forward surgery were used as a basis for the establishment considered necessary for the new unit, and eventually a special establishment was finalised on 1 May 1941. Autoclaves from captured Italian stocks and an X-ray plant purchased with Red Cross funds were added.

An establishment of 5 officers and 29 other ranks, as well as 9 *ASC* drivers, was drawn up and tentage and ordnance equipment for a self-contained unit were requisitioned. Transport consisted of four lorries in addition to a staff car, a motor cycle, and the special van. A water cart was also supplied. The unit was able to work two surgical teams with full equipment for all types of forward surgery. It was first set up in Maadi Camp, where it carried out preliminary training. It was inspected on 22 July 1941 by the Consultant Surgeon, MEF, Major-General Monro, who reported that: 'I regard it as a "war surgeon's dream" from the surgical point of view. Its advantage lies in its mobility, independence in regard to transport and the excellent power plant in the surgical lorry.... A closer study of the economic factors is still necessary.... It is my opinion, however, that the answer to many of the problems can be found in this N.Z. unit or one on the lines of the British unit recently assembled at 15 Gen. Hosp.'

The DMS 2 NZEF also reported that, 'Inspection shows—

1. **That the unit is very handsomely equipped for doing surgery,**
2. **Has ample transport,**
3. **Has reached a high state of efficiency in all departments of its work.'**

The unit rapidly reached a high degree of keenness and efficiency. Some doubt, however, was expressed by British administrative officers concerning the desert-worthiness of the van. The unit was ready for service during the Second Libyan Campaign. It was agreed by the DDMS Western Desert Force that the unit should function close to an MDS. He was impressed by its completely desert-worthy conditions, and this estimate proved correct. The unit worked alongside the MDS during the fateful Second Libyan Campaign, was captured along with the other main medical units but carried on unmolested by the enemy till rescued,

and then, after evacuating its patients to the medical centre behind the frontier, was attached to the British forces for the remainder of the campaign.

The unit which resembled the New Zealand MSU most was 1 Mobile Military Hospital, a gift to the British Army from the United States of America. This consisted of several very elaborately fitted-up special vans providing operating theatre, sterilising equipment, X-rays, cooking van, and supply vans, all on wheels with tentage for personnel and patients. This unit was utilised in the desert, but never in the divisional area, and was not entirely satisfactory.

The establishment of the Mobile Surgical Unit is given below:

Detail	*Personnel Offrs*	*WO II*	*S-Sgt*	*Sgt*	*R and F*	*Total*
Surgeons (Majors or Capts) (*a*)	2					2
Anaesthetists (Capts or Lt)	2					2
Medical Officer (Capt or Lt) (*b*)	1					1
CSM and Wardmaster		1				1
CQMS			1			1
Sergeant				1		1
Corporals					5	5
Privates					21 (*c*)	21
Total	5	1	1	1	26	34
Attached NZASC Drivers					9 (*d*)	9
Total— Mobile Surgical Unit, including attached	5	1	1	1	35	43
Transport						
Motor cycle		1				
Car, 4-seater, 4-wheeled		1				
Lorry, 3-ton, 4-wheeled, special body		1				
Lorries, 3-ton, 4-wheeled		4				
Truck, water cart		1				

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FORMATION OF CCS

Formation of CCS

The 7th Reinforcements arrived in Egypt on 19 October and comprised 18 NZANS, 15 medical officers, and 166 other ranks, all of whom were sorely needed to strengthen existing units and form new units in the Medical Corps.

It was now possible to finalise the long-deferred formation of a casualty clearing station which, as 1 NZ CCS, was officially gazetted as a unit of 2 NZEF on 1 November 1941. The medical and ordnance equipment of the unit had not been received by this date, but it was known to have left the United Kingdom some time previously, and six trucks had arrived from New Zealand. The staff of the unit, except the medical officers and sisters, was assembled under Lieutenant-Colonel Ardagh. It was attached to 2 General Hospital at Garawla and underwent valuable training in setting up a tented hospital under desert conditions.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ANZAC WAR RELIEF AMBULANCES

Anzac War Relief Ambulances

Towards the end of June ten ambulances provided by the Anzac War Relief Committee of New York arrived in Egypt. They were suitable only for base duties, but they filled a long-felt want, especially in Maadi Camp, where transport for medical requirements had been a harassing matter ever since 4 Field Ambulance had moved out with its transport in September 1940. All camp and hospital work had had to be done with two to four ambulances only.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ABOLITION OF RANK OF STAFF NURSE

Abolition of Rank of Staff Nurse

The Matron-in-Chief 2 NZEF, in her report on the NZANS for June 1941, mentioned that a Royal Warrant had abolished the rank of staff nurse. This, it was thought, would bring about greater contentment in the nursing service and would greatly simplify the choice of suitable ward sisters by enabling them to be drawn from a larger pool. Some sisters were excellent nurses but not good administrators in large wards.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PROMOTION OF NCOS

Promotion of NCOs

It was also decided at the conference of senior medical officers on 10 June that future promotions of NCOs above the rank of corporal should be on a corps and not a unit basis. Various anomalies had arisen through: (*a*) excessive losses in some units; (*b*) formation of new units; (*c*) arrival of reinforcement NCOs. The new system would ensure that the claims of all suitable men were considered for promotions. For the purpose a complete nominal roll was compiled. The system could not be of complete general application in that certain NCOs were specialists such as dispensers and radiological and laboratory technicians.

Promotion of NCOs was always a vexed question. In order to prevent difficulties and disappointments DDMS 2 NZEF had recommended to DGMS Army Headquarters on 8 October 1940 that all reinforcement NCOs should be given temporary rank only. This would allow for reduction of rank if need be in fairness to experienced men who had preceded them overseas.

When the 6th Reinforcements arrived at the end of July 1941 a high proportion of NCOs was noted, namely 28 to 197 other ranks. Even though the ranks were temporary there was considerable difficulty, and some disappointment, to the reinforcement NCOs who were reduced in rank, as well as to established units who had to absorb these NCOs, even at reduced rank, and so block promotion to men who had done good work in the unit. As was understandable, the units who had served throughout Greece and Crete had quite marked feeling on the matter, although some of the new arrivals had served with 8 Brigade in Fiji. DDMS 2 NZEF had to ask that the number and rank of reinforcement NCOs be kept as low as possible after their arrival by a board nominated

by him which, as far as possible, should consist of OC 1 Camp Hospital, the Officer-in-Charge NZMC Training Cadre, an officer with experience of field ambulance work, and an officer from one of the general hospitals.

This system was applied fairly successfully with the 7th Reinforcements, but with a break of over a year before the arrival of the 8th Reinforcements, some of whom had substantive rank, the system was not so rigorously applied then or at later dates. Consequently, there were always grounds for a certain measure of discontent on the question. Unit promotion also came to be the accepted rule instead of corps promotion, except for first appointments to commissions.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PROBLEM OF DOWN-GRADED MEN

Problem of Down-Graded Men

A new medical position was established on 9 May when Major Kirker was instructed to assume the duties of senior medical officer Maadi Camp. In addition to the supervision of regimental medical officers with base units, he was responsible to DDMS 2 NZEF for the administration of medical boarding at Maadi.

New forms were introduced at that time. Form NZEF 22 was printed and used from 12 May onwards in place of Form NZ 179 previously used for medical boarding, and Form NZEF 51 introduced to get confirmation from his unit of statements made by a man relating to injuries sustained in the forward areas.

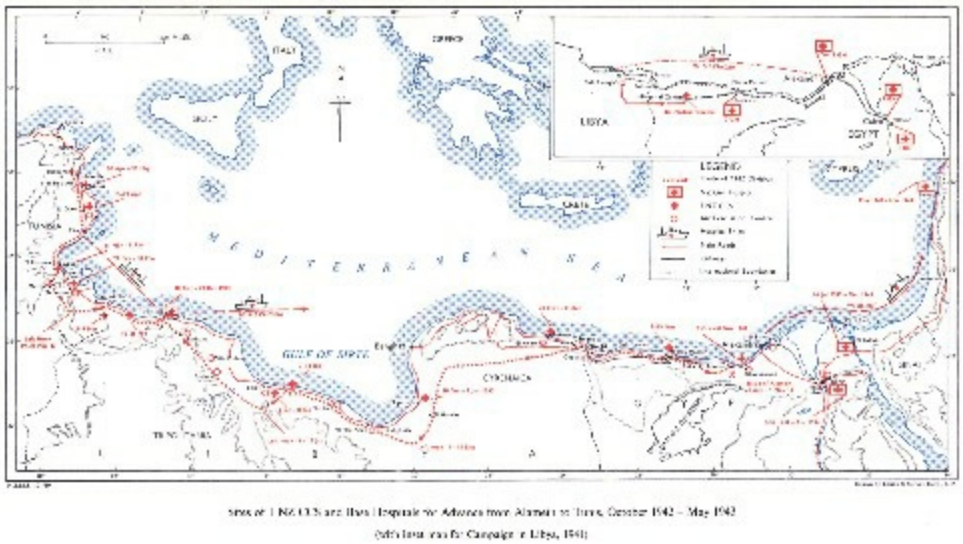
NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GRADED MEN

Graded Men

A conference of senior officers convened by the DDMS 2 NZEF in Maadi Camp on 27 June studied the question of graded men. The DDMS represented that he had never been satisfied that due regard had been taken of the recommendations of medical boards as to employment of Grade III men. He thought that there should be a special officer appointed to see that men were employed as soon as possible in suitable capacities, thus avoiding disappointment and deterioration in the graded men due to periods of inactivity. It was decided that a return should be secured from all base units indicating the number of Grade II and Grade III men employed. Later, it would be decided whether the least employable of the graded men should be returned to New Zealand on the grounds of 'services no longer required' as well as of medical unfitness.

As opposed to conditions in England in the First World War, there was no doubt that the morale of graded men tended to deteriorate in Egypt. The long delays before shipment of some of those actually placed on the New Zealand roll also led to some degree of resentment.



Sites of 1 NZ CCS and Base Hospitals for Advance from Alamein to Tunis, October 1942 – May 1943 (with inset map for Campaign in Libya, 1941)

Numbers of soldiers of the 5th Reinforcements appeared before medical boards soon after their arrival in Egypt, and it was obvious that many men who should never have been passed for service out of New Zealand had been sent overseas. A list prepared on 4 July 1941, which was not claimed to be complete by any means, showed seven who had been immediately graded IV for return to New Zealand on account of pre-enlistment disabilities. It was pointed out at the time that, quite apart from the waste of the country's money and the time of those charged with the men's training, the sending of unfit troops overseas caused great inconvenience, and the efficiency of units was impaired.

During July 155 men were sent by commanding officers to ADMS NZ Division for regrading, and of these 149 were transferred to Base for reboarding. Orthopaedic cases, particularly flat feet, predominated and an unduly high proportion were cases from late reinforcements. This suggested the necessity for stricter medical examinations in New Zealand. The ADMS NZ Division commented that, to say the least, it was most uneconomic to train and equip men, send them overseas, and then, as soon as they reached the Division, start them on their homeward journey to New Zealand.

Instances were still brought to notice of men who should never have

been accepted for service overseas. Cases with histories of head injuries, epilepsy, asthma, and peptic ulcer were quite common. The DDMS was of the opinion that there should be used in New Zealand on medical examination a questionnaire covering the more common pre-enlistment disabilities.

Major Coverdale at that time stressed the desirability of retaining in the Division the many men whose eyesight was unsatisfactory for shooting but who could be used for other or non-combatant duties. He stated that the men deteriorated badly if sent back to Base, and further suggested that ophthalmic investigation at mobilisation camps in New Zealand would result in the elimination of unsatisfactory men from overseas drafts.

Graded men presented a problem in the Middle East from 1941 onwards. Their numbers steadily increased and it became more and more difficult to provide them with congenial employment. From 1 April to 30 June medical boards were held on 594 soldiers, of whom 36 were placed in Grade I, 44 in Grade I A, 102 in Grade II, 42 in Grade III, and 370 in Grade IV for return to New Zealand. The analysis of only two months' medical boards—for July and August 1941—shows that 892 men appeared before medical boards in this period, and of these 86 were placed in Grade I, 56 in Grade I A, 247 in Grade II, 38 in Grade III, while 465 were graded for return to New Zealand. The most common disabilities in the last group of 465 were: functional nervous disease 76; organic nervous disease 29; accidental injuries 33; battle casualties 31; arthritis 37; gastro-intestinal disorders 25; peptic ulcer 17; otitis media 24; asthma 21; skin disease 21; respiratory disease 23; and rheumatic fever 11.

An analysis of the 600 graded men, other than those already on the New Zealand roll, at Maadi Camp on 30 September 1941 showed that 113 were Grade I A, 415 Grade II, and 72 Grade III. Their disabilities were: foot disabilities 126; functional nervous diseases 70; accidental injuries 66; arthritis 41; cardio-vascular disorders 36; eye disabilities 33; otitis media 25; deafness 24; fibrositis 20; mental dullness 19; dermatitis 15;

asthma 14; battle casualties 12; respiratory diseases 11; organic nervous diseases 11; gastro-intestinal disorders 10; others 67—total 600.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL BOARDING

Medical Boarding

This was regularly carried out both by the staffs of the general hospitals and also by specially constituted boards at Maadi Camp Hospital where, at first, the consultants acted on the boards till they took over the approval of the boards from the DDMS. From 250 to 500 cases were boarded or reboarded each month. Reboards might take place after three or six months. That the graded men held in base camps were always a problem in Egypt is not surprising considering that a large proportion of them had a functional basis. Suitable employment at Base was difficult to arrange, and deterioration was inevitable when a man had no interest in his work, especially in the debilitating climate. Knowledge of conditions in the forward areas proved highly desirable in the medical men constituting the boards and they had to be carefully chosen.

Attention was drawn to another aspect of the unfitness of troops by CO 2 General Hospital, Colonel Spencer, in July when, referring to the numerous out-patient attendances for opinions of specialists at the hospital, he said:

.... It would appear that COs of units are still very apt to try to get rid of men on medical grounds who are unsuitable as soldiers, or for other reasons. Pressure thus applied on a junior RMO is very difficult to resist. On the other hand, we feel that it cannot be too strongly impressed upon newly appointed RMOs that their mana with their troops depends to a large extent on the care with which they look after them in sickness; that they will not always have consultants handy to whom to refer their cases, and that the sooner they develop independence in diagnosis and initiative in treatment, the quicker they will gain the

confidence of officers and men of their unit. The assessment of character is not so easy. Close harmony between combatant and medical officers is of the greatest value in this respect, but here again the sooner an RMO learns to distinguish between real and feigned illness, the greater will be the respect in which he is held by all ranks.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ENEMY AIR RAIDS ON CANAL ZONE

Enemy Air Raids on Canal Zone

During the greater part of 1941, especially after the close of the Crete campaign, the Canal Zone was subjected to sporadic and sometimes relatively intensive nuisance raids from enemy aircraft based on Crete and the Dodecanese. No sooner had the Convalescent Depot's equipment been brought up to strength and the physiotherapy department developed, than this disturbing and locally disruptive enemy activity made itself felt in the Moascar region. There was sporadic night bombing of the Ismailia district during the full moon. Other nearby areas suffered and attempts were made by the enemy to sow mines in the Suez Canal. This led to considerable disruption of the Convalescent Depot's routine, and also to a call by Canal Zone Headquarters for convalescent personnel to supply larger armed parties for security duties. The bombing of Ismailia was rapidly followed by the mass evacuation of Egyptian civilians and the almost total cessation of contract services such as dhobi, swill, garbage, and the like. The Egyptian staff in Naafi canteens, supply depots, and other installations was similar depleted, until emergency transport could be arranged to take them nightly to the purely Egyptian towns like Zagazig which were immune from enemy attack. Those who witnessed the evening trains pulling out of Ismailia station, with the native camp employees, their families, and impedimenta clinging to every available space from the couplings of the carriages to the cooler parts of the engine, may well have occasion to recall this as affording a sense of humour and relief from the irritations of the disturbed tempo of convalescent life. Nevertheless, a nuisance value was attained by the enemy. With the increasing intensity of the raids, the Convalescent Depot itself suffered direct hits, as for example that on the MI Room, and its staff helped to extinguish fires in nearby lines and RE dumps, the New Zealanders

distinguishing themselves in the course of these duties.

On the night of 4–5 August bombing raids on Ismailia called for assistance from members of the staff of the Convalescent Depot to help the Egyptian hospital cope with the influx of civilian casualties. Surgical teams arrived later from British military hospitals outside the area.

On 11 August there was a concentrated and sustained air raid on Abu Suweir aerodrome nearby. At the Convalescent Depot slit trenches had been prepared, tents were dug in, and considerable attention was given to PAD preparations. On 14 August flares and two sticks of bombs were dropped in the area around the depot headquarters and a direct hit was scored on the medical inspection room, which was completely wrecked except for the end housing the dental department. A fire which began in a group of native shops near the massage department was dealt with, and this undoubtedly saved the depot from considerable bombing which subseqently was concentrated around a fire in an adjacent area.

Despite the ordeal, personnel in the depot behaved with extreme coolness. Stretcher parties functioned normally between bombings and brought into the treatment centre the five casualties which occurred in the depot. These were mainly light wounds from shell fragments, but one man received a serious chest wound. Three of the more serious cases were evacuated to 54 General Hospital by ambulance. In no case did casualties occur among men in slit trenches.

After these raids the Area Commander instructed that as many troops as possible should be dispersed at night (an instruction which one group of New Zealand convalescents had earlier anticipated). Some 300 convalescents with a small cadre of staff were transferred each night to Chevalier Island, where a reception hospital was subsequently opened to obviate sending patients to general hospitals in the district for minor sickness. Under these conditions the depot scarcely functioned along intended lines. Sleep was interrupted and a few men started to sleep out of camp. Morale tended to suffer, and some who might otherwise have

readjusted themselves well from mild anxiety states were found to exhibit marked exacerbations of their symptoms. A decision was made to return the less stable of these to the quieter Maadi area, 180 in this category being evacuated in three days. This reduced the numbers in the Convalescent Depot to a point at which there were barely sufficient A grade or B1 grade men to supply the necessary number of pickets and guards for depot buildings, stores, and other duties for which the Convalescent Depot had been made locally responsible.

At the end of the first week in September there were heavy air raids. The 54th British General Hospital was severely damaged and rendered untenable. The continued bombing raids, apart from the risk to personnel, had minimised the value of 1 Convalescent Depot as an institution for recuperation from injury and illness. The main factors were the loss of sleep and a general atmosphere of disturbance and uneasiness. The expedient of removing some of the patients and staff to another location at night afforded only partial relief. It was felt that removal of the whole depot to Maadi Camp would provide, at least for the time being, a location free from air raids. No other site being available, it was decided that the depot should be established at Maadi during the winter months and that possibly by March 1942 some alternative location might be found. The move took place on 10 October 1941.

Coinciding with the transfer of the depot, Lieutenant-Colonel Tennent was appointed CO 4 Field Ambulance and relinquished his command to Lieutenant-Colonel Noakes, whose appointment was to continue until the end of the war in Italy in 1945.

An investigation of the functioning of the Convalescent Depot with regard to the type of case likely to benefit by treatment there was carried out by the Consultant Surgeon and Consultant Physician in September. They considered that patients who were incompletely diagnosed, severe cases with disabilities difficult to assess, hysterical cases and possible malingerers, and those for whom no special treatment was required and whose ultimate fitness was doubtful, should not be sent by the hospitals to the depot. Those thought suitable were the more

normal cases likely to make uninterrupted progress and men awaiting return to New Zealand. It was considered that it was unfair to the staff of the depot to send them chronic and difficult cases, which were much better retained and dealt with at the hospitals.

A visit was paid at that time to 2 British Convalescent Depot at El Ballah, where no sick men were admitted and massage was not encouraged, but where all men were fit for concentrated physical training prior to return to their units. The distinction in the administration of the RAMC depots and our own persisted throughout the war, both systems having their special advantages.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 7 — LIBYA, 1941

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

WITHIN a few months of the campaigns in Greece and Crete, the New Zealand Division, having been reorganised and re-equipped, was ready for further action. The enemy forces in North Africa continued to be a major threat to Allied war strategy. Another drive had to be launched against them, if possible before they were in a position to mount an attack on Tobruk, for which it was known that they were preparing. It was, therefore, quite in the natural course that the New Zealanders should be given a role in the Western Desert again—this time to be one of the 'foundation' divisions in what was to become the world-famous Eighth Army.

Thus, the New Zealand Division returned to the desert in September 1941. It was the task of 5 Brigade to work on defences at the ' Kaponga Box', which a year later was to become famous as part of the El Alamein line, and then followed intensive desert training south of Maaten Baggush. ' Baggush by the sea' was the fortress 'box' on the Mediterranean shore originally constructed in 1940 by the First Echelon troops.

Baggush as a fortress 'box' was designed to bar the path of the enemy's North African army to Egypt. At this time the enemy had his forward troops at Sollum, although Tobruk, defended by 70 Division, which had recently relieved 9 Australian Division, was still holding out in the rear.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS AT BAGGUSH

Medical Arrangements at Baggush

All the divisional medical units assembled in September at Baggush preparatory to a campaign which was a most fateful one for them.

The New Zealanders became a race of underground dwellers at Baggush. There was scarcely a stitch of canvas in sight throughout the skilfully camouflaged area. Under the crust of the desert were medical dressing stations and many other works. But the enemy was sufficiently far away not to confine the troops below ground. Comprehensive training exercises were undertaken, including desert navigation and night movement in motorised brigade groups. In addition to their routine work of treating sick and accident cases, all three field ambulances took part during October in three-day desert exercises with their own brigade groups, and also carried out revisionary training.

The health of the troops was generally satisfactory, except that desert sores and skin infections became very prevalent. The other principal illnesses were tonsillitis and dysentery, for which dust-storms were considered a causative factor. In the treatment of desert sores our units adopted with success the method introduced by 7 Armoured Division. The sores, generally multiple, were in the nature of chronic ulcers with crusts and undermined edges, healing slowly and constantly tending to break down. The treatment consisted in thorough cleansing, the removal of overhanging edges of skin, and the application of a dressing of sulphanilamide powder 1 per cent in paraffin or glycerine completely covered over with elastoplast, the dressing being left untouched for from three to five days.

By the end of October all the medical units with the Division were completely reorganised and re-equipped after their difficult experiences

in Greece and Crete, and were once more ready and eager to play their part in a campaign.

On 22 October the ADMS NZ Division (Colonel Kenrick) attended a medical conference at Headquarters Eighth Army. For active operations it was arranged that there would be a casualty clearing station operating behind each division. In the case of NZ Division, the Mobile Surgical Unit was to function as a light section of a CCS and be attached to the Division.

At a conference held at GHQ MEF on 30 October it was decided that two general hospitals would move to Garawla in the Western Desert forthwith, one of which was to be 2 NZ General Hospital and the other, 43 British General Hospital. The New Zealanders would thus have a hospital on the lines of communication, though its patients would not be exclusively New Zealanders.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

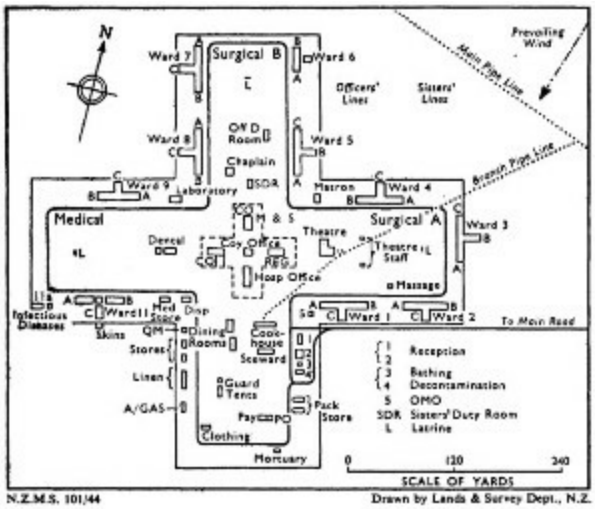
2 NZ GENERAL HOSPITAL AT GARAWLA

2 NZ General Hospital at Garawla

No. 2 General Hospital, with Colonel Spencer in command, made a most expeditious move and left Maadi for the Western Desert on 2 November. The site selected for the hospital at Garawla was half a mile to the west of the Matruh- Alexandria road and railway and about 12 miles from Matruh, while there was a landing ground 3 miles away. The area was flat but a stratum of rock nine to twelve inches thick near the surface of the ground presented a difficulty in the erection of tents and the preparation of dugouts. However, assistance by blasting was rendered by a company of engineers. A pipeline for water ran near the hospital area and pipelines were laid by the engineers to bring the water supply to the hospital.

While at Maadi Camp 2 General Hospital had worked out and erected in skeleton form a hospital layout in the form of a cross and the Garawla hospital was laid out on the same plan. The administrative offices formed a small central cross and the ward tents were pitched on the lines of a larger cross. It was thought the interior communication roads would emphasise the nature of the unit from the air, especially when the roofs of the tents were painted red. For additional security from aerial attack the tents were dispersed at a distance of 42 yards between wards and 37 yards between administrative tents. The latter, and the wards for seriously ill patients, were sunk three feet below ground level, and all the other tent sites were excavated more shallowly and protected on the outside by sandbags. For security reasons senior Eighth Army officers thought it undesirable to give the enemy information that a hospital was being established, so preparations, especially for the erection of large wards, had to be concealed from air observation as much as possible. Dugouts up to six feet deep were made for the theatre block,

resuscitation ward, telephone exchange, and cookhouses. These were covered with corrugated iron and sandbags. High winds with associated sandstorms and occasional rain added to the difficulties of the rocky terrain.



2 NZ General Hospital, Garawla, November 1941 – March 1942

2 NZ General Hospital, Garawla, November 1941 – March 1942

Excellent work by the staff made it possible for the hospital to function within twenty days of its arrival at Garawla. The men of the staff, only two or three of whom were trained tradesmen, did a great deal of construction work as carpenters, tinsmiths, plumbers, electricians, and engine-hands.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DETACHMENT 3 NZ GENERAL HOSPITAL, ALEXANDRIA

Detachment 3 NZ General Hospital, Alexandria

Most of the ambulance trains from the Western Desert proceeded to Alexandria and the Canal Area, and could not be diverted to Cairo on account of congestion of the railways. It was therefore desirable that some provision should be made for looking after such 2 NZEF casualties as were likely to be evacuated through Alexandria. In October it at first seemed likely that 3 General Hospital would have to leave its site at Helmieh, which by hard work and organisation had come to be recognised as the best tented hospital in Egypt, and go to the Canal Area. Then there arose the possibility of taking over the Greek hospital at Alexandria, where the AIF had maintained 200 beds since the evacuation of Crete. The financial responsibility, however, would have been very heavy. Later, as an alternative proposition, it was arranged that the major part of the Anglo-Swiss hospital, Alexandria, be taken over. Arrangements for its transfer were very protracted, but on 22 November a detachment of 3 General Hospital staff under Lieutenant-Colonel E. L. Button went to Alexandria to run a 200-bed hospital. These extra beds were over and above the quota required to be supplied by 2 NZEF, except that the CCS was still not functioning. In order that the new hospital would not be considered a permanent institution, it was not called a 200-bed hospital but Detachment, 3 General Hospital.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE PLAN OF BATTLE

The Plan of Battle

The broad intention of the British offensive was the destruction of the enemy forces in North Africa. This was to be accomplished in two phases: the recapture of Cyrenaica, and the invasion and conquest of Tripolitania. Crusader campaign was planned to carry out the first phase, and timed to forestall an intended operation by the enemy to capture Tobruk. The offensive began on 18 November.

Eighth Army had two corps under its command to carry out the operation. Thirteenth Corps, which consisted mainly of infantry, included NZ Division, 4 Indian Division, and 1 Army Tank Brigade. Thirtieth Corps, which was the armoured corps, comprised 7 Armoured Division, 1 South African Division, and 22 Armoured Brigade.

The first objective of CRUSADER was the destruction of the enemy's armoured forces and this task was given to 30 Corps, which was to advance from the Maddalena area, threaten the enemy forces investing Tobruk, and so compel the enemy to deploy his armour. The enemy's armoured forces were then to be engaged and destroyed wherever they were met. In the meantime, 13 Corps was to advance and isolate the enemy forces in the frontier area and prevent them from assisting in the battles to the west. Later, it was to drive westwards and join forces with 30 Corps. The relief of Tobruk was only incidental to this plan, but was to be carried out by 30 Corps in conjunction with a sortie by the Tobruk garrison according to how the battle progressed.

The New Zealand Division, as part of 13 Corps, had the initial task of isolating enemy forces in the Sollum- Bardia sector of the frontier defences. Its 6th Brigade, which was equipped as a special mobile force, had to be ready to proceed to engage the enemy in the Gambut-Bir el

Chleta area or to move to reinforce 30 Corps.

As the campaign progressed these plans were considerably altered. That which had at first been incidental to the plan, the relief of Tobruk, became the major objective and the New Zealand Division was used to achieve it.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NEW ZEALAND DIVISION'S PART

New Zealand Division's Part

On 11 November the New Zealand Division left Baggush to take up a battle position west of the Egypt–Libyan frontier. Advancing at night without lights in stages of 25–30 miles and unobserved by the enemy, the Division crossed the frontier about 50 miles south of the Mediterranean coast on 18 November. A field ambulance company was attached to each brigade group in readiness to form advanced dressing stations during the coming action.

The Division moved 14 miles to the north on the 19th and on 21 November was ordered to advance and carry out its part in the plan. Led by the Divisional Cavalry, the Division advanced northwards that night. The Divisional Cavalry captured Sidi Azeiz and established a position on the escarpment overlooking the Tobruk– Bardia road. Fifth Brigade, following immediately behind, occupied Sidi Azeiz and captured Capuzzo by dawn on the 22nd. Later in the day 5 Brigade occupied Musaid. Fourth Brigade followed through and cut the Tobruk– Bardia road in the Menastir area, and early on the 23rd the Sollum barracks were attacked and occupied by 28 Battalion. The Division had now successfully established itself to carry out its task of isolating the enemy forces in the Bardia– Sollum sector of the frontier defences.

In the meantime the fortunes of the armoured battles had fluctuated and had developed into a running fight for the mastery of the key position of Sidi Rezegh. On the 21st 6 Brigade was directed to move westward to assist 7 Armoured Division at Sidi Rezegh and came under the command of 30 Corps. The brigade pushed on westwards and, after a hard-fought battle, drove the enemy back from Point 175 on the 23rd. On the same day General Freyberg was ordered to leave the minimum

forces to mask the Bardia– Sollum sector and to proceed westwards and link up with 6 Brigade. The Division, less 5 Brigade which was left to carry out the Division's task on the frontier, was now committed to capturing the features dominating the routes round Tobruk via Ed Duda. After hard fighting Belhamed and Sidi Rezegh were captured and on the night 26–27 November a junction was effected with the Tobruk garrison at Ed Duda.

Meanwhile, Rommel had collected his armoured forces and counter-attacked towards the Egyptian frontier. Crossing the frontier on 24 November, part of these armoured forces linked up with the garrisons at Halfaya and later joined forces with those which had already reached Bardia. Many of our rearward installations were overrun, including an Indian MDS west of the frontier, and this forced those medical units staged out on the 30 Corps axis to withdraw. Between the 24th and the 27th enemy columns appeared at unexpected places, upsetting the lines of supply and causing great confusion among isolated units and formations. Many of the New Zealand medical units and detachments fell into enemy hands as a result.

On the 27th these enemy forces began streaming back from the frontier to re-enter the battle raging at Sidi Rezegh and around Tobruk. Fifth Brigade Headquarters group at Sidi Azeiz which stood in their path was overwhelmed, but at Bir el Chleta the British armour firmly blocked the route westwards and inflicted serious losses on *15 Panzer Division* later in the day. By the 28th enemy armoured formations had begun to arrive in the Sidi Rezegh area. On their way back from the frontier they had been harassed and attacked by formations of 7 Armoured Division, which was also protecting the southern flank and rear of the New Zealand Division. On the evening of the 28th an armoured battle developed south of the New Zealand Division's position and moved away to the south-west. During the temporary absence of armoured protection enemy lorried infantry moved northwards and captured the New Zealand combined medical dressing station, which was to remain in enemy hands till 6 December.

The enemy's intention was to annihilate the New Zealand Division and sever the corridor into Tobruk. During the next three days the Division bore the brunt of the attack of the enemy armour, and, after successively losing the key points of Point 175, Sidi Rezegh and Belhamed, withdrew from the battle during the night 1–2 December. But these battles had also exhausted the enemy, and with the increasing pressure brought to bear on his supply lines he began to withdraw on 5 December to a line based on Gazala.

Thirteenth Corps was given the task of pursuing the enemy, and 4 Indian Division and 5 NZ Brigade were brought from the frontier area to join with other units of that formation from Tobruk. Fifth Brigade was in action in the Gazala area from 11 to 16 December. On the 16th the enemy began to withdraw to a new line at El Agheila and 5 Brigade later rejoined the Division at Baggush. The Divisional Cavalry and the Mobile Surgical Unit were the only units of the Division that remained in the forward area. Bardia was finally captured on 2 January 1942 and about 800 New Zealanders held captive there were released.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL MEDICAL PLAN

General Medical Plan

The general medical plan for the Second Libyan Campaign was based on two lines of evacuation, one for 13 Corps and one for 30 Corps. The Corps' lines converged in the rear at Bir Thalata, 15 miles west of the main medical centre at Minqar el Zannan where were sited 14 British CCS, less the light section, and 1 Mobile Military Hospital.

From the medical centre evacuation was by train from the ambulance railhead about 7 miles away, from a landing ground nearby, and by motor ambulance convoy to the main coastal road and thence back to Matruh and Alexandria, staging posts being arranged on the way. At Garawla, near Matruh, there were two base hospitals on the L of C, where cases could be staged if necessary. One of these hospitals was 2 NZ General Hospital under Colonel Spencer. The next centre was Alexandria, with two British general hospitals in Alexandria itself and two at Buselli close by. A detachment of 3 NZ General Hospital under Lieutenant-Colonel Button was also sited in Alexandria at the Anglo-Swiss hospital.

Behind Alexandria were a group of hospitals in the Canal Zone and the hospitals in Cairo. No. 1 NZ General Hospital under Colonel Pottinger and 3 NZ General Hospital under Colonel Gower were in the Cairo zone at Helwan and Helmieh respectively.

In the 13 Corps zone arrangements were made to have staging posts at 25-mile intervals ahead of the main medical centre. Twenty miles short of the frontier at Conference Cairn were sited the light section of 14 CCS and the MDS of 14 Field Ambulance, and just west of the frontier was 17 Indian Field Ambulance, to which was attached a British surgical team.

From there the lines of 4 Indian Division and the New Zealand Division branched, the Indian line servicing the frontier at Sidi Omar, and the New Zealand line passing west then north to the region of Sidi Azeiz. Evacuation from the open New Zealand MDS was to be arranged by 7 MAC, which was responsible for the transport of cases to the medical centre. The evacuation of casualties from the Division to the MDS was the responsibility of the divisional units themselves. The Division had available three complete field ambulances and the Mobile Surgical Unit as well as the regimental medical officers.

The divisional plan, as during the retreat in Greece, was to attach a section of a field ambulance to each brigade under brigade command, and to utilise the remainder of the field ambulances as MDSs as occasion demanded. To the main active MDS was to be attached the Mobile Surgical Unit to deal with the major surgery, especially the surgery of the abdomen, head and chest, and amputations. This was the first time this unit had been utilised in action.

The experiences in Greece and Crete had convinced our force that the Germans did respect the Geneva Convention, and all medical units provided themselves with adequate recognition signs for display during the campaign. Large Red Crosses were painted on ambulance cars, and all medical trucks had large signs which could be fixed on the roofs and sides. Medical staff cars flew flags and also had signs for the roof. The signs were shown only when the medical units were established as units and not associated with combatant personnel. When the brigades travelled in desert formation all signs were taken down or covered over. This was done in order to observe the Convention strictly, and also to avoid giving information of a strategic move to the enemy. Some of the British ambulance cars still retained the small Red Cross markings which were not discernible more than a few yards away. A convoy of these cars was shot up by our own aircraft in mistake for German armoured vehicles.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NEW ZEALAND MEDICAL UNITS IN THE CAMPAIGN

New Zealand Medical Units in the Campaign

At a conference called by the DDMS 13 Corps, Colonel Smythe, on 16 November it was agreed that in desert warfare the distances between main dressing stations or 'staging posts' should, if possible, not exceed 25 miles. With such a line of evacuation, patients would not have to spend more than two and a half to three hours in motor ambulance cars without dressings being adjusted, sedatives administered, or hot drinks given. This policy was adhered to in the early stages of the campaign as the Division advanced to Bardia and Sollum, but had to be abandoned later when 5 Field Ambulance, which established the staging posts, moved up towards Sidi Rezegh because of roving enemy armoured columns. At midnight on 18 November the medical group arrived at the dispersal area north of Fort Maddalena, which was between the Libyan-Egyptian frontier and the frontier wire inside Libya. Here 5 Field Ambulance set up a temporary MDS, and then maintained a staging post for two days. On 21 November instructions were received for all New Zealand field ambulances to move forward to a dispersal area near Point 187. The halt at this point was short and by 10.30 a.m. next day the medical group was again on the move in desert formation and headed for a point south-west of Sidi Azeiz crossroads. The convoy passed west of Sidi Omar to avoid enemy shellfire and a battle which was then in progress in that area. Eight miles south-west of Azeiz, 4 Field Ambulance, under Lieutenant-Colonel Tennent, set up an MDS which dealt with 250 casualties after the engagements on 22 and 23 November. The Mobile Surgical Unit, under Major Furkert, opened up near 4 Field Ambulance MDS and performed forty major operations on specially selected cases. Fifth Field Ambulance was redirected back to the location of the previous day near Point 187 and there set up as a staging post.

On the morning of 23 November 6 Field Ambulance (less A Company) was stationed in reserve in the vicinity of Sidi Azeiz. Late that morning after a conference between Colonel Kenrick and Lieutenant-Colonel Speight, CO 6 Field Ambulance, the latter's unit was instructed to move along the Trigh Capuzzo and to open an MDS at some suitable spot to the east of Gambut, in which area 4 and 6 Infantry Brigades were now located. For this move the ambulance was attached to the Divisional Headquarters convoy which was proceeding west from Sidi Azeiz that afternoon. Towards evening this convoy became involved in a brush with enemy troops and a wide detour to the south of the Trigh Capuzzo became necessary. The convoy dispersed and halted for the night at about 11 p.m. with 6 Field Ambulance to the northern side.

On the morning of 24 November tank shells began to fall amongst the ambulance vehicles and the unit was moved a mile to the south to the entrance of a wide wadi, where a number of casualties from the tank battle were treated. One or two abandoned vehicles were discovered here and, having been made roadworthy, were added to the unit transport.

The convoy began moving up the wadi at 2.30 p.m., and shortly afterwards 6 Field Ambulance received instructions to go to a wadi 7 miles from Sidi Rezegh to take over from A Company 6 Field Ambulance and open an MDS at that site. Darkness was now falling, and by the time all the ambulance vehicles had negotiated the steep track from the wadi to the escarpment above it was already dark. As there were only the vaguest notions as to where precisely A Company was sited, the next three hours of wandering in the desert were rather anxious, but A Company's ADS was found about midnight and the MDS erected immediately. A Company's personnel were thus given a short and well-earned rest from the extremely strenuous work which had occupied them for the previous few days. At the time the ADS was holding 250 wounded (some New Zealanders, some Germans, and about 200 South Africans from the overrun 5 SA Brigade), after evacuating 200 during that day. During the next twenty-four hours 450 casualties were received at 6 MDS in a steadily increasing stream, which by the morning

of 26 November had reached almost flood proportions. The operating theatre was continuously busy throughout the twenty-four hours.

On 25 November Colonel Kenrick discussed with GSO I NZ Division (Colonel Gentry) [1] the insecurity of the medical units due to the fluid nature of the battle and the activities of enemy armour in the rear. It was agreed that the safest place for all the New Zealand medical units not actively employed elsewhere was with 6 Field Ambulance in the wadi near Advanced NZ Division Headquarters, which had under command a reserve of tanks. It was considered that these tanks would provide additional security for units in this location. Consequently, the same day 5 Field Ambulance, Mobile Surgical Unit, and 4 Field Hygiene Section were instructed by Colonel Gentry (with Colonel Kenrick's approval) to move up with Rear HQ NZ Division and Administration Group to join 6 Field Ambulance MDS near Advanced Divisional Headquarters.

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[1] Maj-Gen W. G. Gentry, CB, CBE, DSO and bar, m.i.d., MC (Greek), Bronze Star (US); Lower Hutt; born London, 20 Feb 1899; Regular soldier; served North-West Frontier, 1920–22; GSO II NZ Div 1939–40; AA and QMG Oct 1940–Oct 1941; GSO I Oct 1941–Sep 1942; commanded 6 Bde Sep 1942–Apr 1943; Deputy Chief of General Staff (in NZ) 1943–44; comd NZ Troops in Egypt, 6 NZ Div, and NZ Maadi Camp, Aug 1944–Feb 1945; comd 9 Bde (Italy) 1945; Deputy Chief of General Staff, Jul 1946–Nov 1947; Adjutant-General, Apr 1949–Mar 1952; Chief of the General Staff 1 Apr 1952–14 Aug 1955.

The Mobile Surgical Unit arrived on 25 November and was erected further down the wadi about a quarter of a mile from the 6 Field Ambulance MDS. Selected cases were referred there for operation at first, but by 26 November the number of casualties requiring operation was greater than the MDS surgical teams could cope with, so that many wounded men were sent straight on to the MSU without any real attempt at proper selection being made. For the evacuation of casualties use was made of returning RMT transport as well as of the ambulance cars.

During 26 November 5 Field Ambulance, less one company and the Field Hygiene Section, arrived at the MDS and dispersed its vehicles on the plain above the wadi. The ambulance remained packed in anticipation of a move into Tobruk at any time. Fifth Field Ambulance medical officers and personnel, however, were of great assistance in helping the 6 Field Ambulance personnel with the heavy flood of casualties arriving at the MDS. The Hygiene Section, besides its ordinary duties of sanitation, marked out routes between Divisional Headquarters and the medical units, and also assisted the other units as orderlies and buried the dead.

Considerable numbers of German wounded were being admitted to the MDS and Lieutenant-Colonel Speight arranged for the release of two German medical officers and a number of German medical orderlies from the prisoner-of-war cage nearby to assist with the treatment of German casualties at the MDS. The German officers messed with the MDS officers and proved pleasant and co-operative in every way.

A convoy of 7 British MAC arrived on 26 November with twenty motor ambulances; the route that had been taken from 4 Field Ambulance MDS was 5 miles south of and parallel to the Trigh Capuzzo road. At midday the convoy of ambulance cars took 279 wounded back to 4 MDS by the same route. Soon afterwards it was learned from the DADMS that 4 MDS had moved, under instructions from Brigadier Hargest, [1] commanding 5 Brigade, to Abiar Araaz owing to the proximity of enemy tanks. Fourth Field Ambulance had carried with it 150 wounded, including many Germans, but those unable to be moved were left at the original site under the care of a detachment comprising Major R. D. King and sixteen other ranks who volunteered to remain. The ambulance convoy staged at Major King's unit and later encountered enemy columns, but eventually found its way back to Conference Cairn.

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[1] Brig J. Hargest, CBE, DSO and bar, MC, m.i.d.; born Gore, 4 Sep 1891; farmer; Member of Parliament 1931–44; Otago Mounted Rifles, 1914–20 (CO 2 Bn, Otago Regt); comd 5 Bde May

1940–Nov 1941; p.w. 27 Nov 1941; escaped Mar 1943; killed in action, France, 12 Aug 1944.

Fourth Field Ambulance, following the overrunning of Headquarters 5 Brigade by enemy tanks, and on instructions from GOC 13 Corps, moved forward with that headquarters to join Headquarters NZ Division, and opened on 27 November a main dressing station alongside that of 6 Field Ambulance. Its presence materially lessened the heavy strain on 6 Field Ambulance's tentage and enabled part of the stream of casualties to be diverted.

During 27 and 28 November remnants of some South African and British medical units began to trickle into the MDS area. Tentage was allotted to these medical officers and they were asked to attend to the increasing numbers of Italian wounded coming in.

An attempt was made to pass the Italian wounded to the German medical officers for treatment but usually they politely sent them back. The New Zealanders found that the German medical orderlies avoided all contact with the Italians whatsoever.

On the morning of 28 November the number of patients in the combined main dressing stations was 862, including 96 prisoners. Because of the danger of motor ambulance convoys falling into enemy hands, Colonel Kenrick had decided on the 26th to hold all wounded with the prospect of being able to evacuate them to Tobruk at an early date. When 5 Field Ambulance arrived in the area on 26 November, this unit had been directed to remain packed and ready for a further move. It was anticipated that there was every chance of moving 5 Field Ambulance into the Tobruk area, where the unit would open an MDS and take in all the casualties from the New Zealand units operating in that area of the desert.

By this time three New Zealand field ambulances (each less one company which was operating with its brigade group), 4 Field Hygiene Section, and the Mobile Surgical Unit were concentrated in the wadi 7

miles east of Sidi Rezegh. In view of the number of the patients and the uncertainty of the situation, special steps were taken to conserve the supplies of water and rations, now very short. From an abandoned German camp along the slopes of the escapment facing the Trigh Capuzzo, a wide range of valuable equipment was obtained which helped materially in the necessary expansion of the medical centre. Tentage, in particular, proved extremely valuable to accommodate many wounded who would otherwise have been without shelter, and some medical equipment was obtained to supplement the rapidly dwindling supplies held by the New Zealand medical units. German portable filters, Seitz pattern, proved invaluable in conserving the dwindling supplies of water. (Some were used later in the Pacific campaign.)

At 11 a.m. on 28 November General Freyberg visited the MDS and expressed his firm belief that, within a very short time, access to Tobruk would be open and the wounded would be evacuated there with all possible speed. This news, which was made known to all troops, materially improved the morale of the wounded, whose condition in many cases was becoming serious. Many men had already been subjected to exposure before they had been brought into the MDS, the weather, particularly at night, being very cold.

During 28 November the tank reserve at Divisional Headquarters was, at the request of Brigadier Barrowclough, [1] commanding 6 Infantry Brigade, committed to action and the headquarters was left temporarily unprotected. About 4 p.m. a tank battle developed a mile and a half to two miles south of Divisional Headquarters. It turned out later that 22 Armoured Brigade, which was moving on the southern flank of the New Zealand Division, was involved. The tank battle drew away to the south-west and at 5 p.m. all became quiet. At 5.15 p.m., just at dusk, enemy lorried infantry with some armoured cars came along the escarpment on to the grouped medical units and the adjoining prisoner-of-war cage. They captured both and set free about 1000 prisoners. [2] Divisional Headquarters, some 600 yards away over the escarpment, might well have been captured too but for the onset of darkness. As it was, Rear

Divisional Headquarters was able to move into Tobruk during the night.

Colonel Kenrick and Major Macfarlane, DADMS NZ Division, moved through the corridor into Tobruk on 29 November with Rear Divisional Headquarters in order, now that the New Zealand Division was without main dressing stations, that arrangements might be made with ADMS Tobruk area for forward evacuation of further wounded through the corridor into Tobruk. On the night of 29–30 November the corridor to Tobruk was cut but was reopened later. New Zealand casualties had been heavy.

Colonel Kenrick arranged with Colonel Fulton, ADMS Tobruk, that in future New Zealand casualties would be evacuated by a chain of three ADSs from Ed Duda back to 173 Field Ambulance MDS, and then to 62 General Hospital in the town of Tobruk. New Zealand units were to provide transport to the British ADS at Ed Duda, and thereafter British units were responsible for the evacuations. All British medical units were most co-operative, and eventually 315 New Zealand wounded were evacuated by this route into Tobruk from the ADSs.

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[1] Maj-Gen Rt. Hon. Sir Harold Barrowclough, PC, KCMG, CB, DSO and bar, MC, ED, m.i.d., MC (Gk), Legion of Merit (US), Croix de Guerre (Fr); Wellington; born Masterton, 23 Jun 1894; barrister and solicitor; NZ Rifle Bde 1915–19 (CO 4 Bn); comd 7 NZ Inf Bde in UK, 1940; 6 Bde, 1 May 1940–21 Feb 1942; GOC 2 NZEF in Pacific and GOC 3 NZ Div 8 Aug 1942–20 Oct 1944; Chief Justice of New Zealand.

[2] The story of the captured medical centre, and its 900 wounded, including 700 New Zealand casualties, will be taken up later in this chapter.

At midday on 1 December information was received that the enemy had made a fierce attack on Belhamed with tanks and infantry at 7.30 a.m. Sixth Brigade Group had been partially overrun the previous evening, and there was no news of the ADS beyond the fact that Captain

Staveley was reported as wounded and missing, and that Captain Clay, [1] Bishop Gerard, [2] and all the medical personnel were missing. Fourth Brigade Group was heavily hit and split up, but the ADS under Major Harrison had not suffered. The corridor was cut again and the New Zealand troops inside or in touch with Tobruk were 18 Battalion (470 strong) and two companies of 19 Battalion (290 strong), the ASC, 4 Infantry Brigade's B Echelon transport, Headquarters NZ Division, less Battle Headquarters, and sundry New Zealand Artillery personnel. Between 2 and 4 December medical arrangements were made for the New Zealand units in the Tobruk area, and the stragglers from the medical units were collected. On 4 December it was arranged with the DDMS 13 Corps (Brigadier Smythe), who had arrived in Tobruk by air three days earlier, that the responsibility for the evacuation of further New Zealand casualties would be entirely that of the British medical units in Tobruk.

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[1] Capt D. C. L. Clay; born Otaki, 19 Jul 1906; medical practitioner; 6 Fd Amb, Feb–Dec 1941; p.w. Dec 1941; died Wellington, 22 Jan 1955.

[2] Rt Rev G. V. Gerard, CBE, MC, m.i.d.; Rotherham, England; born Christchurch, 24 Nov–1898; Lt, The Buffs, 1918–19 (MC); SCF 2 NZEF, May 1940–Nov 1941; p.w. Dec 1941; repatriated Apr 1943; SCF 2 NZEF (IP) Apr–Dec 1944.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SINKING OF SS CHAKDINA

Sinking of SS Chakdina

On 5 December two ships with two escort vessels left Tobruk for Alexandria at 5.30 p.m. The larger of the two, the SS *Chakdina*, under arrangements made by ADMS Tobruk, Colonel Fulton, carried 380 wounded, including 97 New Zealanders. These wounded had been held up inside Tobruk and the decision had been made to evacuate them by sea to base hospitals in Egypt. Most of the ninety-seven wounded New Zealanders on board were stretcher cases and were put in the aft hold between decks.

Just as the moon was rising, a little after nine o'clock, the *Chakdina*, which was not a hospital ship, was attacked by a torpedo-carrying aircraft. Approaching at a height of barely 50 feet, the plane released a torpedo which exploded in one of the aft holds. Immediately the ship began to sink by the stern and in three and a half minutes it had disappeared.

Of those below deck—for the most part prisoners and the seriously wounded—few were able to escape. The men on deck had a better chance of fending for themselves, but many, too, were drowned, some by the upsetting of lifeboats, others by the suction of the sinking ship. For the wounded trapped in the aft hold there was small chance of escape, but there were several remarkable escapes when the exploding boilers caused an upward surge of water that thrust some to the surface. These and others were picked up by ships of the convoy which carried out rescue work for two hours despite continued air attacks. Eighteen of the New Zealand wounded were picked up by the destroyer *Farndale*, and possibly some by the *Thorgrim*, but up to 79 were drowned. This was the only major misfortune in the evacuation of wounded in 2 NZEF during the

war, and the decision to use the *Chakdina* as a hospital ship, without markings, appears unjustifiable.

Major Williams, OC 4 Field Hygiene Section, and three members of the ADMS's staff were on board, one of the staff being amongst the missing.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE ADS WITH 4 BRIGADE

The ADS with 4 Brigade

B Company 4 Field Ambulance, with Major Harrison as OC, came under the command of 4 Brigade Group on 18 November. The unit arrived at Menastir on 22 November, following the cutting of the Tobruk - Bardia road by 4 Infantry Brigade that morning, and set up an ADS to receive the first battle casualties; the majority of these were Germans. The position of the MDS was not known, so the ADS was cleared by sending two trucks of patients to Headquarters New Zealand Division to be redirected from there. Next day the ADS was cleared by three ambulance cars and the unit moved to set up at the Gambut aerodrome, following its capture by 4 Brigade.

On 24 November the unit proceeded 12 miles with 4 Infantry Brigade to Zaafran, where the ADS was established, and worked all night. It was not known whether the MDS had moved or was in the same locality; the company had carried its patients for two days. Three ambulance cars, however, arrived from 6 MDS the next day and the ADS was cleared to the MDS, then situated about 4 miles to the south. Supplies, especially of water, were becoming critically low. About eighty battle casualties were admitted during 26 November and the evacuation of the patients to 6 MDS worked smoothly.

On 29 November the company moved west about 2 miles to where the brigade group formed a compact defensive formation. The ADS was within 100 yards of some guns, but it was impossible to select a better site. The evacuation of patients to Tobruk had been arranged and the ADS was cleared, while water rations had come to hand.

There was heavy shelling all day on 29 and 30 November, with the enemy ranging on the battery adjacent to the ADS. Several of the

wounded in the ADS received fresh wounds, and casualties among the staff were nine wounded and one killed. Lance-Corporal Munro [1] went steadily about his duties as a medical orderly with complete disregard for personal safety and was later awarded the Military Medal. In the evening of 30 November the ADS was moved to a more sheltered locality. The convoy which had taken patients to Tobruk returned with 300 blankets and 100 stretchers which were urgently needed, and a further convoy of patients was sent to Tobruk that night.

There was heavy machine-gun fire and shellfire to the south of the ADS at 7 a.m. on 1 December. A tank battle was in progress and British tanks manoeuvred among the ADS vehicles. At midday the remnants of the badly mauled 6 Brigade withdrew through 4 Brigade and the enemy was in full view on the escarpment, south-west of the ADS. Patients were collected from Captains Sutherland and Levien, [2] RMOs of 6 Brigade, and at 6 p.m. 4 ADS held 120 patients.

On 29 November Captain Carswell, RMO 19 Battalion, assisted at 4 ADS when part of its staff became casualties. On 27 and 28 November at Ed Duda, where the link-up had been made with the Tobruk Force, 19 Battalion came under heavy shellfire from three sides and Captain Carswell's actions earned him the MC. There was no sheltered position for an RAP and the tending of casualties entailed moving about from slit trench to slit trench. Despite the shells bursting around the area, Carswell showed no hesitation in attending to the wounded. His medical section had previously been depleted and this threw extra work on him. At the same time constant calls for assistance were coming from neighbouring British units, 4 and 44 Battalions of the Royal Tank Regiment. To answer these calls meant walking over shell-swept ground for some distance, but Captain Carswell promptly went to the assistance of these wounded. Most of the RMOs had to work under shellfire in this campaign, and Captain W. L. M. Gilmour was killed when 20 Battalion was overrun by enemy tanks.

Experiences in the fighting at Belhamed were described by Captain Dempsey, RMO of 18 Battalion, in these words:

The Belhamed attack was our first real encounter with the Germans. We had to go forward on foot with Battalion Headquarters, so we could carry only first aid gear and stretchers. The RAP truck was to follow up later, also an ambulance car. We had arranged before the attack that the wounded were to be marked by their rifle and bayonet stuck into the ground beside them. We later found this a useful mark to find the wounded in the darkness.

There were many casualties, both our own unit and German.

Most of the casualties were from small arms fire, and most of these were sustained almost at the unit objective. I formed the RAP in a slight depression near Bn HQ, and while the unit was digging in we started our search for the wounded. The cries of these men kept on for most of the night. We had great difficulty at times in finding our way back to the RAP. It was a very cold night, and the blankets were hopelessly inadequate. We packed the wounded together like sardines, and made each three men share one or two blankets. A few died during the night because of the cold. In the morning the RAP truck and ambulance car reached us and we got the wounded evacuated in relays.

The next five or six days were very unpleasant. There was constant mortaring the whole of each day. The casualties were evacuated in the evenings. Nothing except first aid and morphine was given to the wounded. The RAP truck hit a mine and was a write-off.

Just before the big enemy attack on 1 December our unit shifted farther along the escarpment. Here we had a fine RAP—a cave in the hillside which was full of Italian and German wounded. A few yards away was the remains of an Italian hospital, so we had all the equipment we needed and were able to attend adequately to the wounded—British, Polish and New Zealanders. We had no trouble in the evacuation of wounded from here into Tobruk.

The 4th ADS was supplied with eighteen trucks for the transport of

its 120 patients during 4 Infantry Brigade's withdrawal to Egypt on the night of 1–2 December. Across the frontier the patients were transferred to 14 CCS at Minqar el Zannan, and B Company 4 Field Ambulance then continued east and reached Baggush on 5 December. During the operations in Cyrenaica this ADS admitted 360 New Zealand casualties, 48 British, and 40 enemy, a total of 448.

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[1] Capt C. Munro, MM; Taihape; born Taihape, 26 Sep 1914; clerk; 4 Fd Amb Oct 1939–Aug 1945 (RSM); Registrar 6 Gen Hosp, Japan, 1946–47.

[2] Maj G. H. Levien, m.i.d.; Hamilton; born Auckland, 14 Jun 1917; house surgeon, Auckland Hospital; RMO 21 Bn, Aug 1941–Dec 1942; medical officer 5 Fd Amb Aug 1943–Dec 1944; OC Maadi Camp Hosp Dec 1944–Jul 1945.

THE ADS WITH 5 BRIGADE

The ADS with 5 Brigade

The ADS for 5 Infantry Brigade was formed by B Company 5 Field Ambulance with Captain Edmundson [1] as OC. Arrangements were made with the brigade for the attachment of two stretcher squads and one light section to each battalion. The ADS opened at 7 a.m. on 22 November near Sidi Azeiz and thereafter received numerous battle casualties of both New Zealand and enemy troops as the attack on Capuzzo, Sollum, and Musaid developed. Accommodation was grossly overtaxed and there was insufficient equipment. Evacuation of many seriously wounded men was held up because the position of the MDS was then unknown. Welcome help

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[1] **Col F. B. Edmundson, OBE, ED, m.i.d.; Auckland; born Napier, 22 Jan 1910; medical practitioner; medical officer LRDG, Apr 1940–Oct 1941; 5 Fd Amb Oct 1941–Feb 1943; 1 Gen Hosp Mar–Jun 1943; 6 Fd Amb Jun 1943–Apr 1944; CO 4 Fd Amb Apr–Dec 1944; CO 6 Fd Amb Jun–Oct 1945; DDMS 2 NZEF Oct 1945–Feb 1946.**

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was received from a British medical unit, 14 British Field Ambulance, which supplied blankets, stretchers, and other medical supplies. The admission of casualties continued throughout the night and early hours of the morning, and at the first opportunity a reconnaissance successfully located 4 MDS. It was then possible to divert most of the steady stream of casualties there. The unit's car post at Fort Capuzzo evacuated its cases direct to the MDS. On 22 November 21 Battalion with its bearer section became attached to 6 Brigade and proceeded to Point 175, and thereafter was out of contact with the ADS. At 6 p.m. on 23 November the ADS moved out to the Sidi Azeiz

crossroads, where by 7 a.m. the next day a new ADS was established in 5 Brigade Group Headquarters area. Patients continued to arrive and their evacuation was always uncertain. On 25 November, when the MDS of 4 Field Ambulance had closed on account of reported enemy movements to the south, the evacuation route became too dangerous and patients were held until a safe route could be found. At dawn on 26 November battles between enemy and British forces took place in the vicinity of the ADS and both German and New Zealand casualties were admitted. Throughout the day massed enemy transport and armoured fighting vehicles were observed on all sides of the camp moving eastward into Bardia. From the violent fighting additional casualties were admitted.

About 7.10 a.m. on the 27th Sidi Azeiz was attacked by a German force with about forty tanks. The area came under heavy machinegun and shell fire and our anti-tank guns, machine guns, and field guns went into action. Within an hour and a half of the bursting of the first shell all our guns, after a most gallant fight, had been silenced and the tanks had overrun the area. Fifth Brigade Headquarters and other units of the headquarters group, including the ADS, surrendered to the Germans.

The German troops systematically looted all the vehicles of the ADS and commandeered medical and other equipment which was not in actual use. The unit's transport was taken over and driven away. The ASC drivers were marched away as prisoners of war, along with the other troops, in the direction of Bardia. The medical personnel had to identify themselves by producing their Red Cross identity cards and, after this was done, no attempt was made to interrogate them or in any way obstruct the carrying on of their work. Brigadier Hargest, 5 Brigade's commander, who had been taken prisoner, visited the wounded before he was escorted away. A German medical officer, who had made contact with the ADS medical staff, granted every facility for the collection and treatment of casualties, both friend and foe alike.

The German commander, Colonel Cramer, also personally investigated the treatment of German casualties, which he was satisfied was equal to that accorded to New Zealanders. After the German

wounded had received satisfactory treatment they were placed in trucks and other vehicles and evacuated by the Germans.

Two regimental medical officers of units of 5 Brigade, Captains Tyler [1] and Adams, [2] along with their RAP orderlies, joined the ADS and gave valuable assistance, besides bringing in most welcome supplies and equipment. Throughout that day and the next the ADS was unmolested, despite the passage westward of large enemy mechanised forces. A message was received from a German medical officer to the effect that no accommodation for wounded was available in Bardia, but that if necessary he would endeavour to send supplies of food and water; but sufficient supplies were salvaged from the camp to render this unnecessary.

On the morning of 29 November very few enemy troops remained in the locality. At 6 p.m. on 30 November a Divisional Cavalry patrol arrived at the ADS. The evacuation of patients and medical personnel was speedily organised and the convoy set off for Fort Capuzzo, which was reached at 11 p.m. Here the patients were accommodated in an underground cistern which had been prepared for their arrival.

The patients were transferred later to 19 Indian Field Ambulance MDS at Sidi Omar by an ambulance convoy of 7 MAC, under Lieutenant Bennett, accompanied by Major King with several ambulances of 4 Field Ambulance.

B Company 5 Field Ambulance reopened in the ruins of Fort Capuzzo with a view to serving the remustering elements of 5 Infantry Brigade, comprising 22 Battalion, 23 Battalion, and 28 (Maori) Battalion. The unit salvaged as much equipment as possible from surrounding areas. On 5 December it admitted 67 casualties which were transferred to the MDS at Sidi Omar. Then, on 8 December a mixed New Zealand medical party of personnel of 4, 5 and 6 Field Ambulances, who had been released from captivity and gathered by Major King, arrived at Fort Capuzzo with sufficient equipment to function as an MDS for the reorganised 5 Brigade, which was then preparing for further action in the Gazala area.

When 5 Brigade moved west from Tobruk on 11 December, casualties from actions with the enemy were admitted by the ADS in the vicinity of Acroma, and evacuated smoothly to the newly

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[1] Maj J. M. Tyler, m.i.d.; Hastings; born Auckland, 16 Sep 1915; medical practitioner; medical officer 5 Fd Regt Mar 1941–Jan 1942; 5 Fd Amb Jan 1942–May 1943; 2 Gen Hosp May 1943–May 1945.

[2] Maj A. B. Adams; Auckland; born Wellington, 20 Apr 1914; house surgeon, Wellington Hospital; RMO 27 (MG) Bn Jun 1941–Jun 1943; 2 Gen Hosp Jun 1943–Jul 1944; OC Adv Base Camp Hosp Jul 1944–May 1945.

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established 5 MDS nearby. The ADS moved forward with the brigade and on 14 December was subjected to several dive-bombing attacks, resulting in some casualties to the staff of the unit. Numerous casualties, both New Zealand and German, were admitted between 14 and 16 December, but it was possible to evacuate these to Tobruk without delay. The ADS closed on 17 December and the unit moved back with its brigade through El Adem and Bir Gibni to the railhead, and eventually reached Baggush by rail on 29 December.

During the campaign this ADS admitted a total of 700 patients, including enemy casualties. The entire company transport was captured or destroyed, as well as a considerable amount of equipment.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE ADS WITH 6 BRIGADE

The ADS with 6 Brigade

A Company 6 Field Ambulance (Captain Staveley) came under command of 6 Infantry Brigade Group on 18 November to provide an ADS. On 22 November, having passed to the command of 30 Corps, the brigade group moved 10 miles west of Sidi Azeiz on the Trigh Capuzzo ready to move on Gambut. That evening orders came for 6 Brigade to secure Point 175 on the Sidi Rezegh escarpment. An attack was launched at midday on 23 November and during the afternoon some progress was made, at the cost of very heavy casualties, but the enemy still held the high ground of the Sidi Rezegh escarpment farther to the west.

The field ambulance company had travelled all through the night of 22–23 November with 6 Brigade and its first call to action came as it pulled up for breakfast. Elements of 6 Brigade had clashed with a section of the *Afrika Korps*. Working from the trucks and ambulances, with heavy shelling around the area, the men of A Company treated many wounded, mostly German prisoners whom they were obliged to leave behind, with water and a Red Cross sign, to be picked up by others. Moving on again in the afternoon the ADS set up in an unnamed wadi 7 miles east of Sidi Rezegh. Here again the unit experienced some shelling, and then four German tanks attacked nearby troops and the ADS became involved. Hurriedly the staff pulled down their tentage, threw it aboard the trucks, and moved with all speed to the protection of Brigade Headquarters. Here some tentage was erected again in an effort to deal with the numerous casualties. From the attack on Point 175 many casualties were admitted, and the staff worked at high pressure throughout the night and in the early morning were able to evacuate the wounded.

Approximately 200 wounded were evacuated independently along the line of evacuation of 30 Corps by 6 ADS. The convoy consisted of twenty-one vehicles, including three ambulances (one of them German), a captured staff car, and 3-ton trucks, under the command of Lieutenant-Colonel McNaught [1] and Captain McBride, [2] of 25 Battalion, both wounded. An armoured car escort was provided. On reaching the supposed position of the CCS, after travelling 15 miles, it was discovered from DADMS 30 Corps that the CCS was some 17 miles farther back. After the convoy had resumed its journey, another convoy in open formation came across its front; this turned out to be an English regiment. A few minutes later the ambulance convoy was machine-gunned by enemy aircraft and a line of enemy armoured cars appeared behind the English regiment. The latter opened fire with machine guns and light artillery or mortars. Several vehicles were hit, but there were no additional casualties among the men. Eventually, the convoy found 7 South African CCS and arrangements were made to have the serious cases taken out of the vehicles and the walking cases attended to. While this was happening, however, a brigadier arrived at the CCS and ordered it to close down and move back. The wounded were placed on board again and the convoy moved on to 15 British CCS, some 23 miles farther back, at the frontier. When it arrived there at 5.30 p.m., it had completed 72 miles during the day. As the CCS could not feed all the men, it was arranged for a field ambulance which had followed the convoy to the CCS to feed the remainder. The more serious cases were taken to the operating theatres throughout the night and most of the walking cases were attended to at the dressing tent. Quite a number, nevertheless, did not receive attention, and little was possible at any of the staging posts. Owing to the shortage of blankets on that and the two succeeding nights, these men were extremely uncomfortable. On 25 November everybody had to be evacuated and the convoy moved on into Egypt to stage for the night at Alam Dignash, where a meal was provided. On 26 November the convoy reached Minqar el Zannan and all the serious cases were distributed between 14 British CCS and 1 Mobile Military Hospital. Next day the wounded were put aboard ambulance

trains at the ambulance railhead. The patients showed remarkable fortitude on their long journey. Two men died on the way.

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[1] Lt-Col G. J. McNaught, DSO, ED; New Plymouth; born Wanganui, 26 Nov 1896; schoolmaster; NZ MG Corps 1916–19 (2 Lt, 1919); CO 29 Bn (UK) Jun 1940–Mar 1941; 25 Bn Sep–Dec 1941; wounded 23 Nov 1941; headmaster, New Plymouth Boys' High School.

[2] Maj F. R. McBride; born Ohau, 8 Dec 1909; civil servant; wounded Nov 1941.

On the morning of 24 November 6 ADS set up again in the wadi east of Sidi Rezegh, later known as 'Whistling Wadi'. More wounded flooded in, including a convoy of 200 from 5 South African Brigade which had been overrun by the enemy armour. Work went on into the night, when Headquarters and B Companies of 6 Field Ambulance arrived to set up an MDS and take over the 250 patients. A Company had already evacuated 200 cases, so it had treated some 450 cases in the previous twenty-four hours.

The next day the company moved westwards again in the wake of 6 Brigade. On the evening of 25 November while 4 Brigade attacked Belhamed, 6 Brigade attacked Sidi Rezegh. Heavy casualties were suffered and partial success gained. Another attack was made the following night and Sidi Rezegh was taken, but the enemy still held the southern escarpment from which he could shell the brigade positions. From these actions the ADS was kept busily employed in treating and holding the wounded. Evacuation to the MDS by ambulance cars proceeded smoothly until the night of 27 November, after which date the casualties were held because of the uncertainty of the position.

By 28 November, counter-attacks by German armour had upset the general situation, although by this time a link-up had been made with the Tobruk garrison. On the night of 28 November, in a night move

down the escarpment, the ADS set up across the Trigh Capuzzo near Belhamed. On the two following nights the company was able to evacuate large convoys of wounded, in every available 3-ton truck and ambulance, through to Tobruk. In all, some 600 casualties were sent to Tobruk hospitals in two convoys. It was estimated from convoys and burials that 1150 casualties passed through the ADS during the campaign, including 250 South Africans. Many of these were from a heavy action which developed on 30 November. The enemy had captured Point 175 from the remnants of 21 Battalion on 29 November and then on 30 November launched a heavy attack against 6 Brigade, which was severely depleted and much exhausted and had little with which to hold the German armour. Sidi Rezegh fell to an overwhelming force and 24 and 26 Battalions were overrun. The remnants of 4 and 6 Brigades joined forces and reorganised in anticipation of further attacks.

On the evening of 30 November, after despatching the second of the convoys of wounded to Tobruk, the ADS was obliged to move as a tank attack in the direction of the company's position was believed imminent. The ADS set up again on the slopes of Belhamed, but below the level of the main escarpment.

At dawn on 1 December an enemy force of forty to fifty tanks supported by infantry advanced north-westwards from Sidi Rezegh. Part of the force turned eastwards to attack the positions of 6 Brigade while the remainder advanced on Belhamed. The attack broke on the south-eastern slopes of Belhamed where the ADS, the guns of 6 Field Regiment, and Division Battle Headquarters were in position. The ADS was soon overrun, and was later escorted to the rear by enemy infantry. The company's casualties in this action were two men killed and a number wounded.

Just when the capture of 4 and 6 Brigades seemed almost a foregone conclusion, British tanks put in an appearance and saved the day. Later, the remnants of both brigades achieved an anxious but successful withdrawal to safety.

Most of the captured ambulance company were made to proceed on a long march across the desert to the west and were later taken in trucks to the prison camp at Benghazi. Captain Staveley, who had been wounded in a leg, four of the company and six stretcher-bearers were taken to the German hospital at El Adem, some 15 miles west of Sidi Rezegh, where they found Sergeant Nicholas [1] in charge of several wounded men. On the night of 2 December the hospital grounds were bombed and machine-gunned by the RAF. Bombs were dropped alongside some buildings, but no direct hits were made on any building used as a ward. The tide of battle was turning again in favour of the British forces and during the night the Germans began a general evacuation. During 3 and 4 December they evacuated the wounded so that only twenty-five British wounded remained, together with a small German medical staff as well as Captain Staveley and five men of A Company 6 Field Ambulance. Then, on 8 December all the remaining Germans left. The entire staff remained with the patients until an infantry patrol from a British battalion reached them on 10 December. Later that day, staff and patients were taken to Tobruk, where Captain Staveley was admitted to hospital, and the five remaining personnel joined the newly formed 5 MDS.

Captain Staveley was awarded the Military Cross for his work and devotion to duty and Sergeant Nicholas the Military Medal.

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[1] **S-Sgt J. L. Nicholas, MM, m.i.d.; Australia; born South Africa, 28 Feb 1910; orchard hand; NCO 6 Fd Amb Feb 1940–Sep 1942; twice wounded.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DETACHMENT OF 4 FIELD AMBULANCE

Detachment of 4 Field Ambulance

The medical party under command of Major King, who had remained to care for the large concentration of casualties at the former site of 4 MDS near Sidi Azeiz, observed German tanks and other enemy vehicles approaching at 8 p.m. on 25 November, but this column did not then advance into the immediate vicinity. At first light next morning, 26 November, enemy tanks had a short engagement with British armour about 5 miles west of the area, and the British column withdrew. The Germans then investigated the New Zealand unit, and a German medical officer who spoke English interrogated both German and New Zealand patients. This enemy party confiscated an assortment of medical supplies.

At 8.30 a.m. an ambulance car with a badly wounded British member of a tank crew, accompanied by his RMO, was escorted in by two German motor cyclists. The medical officer remained with the detachment all day giving anaesthetics and doing dressings, and then left to try to rejoin his unit.

At 4.30 p.m. General Rommel himself visited the medical area. When assured that German casualties had received similar treatment to that accorded British and New Zealand patients, he gave instructions against interference by his own troops in any medical work undertaken by Major King and his staff. Rommel left twenty-two severely wounded Germans for treatment. These men had all been wounded two to three days previously and they had received very little, if any, skilled medical treatment. Their treatment was undertaken in spite of the growing shortage of supplies, both medical and water, and other difficulties.

At 5 p.m., a convoy of 7 MAC under Lieutenant Bennett, in complete

ignorance of the German occupation, pulled into the medical area with a convoy of 279 patients from the MDS of 6 Field Ambulance. It was decided that continued evacuation must be attempted next morning and, in view of this, stretcher cases remained overnight in the ambulance cars and other patients in open trucks were given shelter under cover of tents and other canvas. Major King, an RAMC officer, and the medical orderlies worked all night checking the condition of each patient and administering morphia where required.

Next morning, at 6.45 a.m., the MAC convoy with 304 patients moved off in an attempt to get through to a CCS, but within an hour it was stopped by an Italian column. This column made the convoy change direction but the captors made off at the approach of British armoured cars. Progress was slow and uncertain, but eventually the convoy reached areas clear of the enemy and made contact with 7 SA CCS.

Parties of Italians entered Major King's camp and one party attempted to take the staff away as prisoners, but it left when told by Major King that Rommel had said they were to be left alone. Another party took away the two remaining ambulance cars and one orderly. (The latter rejoined Major King a few days later at Sidi Omar with the two cars and the two Italians as his prisoners.) Water was getting short, but 16 gallons was collected from tent tops during a shower of rain. Both British and German armoured cars visited the camp during the 28th.

At dusk on 28 November the convoy of ambulance cars returned bringing food and water. Throughout the night the whole staff worked to prepare patients for the evacuation. Fresh dressings were given to all cases. Anxious moments, when enemy tanks passed close to the area, held everyone in suspense, as the numbers of extra vehicles must have been obvious. However, no closer investigation was made, and at 9.45 a.m. on 29 November the medical convoy left the area, although enemy transport was still visible to the east. A route was set to the south-west, with a small section of British armoured cars covering the rear. After changing direction to due south for some 48 miles, the convoy contacted 7 SA CCS at 4.30 p.m. and the patients, numbering 123,

including 30 Germans and 17 Italians, were admitted. Major King had admirably maintained this medical section through a difficult and arduous period, and with the assistance of his medical staff successfully organised the clearance of all patients, tents, and equipment.

On learning that 5 ADS were prisoners at Sidi Azeiz, Major King then went back with Lieutenant Bennett's convoy to evacuate the ADS. The unit was found at Capuzzo and the patients were evacuated to Sidi Omar. Contact was then made with 13 Corps at Conference Cairn and instructions received for the detachment to join up with 5 Brigade, which had been detailed for further service with the corps. Available for service with the brigade were B Company 5 Field Ambulance under Captain Edmundson and Major King's detachment, plus a few New Zealand medical personnel who had escaped from the composite medical centre near Sidi Rezegh—including Major Wilson [1] of the MSU and Captain Jack. [2] While B Company formed an ADS for 5 Brigade, King's group became 5 MDS, and when it reached Tobruk on 9 December it was joined by five men of 5 and 6 Field Ambulances released from enemy hands. Two medical officers from 62 General Hospital were also attached under instructions from DDMS 13 Corps. Some equipment was obtained in Tobruk and some Italian equipment was salvaged from the first site outside Tobruk, where an Italian medical unit had been. The transport was mostly South African vehicles which had been picked up in the desert.

Actions early in December had led to the final relief of Tobruk on 5 December. The enemy then retreated towards Gazala, where he established a line to the south-west and there made a stand for five days until he was once more driven into retreat. For this action 5 Brigade came under 13 Corps, along with 4 Indian Division and British and Polish units, and the composite medical unit formed an MDS for 5 Brigade, evacuating casualties to Tobruk.

The MDS, moving forward as the advance proceeded, dealt with a considerable number of casualties, both New Zealand and enemy. Blood

and plasma, as well as intravenous drips, were given by the MDS, and early surgery and immobilisation of serious fractures were carried out. Evacuation to 62 British General Hospital, Tobruk, was undertaken by 7 MAC. The help given by the officers from 62 General Hospital was much appreciated, and the small composite unit of 57 men earned great praise from Brigadier Wilder, the brigade commander. After the Gazala battle the unit retired with the brigade, travelling by road through the wire at Sheferzen and then by the coastal road to Baggush.

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[1] Lt-Col S. L. Wilson, DSO; Dunedin; born Dannevirke, 17 Apr 1905; surgeon; surgeon 2 Gen Hosp Aug 1940–Jun 1941; Mob Surgical Unit Jun 1941–Feb 1942; 1 Mob CCS Feb 1942–Mar 1943; CO 2 CCS (Pacific) Aug 1943–Jan 1944.

[2] Maj D. McK. Jack; Auckland; born Whangarei, 8 Mar 1914; house surgeon, Palmerston North Hospital; medical officer 4 Fd Amb1940; RMO Pet Coy May–Sep 1940; 4 Fd Amb Sep 1940–Sep 1942; 7 Fd Amb (Pacific) Dec 1942–Aug 1943; OC Malaria Control Unit -Dec 1943.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CAPTURED MEDICAL CENTRE AT 'WHISTLING WADI'

Captured Medical Centre at 'Whistling Wadi'

When German troops at 5 p.m. on 28 November overran the area near Point 175 in which two companies of each New Zealand field ambulance, as well as the Mobile Surgical Unit and 4 Field Hygiene Section, were grouped, they announced that all medical personnel and wounded were to regard themselves as prisoners of war. The medical staffs, after a period of confusion, were permitted to return to their duties, and thereafter the enemy permitted them full control of the wounded in their area.

The German forces took up positions on the high ground flanking the wadi wherein the medical staffs and wounded were concentrated. They opened fire in the direction of Sidi Rezegh and Belhamed. British artillery replied and a number of shells fell amongst the tents, causing some further casualties among the wounded. All next day, 29 November, artillery duels continued and, to make matters worse, the Italians set up a battery of field guns just on the perimeter of the medical area. In consequence, the medical staff had at times to take cover below ground level and their work with the casualties was greatly hampered.

A conference of the officers in the medical area discussed all aspects of the position and agreed that Lieutenant-Colonel Twhigg, CO 5 Field Ambulance, should take over full command. The most pressing problems for decision concerned rations, water, sanitation, and salvage of material which was scattered about the medical area. All food and water supplies were pooled, assessed, and rationed, according to patients held and staff, to each unit. The supply of rations was low and it became necessary to reduce meals to two a day. An estimate of the water held revealed that there would be only a pint a day for all purposes for each

individual for the next two days. The meals consisted of a breakfast of biscuits, jam, and half a cup of tea or cocoa, and a meal at 4 p.m. of bully-beef stew and biscuits. No water was drawn except under supervision and then only by cooks. With the ration, all personnel received barely half a cup of tea a day. A ground sign for water was constructed out of sheets and displayed on the eastern slopes of the wadi between the Mobile Surgical Unit and 6 Field Ambulance in the hope of attracting the attention of the RAF. The total number to be sustained on the water and rations was approximately 1800 and, of these, the patients numbered 1200.

The Mobile Surgical Unit was overwhelmed with patients requiring operative treatment, which was carried out largely by Majors Furkert and Wilson. All medical officers were kept busy in the treatment of casualties. German medical personnel assisted the New Zealand staffs in the work of caring for all cases and also provided medical supplies. The German medical personnel made no attempt to aid in the slightest degree any Italian casualties who were brought in. These cases were almost wholly dealt with by the few South African medical officers who were present. A harmonious relationship existed between New Zealand and German medical officers. The latter, who had been among the prisoners but were now among the captors, were considerate, polite, and co-operative.

At 3 p.m. on 29 November the German command decided they would evacuate all their own wounded from the area. To do this they commandeered all the staff cars, ambulance cars, and other vehicles which were capable of being moved. Others which they could not move had been deliberately and secretly immobilised by ASC drivers, essential parts being removed from trucks and hidden so that the vehicles would be available should a favourable opportunity arise for parties to escape.

Prior to the departure of the convoy Lieutenant Dawson, [1] 6 Field Ambulance, accompanied by a German soldier, went through the enemy lines in one of the New Zealand ambulance cars and collected German wounded. Some New Zealand troops wished to detain them, but they

returned to the medical area.

On 30 November the artillery fire was intensified. When the Italian positions on the high ground surrounding the wadi were shelled, the Italians withdrew within the lines of the wounded and medical staff or rushed through the lines in their transport and

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[1] Maj R. H. Dawson, m.i.d.; Palmerston North; born India, 24 Sep 1915; house surgeon, New Plymouth Hospital; medical officer 6 Fd Amb Jun 1941–Dec 1942; 3 Gen Hosp Mar–Oct 1944; 5 Fd Amb Nov 1944–Feb 1945.

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disappeared over the eastern escarpment. An emplacement of fourteen guns was sited about 150 yards from 6 Field Ambulance's Red Cross flag on the north-western side and thirty enemy tanks were on the north-western escarpment immediately above the Mobile Surgical Unit. About midday British guns began shelling the former position. A number of shells fell in the medical area, killing and wounding a number of the New Zealand medical staff of 4 Field Ambulance and the Mobile Surgical Unit, and New Zealand and German patients of these and other units. Intermittent shelling continued all afternoon.

The work of Staff-Sergeant Henley [1] in organising the reception and evacuation of wounded from the operating theatre during the afternoon materially assisted the patients and inspired confidence in his men, and his actions were later recognised by the award of the DCM.

A German field ambulance had arrived during the morning and sited itself beyond 4 Field Ambulance in the south-western end of the wadi. German doctors endeavoured to get the Italian guns moved farther from the medical area, but without avail. These doctors, however, did valuable work in keeping Italian tanks, armoured fighting vehicles, and other combatant forces out of the area. The CO 4 Field Ambulance, Lieutenant-Colonel Tennent, helped one of the German medical officers to operate on re-wounded Germans in the German field ambulance

operating truck under most amicable conditions. The methods employed by German medical officers were noted to be rather crude judged by New Zealand standards.

At 3 p.m. on 30 November the German troops, using further commandeered transport, withdrew from the position, taking with them most of their own wounded. The commander of the German forces, as a mark of appreciation of the work performed by New Zealand medical personnel, left written instructions that the Italians were in no way to molest patients or obstruct their care and treatment. The Germans also labelled the remaining rations and water to indicate that they were to be left intact for staff and patients of the medical area. With the departure of the Germans, the Italian commander of the *Ariete Division* appointed an Italian medical officer as commandant of the medical area. This individual proved himself to be most inefficient and exercised poor control over the Italian troops in the area, and they were guilty of obstruction and looting.

Intermittent shelling continued all day on 1 December and an enemy position which had recently been set up on the eastern side

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[1] Capt J. C. Henley, DCM, ED; Auckland; born Auckland, 21 Jul 1913; milk vendor; NCO 4 Fd Amb 1939–42; Lt, 12 Fd Amb (NZ) 1943; Adjutant, Papakura Camp Hosp, 1944–47.

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of 6 Field Ambulance, within 100 yards of its Red Cross flag, received considerable attention from British guns. The continued gunfire and the screaming and bursting of shells proved most trying for the patients. The serious water situation was slightly relieved in the evening by the arrival of an Italian water truck. After prolonged and difficult argument, permission was obtained from the commandant to draw 200 gallons of water, to be rationed equally among all patients, enemy included, and other personnel in the area. Italian troops were allowed to fill their water-bottles and containers from the truck, but New Zealanders were refused this privilege.

At 8 p.m. on 1 December a convoy of six 10-ton diesel trucks and a few other vehicles arrived and the Italians announced that they were going to move everyone at once. It was pointed out that this was impossible, and it was agreed that only the Italians should be moved. They were all classified as 'lying' cases and so, on their stretchers, they filled the available transport. The convoy left at 2 a.m. after much excitement, heading for Derna via El Adem.

The German field ambulance moved out early on 2 December and took most of its wounded. The Germans expressed their thanks for the way the New Zealanders had looked after their wounded and hoped that they, and not the Italians, would look after any other German wounded who were left, or who might subsequently come in.

During the morning it was obvious that the Italians were fixed in their intention of moving as many as possible from the medical area, and to this end called a parade of all ranks. While this parade was held, the Italian soldiers began a systematic and thorough looting of the whole area and also took a considerable quantity of the remaining food. At the parade nominal rolls were prepared of the medical staff and patients, and the Italian commander intimated that a proportion of these troops would be evacuated. According to Lieutenant-Colonel Kippenberger, 'Most of the men paraded got fed up with the messing about, pushed their way quietly through the cordon surrounding the parade, and returned to their tents—if they had any.' The Italians forced our men to hand over all knives, forks, clasp knives, blade razors, cameras, binoculars, and revolvers, although finally medical personnel were allowed to retain their clasp knives. In the afternoon all ranks not actually engaged in the wards were paraded again and were detailed into groups for embussing in a convoy of motor vehicles which had assembled by this time.

In their selection the Italians tended to allow the medical staffs who had been looking after Italian wounded to remain behind. Thus, the eleven South African medical officers and other ranks of their field

ambulance, as well as two attached British medical officers, were retained. Permission was given by the Italian commandant for all of the Mobile Surgical Unit staff to return to their area, and five other New Zealand medical officers also remained. The senior New Zealand medical officers strongly opposed the impending move on the grounds that they were being taken away from the wounded under their care, but on being informed that the object was to set up a reception hospital in the back areas, offered no further resistance. The men of 4 Field Ambulance were fortunate that there was insufficient transport to take them away.

The medical staff detailed for removal, as well as some of the ambulant wounded, were hurried up the slope to the south-western escarpment where large diesel trucks were drawn up for their transport, and were taken away towards Derna and Benghazi at 3 p.m.

The medical group taken away as prisoners of war (and not to a hospital unit as they had been led to believe) comprised 14 medical officers and 183 other ranks. [1]

On the evening of 2 December the remaining medical officers in the medical centre reorganised their administration, a South African medical officer being placed in command. A party under Lieutenant-Colonel Dittmer, [2] 28 Battalion, with Captain Lomas, 4 Field Ambulance, and 38 patients and staff escaped by truck that night and crossed the frontier wire at dawn next morning, and another group of 23, under the command of Lieutenant-Colonel Kippenberger and including Majors Wilson and Lovell and Captain Jack, similarly escaped in daylight on 4 December. Colonel Dittmer contacted a corps headquarters and gave information about the medical centre, and Colonel Kippenberger persuaded DDMS 30 Corps to take action. Kippenberger's group was able to direct units of 7 British Armoured Division towards the location of the captured medical units.

At 3 p.m. on 3 December a conference of all medical officers was called by the Italian commandant. Through Padre Forsman, [3] the

[1] They comprised Lt- Col A. A. Tennent, Capt H. C. Tremewan, Lt V. C. Martin and Lt R. A. D. Fulton (QM) and one other rank of 4 Fd Amb; Lt-Col J. M. Twhigg, Maj T. G. de Clive Lowe, Capt R. B. Beattie, Capt G. C. T. Burns, Capt W. G. Gray, Capt W. B. de L. Lusk, Lt N. G. Crossman (QM) and 81 other ranks of 5 Fd Amb; Lt- Col N. C. Speight, Capt A. G. Gilchrist, Capt F. E. Webster and 84 other ranks of 6 Fd Amb, and 17 other ranks of 4 Fd Hyg Sec.

[2] Brig G. Dittmer, CBE, DSO, MC, m.i.d.; Auckland; born Maharahara, 4 Jun 1893; Regular soldier; Auckland Regt 1914–19 (OC 1 NZ Entrenching Bn); CO 28 (Maori) Bn, Jan 1940–Nov 1941; wounded 23 Nov 1941; comd 1 Inf Bde Gp (in NZ) Apr 1942–Aug 1943; 1 Div, Aug 1942–Jan 1943; Fiji Military Forces and Fiji Inf Bde Gp, Sep 1943–Nov 1945; Camp Commandant, Papakura Military Camp, 1946; Commandant, Central Military District, 1946–48.

[3] Rev Fr E. A. Forsman; Auckland; born Pakuranga, Auckland, 20 Mar 1909; Roman Catholic priest.

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officers were informed that the commandant admired the great technical skill displayed by all medical officers and the care and attention shown to his countrymen who had been wounded, but he sensed a feeling of obstruction and non-cooperation; further, the commandant added that medical officers must realise they were prisoners and that such an attitude must cease.

On the morning of 4 December some 150 walking wounded, with Lieutenant Dawson, 6 Field Ambulance, were taken away in trucks by the Italians to Benghazi, where those who were allowed to remain in that town were released by advancing units of Eighth Army on 24 December

In spite of Italian promises, no water or food had reached the captured medical centre by 5 December; the patients were desperately in need of water, some having developed swollen and cracked tongues.

After the evening meal that day the quartermaster announced that there were only 30 gallons of water left for a total of 860 patients and the staff.

Patients began to die rapidly from dehydration in spite of the distribution of water from the shares of those taken away as prisoners. Several of the patients appeared to die of cold as supplies of kerosene for heaters failed. In the Mobile Surgical Unit water was re-used in Major Furkert's operating theatre after being cleansed by a German filter. The scarcity of water in the theatre, where operations were being steadily carried on, made conditions seem like those recorded of the Crimea. The escape of the entire Mobile Surgical Unit, which would have been practicable, was considered but was abandoned because of the plight of the patients.

However, during the night the Italians moved out and on the morning of 6 December elements of 7 British Armoured Division arrived on the western escarpment and sent particulars by wireless to their headquarters. The remaining walking wounded, totalling 200, were then sent off to the south-east, two medical officers and several orderlies accompanying them. There were then left 16 officers (10 South Africans), 5 padres, 265 personnel (43 South African), and 592 patients. The remaining equipment of the three ambulances was stacked ready to be collected later by the MSU. During the morning a company of the RASC came in with nineteen 3-ton trucks and three ambulances, and these, together with three or four of the remaining New Zealand trucks in tow, lifted approximately 510 wounded and 210 personnel and moved off south at 3 p.m. These did not include any of the Mobile Surgical Unit, which was collected later in the day. Good progress was made by the convoy and, after travelling 30 miles, an ADS of 151 British Light Field Ambulance was reached at 6 p.m. An excellent hot meal was provided by this unit. Severe cases were transferred that night to an MAC convoy of seventeen ambulance cars which moved off at dawn for 7 SA CCS.

At 7 a.m. on 7 December the remaining wounded and medical

personnel of this convoy were transferred to four ambulance cars and thirty 3-ton trucks of 22 Armoured Brigade. At 9 a.m. they moved off to travel 46 miles to the rear section of 7 SA CCS, and arrived eight hours later. The patients were unloaded there and the medical personnel carried on down the axis of the Armoured Division to the frontier wire and 15 British CCS. Instructions were received for the New Zealanders to return to the Division at Baggush, which they reached on 11 December.

The Mobile Surgical Unit with its patients was relieved by an ambulance convoy under Colonel Clifton, [1] then acting CRE 30 Corps. Most of the equipment belonging to all the medical units was salvaged. Four useful vehicles towing four disabled ones, all full of stores, were taken away. The patients were left with 7 SA CCS and the unit went on through the frontier by road to Baggush. The unit's surgical van had proved entirely desert-worthy, and on the move had to 'hang back' for the standard three-tonners.

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[1] Brig G. H. Clifton, DSO and 2 bars, MC, m.i.d.; Porangahau; born Greenmeadows, 18 Sep 1898; Regular soldier; served North-West Frontier 1919–21 (MC, Waziristan); CRE 2 NZ Div 1940–41; Chief Engineer 30 Corps, 1941–42; comd 6 Bde Feb–Sep 1942; p.w. 4 Sep 1942; escaped, Germany, Mar 1945; NZ Military Liaison Officer, London, 1949–52; Commandant, Northern Military District, Mar 1952–Sep 1953.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOBILE SURGICAL UNIT

Mobile Surgical Unit

Following the withdrawal of the New Zealand troops, a request was made for the Mobile Surgical Unit to service advanced British units carrying on the pursuit of the retreating German and Italian forces. The unit was despatched, with Lieutenant-Colonel Ardagh in command, to gain what DDMS 2 NZEF considered would be very useful experience.

On 2 January the unit was temporarily attached to 1 Armoured Division as an advanced operating centre, in view of the probability that that division might advance rapidly a considerable distance from the main casualty evacuation axis. Unfortunately, other factors prevented the execution of this plan, and the Mobile Surgical Unit became involved in the general withdrawal of 13 Corps.

While with 1 Armoured Division, the unit was nearly captured again on 25 January 1942 at Msus, some tents having to be left standing. Lieutenant-Colonel Ardagh, with the surgical van in the forefront, led a large medical convoy safely back across the desert to Mechili during the pursuit. The unit had functioned well but had not been called upon to care for very many casualties. Henceforth, it was to act as the light section of the newly established 1 NZ CCS.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BARDIA PRISONERS

Bardia Prisoners

The New Zealand prisoners of war liberated at Bardia on 2 January in the mopping-up operations were all quickly evacuated to Egypt. They had suffered from the primitive conditions under which they were kept, conditions probably accentuated by the disorganisation of the enemy communications and supplies. Dysentery was prevalent amongst the enemy troops and developed amongst our own prisoners, though the majority continued to live in the prisoner-of-war area. A few were treated in hospital, one of our men being the only prisoner found in the Italian hospital. The men recovered quickly after their arrival in Egypt, and soon lost the drawn appearance they had when they first arrived. Their imprisonment had been too short to make any difference to the normal healthy young soldier, either physically or psychologically.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF CAMPAIGN

REVIEW OF CAMPAIGN

The unusually fluid battle conditions on the vast expanse of desert in the Second Libyan Campaign, when there was no defined line between the opposing forces and supply lines were upset, created for the field medical units peculiar circumstances which were not repeated in later campaigns. All the field medical units, with the exception of B Company 4 Field Ambulance which formed the ADS for 4 Infantry Brigade, were at one time or another in the hands of the enemy. Most of the men of 4 Field Ambulance, and B Company 5 Field Ambulance, some of A Company 6 Field Ambulance, some of 4 Field Hygiene Section, and the Mobile Surgical Unit (less drivers) eventually escaped or were rescued and formed a basis for the reconstitution of the medical units.

NZMC Casualties

The Medical Corps casualties in killed, wounded, and prisoners of war were:

	Killed in Action and Died of Wounds Offrs	ORs	*Wounded* Offrs	ORs	*Prisoners of War* Offrs	ORs	*Total*
4 Fd Amb		**6**	**1**	**6**	**4**	**1**	**18**
5 Fd Amb		**3**	**1**	**6**	**7**	**81**	**98**
6 Fd Amb			**1**	**2**	**5**	**86**	**94**
4 Fd Hyg Sec						**17**	**17**
RMOs	**1** *				**1** *		**2**

1	9		3	14		17	185	229

Casualties among the ASC attached were 2 officers and 108 other ranks, mostly prisoners of war.

As prisoners of war, 43.8 per cent of the strength of the field medical units was lost to the New Zealand Division.

Wounded Treated

Circumstances were such that it was difficult to arrive at an accurate figure for the total number of wounded (New Zealand, British, South African, and enemy) treated by the Division's medical units, but the following figures taken from unit returns at the time are fairly correct:

4 Fd Amb	740
5 Fd Amb	750
6 Fd Amb	1010
Mob Surg Unit	160
Total	2660

Of these 2660 cases, approximately 1650 were New Zealand casualties. [1]

Losses of Medical Equipment

Equipment losses were heavy, being similar in magnitude to those suffered in Greece and Crete. Fifth Field Ambulance came out of the battle without anything in the way of medical equipment, while 6 Field Ambulance had only a few instruments which some members of the unit carried out in their packs. Fourth Field Ambulance, however, had retained a fair amount of its equipment, and 4 Field Hygiene Section had few deficiencies.

Pending the re-equipment of the field ambulances, in which there

was a delay of some weeks, there was an acute shortage of expendable medical stores, much on the same lines as that which occurred when the Division returned from Crete. No. 2 General Hospital at Garawla helped to tide the field medical units over a rather difficult period in this respect.

Transport Losses

Enemy depredations had also produced considerable deficiencies in the vehicle strength of the medical units. The following table sets out the authorised war establishments and the actual holdings of each unit at the end of December.

Unit	*Motor Cycles*	*Cars, 4 Seater*	*Lorries, 3-ton*	*Motor Ambs*	*Water-tank Trailers*
War Establishment	5	3	10	8	3
Vehicles held by—					
4 Fd Amb	1	1	5	6	1
5 Fd Amb	2	1	5	4	
6 Fd Amb	1		3	3	
4 Fd Hyg Sec	The only transport held was one 8-cwt truck.				
Mob Surg Unit	Transport deficiencies were one staff car; one water-tank trailer; one motor ambulance car; one motor cycle.				

General Health of Troops

The general health of the New Zealand troops remained remarkably good from the time of the start of active operations on 18 November, particularly in view of the severity of the fighting, the shortage of water, and the cold weather. The only infectious disease giving rise to any anxiety was diphtheria, of which four cases occurred in November and

six in December. Relatively few cases of dysentery occurred either in the field or on the return of the Division to Baggush. This was in striking contrast to the state of affairs existing among the enemy, for on 28 November, when 800 German and Italian prisoners were placed in the prisoner-of-war cage near the New Zealand medical centre near Point 175, approximately 400 of them were found to be suffering from dysentery. There were very few cases of anxiety state till the battle was over.

Hygiene and Sanitation

The standard of sanitation was reported as very high, as evidenced by the low incidence of sickness. In the desert shallow trench latrines were dug by the troops. In the field ambulances deep latrines were dug and fly-proofed box seats were used. All refuse was buried. Water was carried in two-gallon tins. Originally it was not chlorinated and had to be treated with WSP, but later the water drawn was satisfactory.

Medical Plan Reviewed

The original medical plan of the Division was entirely upset by the enemy mobile columns which roamed at will behind the Division and on its axis. No axis remained, and convoys went to and fro across the desert no-man's-land where armoured and motorised columns of both forces were roaming free and occasionally meeting in mobile battles.

When the medical units were concentrated there was only one medical centre for the whole Division where adequate surgical work could be carried out and numbers of casualties attended to. When this was captured the Division lost all its surgical facilities and the main medical units all their supplies and their power of evacuation of casualties. They were, however, able to carry on their function of caring for, and giving medical attention to, over 1000 casualties. Unfortunately, the supply of water was inadequate, but otherwise it was possible to give satisfactory attention to the wounded.

After the capture of the main units, 4 and 6 Brigades were serviced by their attached ADSs and were able to evacuate the fresh casualties to Tobruk. Fifth Brigade still had its ADS and casualties were evacuated to the Indian CCS at Sidi Omar.

The Division was undoubtedly well served by 7 MAC and Lieutenant Bennett was decorated with the MC for his able and fearless work.

The only serious difficulties in attending to the wounded arose because of the capture of the MDS centre. This resulted in scarcity of supplies, particularly of water, and was a serious matter in cases such as those of abdominal injury. The capture occurred the day after the main battle and prevented the evacuation of the casualties which had been held because of interference by the enemy on the lines to the rear. Perhaps it was as well that sufficient medical personnel were also captured to enable the wounded to be well looked after. The eggs were certainly all in one basket, but there seemed no protection for the eggs even if they had been well scattered.

The senior divisional medical officers had nearly all already had experience in Greece and Crete and were capable men. The Medical Corps suffered, as did the rest of the Division, in a stern and very even battle where the enemy showed great initiative and daring, especially in his use of tanks. The Division had heavy casualties and lost many prisoners, but had inflicted crippling losses on the enemy. Under such conditions the medical loss was not out of proportion, and the 2 NZEF medical services recovered quite well and quite quickly.

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[1] 2 NZEF casualties for the campaign were:

Killed and Died of Wounds	879
Prisoners of war	2042
Wounded	1699

[*] Captain W. L. M. Gilmour, 20 Battalion, killed in action, and Captain G. C. Jennings, 26 Battalion, prisoner of war.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF MEDICAL WORK OF THE DIVISION

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The arrangements made for the treatment of the casualties were based on the attachment of an ADS to each brigade to carry out the first-aid treatment whenever the brigade might be engaged in very mobile battle. At the MDS arrangements were made to carry out the more elaborate forward surgery. To enable this to be done, the newly formed MSU was attached to the active MDS with the role of operating on specially selected cases such as abdomens, chests, and heads. It had very elaborate equipment, similar to that of the head and chest units in Britain, which had been brought from England by the Second Echelon, and to this instruments were added for abdominal and general surgery. [1] **A truck had been specially fitted up in Cairo to contain the equipment as well as special lighting plant, suction, and tanks to hold extra water. The unit was self-contained. The OC, Major Furkert, was a skilled surgeon and Major S. Wilson was one of our ablest young surgeons in the Middle East Force. The whole staff was hand-picked.**

In the ambulances themselves there were many capable medical officers and some quite capable surgeons. It was fortunate that this was so, as the Division under the circumstances of the battle had to undertake the full responsibility of the forward surgery. The field ambulance surgical teams dealt with the routine wounds, and the MSU had referred to it specially selected cases. This arrangement, however, lasted only a very short time as it was found that in the rush it was impossible to restrict the work of the MSU, and, as had happened before, in France and in the Desert, the specialist teams in the forward areas had to deal with far more general than special cases. The surgeons were, in any case, general surgeons so were well able to fit in with the conditions.

At that period wound treatment consisted in the surgical cleansing of the wound, the local application of sulphanilamide, the dressing with vaselined gauze and the use of enclosed plaster splints, the method recommended by Trueta. This treatment was carried out in the MDS, and generally no further forward surgery was necessary and the patients were staged along their journey to Egypt in the different units, being fed and bedded and having their dressings changed as required, though, with the plaster technique, change of dressings was infrequent.

The prolonged journey, however, was very exhausting to the more serious cases and the constant shifting aggravated any infection that might have been present. The first part of the journey by ambulance or truck across the desert to the railhead was particularly trying, and was associated with the constant danger of interference by enemy mobile columns. The surface was rough and at times the convoys had to be speeded up. The nights were cold, and at times there were insufficient blankets available. The adequate resuscitation of the serious cases was gravely interfered with by lack of water, especially during the period when the MDSs were captured. Some blood had been sent up to the forward areas but not to the divisional areas. Plasma had been supplied, four bottles, to each field ambulance, and citrate solution for locally drawn blood. There was also supplied a quantity of distilled water for use with the plasma, but the supply of this was somewhat restricted. Plasma was given in the MDS and the MSU, and some blood was given from local donors. Morphia was available, and fresh supplies were obtained from captured enemy stores.

The nature of the work performed in the ADS is shown in a very valuable report by Major Harrison, who was in charge of the only uncaptured medical unit, 4 ADS. This ADS treated altogether 448 casualties, 360 being New Zealanders. There were 15 deaths, 10 being New Zealanders, and casualties in the ADS itself were 1 killed and 9 wounded. Harrison stated that he limited his treatment to the ligation of arteries, amputation of shattered limbs, splinting of fractures, suture of sucking wounds of the chest, and aspiration of haemothorax. At times

when casualties had to be retained for twenty-four to forty-eight hours, more extensive surgical procedures were carried out, such as excision of wounds, drainage of infected wounds, and removal of obvious foreign bodies. Treatment of shock was difficult owing to the shortage of water and hot-water bottles. Often there was a shortage of acriflavine lotion and once of morphia. Kramer wire splinting proved very valuable, and when supplies ran short they were replenished from captured enemy equipment. The majority of the cases dying in the ADS were badly shocked on admission, and practically all suffered from great loss of blood. Only one plasma infusion was given, and it was impossible to give transfusions after dark. The majority of anaesthetics given were sodium pentothal.

Harrison gave a classification of the wounded men as under:

(*a*) *Parts affected*:

Extremities	**289**
Head	**28**
Face and neck	**32**
Chest	**44**
Abdomen	**19**
Buttocks	**23**
Lumbar region	**15**

(*b*) *Complications and deaths*:

***Extremities*:**	**45**	**had fracture.**
	2	**deaths (both traumatic amputations with marked shock and blood loss).**
***Head*:**	**9**	**had fractured skull.**
	3	**of these died.**
***Face and Neck*:**	**4**	**fractures of facial bones.**
	2	**involving air passages died; in one case the great vessels were severed.**
***Chest*:**	**6**	**sucking wounds of which one died.**
	5	**other deaths from extensive damage.**

Abdomen:	15	had intra-abdominal damage, several with portions of viscera extruding from the wound.
	2	died in the ADS.
Buttocks:	3	had intra-abdominal damage, one dying.
Lumbar region:		All wounds superficial.

This ADS had to treat the casualties from the attack by 20 Battalion on 27 November, and many of these were hit in the early afternoon and stayed out in no-man's-land until after dark, suffering more wounds as they lay, and were in a bad way when brought in. Twelve of them died shortly afterwards, either in the MDS, in Tobruk, or in some other medical centre. Their main wounds were as follows:

Face and neck	2
Chest	5
Abdomen	2
Thigh, buttock	2
Shoulder	1

Major King's detachment, with the help of an RAMC officer, operated on twenty-two severely wounded Germans left behind by General Rommel. Two of these, having had tourniquets on for three days, required amputation of the legs. All the cases had been wounded two or three days before and had received little, if any, medical attention. The Germans concentrated on the minor casualties so as to fit them for further service and neglected the severe cases. Rommel's large mobile force was stated to have very few medical officers attached and no field ambulance.

Major King reported that as much surgery as possible was done at his unit because of the very questionable contact with the CCS over a rough desert track. He operated on all cases except abdomens. The small supplies of glucose saline and plasma were soon used up. No blood was used. Sterile tulle gras, prepared by the unit before the campaign, was available, each dressing being wrapped in cellophane from cigarette packets. Some German dressings were used—these were of fine paper. All available plaster-of-paris was used up in the splinting of fractures.

Major Furkert in his reports of the work of the MSU gave a clear picture of the conditions under which forward surgery was carried out during the campaign. During the period of capture water was cut down to a pint per head, and the lack of water undoubtedly increased the mortality, especially of the abdominal cases. Dehydration noticeably accelerated death by 4 December. An enemy filter was used for the theatre water, which was re-used indefinitely. No patients were washed and no linen was cleaned. Only once in a fortnight was water drawn, and without the unit reserve work would have been impossible.

Supplies of kerosene and spirit were very short, and both sterilisation and heating became difficult. There were insufficient blankets for the large numbers of wounded, and this caused some distress as the weather was cold. Selection of cases became impossible and few casualties were admitted who had been wounded less than twenty-four hours, and many wounds were three days old. But, in spite of this, fulminating infection was rare. Very few abdominal cases were seen. Shortage of ether, morphia, and plaster-of-paris was serious. Food consisted of vehicle battle rations, and shortage of water made the use of Red Cross comforts difficult. Evacuation to the CCS after the relief necessitated twelve hours' actual desert travelling.

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[1] **A generous gift by Mr Arthur Sims of Christchurch in July 1940 enabled the equipment to be purchased in England and arrangements made for setting up this unit later in Egypt.—See**

Surgery in Mobile Surgical Unit, 23 November-5 December 1941

Patients admitted 190; patients operated on 112; post-operative deaths 15 (omitting 4 killed by shellfire after operation); other deaths 30, including 5 from shellfire, 1 under anaesthetic induction, and 13 who were either so late or so shocked that they could not be brought to operation.

Type	*Total Cases*	*Operations*	*Post-op Deaths*	*Non-op Deaths*	*Total Deaths*
Head	**11**	**8**	**2**	**2**	**4**
Chest	**35**	**20**	**1**	**6**	**7**
Abdomen, incl. pelvis	**21**	**16**	**6** *	**5**	**11**
Comp fract large bones, etc.	**53**	**43**	**6** *	**4** *	**10**
Amputations (some traumatic)	**16**	**13**	**2**	**3**	**5**
Severe flesh wounds	**36**	**19**	**2** *	**1**	**3**
Burns	**4**	**3**	**1** *		**1**
Spine with paralysi	**4**			**4**	**4**
Minor cases	**10**	**3**			

In the MDS area a great deal of operative treatment was carried out by surgical teams formed from the ambulances' own personnel. Records show that by 4 December some wounds were showing evidence of severe infection. Moreover, the elastoplast extensions applied to fractured femur cases peeled off in eight to nine days and had to be replaced by a piece of wire inserted in front of the *tendo* Achilles above the ankle. On 5 December patients were becoming desperate for water; some developed projectile vomiting and were unable to keep down even sips of water. There was no intravenous glucose saline left and insufficient water for rectal drips. Some patients developed swollen and cracked tongues, which were extremely painful, besides sores of the lips. At that date there was only 30 gallons of water left for the 860 casualties as well as the medical personnel. Several patients seemed to die of cold as the

supplies of kerosene failed. Bed sores were common, with no means of washing the patients' backs or blankets. (The relieving convoys arrived on 6 December with food and water.)

Behind the divisional area the medical centre of Minqar el Zannan dealt with cases as they were evacuated from the forward areas, but the urgent surgical treatment had already been carried out at the MDS level and it was only the cases unfit for further evacuation that needed to be dealt with. Otherwise, the CCS acted as a staging and sorting post, and sent cases back to the general hospitals either at Matruh or further back in Egypt. At 2 NZ General Hospital sited at Garawla, only 228 casualties were admitted, 180 of them in one convoy. It was noted that 57 of these were profoundly exhausted and dehydrated. There had been insufficient blood for transfusion in the forward areas and the majority of the serious cases required blood transfusion on arrival. Infection was common and at times severe. The amputation stumps which had been sutured were unsatisfactory. The plaster spicas had caused bad sores. There had been serious delays in evacuation from the forward areas. Few abdominal cases were seen.

The battle casualties admitted to 2 NZ General Hospital consisted mostly of cases of multiple wounds classified as: Soft-tissue wounds 145, fractures 29, heads 12, chests 14, abdomens 6, amputations 6, burns 4. It was noted that the chest wounds with simple stitching did well and those with elaborate toilet did badly. Sulphonamides did not appear to have lessened infection and sutured amputation wounds were septic. Thirty-eight of the cases were given an average of two pints of blood. Five deaths occurred, three of them within twelve hours of admission.

It was stated that the placing of general hospitals on the Line of Communication had saved several lives, and that if it had been possible to site them still farther forward it would have saved the severe cases from the extreme exhaustion noted on admission to the hospital at Garawla.

Reports were obtained both from our own base hospitals in Egypt

and from the British hospitals to which the large majority of our casualties were primarily admitted. Observations were also made by the Consultant Surgeon 2 NZEF, who paid frequent visits to the British hospitals, and also by the Consultant Surgeon MEF. The following is a summary of these observations and criticisms:

(1) ***Excision of wounds*: This had generally been adequate and had proved valuable in preventing infection.**

(2) ***Drainage of wounds*: In many infected cases insufficient drainage had been provided.**

(3) ***Primary suture of wounds*: Such wounds were stated to be almost always septic and breaking down and the patients were toxic.**

(4) ***Amputations*: The amputation of a mangled limb was often seen to produce a dramatic improvement in the patient's condition. Amputation had often been carried out at the site of election and primary suture performed. Sepsis had almost invariably followed, with breaking down of the stump. All reports urged the necessity of performing the primary amputation as near the wound as possible and leaving the skin unsutured. There had been a lack of skin traction in many of the unsutured stumps. Secondary amputations at Base, carried out for secondary haemorrhage and severe infection, had been common.**

(5) ***Compound fractures*:**

(*a*) Fractured femurs had travelled well in Tobruk plasters and also in Thomas splints. Plaster sores had been caused when plaster bandages had been incorporated with the Thomas splint and insufficient padding used under the plaster. Plaster spicas gave generally unsatisfactory results. Sufficient absorbent dressing was necessary under the plaster to prevent damming back of the secretions in the wound.

(*b*) Fractured legs travelled well in plaster.

(*c*) Fractured arms had mostly been treated in slings and simple splints.

(6) ***Chests*: Open pneumothorax cases travelled badly. Only one New Zealand sucking chest case was seen at Base.**

(7) ***Heads*: Head wounds adequately excised and sutured with drainage did well.**

(8) ***Plasters*: Skin-tight plasters had proved dangerous and their use was condemned.**

(9) *Abdomens*: The Consultant Surgeon 2 NZEF noted that no New Zealand abdominal cases were seen by him in visits to the base hospitals.

(10) *Tetanus*: No cases had been reported throughout the Army.

(11) *Gas gangrene*: Nine cases had been reported in the Army, none being seen in New Zealand cases at Base, though two were reported at the MDS centre.

(12) *Burns*: Tanning treatment was being carried out and 10 per cent silver nitrate solution was being used in some British hospitals.

(13) *Sulphonamide*: Oral administration had been unsatisfactory during evacuation. A special chart for marking dosage was advised.

The picture was one of serious injuries, severe sepsis, frequent secondary haemorrhage and amputations.

In summarising the treatment of casualties in the Second Libyan Campaign it can be stated that, as far as the New Zealand Division was concerned, primary surgery was carried out in our own field ambulances and in our MSU. Wound *débridement* was done, with the wound dusted with sulphanilamide and left open and, if necessary, drained. Plaster splints were applied to fractures of the leg and forearm. Thomas splints were applied to the thigh fractures and the upper arm largely treated in simple splint with a sling.

The MSU dealt with the abdomens, the chests, the heads, and many of the amputations. Early evacuation of all cases was aimed at, but circumstances prevented this and the majority of the wounded were captured and immobilised for eight days, when they suffered severely from lack of water. Eventually the casualties were evacuated by many stages to Alexandria and the Canal Zone, and finally transferred to our own hospitals in Cairo.

There had been a large proportion of very serious wounds, and the unsettled condition of the divisional area and the prolonged and many-staged evacuation had resulted in a rather heavy mortality and severe infection, largely streptococcal, in many of the cases. Conditions in the forward areas undoubtedly prevented early surgical *débridement* in the large majority of the cases. Although the primary mortality of the

abdominal and chest wounds was not heavy as recorded by the MSU, it was noted that only three abdominal cases were seen at Base, and very few chest cases, so it can be surmised that there was a heavy mortality in these cases during evacuation.

The performance of sites of election amputations with suture in the forward areas was noted to give rise to serious infection and disastrous results at the Base. Neglect of skin traction in unsutured stumps was also common.

Splinting in the forward areas was excellent. The Tobruk plaster for fractured femurs had proved its value though the Thomas splint also gave good results. The limited blood transfusion available had been of great value under the difficult conditions. The Mobile Surgical Unit had completely justified itself in saving the lives of many severely wounded men, and the surgical treatment in the forward areas had been soundly carried out.

Staffing of Ambulance Trains and Naval Carriers

The DMS General Headquarters, British Troops in Egypt, suggested that, in view of the very general shortage of medical personnel in the Middle East Force, 2 NZEF should take its share in line of communication services such as ambulance trains and ambulance carriers (naval). DDMS 2 NZEF, therefore, agreed to the formation of an ambulance train unit, comprising one medical officer and fourteen men, and an ambulance transport unit of three medical officers and thirty men. The latter unit was to be employed in the Mediterranean on the *Warsawa*, a Polish ship of 3000 tons, but was never actually used for this purpose owing to the ramming of the ship at Alexandria. An ambulance transport was defined as 'a ship which carries cargo on the outward journey and casualties on the return journey'.

The ambulance train unit functioned from 28 November 1941 until 21 January 1942 and earned commendation for its efficient work.

A party of NZMC personnel comprising one medical officer and ten other ranks was detached for duty on the Hospital Ship *Somersetshire*, which evacuated casualties from forward areas on the Mediterranean coast to Alexandria. This group returned to Maadi on 6 March 1942.

Base Hospitals

During December our New Zealand general hospitals were very busy coping with the Libyan casualties, though these were mostly transferred from British hospitals after treatment there. In all, 985 battle casualties and 1540 sick were admitted to hospital in the month from 2 NZEF, and of these 809 were transferred from British hospitals, a special effort being made to transfer all movable cases before Christmas. These battle casualties were mainly minor cases, though there were some severe compound fractures. Eight amputations were reported in our hospitals. During January most of the other battle casualties were transferred from British hospitals, some of them having already been medically boarded. Our head injury cases were dealt with by the neurosurgical unit at 15 Scottish Hospital, Cairo, but arrangements were made to transfer the cases to 1 General Hospital and recall Major McKenzie [1] from the unit to look after them. Our facio-maxillary cases were mostly treated in the British special centre at Alexandria.

Practically all the serious cases were returned to New Zealand on HS *Maunganui* at the end of January, some sooner than they normally would have been, but the hospital ship was very well staffed to deal with them.

A review of the Division's wounded who reached the base hospitals and survived was made from medical board papers by the Consultant Surgeon. There was a considerable number of very severe wounds, including fractures of the long bones and amputations, with asso- ciated nerve injuries. Only three abdominal cases with bowel injury had survived, all having been operated on in the Mobile Surgical Unit. Few cases of injury to the skull, brain, or chest were admitted to base

hospitals, but eye injuries were common and involved ten enucleations. Joint injury associated with subsequent streptococcal infections had been serious but not very frequent. Secondary haemorrhage was reported in twelve cases, in eight of which the bleeding vessel had been ligatured.

Most of the amputations had been necessitated largely by the original severity of the wound, and subsequent amputations had been due largely to damage to the blood supply of the limb. Severity of the wound was the reason for twenty-nine amputations, vascular damage for five, gas gangrene for five, sepsis for two, and haemorrhage for two. It appeared that nearly all the amputations had been inevitable from the beginning and that very few could possibly have been prevented under any conditions; and certainly in very many cases amputation was prevented by excellent treatment and great patience.

The fractures of the long bones showed excellent results and the majority of cases were evacuated to New Zealand in very good condition. The condition of the cases generally reflected great credit on the surgical staffs of British and New Zealand hospitals responsible for their treatment.

Battle casualties boarded and evacuated to New Zealand showed the following types of wounds (a case of multiple wounds being included more than once): Heads 20; chests 27; abdomens 3; amputations 47; nerve injuries 50; burns 3; fractures—femur 40, tibia and/or fibula 49, radius and/or ulna 22, humerus 41, jaw 4, spine 1, pelvis 5, patella 4, scapula 7, clavicle 6—a total of 179 wounded.

A surgical conference was held in Cairo in February 1942 to evaluate the results of treatment following the Libyan campaign. Papers were read by two of our officers and an account of the work of the Mobile Surgical Unit was also given. Points emphasised at the conference included the value of the Tobruk type of splint for fracture of the femur; the necessity to perform only temporary amputations, preserving the maximum amount of healthy tissue with non-suture of the wound, and the ligature of the vessel at the site of bleeding in secondary

haemorrhage; and the referring of head cases to the Base for definitive operative treatment. Two series of abdominal injuries were reported—one from the First Libyan Campaign of 25 cases, with 40 per cent recoveries, and one from the Second Libyan Campaign of 33 cases, with 33 per cent recoveries.

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[1] **Maj D. D. McKenzie**; **Auckland**; born **Australia**, 9 Sep 1902; surgeon; surgeon **2 Gen Hosp** Jun 1940–Dec 1941; **1 Gen Hosp** Dec 1941–Sep 1942; OC 2 NZ Fd Surg Team Sep 1942–Mar 1943; OC 1 British Neurosurgical Unit Feb–Sep 1943; surgeon HS ***Maunganui***, Nov 1943–Mar 1944.

Work of NZ units at Alexandria and Garawla

The detachment of 3 General Hospital, which, under Lieutenant-Colonel Button as OC and Miss Hennessy as Matron, took over two wards of the Anglo-Swiss hospital at **Alexandria** on 23 November, admitted its first patients on 4 December. They were forty-one patients who had arrived by ship from **Tobruk**. The number of patients grew to 171 at the end of the month. Many of the patients had passed through up to six medical units in the field before arriving at the hospital. With adequate draining of septic wounds and splinting, together with sulphonamide by mouth, all cases progressed satisfactorily. The detachment functioned at

Alexandria until 28 April 1942, by which time it had treated 626 patients—315 of them from the Western Desert, 146 from New Zealand units in the Alexandria area, 114 from 1 NZ Convalescent Depot, and 51 from 2 NZ Rest Home. Its period of useful work was terminated by the move of the Division to Syria and the need for the detachment to rejoin its parent unit for service in that area.

In its four months at Garawla to March 1942, 2 General Hospital admitted 3266 patients, including 228 battle casualties from the Libyan campaign. New Zealand patients were in the minority, numbering 990. The hospital experienced numerous dust-storms and occasional rain, but it was never subjected to air attack. The reason for this as volunteered by a prisoner patient, one of the crew of a German bomber shot down nearby, was that the hospital was recognised by enemy pilots, as well as by Allied pilots, as a useful landmark from which to get their bearings, and that it would be a handicap to bomb it. (This presumably was a reason additional to the primary one of the observance of the Geneva Convention.)

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* **Means one patient killed by shellfire.**

[SECTION]

The arrangements made for the treatment of the casualties were based on the attachment of an ADS to each brigade to carry out the first-aid treatment whenever the brigade might be engaged in very mobile battle. At the MDS arrangements were made to carry out the more elaborate forward surgery. To enable this to be done, the newly formed MSU was attached to the active MDS with the role of operating on specially selected cases such as abdomens, chests, and heads. It had very elaborate equipment, similar to that of the head and chest units in Britain, which had been brought from England by the Second Echelon, and to this instruments were added for abdominal and general surgery. [1] **A truck had been specially fitted up in Cairo to contain the equipment as well as special lighting plant, suction, and tanks to hold extra water. The unit was self-contained. The OC, Major Furkert, was a skilled surgeon and Major S. Wilson was one of our ablest young surgeons in the Middle East Force. The whole staff was hand-picked.**

In the ambulances themselves there were many capable medical officers and some quite capable surgeons. It was fortunate that this was so, as the Division under the circumstances of the battle had to undertake the full responsibility of the forward surgery. The field ambulance surgical teams dealt with the routine wounds, and the MSU had referred to it specially selected cases. This arrangement, however, lasted only a very short time as it was found that in the rush it was impossible to restrict the work of the MSU, and, as had happened before, in France and in the Desert, the specialist teams in the forward areas had to deal with far more general than special cases. The surgeons were, in any case, general surgeons so were well able to fit in with the conditions.

At that period wound treatment consisted in the surgical cleansing

of the wound, the local application of sulphanilamide, the dressing with vaselined gauze and the use of enclosed plaster splints, the method recommended by Trueta. This treatment was carried out in the MDS, and generally no further forward surgery was necessary and the patients were staged along their journey to Egypt in the different units, being fed and bedded and having their dressings changed as required, though, with the plaster technique, change of dressings was infrequent.

The prolonged journey, however, was very exhausting to the more serious cases and the constant shifting aggravated any infection that might have been present. The first part of the journey by ambulance or truck across the desert to the railhead was particularly trying, and was associated with the constant danger of interference by enemy mobile columns. The surface was rough and at times the convoys had to be speeded up. The nights were cold, and at times there were insufficient blankets available. The adequate resuscitation of the serious cases was gravely interfered with by lack of water, especially during the period when the MDSs were captured. Some blood had been sent up to the forward areas but not to the divisional areas. Plasma had been supplied, four bottles, to each field ambulance, and citrate solution for locally drawn blood. There was also supplied a quantity of distilled water for use with the plasma, but the supply of this was somewhat restricted. Plasma was given in the MDS and the MSU, and some blood was given from local donors. Morphia was available, and fresh supplies were obtained from captured enemy stores.

The nature of the work performed in the ADS is shown in a very valuable report by Major Harrison, who was in charge of the only uncaptured medical unit, 4 ADS. This ADS treated altogether 448 casualties, 360 being New Zealanders. There were 15 deaths, 10 being New Zealanders, and casualties in the ADS itself were 1 killed and 9 wounded. Harrison stated that he limited his treatment to the ligation of arteries, amputation of shattered limbs, splinting of fractures, suture of sucking wounds of the chest, and aspiration of haemothorax. At times when casualties had to be retained for twenty-four to forty-eight hours,

more extensive surgical procedures were carried out, such as excision of wounds, drainage of infected wounds, and removal of obvious foreign bodies. Treatment of shock was difficult owing to the shortage of water and hot-water bottles. Often there was a shortage of acriflavine lotion and once of morphia. Kramer wire splinting proved very valuable, and when supplies ran short they were replenished from captured enemy equipment. The majority of the cases dying in the ADS were badly shocked on admission, and practically all suffered from great loss of blood. Only one plasma infusion was given, and it was impossible to give transfusions after dark. The majority of anaesthetics given were sodium pentothal.

Harrison gave a classification of the wounded men as under:

(*a*) *Parts affected*:

Extremities	**289**
Head	**28**
Face and neck	**32**
Chest	**44**
Abdomen	**19**
Buttocks	**23**
Lumbar region	**15**

(*b*) *Complications and deaths*:

***Extremities*:**	**45**	**had fracture.**
	2	**deaths (both traumatic amputations with marked shock and blood loss).**
***Head*:**	**9**	**had fractured skull.**
	3	**of these died.**
***Face and Neck*:**	**4**	**fractures of facial bones.**
	2	**involving air passages died; in one case the great vessels were severed.**
***Chest*:**	**6**	**sucking wounds of which one died.**
	5	**other deaths from extensive damage.**
***Abdomen*:**	**15**	**had intra-abdominal damage, several with portions of viscera extruding from the wound.**

	2 died in the ADS.
Buttocks:	3 had intra-abdominal damage, one dying.
Lumbar region:	All wounds superficial.

This ADS had to treat the casualties from the attack by 20 Battalion on 27 November, and many of these were hit in the early afternoon and stayed out in no-man's-land until after dark, suffering more wounds as they lay, and were in a bad way when brought in. Twelve of them died shortly afterwards, either in the MDS, in Tobruk, or in some other medical centre. Their main wounds were as follows:

Face and neck	2
Chest	5
Abdomen	2
Thigh, buttock	2
Shoulder	1

Major King's detachment, with the help of an RAMC officer, operated on twenty-two severely wounded Germans left behind by General Rommel. Two of these, having had tourniquets on for three days, required amputation of the legs. All the cases had been wounded two or three days before and had received little, if any, medical attention. The Germans concentrated on the minor casualties so as to fit them for further service and neglected the severe cases. Rommel's large mobile force was stated to have very few medical officers attached and no field ambulance.

Major King reported that as much surgery as possible was done at his unit because of the very questionable contact with the CCS over a rough desert track. He operated on all cases except abdomens. The small supplies of glucose saline and plasma were soon used up. No blood was used. Sterile tulle gras, prepared by the unit before the campaign, was available, each dressing being wrapped in cellophane from cigarette packets. Some German dressings were used—these were of fine paper. All available plaster-of-paris was used up in the splinting of fractures.

Major Furkert in his reports of the work of the MSU gave a clear

picture of the conditions under which forward surgery was carried out during the campaign. During the period of capture water was cut down to a pint per head, and the lack of water undoubtedly increased the mortality, especially of the abdominal cases. Dehydration noticeably accelerated death by 4 December. An enemy filter was used for the theatre water, which was re-used indefinitely. No patients were washed and no linen was cleaned. Only once in a fortnight was water drawn, and without the unit reserve work would have been impossible.

Supplies of kerosene and spirit were very short, and both sterilisation and heating became difficult. There were insufficient blankets for the large numbers of wounded, and this caused some distress as the weather was cold. Selection of cases became impossible and few casualties were admitted who had been wounded less than twenty-four hours, and many wounds were three days old. But, in spite of this, fulminating infection was rare. Very few abdominal cases were seen. Shortage of ether, morphia, and plaster-of-paris was serious. Food consisted of vehicle battle rations, and shortage of water made the use of Red Cross comforts difficult. Evacuation to the CCS after the relief necessitated twelve hours' actual desert travelling.

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[1] **A generous gift by Mr Arthur Sims of Christchurch in July 1940 enabled the equipment to be purchased in England and arrangements made for setting up this unit later in Egypt.—See**

Chapter 6.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGERY IN MOBILE SURGICAL UNIT, 23 NOVEMBER-5 DECEMBER 1941

Surgery in Mobile Surgical Unit, 23 November-5 December 1941

Patients admitted 190; patients operated on 112; post-operative deaths 15 (omitting 4 killed by shellfire after operation); other deaths 30, including 5 from shellfire, 1 under anaesthetic induction, and 13 who were either so late or so shocked that they could not be brought to operation.

Type	*Total Cases*	*Operations*	*Post-op Deaths*	*Non-op Deaths*	*Total Deaths*
Head	**11**	**8**	**2**	**2**	**4**
Chest	**35**	**20**	**1**	**6**	**7**
Abdomen, incl. pelvis	**21**	**16**	**6** *	**5**	**11**
Comp fract large bones, etc.	**53**	**43**	**6** *	**4** *	**10**
Amputations (some traumatic)	**16**	**13**	**2**	**3**	**5**
Severe flesh wounds	**36**	**19**	**2** *	**1**	**3**
Burns	**4**	**3**	**1** *		**1**
Spine with paralysi	**4**			**4**	**4**
Minor cases	**10**	**3**			

In the MDS area a great deal of operative treatment was carried out by surgical teams formed from the ambulances' own personnel. Records show that by 4 December some wounds were showing evidence of severe infection. Moreover, the elastoplast extensions applied to fractured femur cases peeled off in eight to nine days and had to be replaced by a piece of wire inserted in front of the *tendo* Achilles above the ankle. On 5 December patients were becoming desperate for water; some developed projectile vomiting and were unable to keep down even sips of water. There was no intravenous glucose saline left and insufficient water for rectal drips. Some patients developed swollen and cracked tongues,

which were extremely painful, besides sores of the lips. At that date there was only 30 gallons of water left for the 860 casualties as well as the medical personnel. Several patients seemed to die of cold as the supplies of kerosene failed. Bed sores were common, with no means of washing the patients' backs or blankets. (The relieving convoys arrived on 6 December with food and water.)

Behind the divisional area the medical centre of Minqar el Zannan dealt with cases as they were evacuated from the forward areas, but the urgent surgical treatment had already been carried out at the MDS level and it was only the cases unfit for further evacuation that needed to be dealt with. Otherwise, the CCS acted as a staging and sorting post, and sent cases back to the general hospitals either at Matruh or further back in Egypt. At 2 NZ General Hospital sited at Garawla, only 228 casualties were admitted, 180 of them in one convoy. It was noted that 57 of these were profoundly exhausted and dehydrated. There had been insufficient blood for transfusion in the forward areas and the majority of the serious cases required blood transfusion on arrival. Infection was common and at times severe. The amputation stumps which had been sutured were unsatisfactory. The plaster spicas had caused bad sores. There had been serious delays in evacuation from the forward areas. Few abdominal cases were seen.

The battle casualties admitted to 2 NZ General Hospital consisted mostly of cases of multiple wounds classified as: Soft-tissue wounds 145, fractures 29, heads 12, chests 14, abdomens 6, amputations 6, burns 4. It was noted that the chest wounds with simple stitching did well and those with elaborate toilet did badly. Sulphonamides did not appear to have lessened infection and sutured amputation wounds were septic. Thirty-eight of the cases were given an average of two pints of blood. Five deaths occurred, three of them within twelve hours of admission.

It was stated that the placing of general hospitals on the Line of Communication had saved several lives, and that if it had been possible to site them still farther forward it would have saved the severe cases from the extreme exhaustion noted on admission to the hospital at

Garawla.

Reports were obtained both from our own base hospitals in Egypt and from the British hospitals to which the large majority of our casualties were primarily admitted. Observations were also made by the Consultant Surgeon 2 NZEF, who paid frequent visits to the British hospitals, and also by the Consultant Surgeon MEF. The following is a summary of these observations and criticisms:

(1) ***Excision of wounds*: This had generally been adequate and had proved valuable in preventing infection.**

(2) ***Drainage of wounds*: In many infected cases insufficient drainage had been provided.**

(3) ***Primary suture of wounds*: Such wounds were stated to be almost always septic and breaking down and the patients were toxic.**

(4) ***Amputations*: The amputation of a mangled limb was often seen to produce a dramatic improvement in the patient's condition. Amputation had often been carried out at the site of election and primary suture performed. Sepsis had almost invariably followed, with breaking down of the stump. All reports urged the necessity of performing the primary amputation as near the wound as possible and leaving the skin unsutured. There had been a lack of skin traction in many of the unsutured stumps. Secondary amputations at Base, carried out for secondary haemorrhage and severe infection, had been common.**

(5) ***Compound fractures*:**

(*a*) Fractured femurs had travelled well in Tobruk plasters and also in Thomas splints. Plaster sores had been caused when plaster bandages had been incorporated with the Thomas splint and insufficient padding used under the plaster. Plaster spicas gave generally unsatisfactory results. Sufficient absorbent dressing was necessary under the plaster to prevent damming back of the secretions in the wound.

(*b*) Fractured legs travelled well in plaster.

(*c*) Fractured arms had mostly been treated in slings and simple splints.

(6) ***Chests*: Open pneumothorax cases travelled badly. Only one New Zealand sucking chest case was seen at Base.**

(7) ***Heads*: Head wounds adequately excised and sutured with drainage**

did well.

(8) *Plasters*: Skin-tight plasters had proved dangerous and their use was condemned.

(9) *Abdomens*: The Consultant Surgeon 2 NZEF noted that no New Zealand abdominal cases were seen by him in visits to the base hospitals.

(10) *Tetanus*: No cases had been reported throughout the Army.

(11) *Gas gangrene*: Nine cases had been reported in the Army, none being seen in New Zealand cases at Base, though two were reported at the MDS centre.

(12) *Burns*: Tanning treatment was being carried out and 10 per cent silver nitrate solution was being used in some British hospitals.

(13) *Sulphonamide*: Oral administration had been unsatisfactory during evacuation. A special chart for marking dosage was advised.

The picture was one of serious injuries, severe sepsis, frequent secondary haemorrhage and amputations.

In summarising the treatment of casualties in the Second Libyan Campaign it can be stated that, as far as the New Zealand Division was concerned, primary surgery was carried out in our own field ambulances and in our MSU. Wound *débridement* was done, with the wound dusted with sulphanilamide and left open and, if necessary, drained. Plaster splints were applied to fractures of the leg and forearm. Thomas splints were applied to the thigh fractures and the upper arm largely treated in simple splint with a sling.

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LESSONS FROM THE CAMPAIGN

Medical Supplies

All New Zealand medical units left the forward base with fourteen days' reserve of medical supplies. This, together with captured medical stores, proved adequate for requirements in most cases. In the latter stages of the action there was, however, some shortage of stretchers and blankets.

At a conference after the campaign it was recommended that there should be some increase in certain supplies to field ambulances, such as Kramer splinting, pentothal, sulphonamides in powder and tablet form, anti-tetanic serum, plaster-of-paris, and morphia in solution in capped bottles. An increase in the number of panniers and medical companions was also suggested, and instruments sufficient for emergency operations.

Transport

Motor ambulance cars proved desert-worthy, but it was apparent that, when operating over such a wide area, more than eight cars to each field ambulance were required. Twelve was considered to be a more suitable establishment, and all should be marked with large Red Crosses. Stretcher-carrying appliances in 3-ton trucks proved invaluable.

Evacuation of Wounded

Events made it quite clear that, if the evacuation of wounded was to be carried out satisfactorily, either the complete lines of communication should be secure or else ambulance cars should be despatched with an

adequate escort of armoured forces to protect them. Moreover, if wounded could not be safely evacuated but were held at main dressing stations, the field ambulance necessarily became more and more immobilised and more vulnerable to attack.

Further, in warfare in the open desert it was considered that evacuation should be carried out in daylight only. If evacuation by night was attempted the wounded suffered unnecessarily from the rough going, and there was a greater likelihood of the motor ambulance convoys being shot up by enemy columns operating in the rear.

The possibility of evacuating casualties from forward areas by Bren-gun carriers was thought worthy of further investigation as, when under fire, some RMOs found this the method of choice.

Location of ADMS

Theoretically, it was normal for ADMS NZ Division to be located at Rear HQ NZ Division, but in actual practice it was nearly always necessary for him to be at Advanced HQ NZ Division. In this case the DADMS NZ Division was left at Rear Headquarters.

Communications

The lack of wireless communication produced serious complications. Contact between the different medical units was often lost and an ADS sometimes did not know the location of the MDS. The MDS also was often out of touch with the administrative officer either of the Division or the Corps. In what amounted to an enormous no-man's-land, no other means of communication was practicable. The plight of our captured medical units would have been much less serious if they had been able to apprise the staff officers of their difficulties.

Utilisation of Field Ambulances in Desert Warfare

An investigation into the utilisation of field ambulances in desert

warfare was undertaken by GHQ MEF after the Second Libyan Campaign. It was concluded that the infantry field ambulance was insufficiently mobile or flexible, and that it should be capable of holding and treating a considerable number of patients. Suggestions included an increase in ambulance cars to fourteen, a reduction in the number of stretcher-bearers, and the elimination of some of the G.1098 equipment.

It was considered that, when a field ambulance was called upon to function as part of an independent brigade group, a surgical team with its own transport and equipment should be attached; and that in any case one officer at least in a field ambulance should be capable of undertaking major emergency surgery. This would also entail the provision of surgical instruments sufficient for the purpose.

Some of these recommendations were later implemented when supply and other difficulties were overcome.

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The experience gained in the Libyan campaign at some cost was applied in later campaigns. Fortunately, the same unequal and unforeseen conditions were not repeated, except for a day or so at Minqar Qaim in June 1942; and then the shorter lines of communication, together with fewer wounded, enabled the ADSs to accompany the Division in its break through the surrounding enemy, taking the wounded with them back to the Alamein line.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 8 — EGYPT AND SYRIA, JANUARY - JUNE 1942

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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AFTER its momentous, and to some extent disastrous, campaign in Libya in November and December 1941, the New Zealand Division was not required to undertake any further desert battles until it was flung into the line again in June 1942, after a hectic dash from Syria, to help stem the advance of Rommel's forces at the Alamein line.

The medical units, along with the rest of the Division, celebrated Christmas 1941 and New Year 1942 at Baggush before moving temporarily to the Canal Zone and later to Syria. Thoughts turned to the Pacific following the attack on Pearl Harbour by the Japanese on 7 December 1941 and the entry of the United States of America into the war.

On 8 January 1942 a new commanding officer was appointed to each field ambulance to replace the previous commanders who had been taken prisoner of war. Lieutenant-Colonels R. D. King, J. P. McQuilkin, [1] and F. P. Furkert were appointed to the command of 4, 5, and 6 Field Ambulances respectively. The officer strength of the units remained below establishment until after the end of January, postings made at that stage being insufficient to replace losses. The timely arrival of medical reinforcements from New Zealand on HS *Maunganui* on 25 January, however, enabled all units to be built up to strength. These reinforcements, 10 officers and 117 other ranks, had been sent from New Zealand at short notice—and after the Japanese move in the Pacific—in response to an urgent request by DDMS 2 NZEF when news of the losses in the Libyan campaign was received. They were to be the last major reinforcement for some twelve months, as during 1942 mobilised troops were retained in New Zealand for the defence of New Zealand and Pacific islands following the southward drive of the Japanese.

Early in 1942 the possible repercussions of the entry of Japan into

the war were realised in 2 NZEF in the Middle East. The threat to Australia and New Zealand as the Japanese drove southwards made it inevitable that the defence of New Zealand and nearby Pacific islands had to be considered, and the Division in the Middle East was not now the only major commitment of the New Zealand Army. The 8th Reinforcements were held back in New Zealand and, in any case, the passage of troopships to the Middle East would have been fraught with great danger.

Fortunately, the protection offered under the Geneva Convention to hospital ships and medical personnel enabled the *Maunganui* and other hospital ships to continue their voyages to and from the Middle East, taking over medical reinforcements as available and as required, and bringing back the sick and wounded.

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[1] **Lt-Col J. P. McQuilkin; Christchurch; born Ashburton, 18 Jul 1900; medical practitioner; medical officer 4 Fd Amb Oct 1940–Jan 1942; CO 5 Fd Amb Jan 1942–Dec 1943.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NEW ZEALAND WOMEN'S WAR SERVICE AUXILIARY (HOSPITAL DIVISION)

New Zealand Women's War Service Auxiliary (Hospital Division)

The first contingent of the women of the NZWWSA (Hospital Division) [1] proceeded overseas in the *Maunganui* on 22 December 1941, with Miss King [2] as commandant. They numbered 200, but sixty-five were disembarked at Fremantle owing to overcrowding, and were picked up by the *Oranje* some weeks later. After reaching Port Tewfik on 25 January 1942, they commenced duty at 1 General Hospital and 3 General Hospital on 30 January. The remainder reached Egypt on the *Oranje* on 17 February and were also attached to the hospitals.

The eventual postings were:

(*a*) *Nursing Section:*

Attached office Matron-in-Chief—1 officer (commandant)

1 Gen Hosp—1 officer, 3 sergeants, 69 nurses

2 Gen Hosp—1 officer, 2 sergeants, 38 nurses

3 Gen Hosp—1 officer, 2 sergeants, 64 nurses

Attached YWCA Cairo—2 nurses

Attached 1 NZ Rest Home—1 nurse

Attached 2 NZ Rest Home—3 nurses

The nursing section, comprising the majority, were posted to the various wards as assistants. In the wards their duties consisted mainly of bed-making, taking temperatures, taking round the meals, sweeping and cleaning, and helping in the kitchen.

(*b*) *Clerical Section:*

1 Gen Hosp—5 clerks

2 Gen Hosp—3 clerks

3 Gen Hosp—5 clerks

The clerical section was absorbed immediately, particularly in the hospital offices, where the women replaced men who were sent off to field units. They were also employed in the stewards' stores, company offices, QM stores, and X-ray departments of the hospitals, where the duties consisted of shorthand, typing, and clerical work.

In each of the three hospitals there was, at the time of the voluntary aids' arrival, a shortage of staff in NZMC personnel, with insufficient reinforcements available to make up the deficiencies. It was felt that any further weakening of male staff by reduction in hospital establishments would decrease the efficiency of hospitals, particularly if any hospital was shifted. Female staffs could not replace males in the packing and unpacking necessitated in the closing and opening of hospitals. It was also agreed that military hospitals were, in general, understaffed, particularly in comparison with New Zealand civil standards. The male staff, therefore, was not reduced after the arrival of the voluntary aids but some sections were built up to give increased efficiency, and adjustments were made between the nursing and general duties sections so as to provide for the establishment of a fire-fighting section.

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[1] Afterwards changed to WAAC, Women's Army Auxiliary Corps.

[2] Senior Commander Miss M. King, MBE; born Australia, 30 Jun 1903; accountant; officer i/c WAAC (Med Div) Dec 1941–Mar 1945; died 23 Oct 1953.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INVALIDS RETURNED TO NEW ZEALAND

Invalids Returned to New Zealand

During January the many battle casualties in the British hospitals in the Canal Zone and in Alexandria and Cairo were examined by the Consultant Surgeon and boarded preparatory to evacuation to New Zealand, sixty-seven cases being boarded during the month in the Canal Zone alone.

On 26 January HS *Maunganui* embarked 371 patients, including a large number of stretcher cases. On 18 February NMHS *Oranje* embarked 199 invalids for return to New Zealand. Up to this date 2579 invalids had been returned to New Zealand. Under main categories the numbers were:

Diseases: infectious 54; nervous 431; eye 85; ear 105; nasal 21; circulatory 126; blood 2; ductless glands, etc., 33; respiratory 243; digestive 157; metabolic 17; genito-urinary 26; skin 55; bones, joints, and muscles 274; urinary 28; alcoholism 7; debility 9; old age 65; malignant 14.

Battle casualties 684; accidental injuries 131; hernia 12.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CONTROL OF NEW ZEALAND DENTAL CORPS

Control of New Zealand Dental Corps

The control of the Dental Corps was the subject of differences of opinion between the DGMS and the DDS at Army Headquarters in New Zealand, and it could not be claimed that any unity of opinion or clearly defined policy of administrative control was achieved during the war. The problem in 2 NZEF was not in any real degree connected with this, but similar difficulties arose.

In 2 NZEF in October 1940 the question of the recognised channel of communication for the NZDC had been raised and defined. The DDMS had asked that all dental communications with Headquarters 2 NZEF be forwarded through him, but with this ADDS did not agree. The question was submitted to the Officer-in-Charge Administration, 2 NZEF (Brigadier Stevens), [1] whose ruling was as follows:

The DDMS is responsible for the health of the NZEF as a whole. The ADDS, while retaining a certain degree of independence technically, is responsible to the DDMS for the dental health of the NZEF.... The ADDS commands the Dental Corps in the NZEF and the Mobile Dental Section is, therefore, under his command as far as personnel and technical work are concerned, and should at all times be at liberty to communicate with the ADDS direct on technical matters. While with the division in the field the Mobile Dental Section comes under the command of the ADMS as far as its location and duties are concerned. It should communicate with the ADMS on these matters. If necessary the ADMS communicates in turn with the ADDS, a copy of such communication going to the DDMS.... When not with the division in the field, i.e., while under training in Maadi Camp, the Mobile Dental Section is under the ADDS for all purposes, the ADDS in turn reporting if necessary to the DDMS....

In the period November 1941 to February 1942 there was further disagreement as to the definition of command when the Mobile Dental Unit was in the field. The ADDS contended that it was wholly a non-divisional unit and that when it was with the Division it should be attached to the headquarters of the area or sub-area in which the force was located. On this basis the ADDS 2 NZEF sent movement orders from Headquarters 2 NZEF in January 1942. But the ADMS NZ Division considered, with some justification, that while the Mobile Dental Unit was with the New Zealand Division it became one of the five medical units under his command, and that therefore he should control its movements.

The controversy was decided on 26 February 1942 when Brigadier Stevens issued the following instructions which were an expansion of his earlier ruling:

While with the Division, the Mobile Dental Unit comes under command of the ADMS as far as its location and duties are concerned. It should communicate with the ADMS on these matters. If necessary the ADMS communicates in turn with the ADDS, a copy of each communication going to the DDMS.

The OC Mob. Dent. Unit will presumably be the senior Dental Officer with the Division in the field, and in these circumstances is the principal advisor of the ADMS on dental matters.

When not with the Division the Mobile Dental Unit is under the ADDS for all purposes, except such matters as rationing, quarters, etc., as may be arranged by any unit to which the Dental Unit or part thereof is attached.

The Mob. Dent. Unit is intended to serve the NZEF as a whole and will therefore from time to time be moved where it can most usefully carry out its duties.

The decision whether the Mobile Dental Unit or part thereof is to be

attached to NZ Div. or withdrawn from NZ Div. rests with the DDMS and it is for him to say at what stage attachments are to commence or cease. The ADDS is the advisor of the DDMS in this matter as in other matters.

When NZ Div. is under orders to move from one location to another, it will be the responsibility of the ADMS to raise with the DDMS the question of whether or not the Mobile Dental Unit or such part of it as is attached to NZ Div. is to move with the Division.

After this clarification of the position there was no further friction during the war.

As regards the Dental Corps generally, the staffing and equipment proved ample to cope with the needs of the force, and the whole force was regularly examined and made dentally fit. The 1st Mobile Dental Unit detached sub-sections to medical units in the forward areas, and a second mobile unit was formed at this period to serve non-divisional units sited away from the Base. A Base Dental Hospital was also established at Maadi Camp. At the hospitals, the CCS, and Convalescent Depot every endeavour was made to see that all patients were examined and made dentally fit before discharge, and this was the normal procedure. It was reported from time to time that the teeth and gums of the troops were in good condition.

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[1] Maj-Gen W. G. Stevens, CB, CBE; AA and QMG, NZ Division, 1940; Officer-in-charge Administration, 2 NZEF, 1940–45; GOC 2 NZEF, 22 Nov 1945–6 Jul 1946.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CONVALESCENT HOMES

Convalescent Homes

The need for convalescent homes in order to make the medical services as complete as possible had been realised for some time. It was most difficult, however, to find suitable buildings in a favourable locality. Many possibilities were considered and numerous inspections made by DDMS 2 NZEF and others before any choice was made, and protracted negotiations and arrangements were necessary for hiring the buildings finally chosen. The three rest homes for nurses, officers, and other ranks were formed as units of 2 NZEF on 28 November 1941.

The financial arrangements made for these rest homes were that the Army was responsible for rent, payment of (civilian) staff, rationing, and the ordinary articles of furniture such as tables, chairs, and beds. All extras in the way of curtains, floor-covering, and easy chairs were to be provided by the Joint Council of the Order of St. John and the Red Cross Society of New Zealand.

***1 NZ Rest Home* for NZANS and NZ WAAC was situated in the Garden City, Cairo. It was a large house with a pleasant garden and could hold forty convalescent patients. A sister (Miss Sutherland) [1] was placed in charge of this home, which received its first patients on 17 December 1941 and was officially opened by Lady Lampson, wife of the British Ambassador to Egypt, on 27 January 1942.**

[1]Charge Sister Miss E. M. Sutherland; Dunedin; born Kyeburn, Otago, 21 Mar 1897; Sister 2 Gen Hosp Aug 1940–Nov 1941; Ch Str 1 Rest Home Nov 1941–Dec 1944.

***3 NZ Rest Home* for officers of 2 NZEF was in a very fine residence overlooking the Nile. It was capable of holding fifty patients and was a**

quarter of a mile from 1 Rest Home. One medical officer was able to supervise the medical care of this institution and 1 Rest Home, and also visit the New Zealand Forces Club, Cairo, where the floating population and the staff of NZWAAC (Welfare Division) necessitated daily medical attendance. The rest home received its first patients early in January and was officially opened by Lady Lampson on 27 January 1942. New Zealand officers serving in the Royal Air Force and Royal Navy were also at times received in this home.

2 NZ Rest Home **was for other ranks of 2 NZEF. For this purpose a small hotel of four stories on the seafront at Sidi Bishr, some 7 miles from the centre of Alexandria, was taken over and renovated. It was an attractive and comfortable location for men who were recovering from the more serious illnesses or wounds, and excellent sea bathing was available. It could hold 120 patients. It received its first patients on 12 January 1942 and was officially opened on 21 February by Lady Freyberg.**

To the official openings of the rest homes were invited local residents and officials, many of whom had already generously interested themselves in providing outings and other forms of entertainment for the patients. Comfortable furnishings were provided in all the rest homes from funds made available through the Joint Council.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MARRIAGES OF NZANS SISTERS

Marriages of NZANS Sisters

The important question of whether nurses in 2 NZEF should be given permission to marry, and whether in the event of marriage they should be permitted to continue to serve in 2 NZEF, was first raised in October 1941. Before making a decision in this matter the New Zealand Government requested an expression of views by the GOC 2 NZEF, and he naturally gave the DDMS 2 NZEF and Matron-in-Chief an opportunity to put forward their opinions. While there was general agreement that permission could not reasonably be withheld, there was a divergence of opinion whether married women should be allowed to continue their military service.

In this connection British and South African nursing and auxiliary services allowed married women to continue serving, subject to efficiency. The Australian force returned all married sisters to Australia without exception.

The DDMS 2 NZEF and Matron-in-Chief considered that nurses should be required to serve a reasonable period overseas before being permitted to marry, and that, on account of administrative difficulties, nurses should be returned to New Zealand after marriage, preferably on duty in the first returning hospital ship.

General Freyberg, however, inclined to the view that women who married should be allowed to remain overseas, maintaining that the tradition and high sense of duty of the nursing profession would be a reasonable guarantee of continued efficiency, and that administrative difficulties alone were not sufficient grounds for termination of the service of married women.

After considerable deliberation in 2 NZEF and the exchange of cables with the New Zealand authorities, the decision was reached by the Government in March 1942 that NZANS and NZWWSA personnel would be permitted to marry and that they might be retained in the Middle East as long as they continued to perform their duties efficiently. In the case of pregnancy, women were to be returned to New Zealand for confinement, and if shipping to New Zealand should at any time be interrupted Headquarters 2 NZEF was to make suitable arrangements including, if necessary, evacuation to South Africa.

Medical examination of married women at regular intervals was recommended by New Zealand authorities, but this was not carried out in 2 NZEF. It was arranged by DMS and Matron-in-Chief on 5 August 1942 that a memorandum be sent to all married sisters and WWSA personnel indicating that in the event of pregnancy occurring an immediate passage would be arranged to New Zealand. If any of them did not report that they were pregnant and consequently had to remain in the Middle East, the responsibility for their passage to New Zealand was entirely that of the husband. After reporting suspected pregnancy women were medically examined, and when a diagnosis of pregnancy was established they were medically boarded for return to New Zealand by hospital ship.

Few administrative difficulties were experienced with married women generally and it was found that their efficiency was not impaired. (Up to August 1945 there were 72 sisters and 73 nurses married overseas, that is, about one-sixth of the total who served overseas in 2 NZEF in the Middle East and Italy.)

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL RECORDS SECTION

Medical Records Section

A major step in the organisation of a complete and efficient medical records section in 2 NZEF was taken in January 1942 when a non-professional NZMC officer was placed in charge of the section. Although Medical Records Section came under the control of A Branch, Headquarters 2 NZEF, as part of 2 Echelon, its work was of paramount interest to the senior officers of the Medical Corps, who desired that, to ensure efficient medical treatment, the file of a soldier's medical history should be complete. These officers were also interested in statistical returns from both the administration and medical treatment aspects, and were especially concerned that details should all be readily available later in New Zealand in connection with pension claims by individual soldiers.

This last point alone was sufficient to secure the organisation of an adequate medical records section for the AIF from the start of the war, following a deputation from the Returned Services League to the Australian Prime Minister, who gave an undertaking that full particulars in regard to a serviceman's medical history would be available on his return from overseas. The Canadian forces had a medical records branch in charge of a medical officer on the staff of the DDMS, and maintained a most thorough system of records. Experience in 2 NZEF tended to prove that this latter procedure was the most advisable and most workable one.

In 2 NZEF at first there was no special medical records section. The system operating in camp records offices in camps in New Zealand, whereby all personal records, medical and non-medical, were placed on the one individual file, was continued overseas. At a conference of senior

medical officers of 2 NZEF, called by DDMS 2 NZEF on 2 December 1940, it was decided that a special medical records section should be established, that a history sheet (AFI 1220) should be filled in for every soldier admitted to hospital, and that a more complete medical history (on AFI 1237) be compiled for serious and important cases, including all cases which were medically boarded, and that a full medical record, including X-rays, pathological and specialist reports etc., should accompany a soldier returning to New Zealand as unfit.

On 9 March 1941 approval was given by Headquarters 2 NZEF for the establishment of a medical records section under the DAAG 2 Echelon. There was provision for a medical officer in charge, but none was available for the position.

When DDMS 2 NZEF inspected the section on 6 January 1942 he noted many deficiencies in its system, particularly as regards checking whether all New Zealand hospitals were furnishing adequately completed records for all patients. He therefore arranged for WO II Cawthorn, [1] chief clerk to ADMS NZ Division, to be promoted to commissioned rank and put in charge of the section. Lieutenant Cawthorn organised and developed a simple and thorough method of recording hospital admissions, providing for the safe custody of medical documents and also enabling a statistical survey of the incidence of any particular disease or disability to be obtained with speed, accuracy, and a minimum of inconvenience.

When in the Middle East on 3 March 1943 Professor Zuckerman, Scientific Adviser to the War Office, visited the section to get data regarding missiles causing wounds and the parts of the body affected; he had been referred there on account of the high reputation of the section, and he expressed keen appreciation of the methods employed.

It would have been a decided advantage to have had a properly staffed and equipped medical statistics section set up and ready to operate with the First Echelon.

[1] **Lt R. W. Cawthorn, MBE; Wellington; born England, 3 Mar 1907; assurance officer; NCO 4 Fd Amb Oct 1939–1941; Office of ADMS 1941–42; Officer i/c Medical Records 1942–43; Medical Archivist (NZ) 1943–44.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RED CROSS ADMINISTRATION

Red Cross Administration

There was a change in the administration of Red Cross Stores when Major Tweedy [1] arrived in the Middle East on 25 January 1942 on HS *Maunganui* as a full-time and permanent New Zealand Red Cross Commissioner for the Middle East, under the Joint Council of the Order of St. John and New Zealand Red Cross Society. Major Tweedy was vested with full authority to act on the Council's behalf in all matters in the Middle East affecting Red Cross interests. He took over from Lieutenant-Colonel Waite who had been acting in a temporary capacity as Red Cross Commissioner.

The control of the issue of Red Cross supplies and comforts from both the British Red Cross Society and the New Zealand Joint Council to 2 NZEF was at first an indirect responsibility of DDMS 2 NZEF. To assist in the issue and accounting of these Red Cross supplies Captain Peek, NZMC, was attached to the staff of the DDMS as quartermaster. When Captain Peek became OC NZ Medical Stores Depot in Maadi in January 1941, he continued to hold and distribute Red Cross stores under the control of DDMS 2 NZEF. The latter was the issuing authority prior to the arrival of Lieutenant-Colonel Waite from New Zealand in May 1941, in the position of Overseas Commissioner jointly of the New Zealand National Patriotic Fund Board and the Joint Council of the Order of St. John and the New Zealand Red Cross Society. DDMS 2 NZEF and Lieutenant-Colonel Waite then comprised the Red Cross Committee in 2 NZEF, supervising the issue of Red Cross supplies to New Zealand medical units for the benefit of patients. Indents were submitted by medical units for approval by DDMS 2 NZEF and supplies issued from New Zealand Red Cross Stores, which could draw stocks from the British Red Cross Society, Cairo, for items other than those supplied from New

Zealand. Items not in stock could be bought locally, if available, and the accounts met by the Red Cross Commissioner, who took over the funds in the Red Cross account on his arrival.

The appointment of a full-time New Zealand Red Cross Commissioner was considered desirable and opportune at this stage, in view of the growing contributions made available from Patriotic Funds in New Zealand and the need for an increased liaison between New Zealand and 2 NZEF in the Middle East in order that optimum use could be made of the volunteer Red Cross effort in New Zealand. In Maadi Camp a separate Red Cross store was established by Major Tweedy with a small staff, and there is no doubt that the services of the Red Cross Commissioner in a separate specialised capacity were valuable, and relieved the DDMS 2 NZEF and OC Medical Stores Depot of the burden of executive control of Red Cross matters.

The DDMS 2 NZEF was naturally still consulted on major policy matters as the work of the Red Cross lay within the medical units, and DDMS 2 NZEF and the Red Cross Commissioner constituted, as formerly, the committee administering the Overseas Fund of the Joint Council (excluding special grants which had been made direct to medical units as sick and wounded funds, which were drawn upon at the discretion of unit commanders).

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[1] Maj W. G. Tweedy, OBE; Timaru; born Melbourne, 23 Jul 1890; solicitor; Commissioner NZ Order of St. John and Red Cross, Dec 1941–Apr 1945.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

VENEREAL DISEASE TREATMENT CENTRES

Venereal Disease Treatment Centres

Fresh arrangements were made at this time for the treatment of venereal disease. War Office establishments had been issued for 50-and 100-bed VD treatment centres, which could be attached to any hospital and were independent as regards equipment and personnel. It was therefore arranged that the VD Section of 1 NZ Camp Hospital be disbanded and its staff and equipment used to form two such 50-bed treatment centres, one to be attached to 1 General Hospital at Helwan and the other to 2 General Hospital. These were called 101 and 102 NZ VD Treatment Centres respectively and were formed on 27 April 1942. (The numbers 101 and 102 were used in preference to 1 and 2 to avoid confusion with British VD treatment centres.) At the same time, a VD Records clerk was added to the staff of DDMS 2 NZEF to maintain a central register of VD patients so as to correlate all records of treatment from New Zealand medical units, and to ensure that full courses of treatment were received by all out-patients and final tests of cure completed. This system was very successful.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FORMATION OF NEW ZEALAND SECTION, MOTOR AMBULANCE CONVOY

Formation of New Zealand Section, Motor Ambulance Convoy

In March 1942 the AIF in the Middle East was arranging to move to the Pacific zone, and it offered to the New Zealand Red Cross Commissioner eight two-stretcher ambulance cars originally donated to the AIF by the Anzac War Relief Fund, New York. This offer was gladly accepted and these cars, together with nineteen 4-stretcher ambulances which had been on loan to the AIF from the British Red Cross Society, were transferred to the NZMC in May. Although these cars were not entirely suitable for desert work, they were a valuable supplement to the vehicles available to the NZMC, and their receipt enabled a New Zealand Section, Motor Ambulance Convoy, to be formed as a unit of 2 NZEF on 9 June 1942. This was an NZASC unit with medical orderlies attached, but its services were always at the disposal of DMS 2 NZEF, and those particular ambulance cars rendered signal service at Tripoli during the advance to Tunisia. (Before this there was a motor ambulance section attached to 1 NZ Camp Hospital, but it was required solely for base camp and base hospital duties.)

The NZMC was greatly indebted to volunteer donors in regard to motor ambulance cars. Previously, a gift of ten ambulances had been received in June 1941 by 2 NZEF from 'American Friends of the Anzacs' through the Anzac War Relief Fund, New York. Prior to that the people of Paisley presented two motor ambulance cars through the British Volunteer Ambulance Corps to the Second Echelon while it was in England in 1940. These were sent to the Middle East in March 1941 and for a time were the only vehicles exclusively available to Maadi Camp, and they did a great deal of work in meeting convoys of sick and wounded after the evacuation of Greece and Crete. [1]

[1]In December 1942 there arrived from New Zealand two gift ambulances presented by Mr and Mrs J. Sutherland Ross, Dunedin, and the Hugh Baird family of Hastings. Then in April 1943 three ambulances were received via the United States, two the gift of the Young American Victory Club and one from the Samoan Red Cross. Also in July 1943 another gift ambulance was received from Miss E. Bellamy, Invercargill, and other ambulances were donated later from New Zealand.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PLASTIC SURGERY

Plastic Surgery

Medical and dental officers trained in plastic surgery arrived in the Middle East early in 1942, following a period of special training in England, and were distributed between the hospitals, with Helwan as the headquarters, where all the cases were to be concentrated following preliminary treatment at the other hospitals. By May a saline bath unit was installed at Helwan, the tannic acid treatment of burns having been abandoned, and dressings of sulphanilamide powder and tulle gras or vaseline gauze substituted. The saline bath was used both for burns and also for cleaning up large infected gunshot wounds prior to skin grafting. Sulphonamide drugs by mouth were also used in the treatment of infections such as those due to the streptococcus, with favourable results. As far as maxillo- facial work was concerned, not many cases of fracture of the jaw were admitted.

Plastic surgery training had followed a generous offer in February 1940 by Sir Harold Gillies, in London, to accept New Zealand medical officers for special training in this branch of surgery. In December 1940 Captain Brownlee, [1] NZMC, and Captain Gilbert, [2] NZDC, were sent direct from New Zealand to England for a full course of training to enable them to establish a plastic surgery unit in New Zealand when sufficient wounded requiring specialised attention for disfigurement, etc., had been invalided home.

At the same time it was arranged by DMS 2 NZEF that Lieutenants Manchester, Hutter, and Dunne, [3] and dental officers, who were with the Second Echelon in England, should undergo short courses of training.

After delivering a series of lectures on maxillo-facial surgery to NZMC officers in the Middle East in April 1942, Major Brownlee returned

to New Zealand to organise a plastic surgery unit there for the long-term cases from the forces.

A review of cases evacuated to New Zealand up to February 1942 showed that there had been only eleven cases possibly requiring treatment in New Zealand, including two possible bone grafts for the mandible and two cases of burns with deformity. It was suggested by the Consultant Surgeon that the plastic surgery team in New Zealand should combine civilian work at one of the larger hospitals with the small amount of military work then offering.

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[1] **Lt-Col J. J. Brownlee; Christchurch; born Christchurch, 2 Sep 1902; surgeon; plastic surgery specialist, 2 NZEF, Jan 1941–Jul 1942; OC Plastic Surgical Unit, Burwood, Apr 1943–Sep 1944.**

[2] **Maj G. H. Gilbert; Christchurch; born Wellington, 20 Nov 1908; dentist; NZ Dental Corps, 2 NZEF, Dec 1940–Mar 1943; Plastic Unit, Burwood, Apr 1943 Jun 1944.**

[3] **Maj B. J. D. Dunne; born Johannesburg, 6 Sep 1903; medical practitioner; 3 Gen Hosp, Oct 1941–Aug 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FIRST REPATRIATION OF NZMC PRISONERS OF WAR

First Repatriation of NZMC Prisoners of War

On 11 April 1942 the first of the NZMC prisoners of war were repatriated from Italy. The group included the commanding officers of the three New Zealand field ambulances captured in Libya in November 1941—Lieutenant-Colonels J. M. Twhigg, A. A. Tennent, and N. C. Speight—Major T. G. de Clive Lowe, who was captured at the same time, and nineteen NZMC other ranks. In addition, there were two regimental medical orderlies, one NZDC other rank, and three New Zealand invalids.

They had come from Camp 75 near Bari, Italy, and had been transferred from an Italian naval hospital ship to HS *Llandovery Castle* at Smyrna on 8 April, along with protected personnel from British, Australian, and South African forces. They disembarked at Alexandria on 11 April and went that day by hospital train to Cairo, where they were welcomed back by DDMS 2 NZEF.

There was some doubt as to the recognised policy regarding the re-employment in 2 NZEF in the Middle East of the exchanged prisoner-of-war protected personnel and an opinion was obtained from DJAG 2 NZEF. It was agreed that the appropriate parts of the Hague Convention permitted the re-employment of medical personnel as distinct from combatant troops, but it was not customary to employ them on the same front. A definite instruction was issued by the War Office that the British personnel involved in the exchange were to be returned to the United Kingdom, and a similar course was later adopted with the New Zealanders, some of whom served in the Pacific after their return to New Zealand. [1]

[1]In May 1943 Army HQ New Zealand pointed out that protected personnel could quite rightly be re-employed on the same front, and

suggested that this might be necessary because of manpower shortage.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CLASSIFICATION OF INVALIDS ON HOSPITAL SHIP

Classification of Invalids on Hospital Ship

A complaint raised by the Admiralty, London, in connection with the types of cases sent by hospital ships led to an inquiry into the matter on 21 April 1942. It had been learnt from secret sources that the Dutch hospital ship *Oranje* would be regarded by the Germans as a troop-carrier and would be attacked if encountered on the high seas. The reason given was that the ship had carried to Australia some men who were not invalids, but were, in fact, unfit men who should never have enlisted. War Office inquiries led to the opinion that some convalescents not under medical treatment had been carried on the *Oranje* when she left Suez for Australia on 8 August 1941. There were New Zealand invalids as well as Australians on this voyage, but an inquiry by DDMS 2 NZEF into the roll showed that almost without exception the cases were such as should travel by hospital ship.

It was felt that the complaint arose through a misunderstanding, possibly to some extent from the New Zealand shipboard alphabetical category for such invalids being confused with the British medical grading classification, which also used the early letters of the alphabet. In consequence, the DMS GHQ MEF requested DMS 2 NZEF to change the New Zealand classification, which in no way represented the grading of personnel but was used to enable cable advice to be sent simply to New Zealand regarding the types of invalids. A change was made from A B C ... to P Q R ... Z.

In addition, it was clearly laid down by DMS 2 NZEF that all cases travelling by hospital ship must be in need of medical or nursing attention on the voyage, and that all low category personnel not requiring medical attention must be returned by ordinary troopship. [1]

[1]In this connection there was another qualifying factor that was taken into account. This was in regard to a disabled person who, though not specifically receiving medical attention, but who in the event of a troopship being attacked would be unable to fend for himself, was on humane grounds usually returned by hospital ship.

As a rule, battle casualties were not returned by troopship, nor were mental cases requiring supervision, asthmatics requiring treatment, gastric ulcer cases or severe dyspeptics, chronic dysentery cases, and any case physically incapacitated in battle.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BASE MEDICAL ACTIVITIES

Base Medical Activities

After the battle casualties from the Libyan campaign had been dealt with and the serious cases evacuated to New Zealand, the hospitals settled down to routine work and, with a relatively low incidence of sickness in 2 NZEF, were not taxed. The medical staffs took the opportunity of the lull to carry out important clinical investigations into certain diseases or surgical conditions, including hepatitis, dyspepsia, and nerve injuries, reference to which has been made in the clinical volume of the Medical History, *War Surgery and Medicine*. These investigations were of great value in the management of the conditions later, as well as in stimulating the enthusiasm of the members of the medical staffs. The investigation of hepatitis was particularly valuable and helped considerably in the elucidation of the mode of transmission of infection, the opinion being expressed that the virus was transmitted by faecal contamination of food.

A series of cases of brachial neuritis of virus origin was reviewed, as well as some cases of agranulocytosis following sulphapyridine treatment.

A medical conference was held at 15 Scottish Hospital in Cairo in April and the Consultant Physician reported on the discussions. Bacillary dysentery was being treated by the early administration of sulphaguanidine, and also of anti-dysenteric serum in Shiga infections. It was held that smaller dosage was satisfactory in the average case and that sulphaguanidine had had no bad effects. Saline treatment had been abandoned. Digestive disorders were held to be of nervous origin in 80 per cent of the cases, most of which had previously arisen in civil life. The clinical meeting of the conference was held at our Helwan hospital

—a great compliment to the unit.

The Consultant Physician made a study of typhus in the civilian population of Egypt at that time and furnished reports on the subject for the information of the hospital staffs, drawing attention to a discussion on the subject at the Royal Society of Medicine at that time. Fortunately, though typhus was prevalent in Egypt during the war, it affected our own force very little, only occasional cases arising, with a few deaths.

Colonel Boyd also investigated the asthmatics and epileptics in 2 NZEF, the policy having been determined to evacuate all such cases to New Zealand; but the lack of shipping had resulted in the retention of some of the cases in the Middle East. Up to May 1942 there had been 143 asthmatics, 117 of whom had been evacuated to New Zealand, and 44 epileptics, 34 of whom had also been sent to New Zealand. It was found that most of those kept in the Middle East had done good service at Base.

A review of the results of treatment of the cases of hernia and varicose veins was made by the Consultant Surgeon. This showed that the results of operative treatment of hernia were generally excellent, and that there was little disability in the force due to varicose veins. The only bad results in the varicose veins cases were due to excessive injections, leading to the blocking of the deep veins, and to faulty ligation or non-tying of the saphenous vein. Operation for varicocele was advised against, and the condition caused no real disability.

A review was also made of the results of operative treatment of the different internal derangements of the knee, and the results were found to be highly satisfactory as regards future fitness for service in the Division.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RE-EQUIPMENT OF DIVISIONAL UNITS

Re-equipment of Divisional Units

Reorganisation and re-equipment were major needs of the medical units of the Division after the Libyan campaign. Much medical equipment was drawn during January and, with the exception of a few items, all three field ambulances and the Field Hygiene Section were complete to I. 1248 scale by the end of the month. At this date some RMOs were still incompletely equipped. G. 1098 equipment (stretchers, etc.,) were obtained from Ordnance, but the Division was low on the priority list for transport and no new vehicles had been received by the end of January. Each field ambulance, however, had a sufficient number of motor ambulance cars to evacuate sick from units of its brigade group. The vehicles were serviced and overhauled by NZ Divisional Petrol Company. The deficiency of vehicles was slowly made up in Syria, but in June units were still short, especially of light trucks and cars.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOVES TO MAADI AND SUEZ CANAL ZONE

Moves to Maadi and Suez Canal Zone

During January the New Zealand Division moved from Baggush in brigade groups to either Maadi or the Suez Canal area in the region of Kabrit. Fifth Infantry Brigade, including 5 Field Ambu- lance, moved by road and rail to Kabrit on 4 January and there engaged in training in combined operations. Fourth Infantry Brigade, with 4 Field Ambulance, moved by road and rail to Maadi Camp on 5 January, stayed there seventeen days, and moved to Kabrit on 22 January; and 6 Infantry Brigade, with 6 Field Ambulance, moved from Baggush to Maadi Camp on 22 January and took over the lines vacated that day by 4 Brigade. On 7 January HQ NZ Division moved by road to Fayid, and was followed a day later by 4 Field Hygiene Section.

ADMS NZ Division called on ADMS Geneifa Sub-Area on 8 January and discussed medical arrangements for the area in general and for training in combined operations in particular. Fifth Field Ambulance had established an MDS at Kabrit, and cases were evacuated from there to 19 British General Hospital at Fayid (Geneifa). Expendable medical supplies were drawn from No. 3 Base Depot Medical Stores, Tel el Kebir, although at first there was some difficulty in obtaining them.

Sanitary arrangements at Kabrit Camp were poorly planned and had been improperly maintained since New Zealand troops had previously occupied the area. Although units did their utmost to improve sanitation, the system generally remained unsatisfactory, in spite of representations to higher authority.

Very little serious illness occurred among the troops during January and February while they were at Kabrit and Fayid, although there was a high incidence of colds, pharyngitis, and infection of the upper

respiratory tract. This, together with the cold weather, produced a rather high pneumonia rate, there being twenty cases in January and twenty-two the following month. In January, too, there were twenty-eight cases of infective hepatitis, but the number dropped to eight in February. Otherwise, dysentery continued to claim a certain number of victims: 38 and 14 in January and February respectively.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

COMBINED OPERATIONS

Combined Operations

A series of combined operations was undertaken by 4 and 5 Infantry Brigades to provide training for a possible seaborne invasion. For the purpose, the Suez Canal and Bitter Lakes were regarded as open sea and the northern shores as enemy territory, and troop-carriers and landing craft were provided for the landing of troops on the 'enemy' shore. New Zealand troops were not at this, or any later, stage called upon to take part in any seaborne invasion in the Mediterranean area.

The field ambulances provided supporting medical personnel for the practice assault landings by 4 and 5 Brigades and lessons were learnt on the most useful weight of equipment that could be conveniently handled, on the need for a medical liaison officer on the beach-head, and on the most desirable methods of evacuation of casualties.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

5 FIELD AMBULANCE RETURNS TO WESTERN DESERT

5 Field Ambulance Returns to Western Desert

Between 10 and 14 February 5 Brigade left the Canal Zone for El Adem in the Western Desert, where it came under command of Eighth Army and prepared defensive positions. To provide medical services for the brigade 5 Field Ambulance left Kabrit for El Adem area and there established an ADS and MDS. Before the move, vehicles were taken from 4 and 6 Field Ambulances to build 5 Field Ambulance up to establishment. This left 4 and 6 Field Ambulances with only seven ambulance cars and two motor cycles between them.

Fifth Brigade, although not actively engaged, remained in the Western Desert until 28 March, when it returned to Maadi Camp. While in the desert 5 Field Ambulance had been called upon to receive only a limited number of sick and wounded.

Meanwhile, 6 Field Ambulance had accompanied 6 Brigade from Maadi to Kabrit on 21 February and there again set up an MDS.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FORMATION OF CASUALTY CLEARING STATION

Formation of Casualty Clearing Station

On the return of the Mobile Surgical Unit to Maadi Camp from the Western Desert on 8 February 1942, it was obvious from the point of view of staff and equipment that it was impossible to continue both this unit and a casualty clearing station. Therefore, the Mobile Surgical Unit, acting largely as the Light Section, was absorbed into 1 NZ Casualty Clearing Station as from 27 February, and this unit thus had an experienced and proven efficient staff from the outset. Lieutenant-Colonel Ardagh was appointed commanding officer.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOVE TO SYRIA

Move to Syria

In February it was decided that the New Zealand Division should move north to Syria and there man and complete the defences of the Djedeide fortress, a part of the defensive system of Syria and Palestine which had been prepared in case the Germans should break through the Caucasus or cut through Turkey. The line which the New Zealand Division was to hold across the plains of Al Bekaa, from the slopes of the Lebanons across the valley to the far slopes of the Anti-Lebanons, denied to the enemy the use of all major arteries of communication from the north to southern Syria. The Australians manned a similar fortress on the Mediterranean slopes of the Lebanons, while British and French units guarded the far slopes of the Anti-Lebanons and the Damascus-Beirut road.

At the direction of GOC 2 NZEF, the DDMS 2 NZEF (Brigadier MacCormick) and ADMS NZ Division (Colonel Kenrick), in company with the GOC himself and other senior officers, made a reconnaissance trip to Palestine and Syria between 14 and 20 February 1942. After inspecting possible hospital sites at Jerusalem, Nathanya, Kfar Vitkin, Nazareth, Haifa, Sidon, Beirut, and Zahle, the DDMS recommended to the GOC that 1 CCS should be located at Zahle, while 2 General Hospital and 1 Convalescent Depot should be situated at Kfar Vitkin, on the coast approximately half-way between Haifa and Tel Aviv. When a request for material for constructional work on the coastal site was vetoed by GHQ MEF owing to shortage of supplies, it was decided to locate 2 General Hospital in Nazareth.

Medical Units and Lines of Evacuation, Syria, March 1942 – April 1943

Subsequently Colonel Kenrick, in company with the AA & QMG, made an inspection of the divisional area between Ras Baalbek to the north and Baalbek valley. This valley was a highly malarious area and, as the previous winter had been wet, it appeared that anti-malaria measures would have to be carried out by all units from 15 March onwards. The Bekaa valley, although itself 2500 to 3000 feet above sea level, was marshy in places. The climate in Syria was cold in the winter and humid in summer. Among the endemic diseases were malaria, sandfly fever, and venereal disease, and ADMS NZ Division early issued special instructions in regard to these.

The New Zealand Division began its move to Syria on 23 February, when advance parties from 4 Infantry Brigade left for the Djedeide area. The main body of 4 Brigade, including 4 Field Ambulance, left Kabrit for Syria by road and rail on 1 March and the days following, and 6 Brigade with 6 Field Ambulance set out on 10 March. Both 4 and 6 Field Ambulances received additional transport in the last days of February which assisted in the move, although most of the members of the units and their equipment were transported by train to Haifa, and thence by trucks. In Syria the Division came under command of Ninth Army.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS

Medical Arrangements

Fourth Brigade occupied defensive positions in the Bekaa valley about 20 miles north of Baalbek, and 4 Field Ambulance established an ADS at Djedeide and an MDS in Gouraud Barracks in Baalbek, where Headquarters New Zealand Division was also located. The 4th Field Hygiene Section was also in Baalbek.

Sixth Brigade was based on Aleppo, 180 miles from Baalbek, near the Turkish border. Its task was to delay, by demolition of all lines of communication from Turkey, any enemy attack long enough to cover the withdrawal of base installations from the Aleppo area, and subsequently to fall back on to the Djedeide fortress.

Sixth Field Ambulance took over for an MDS the 100-bed Italian hospital in the centre of Aleppo which had previously been occupied by 2/8 Australian Field Ambulance. The field ambulances were completely equipped to AFI 1248A scale, including malaria diagnosis panniers. Expendable medical supplies were drawn from 8 Advanced Depot Medical Stores in Beirut. Indents were necessarily fairly large because the New Zealand medical units serviced numerous British and Imperial troops in the divisional area, as well as giving out-patient and emergency treatment to impoverished civilians where no local medical practitioner was available.

Until the arrival of the newly formed 1 NZ CCS at Zahle on 22 March and its opening in the American hospital building, donated by ex-residents of Zahle, on 1 April, and the opening of 2 NZ General Hospital at Nazareth on 12 April, the field ambulances held more sick and accident cases in the divisional area than was customary. At the end of March 6 Field Ambulance was holding and treating 61 cases at Aleppo

and 4 Field Ambulance had 71 cases at Baalbek. On account of this, and more particularly because of problems in connection with the disinfestation of women refugees coming over the Turkish frontier, ADMS NZ Division considered it advisable to ask for four members of the NZANS to be temporarily attached to 6 Field Ambulance. This request was approved by General Freyberg, and DDMS 2 NZEF arranged for four sisters to report to 6 Field Ambulance on 25 March. It was also expected that the sisters would be of great assistance in training nursing orderlies. Six Australian sisters who had been attached to 2/8 Australian Field Ambulance on disinfestation duties remained until the New Zealand sisters arrived. This was the first occasion in which nursing sisters were attached to a field ambulance of 2 NZEF.

Pending the establishment of 2 General Hospital in Palestine, ADMS NZ Division arranged for 53 General Hospital in Damascus to receive serious cases from among the New Zealanders in the Bekaa valley, evacuation being made by motor ambulance cars to Rayak station, thence by rail to Damascus. From 6 Field Ambulance at Aleppo serious cases were at first evacuated some 200 miles to Beirut, some of the patients being transported by the American Field Service, twenty of these cars being attached to the Division. This was the first contact of the New Zealanders with this fine volunteer Red Cross organisation, which was to have a long, friendly, and valuable connection with the New Zealand Division.

With the first opening of 1 CCS as an established unit at Zahle, at the southern end of the Bekaa valley, on 1 April, patients were evacuated from both 4 and 6 Field Ambulances to this unit. From Baalbek the distance was only some 20 miles. The line of evacuation from Aleppo was much longer, about 200 miles, but an excellent road as well as a narrow-gauge railway ran down through Hama, Homs, and along the Lebanon valley to Baalbek, and thence further south, passing near Zahle. There were eight nursing sisters on the staff of the CCS, which was able to function as a small hospital with satisfactory facilities for operative treatment. It was well sited on the top of a hill,

3500 feet high, on the approach road to, but well away from, the picturesque town, which lay in a hollow to the west. The unit personnel were happily accommodated in tents on the adjoining hills.

When 2 General Hospital opened at Nazareth in Palestine on 12 April the CCS was able to evacuate hospital cases to it. Until 21 April patients were taken to Nazareth by American Field Service ambulance cars. After that date patients were loaded by the CCS at Zahle on to an ambulance coach on a train in the evening and, travelling on the narrow-gauge railway via Damascus and Deraa and through the Yarmuk and Jordan valleys, reached Affule on the plain of Jezreel in Palestine some eighteen hours later. Here the patients were off-loaded on to motor ambulance cars and taken the distance of 9 miles to Nazareth.

Patients for discharge to 1 Convalescent Depot and Advanced Base were taken by AFS cars to 2/3 Australian CCS at Beirut and went south to Kfar Vitkin from there.

On 6 April 5 Infantry Brigade, including 5 Field Ambulance, started moving from Maadi to Syria, and on 11 April this brigade took over from 6 Infantry Brigade at Aleppo. Thereupon 6 Brigade proceeded to Zabboud, in the Bekaa valley about 24 miles north of Baalbek, where defensive positions were being organised.

Fifth Field Ambulance took over the operation of the MDS in the Italian hospital building from 6 Field Ambulance, which established an ADS at Camp No. 2, Zabboud.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TRAINING

Training

While 4 and 5 Field Ambulances were running their main dressing stations, or camp reception stations, it was possible to undertake only a limited amount of field training. Fourth Field Ambulance was holding and treating an average of seventy patients, while 5 Field Ambulance had an average of fifty patients. After its arrival in Zabboud 6 Field Ambulance did intensive training in parade-ground drill, went for long route marches, practised erecting and dismantling tentage, and did pack transport drill with mules.

On 22 April A Company 4 Field Ambulance set out for the area above Laboue, where it had been decided to construct an underground fortress ADS in the defensive positions. Constructional work was continued by A Company until 29 May, when it was relieved by B Company. Early in June the battle ADS was inspected by DMS 2 NZEF, ADMS NZ Division, and CRE NZ Division (Lieutenant-Colonel Hanson), [1] who recommended certain alterations in the construction.

From 21 to 26 May A Company 4 Field Ambulance participated in a comprehensive exercise with 4 Brigade at Forqloss. A thorough knowledge of equipment and drill enabled the company to function efficiently as an ADS. From the exercise useful lessons were learnt: notably the need for improved communications between RMOs and the ADS, an increased call for ambulances at the ADS, improved lighting equipment for emergency operations, and a duplicate set of operating instruments to obviate delay during sterilisation.

B Company 6 Field Ambulance took part in a similar exercise with 6 Brigade from 29 May to 3 June.

Sixth Field Ambulance was located at Zabboud until 12 June when it moved to Aleppo to take over from 5 Field Ambulance, which then moved to Zabboud, taking part in training exercises on the way.

The defended area included some rough, hilly country, and the ambulances carried out training with mules for the transport both of medical supplies and casualties. The patients were strapped on the litters or cacolets, and Thomas splints were utilised in the training. The equipment was arranged in unit mule loads of 160 to 200 pounds and separated according to the different departments for which it was required, such as the reception, evacuation, cooks and quartermasters; so that, if necessary, an ambulance unit could be shifted readily into the hills and set up there with the maximum of speed and efficiency. The ambulances also took part in divisional exercises in the desert to the north-east.

The open-air life, the active work entailed in the construction of the defensive line and the manoeuvres, as well as the welcome change in climate and surroundings from the heat and sand of Egypt, all combined to make for the good health and happiness of the troops. The rations were ample and varied, and extra blankets and leather jerkins were issued to some of the troops, as the winter was severe with snow, hail, and rain. The Division was thus in excellent order to sustain the severe strain of the fighting encountered in the months to come in holding back Rommel at the gates of Egypt.

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[1] Brig F. M. H. Hanson, CBE, DSO and bar, MM, m.i.d.; Wellington; born Levin, 1896; resident engineer, Main Highways Board; Wellington Regt in First World War; comd 7 Fd Coy, NZE, Jan 1940–Aug 1941; CRE 2 NZ Div May 1941, Oct 1941–Apr 1944, Nov 1944–Jan 1946; Chief Engineer, 2 NZEF, 1943–46; wounded three times; Commissioner of Works.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CONVALESCENT DEPOT

Convalescent Depot

The Convalescent Depot was moved on 30 April from the drab, unsatisfactory site at Sidi Bishr, with its sand and wind, to the Palestinian coast at Kfar Vitkin, north of Tel Aviv, taking over from the Australians a large hutted camp. The area was a very healthy one, high up behind cliffs above the long, sandy beaches of the warm Mediterranean. Although a long way from the Division and from other hospitals, it was a very desirable site for the purpose and was close to the main railway line. The Division had also arranged for a rest camp on the coast just south of Beirut, where sea bathing was very attractive.

There was a larger area and more buildings at Kfar Vitkin than were required for the Convalescent Depot so the Advanced Base was also placed there. This had the advantage of saving transport and of simplicity in transferring fit patients to the Base. On the other hand, the close contact between convalescent patients and fit men was in some ways undesirable.

The ample sports facilities, the close proximity of the beach, the summer weather, and the opportunity of swimming in the Mediterranean led to more time being spent outdoors by the patients, and encouraged the convalescents to carry out unconsciously the steps necessary to make themselves fit.

The majority of the cases sent to the depot from the hospitals made very good progress. The Consultant Surgeon reported, however, that cases with plaster splints did badly in the sand and should not be sent to the depot till the surgeon at the hospital had finalised treatment and applied the last plaster. Fracture cases kept for long periods in plaster developed muscular wasting and were slow to rehabilitate. Cases were

also being sent for physiotherapeutic treatment when the depot was suitable only for ordinary massage and remedial exercises.

Our Convalescent Depot functioned as both a convalescent camp and rehabilitation centre. At Kfar Vitkin a more strenuous military training course was started for men almost ready to be discharged; it proved of great value and resulted in men being received by Reception Depot, Maadi Camp, in a much fitter condition for return to their units than formerly.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE HOSPITALS

The Hospitals

The hospitals were rearranged to serve the Division in Syria. No. 1 General Hospital remained at Helwan as the static base hospital to service the base camps at Maadi and Helwan and to evacuate cases to New Zealand by the hospital ship. No. 2 General Hospital was shifted from Garawla, where it had acted on the lines of communication during the Libyan battle, and was established in several buildings in the centre of Nazareth. Although a long way from the Division, it was able to deal satisfactorily with the work, civilian in type, and had the newly formed VD Treatment Centre attached to it.

No. 3 General Hospital, having been warned that it probably would be needed in Syria, received final instructions on 6 May to close and move to a new site at Choukri Ghanum, some 5 miles east of Beirut, on the lower slopes of the Lebanon Mountains on the road to Damascus. The staff of the detachment of 3 General Hospital which had been functioning in the Anglo-Swiss building in Alexandria since November 1941 had rejoined the parent unit on 30 April 1942.

The hospital closed at Helmieh on 18 May, left for Beirut on the 23rd, and opened to receive patients on 3 June. Some 200 trucks were required to move the equipment of the 900-bed hospital. One of the two blocks of buildings occupied by the hospital had previously been French barracks and the other had been part of the Lebanon mental hospital. No. 3 General Hospital was the first military hospital to move at that time into that area of Syria, and its establishment had been regarded as of urgent importance by Headquarters Ninth Army. The hospital quickly got established again and by 26 June had 1032 occupied beds.

An outbreak of typhoid fever involving the VADs caused one death

and led to doubt as to the immunity provided by TAB injections in New Zealand.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GREEK BRIGADE

Greek Brigade

Arriving from Palestine on 2 June, 1 Royal Greek Brigade occupied an area near 4 Infantry Brigade and came under command of the New Zealand Division. The Greek field ambulance, which arrived on 4 June, was attached to 4 Field Ambulance for further training. Major Palmer, NZMC, as liaison officer with 210 British Military Mission, had been responsible for organising the formation, training, and equipment of the unit.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HYGIENE AND SANITATION

Hygiene and Sanitation

In both the Aleppo and Djedeide– Baalbek areas some units were quartered in buildings, and others in hutted and/or tented camps. At the time of occupation the huts were dirty and many were in a state of disrepair. This condition was largely rectified and straw palliasses were provided for all troops.

The sanitary arrangements in buildings varied considerably but, in general, were made satisfactory. In the camps, deep-trench latrines, soakage-pit urinals, and fluid refuse soakage pits with cold-water grease taps were in use. Difficulties in the construction of these and in their proper maintenance was caused by the rocky and non-porous nature of the ground. These difficulties were overcome by the use of compressors and explosives. Swill was removed by contractors under brigade arrangements and the remaining dry refuse was burnt.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DIVISIONAL LAUNDRY

Divisional Laundry

A very well-equipped divisional laundry was set up in Zahle alongside a large stream of excellent water at the outskirts of the town, and this was able to deal with large quantities of washing for the troops.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WATER

Water

Syria with its abundance of streams was able to provide a more than ample water supply. All the water used by the various units came originally from springs and was clear and sparkling, showing deep-blue in the first cup of the Horrocks test. However, in several localities, contamination was remotely possible from adjoining villages, and chlorination was carried out at all water points. The only water not chlorinated was that in Aleppo and Baalbek, where the supply was laid on to buildings through the town reticulation systems.

In Baalbek the water came from a series of springs in the hills 6 miles north-east of the town. The surroundings were free from habitation and cattle, and the springs themselves were concrete-covered. The water was led by a 20-centimetre pipe to a large concrete storage reservoir and from this piped to the town reticulation.

In Aleppo the source was also a series of springs, the water containing 200 B. Coli per litre. It was filtered through gravel, treated by the process of 'Verdunisation' (sodium hypochlorite), and pumped to a reservoir in the town from which it was reticulated.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FOOD

Food

The Division was on the Middle East fresh ration scale. Larger appetites occasioned by the colder climate at times caused the ration to appear insufficient, but in reality it was adequate. Meat was provided under supervision of Ninth Army authorities and the purchase of locally killed meat was forbidden. Vegetables were out of season at the time of the Division's arrival in Syria, and both the quantity and variety were poor but improved in the spring months. During the heavy rain and snow from 19 to 23 March, a daily rum ration was issued to all ranks. The consumption of locally made ice-cream and mineral fruit drinks was prohibited. These were prepared almost invariably under the most unhygienic conditions and with very little regard to the purity of the ingredients.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TYPHUS-DISINFESTATION

Typhus-Disinfestation

Disinfestation was carried out regularly in the Baalbek area by 4 Field Hygiene Section, which set up its ASH mobile disinfestor in Wavell Barracks. In addition, 4 Field Ambulance had a No. 2 portable disinfestor and a Serbian barrel. Arriving towards the end of March, 1 Mobile Bath Unit began operations early in April.

In the Aleppo area 6 Field Ambulance supervised the disinfestation of refugees and troops, following the system operated by 2/8 Australian Field Ambulance. The refugees crossing the Turkish border into Syria were mainly Greeks, with some Yugoslavs and others. About 10 per cent were women and children. The spread of typhus fever was feared, and Headquarters Ninth Army ruled that the disinfestation and medical examination of refugees was an army and not a civil responsibility.

The refugees arrived in Aleppo by train and were immediately marshalled into lorries and taken direct to the quarantine station, a civil property on loan to the Army. Here they were medically examined, sprayed with AL 63 to kill lice and bugs, bathed, and redressed in their own clothing after it had been steam disinfested. They were then quarantined for two weeks for observation, with particular regard to typhus. At the disinfestation centre 6 Field Ambulance dealt with approximately forty refugees a week. (On one day in June 329 women and children refugees were brought to the centre. The females were supervised by the nursing sisters attached to the field ambulance, who had been inoculated against typhus.)

Cases of typhus fever had occurred in the three months before the arrival of the New Zealanders, and in March a number of cases among civilians were reported from Aleppo, Homs, and Damascus. Colonel

Kenrick arranged adequate precautionary measures, including regular shower and bath parades and medical inspections, and troops were advised to keep their hair cut short. In addition, the town of Homs was placed out of bounds.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INFECTIOUS DISEASES

Infectious Diseases

Malaria was highly endemic in Syria. With many rivers and numerous swamps lying between the Lebanon and Anti- Lebanon ranges, and especially with the melting snows and swollen rivers following the severe winter, the stage was set for a high malarial incidence among New Zealand troops unless energetic measures were taken to combat the disease. To meet the situation a complete anti-malaria organisation was set up within the Division.

At the outset arrangements were made to determine the areas where malaria was most marked and to combat the danger by field operations as well as by taking full personal precautions. The spleen rate in the different villages and areas was determined and highly infected areas put out of bounds. The spleen rate varied from 4 to 92 per cent in the different villages, and a very extensive investigation was made of the whole of the area of Syria in contact with the Army. General Freyberg circulated an instruction to the Division stressing the supreme importance of precautions against the disease. Mosquito nets and repellent creams and sprays were distributed to the troops. Veils and gloves were issued to night sentries. The unbecoming ' Bombay bloomers' were issued, with instructions to lengthen them into slacks at sunset.

Captain J. M. Staveley was placed in charge of divisional malaria control and sent on a course to No. 2 Malaria Field Laboratory, Beirut. Two anti-malaria control units of one officer, one sergeant, and five other ranks were formed within the Division, and members from each unit also attended the Malaria Field Laboratory for training. Ten anti-malaria sections, with a civilian staff of one foreman and twenty-three

labourers, worked under the supervision of, first, 4 Field Hygiene Section, and later of 4 and 6 NZ AMCUs at Baalbek and Aleppo respectively. They drained swamps and sprayed potential mosquito breeding grounds. In addition, unit squads, consisting of an NCO and three men, worked under the control of each RMO.

As a result of these measures malaria in the New Zealand Division was kept within moderate limits. A high proportion of the cases occurred in two battalions stationed on the Turkish border, beyond which no malaria control was exercised. Fortunately, the Division left Syria before the malaria season was at its peak. In June, the first month of the season, there were only sixty-two cases reported, mostly BT infection. More cases developed later in the Western Desert from infection arising in Syria, bringing the total Syrian cases to 261, from which 27 per cent of relapses was reported.

Owing to the high incidence of venereal disease in Syria, it was deemed wise to establish controlled brothels. Two were opened in Aleppo and two in Baalbek, under the control of DAPM NZ Division, and PA treatment centres were established in each brothel by 6 and 4 Field Ambulances in the respective towns. Arrangements were made for the examination by medical officers of prostitutes by 'snap' inspections every second day, cervical and urethral smears were examined weekly, and blood tests carried out monthly. The field ambulances co-operated with DAPM NZ Division in the questioning of VD patients regarding the source of infection and the tracking down of infected prostitutes. This strict supervision was singularly effective and resulted in a remarkably low incidence of venereal disease among New Zealand troops in Syria. Most of the few cases which did occur followed infection contracted from prostitutes in Beirut and Damascus.

Sandfly fever was present to a moderate degree. There were a small number of cases of dysentery and diarrhoea and a few cases of infective hepatitis and measles. The small number of relapsing fever cases investigated at the CCS were treated successfully with injections of NAB. Typhoid and paratyphoid fevers were endemic in Aleppo but only one

case was reported in the Division.

Diseases reported in the Division in Syria were:

	April	*May*	*June*
Diarrhoea	**17**	**50**	**116**
Dysentery	**15**	**39**	**68**
Sandfly fever	**1**	**88**	**214**
Malaria	**2**	**17**	**62**
Venereal disease	**9**	**8**	**4**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL WORK IN THE DIVISION IN SYRIA

Medical Work in the Division in Syria

The period spent in Syria was a quiet one for the medical services. There were no battle casualties and there was little sickness. The divisional medical units had the chance to rehabilitate themselves after the disastrous events in Libya. Built up by reinforcements, they quickly settled down under new commanding officers. The professional aspect of their work was developed considerably and two small hospital units were set up by the field ambulances.

At a stage before the CCS was functioning at Zahle and 2 General Hospital at Nazareth, the ambulances held medical cases in hospital, and at Aleppo a considerable amount of hospital work was carried out. Not only was hospital nursing and treatment undertaken by the ambulances, but they also did bacteriological work with regard to malaria. At Baalbek 4 Field Ambulance ran a small hospital of 80–100 beds where cases were held pending the arrival of the CCS, and malaria diagnostic work was also undertaken.

Advantage was taken of the quiet period to enable two junior officers in the Division to exchange duties every fortnight with officers attached to 2 General Hospital at Nazareth and so gain clinical experience.

The dearth of medical practitioners in Syria, especially in the country districts, resulted in the services of New Zealand medical officers being freely sought by the civil population. This led to the development of quite a large out-patient practice in several areas, particularly on the Turkish frontier and at Aleppo. Long queues of patients of both sexes and all ages were to be seen outside the medical quarters patiently waiting their turn for treatment for all sorts of ailments. Visits were also paid on occasions to the homes of the people

and a small obstetrical practice developed. The universality of medicine had demonstrated itself.

In Aleppo the small civil hospital which the New Zealand field ambulances had inherited from the Australians was called upon to do civil out-patient work and also admitted some civilians to the hospital wards. Serious army cases often had to be held here, as it was 200 miles back to the nearest hospital. Some special cases, however, were sent back by air.

It had been decided to rely more on the protection of the Geneva Convention, and additional large Red Cross flags of excellent material and workmanship were made in Aleppo.

At Zahle the newly constituted CCS proved a very valuable unit to the Division and was able to provide an out-patient consultative service for the ambulances. Medical and surgical consultations were provided by the unit personnel, and the eye and ear, nose, and throat specialist from 2 General Hospital at Nazareth was available weekly in addition. Clinical teaching rounds were carried out weekly. The CCS also arranged out-patient clinics for the injection of varicose veins and haemorrhoids. At Zahle bacteriological investigations were carried out and several cases of relapsing fever were definitely diagnosed there. Further laboratory investigations, including Kahn and Wasserman reactions, were carried out by an Australian laboratory at Beirut.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CLINICAL MEETINGS

Clinical Meetings

A series of valuable clinical meetings for medical officers was conducted at Baalbek by 4 Field Ambulance fortnightly during April, May, and June, when specialists covered such subjects as the treatment of burns, treatment at a CCS and its relation to earlier treatment, forward surgery, facial injuries, early diagnosis of pyrexias, malaria, and the rearrangement of RAP equipment.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHANGE OF DMS 2 NZEF1

Change of DMS 2 NZEF [1]

[1]The title of DDMS 2 NZEF was changed on 8 April 1942 to DMS 2 NZEF to bring 2 NZEF into line with 2 AIF and the Union Defence Force.

There was a change in the administration of medical services in 2 NZEF when Brigadier MacCormick returned to New Zealand for family reasons on 9 May 1942 on NMHS *Oranje*, and the appointment of Director of Medical Services was assumed by Brigadier Kenrick, formerly ADMS NZ Division. Brigadier MacCormick had been in charge of medical administration in 2 NZEF during the first formative two and a half years, and had played a leading part in building up the efficiency and proud reputation of the New Zealand Medical Corps. His work had called forth the highest praise from General Freyberg.

Colonel Kenrick was attached to Headquarters 2 NZEF from 11 April 1942, while Brigadier MacCormick was preparing to return to New Zealand. Lieutenant-Colonel Ardagh of 1 NZ CCS was appointed acting ADMS NZ Division. With the departure of Brigadier MacCormick, his duties were taken over on 10 May by Brigadier Kenrick, while Colonel Ardagh was confirmed in the appointment of ADMS NZ Division and Lieutenant-Colonel L. J. Hunter, 2 NZ General Hospital, was appointed to command 1 NZ CCS.

The dispersion of 2 NZEF from Helwan to Aleppo naturally made medical administration difficult, and throughout the war in the Mediterranean area the force was to become used to frequent and long-distance moves.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ENEMY ATTACKS IN WESTERN DESERT

Enemy Attacks in Western Desert

In Syria the weeks passed and no enemy attack southwards through Turkey developed. In the Caucasus the Russians were sternly resisting in a campaign which culminated in the battle for Stalingrad. But in the Western Desert in May and June events swung in favour of the Germans.

In the Second Libyan Campaign the New Zealanders had helped to relieve Tobruk, and the enemy was driven from Cyrenaica back to El Agheila for the second time within a year. On 21 January, however, an enemy counter-offensive had forced the Eighth Army to withdraw as far as Gazala, just west of Tobruk.

By the middle of May both sides had built up their forces for further offensive action. The Axis offensive began on the evening of 26 May. After three weeks of heavy and costly fighting the Eighth Army, again leaving a garrison in Tobruk, which capitulated on 20 June, retreated to Egypt in a withdrawal which was not to end until El Alamein was reached.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE DIVISION RETURNS TO THE DESERT

The Division Returns to the Desert

In Syria on 14 June the New Zealand Division received an order from General Freyberg, who had earlier been called to Cairo, to move forthwith to the Western Desert. Within a few hours coded instructions for movement were flashed to units scattered all over Syria from the Turkish frontier to Beirut. The move caused no real surprise, for news that all was not well with the Eighth Army made the necessity of sending reinforcements to the desert obvious, and the move was accepted with resignation. Two days later, under cover of strictest secrecy, the New Zealand Division began a dramatic dash of 900 miles in five days back to the Western Desert.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ARRANGEMENTS FOR MEDICAL UNITS

Arrangements for Medical Units

Each of the field ambulances cleared their patients to the CCS at Zahle and moved with their respective brigade groups from Syria to Egypt from 16 to 18 June. The accommodation at the CCS was taxed with nearly 200 patients on the night of 15 June, but most of these were evacuated next morning to 2 General Hospital at Nazareth and 3 General Hospital at Beirut. Then, on 17 June, the CCS was ordered to proceed to Egypt. All patients were evacuated to the general hospitals and the CCS left for Egypt on the 21st. The unit went to Sidi Bishr transit camp, Alexandria, the intention being to locate it behind the New Zealand Division in the Western Desert. The withdrawal of our troops from Minqar Qaim, however, so shortened the lines of communication that the unit was not called upon to go forward, and on 30 June it was recalled to Maadi Camp to be held in reserve.

During July the light section of the CCS was set up as a staging post for casualties on a small sandhill in the Delta, alongside the main road and rail communications between Alexandria and Cairo.

At a conference at GHQ MEF on 14 June it was decided that 2 General Hospital would move from Nazareth to a site at Kantara or El Ballah in the Suez Canal zone, and open there in order to take the New Zealand battle casualties arriving by ambulance train from the Western Desert. This projected move was subsequently cancelled on 29 June by GHQ MEF because, on account of the serious military situation after the fall of Tobruk, it was then considered inadvisable to move any units other than combatant troops into Egypt. It was decided a few days later that, as a British hospital was already moving in to Nazareth, 2 General Hospital should move to Kfar Vitkin and open alongside 1 Convalescent

Depot. With the hope of eventually getting the hospital to the Canal area, where it would be much better placed to deal with the reception and evacuation of New Zealand casualties, DMS 2 NZEF deferred the opening at Kfar Vitkin. On 13 July approval was received for the hospital to move to El Ballah as originally intended, and it opened there on 29 July.

Having opened in Syria just prior to the departure of the New Zealand Division, 3 General Hospital remained there, being one of the few New Zealand units left in the country. Thereafter, until February 1943, the majority of the hospital's patients were British and Allied troops and not New Zealanders, although some New Zealand battle casualties were admitted after travelling from Alexandria to Haifa by hospital ship and then by motor ambulance cars to Beirut.

No. 3 General Hospital serviced Ninth Army, with only an occasional convoy of New Zealand troops from the Desert, till eventually it was shifted to Tripoli. However, it did something to balance the large amount of work carried out for New Zealand troops by British hospitals and by its efficient work added to the popularity of the New Zealand Medical Corps.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 9 — BATTLE FOR EGYPT

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

WHILE the long lines of vehicles were carrying the New Zealand Division from Syria to rejoin the Eighth Army, the enemy attacked Tobruk. The assault began at dawn on 20 June, and by last light on the same day the town was in enemy hands. This was a shattering blow, for Tobruk had been held before and everyone expected it would be held again. After this setback Eighth Army's object then was to delay the enemy at the Egyptian frontier as long as possible, in the meantime withdrawing the remnants of the Army to the Matruh- Alamein area.

Advanced elements of the New Zealand Division reached Mersa Matruh from Syria on 19 June, while 4 Infantry Brigade and 5 Infantry Brigade arrived at the same place on 21 and 22 June respectively. On 24 June 6 Infantry Brigade reached Amiriya, just west of Alexandria, and remained there as a general reserve. The 4th and 5th Brigades manned the Matruh 'Box' and set about extending the defences which had been prepared originally in 1940.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS

Medical Arrangements

Arriving in Maadi from Syria on 17 June, the ADMS NZ Division (Colonel Ardagh) conferred with DMS 2 NZEF (Brigadier Kenrick) on the move to the Western Desert. Colonel Ardagh waited in Maadi for General Freyberg's conference on 19 June and then left next day for the Western Desert, consulting on the way with DDMS Rear Eighth Army on medical arrangements. A route of evacuation from the fortress area was arranged by way of 8 SA CCS at Matruh and 58 General Hospital, Garawla. By arrangement with ADMS 83 Sub-Area, Matruh, medical supplies were to be drawn from Indian Base Medical Stores.

At a conference of ADMS 83 Sub-Area and senior New Zealand and South African medical officers on 23 June it was arranged that all South African medical units would leave Matruh, and that 4 and 5 Field Ambulances would take over that day from 10/11 SA Field Ambulance. Fourth Field Ambulance, under Lieutenant-Colonel R. D. King, established an MDS that afternoon, and during the next day received a number of seriously wounded cases from British units west of Matruh, which necessitated the surgical section operating throughout the night. B Company, under Major T. W. Harrison, staffing the MDS, treated 167 patients in thirty-six hours, and evacuated some cases by air from Matruh.

The DMS 2 NZEF arrived at Matruh on the afternoon of 24 June and held a conference with field ambulance officers. He informed them that 6 Field Ambulance would not be joining the Division as had been expected (it had been planned that the unit should take over from the South African CCS), but would be remaining with 6 Brigade at Amiriya as a general reserve. The DMS 2 NZEF later visited DDMS Eighth Army at

the request of Colonel Ardagh and was able to arrange for twenty American Field Service motor ambulance cars and drivers [1] to be placed under command of ADMS NZ Division on 25 June.

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[1] These American drivers were members of a volunteer Quaker unit which was formed in 1941 before the United States entered the war. Some of them were first associated with NZ Division in Syria, and they continued to be attached to the Division until the end of the war in Italy. They rendered a sterling service in battles from Minqar Qaim onwards.

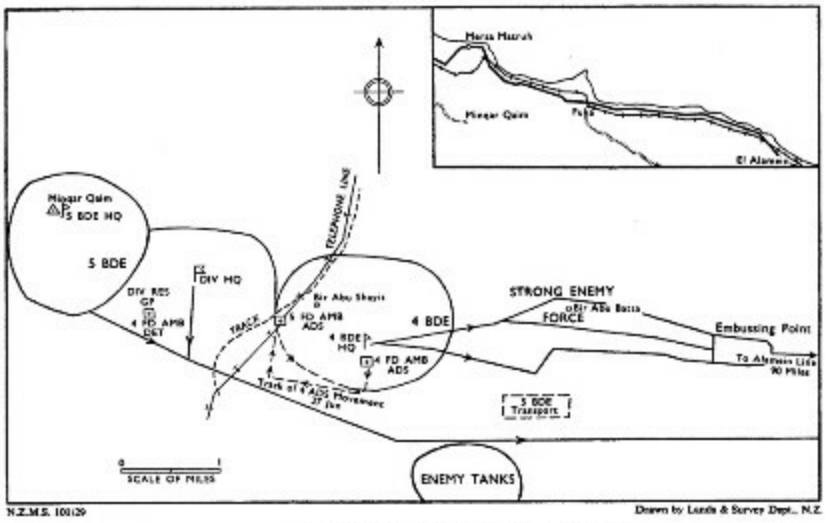
NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BATTLE SITUATION

Battle Situation

The enemy was only slightly delayed on the Egyptian frontier in his drive from Tobruk, and on the morning of 24 June he crossed into Egypt and began to advance swiftly along the top of the escarpment to Matruh, in which area General Ritchie had been ordered to fight a decisive battle. When, however, General Auchinleck assumed personal command of Eighth Army on 25 June, he abandoned the decision to fight a decisive battle in favour of mobile operations which, nevertheless, were intended to cripple the enemy between Matruh and the Alamein line.

On 25 June the New Zealand Division moved out of Matruh to take up a mobile role in the desert in place of the static role in the Matruh Box. Following reconnaissance, the force moved again next day to the main southern escarpment at Minqar Qaim and took up a defensive position. At this stage 4 Field Ambulance had a company under Captain D. McK. Jack attached to 4 Brigade as an ADS with six ambulance cars, and 5 Field Ambulance had a company under Major Edmundson similarly attached to 5 Brigade with six ambulance cars, plus two cars with 21 Battalion, which had been detached to Bir Khalda from the main group. Fourth Field Ambulance also had a detachment with two ambulance cars under the command of the Divisional Reserve Group. The provision of these cars had been made possible by the attachment of five extra AFS cars to each MDS, leaving ten AFS cars which were held in reserve at Rear HQ NZ Division, which had the main bodies of 4 and 5 Field Ambulances under command and was located at Point 178, some 20 miles away from Main HQ NZ Division at Minqar Qaim; 5 Field Ambulance under Lieutenant-Colonel McQuilkin then established an MDS near Qaret el Gleil.



Battle of Minqar Qaim and the Withdrawal

Battle of Minqar Qaim and the Withdrawal

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MINQAR QAIM

Minqar Qaim

At dusk on 26 June the divisional area at Minqar Qaim was bombed and seventy casualties were suffered by units of 4 Infantry Brigade and by a mobile column of 21 Battalion to the south. Next morning the enemy deployed artillery to the north of our positions and the first ranging shells fell near Divisional Headquarters. Then began an artillery duel which went on all day. At midday the enemy put down heavy concentrations for about two hours, after which he made several half-hearted attacks, all of which were easily repulsed. By late afternoon, however, the enemy had deployed on the northern and eastern sides of the New Zealand positions. At dusk shell and mortar fire gradually died away.

The RMOs had a difficult time that day; one of them, Captain R. A. Wilson, [1] RMO of 23 Battalion, was awarded the Military Cross. Owing to the nature of the country his RAP could not be moved to a safe zone and was under heavy shellfire for a period of over eight hours. Captain Wilson remained at his post attending the wounded and carrying on under the most difficult and trying conditions. At one stage—under heavy fire—he personally went out with a stretcher to bring in a wounded man. His whole bearing and conduct during the day was an inspiration to the men around him.

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[1] Maj R. A. Wilson, MC; London; born Christchurch, 2 Feb 1909; medical practitioner; RAMC 1940; RMO 23 Bn Jun 1941–Oct 1942; medical officer 3 Gen Hosp Dec 1942–Jan 1944; 5 Fd Amb Jan–Sep 1944; Repatriation Unit (UK) May 1945–Mar 1946.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION OF WOUNDED

Evacuation of Wounded

Early on the morning of 27 June the seventy bomb casualties were cleared from the ADSs to 5 MDS. The ADS ambulance cars were met at the car post of 2 British MAC north of the divisional area by Major Boyd,[2] who was taking the ten reserve AFS cars to Main Divisional Headquarters. The wounded were here transferred to cars of 2 British MAC and to four of the AFS cars. With the remaining six AFS cars and the seven ADS cars, Major Boyd attempted to continue on to the divisional area, but, being cut off by two German columns, was forced to circle round via Rear Divisional Headquarters and get to the Division from the south, crossing the head of one German column. The convoy reached Main Divisional Headquarters safely at 3 p.m.

The ambulances were quickly filled at the ADSs with casualties which had occurred during the day, and set off on their return to the MDS. The convoy was forced to retire to the ADS area as the Division was almost surrounded by enemy armour. Shelter was taken in a wadi, wherein some amount of protection from enemy shelling was available for the casualties and medical personnel.

During the afternoon both 4 and 5 ADSs were threatened by the sudden approach of enemy armour and had to be hurriedly brought in to a position close to Main Divisional Headquarters. One tarpaulin shelter was left behind by 4 ADS as there was no time to collect it, but otherwise there was no loss as ADMS NZ Division had warned the officers commanding ADSs to be prepared for emergency moves.

The detachment of B Company 4 Field Ambulance worked as an ADS at several locations during the day, the moves being occasioned by the proximity of enemy shellfire and our own artillery concentrations. For

most of the afternoon the detachment was combined with 5 ADS, and later cleared patients from the RAPs of 6 Field Regiment and 18 Battalion to 5 ADS by means of an AFS ambulance car and trucks of 6 Field Regiment.

At 5 p.m. General Freyberg was wounded in the neck by a shell splinter while watching from a forward position the progress of an enemy attack. By great good fortune the splinter went through the back of the General's neck without injury to vertebral column or spinal cord. He was attended by Colonel Ardagh and Major Boyd. There was, of course, no chance of evacuating wounded then and the General lay on a stretcher in a widened slit trench until the shelling ceased at last light.

During the day the ADSs in the battle area performed efficiently and the ambulance cars, both our own and those of the AFS, did wonderful service in going forward to RAPs and beyond to collect the wounded early. Emergency surgery and immobilisation of fractures were all completed well before the ultimate withdrawal took place.

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[2] Lt-Col W. J. Boyd, ED; Wanganui; born Dunedin, 31 Jul 1913; medical practitioner; RMO 19 Bn Dec 1939–Mar 1941; RMO 4 Fd Regt Apr 1941–Jan 1942; OC 4 Fd Hyg Sec Feb–Oct 1942; medical officer 2 Gen Hosp, Mar–Jun 1943; SMO Linton Camp (NZ) Nov 1943–Aug 1944; DADMS Army HQ (NZ) Aug 1944–May 1945.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PREPARATIONS FOR BREAKTHROUGH

Preparations for Breakthrough

At dusk instructions were issued that the New Zealand troops would withdraw from the area during the night. It was known that our withdrawal route to the east was blocked by the enemy, who had enveloped the positions from the north round nearly to the south. Fourth Brigade was given the task of clearing a wide lane through the enemy so as to allow the remainder of the Division through. Plans were made for an attack with the bayonet by the whole brigade on a narrow front. There would be no artillery support for the field regiments were down to thirty rounds a gun before dark and there was no possibility of replenishment. During the day enemy fighting vehicles had come in between 5 Brigade and its troop-carrying transport which had concentrated farther south. As the brigade was thus grounded, it was ordered to the Divisional Reserve Group area on foot, and there arrangements were made to carry the brigade on its own fighting vehicles, a few borrowed from 4 Brigade, and Artillery and Reserve Group vehicles.

This shortage of vehicles had its effect on the medical units, particularly 5 ADS which, of course, had also not been able to evacuate patients during the day. A request was made by this unit to ADMS NZ Division for extra transport, which he obtained after considerable difficulty. By 11 p.m. all the patients and medical personnel were crammed on the available transport ready for the breakout. The GOC's caravan truck, in which were the wounded general, his ADC, and Colonel Ardagh, had a Red Cross flag attached and headed a medical convoy which included 5 ADS and a detachment of B Company 4 Field Ambulance, under Captain Kennedy, [1] travelling with 5 Brigade.

[1] **Lt-Col D. P. Kennedy, m.i.d.; Wellington; born Christchurch, 19 May 1915; medical practitioner; Adjutant 7 Fd Amb (Fiji) Oct 1940–May 1941; DADMS Army HQ (NZ) Jun–Nov 1941; medical officer 4 Fd Amb May–Oct 1942; OC 4 Fd Hyg Sec Oct 1942–Aug 1943; Dpty Asst Director Hygiene, NZ Corps, Feb–Mar 1944; DADMS 2 NZ Div Apr–Nov 1944; DADMS 2 NZEF Nov 1944–Feb 1945; OC 4 Fd Hyg Coy and DADH 2 NZ Div Feb–May 1945; CO 5 Fd Amb Jun–Oct 1945; Assistant Director Hospitals Division, Wellington, 1955–.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE BREAKTHROUGH

The Breakthrough

There was a considerable delay in the opening of the attack by 4 Brigade, which did not leave the start line until 1.45 a.m. on 28 June. Then the assaulting battalions advanced in formation on the unsuspecting enemy until they were at close quarters, when pandemonium broke loose. There was consternation and little ordered resistance by the enemy, though some of the clashes were fierce. Enemy vehicles were set on fire, but this unfortunately gave the enemy light to see us and probably caused more casualties than we would otherwise have suffered. After the infantry had gone forward, hundreds of trucks from 4 Brigade followed them in tightly packed formation. Engines roared, shells exploded, and machine-gun bullets seemed to be coming from every direction. Some vehicles were hit, some exploded, but the column went on through the gap. As the vehicles cleared the gap the infantry of 4 Brigade reorganised and, with very little difficulty or confusion, embussed, loading the wounded in any available space. They had accomplished their breakthrough. Fire from the flanks was still considerable but most of it was high and ineffective.

Meanwhile another breakthrough was made by 5 Brigade. The delay in starting 4 Brigade's attack limited the hours of darkness, and it was decided that the rest of the force would push on independently while the infantry attack was still in progress. The column accordingly moved off by wheeling to the right to make a detour from a point further south. A mile and a half to the south it ran straight into a German tank harbour. At close range the enemy opened fire wildly in his surprise. Had his fire been less hasty it would have been more deadly among the mass of transport moving nose to tail in the moonlight. The front vehicles of the column swung east to a route parallel with that of 4 Brigade, at a speed

probably never improved upon by 3-ton trucks moving across open desert at night. Enemy fire continued against our transport as it came up to the wheeling point, but most of it was high and there were comparatively few casualties. Although the column passed through and over enemy troops for the first mile and a half of its eastward move, the Germans were so shaken by the mass of vehicles and guns boring through them that there was virtually no fire from them once the tanks were passed.

The New Zealand column had broken into three main groups during the move. One went due east, another wheeled back, then went south and then to the east. Another group got free by going to the north-west, resting overnight, and then returning east, and there were several smaller parties split from the main groups and making their own way out.

MEDICAL UNITS IN THE BREAKTHROUGH

Medical Units in the Breakthrough

In the breakthrough three New Zealand and two AFS ambulance cars and two trucks were hit and set on fire, but it was possible to get many of the wounded and medical staff on to the remaining trucks and to continue eastwards. The GOC had a rough journey in his caravan, which was hit at least twice and had its windscreen shattered, but during the height of the battle he got out of bed and viewed the action through the window, likening it to Balaclava. At 10 a.m. the GOC's party, including medical personnel, moved away from the main column and later, as arranged by ADMS NZ Division, was guided to an aerodrome, which was reached at 1.30 p.m. A fighter plane was sent off to call up an ambulance plane, which duly arrived and at 5 p.m. took the GOC to Cairo, with Corporal Wilson [1] of 4 Field Ambulance as medical orderly. The General was admitted to 1 General Hospital, Helwan, in good condition.

In the first salvoes coming from the enemy 4 Field Ambulance also lost an ambulance car. The total wounded brought out in

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[1] **Cpl W. A. Wilson; Dunedin; born NZ 8 Jul 1918; butcher.**

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ambulance cars, unit vehicles, and borrowed trucks was between 300 and 350 (the figures are indefinite because the truck containing 5 ADS records was disabled or destroyed), and of these it is probable that ten to fifteen were lost when ambulance cars were destroyed. The additional ambulance cars which had been taken through to 5 ADS in spite of the enemy encirclement the previous afternoon were a big factor in making the subsequent evacuation of wounded so satisfactory. One truck

carrying fifteen men of 5 Field Ambulance was disabled and these men were all taken prisoner. Three AFS drivers were also missing, presumed prisoners of war.

During the breakthrough 4 ADS accompanied 4 Brigade, and Driver Robinson [1] went forward in his ambulance behind the infantry making the charge. Although ordered to follow the comparatively safe centre of the attack, he zigzagged his ambulance across the whole battlefield, ignoring the heavy fire from machine guns, antitank guns, and heavier weapons, which was particularly intense on the flanks. He collected every wounded man who he saw was unable to walk, and brought his ambulance safely out laden with wounded. For this exploit he was awarded the Military Medal.

The 4th ADS travelled across the desert with 4 Brigade all next day (28 June), making only a few brief stops to treat some of the casualties received from brigade units and burying some dead. All the casualties were attended to when the ADS staged for the night at 9 p.m. and erected a canvas. About 140 cases were treated between the time of setting up the ADS and four o'clock next morning (29th). Some forty of the cases came from 5 ADS. By 4 a.m. a convoy of twenty-seven vehicles (ambulances and trucks) had been organised and was sent off with the patients to 14 CCS at Gharbaniyat. Before the ADS moved farther back with 4 Brigade in the early afternoon it had received another thirty cases, some of them sick, and these were sent to 4 MDS, whose position was then known. Shortly after 4 ADS reached the Fortress A area and had dug in, the unit admitted another thirty cases, and these were evacuated to the MDS also.

When it was proposed that the Division would fight its way back, arrangements were made on the afternoon of 27 June for 4 Field Ambulance to move back to the Fuka escarpment and there open an MDS, leaving a staging post at Point 178. Fifth Field Ambulance moved back some 8 miles during the morning near to the Fuka escarpment, whence all patients were evacuated to 15 CCS at El Daba. The unit then closed and moved in the afternoon to a point south of the Fuka

escarpment, near the newly opened 4 MDS. From there eleven ambulance cars were despatched

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[1] Cpl C. C. Robinson, MM; Auckland; born England, 29 Mar 1918; truck driver.

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with a supply column which was proceeding to a fixed point to meet the Division in its withdrawal. This ambulance convoy joined up with the divisional medical group, which had travelled all night except for short stops to attend to the wounded. The convoy then continued to move east until about 8 p.m., when it camped adjacent to Fortress A at Qaret el Abd, a fortified point in the Alamein line which was also known as the Kaponga Box.

From here 5 ADS evacuated forty patients to 14 British CCS before moving the rest of its casualties into the fortress. Here they were admitted into a specially constructed underground MDS which was to be manned for the next few days by 4 Field Ambulance, assisted by A Company 6 Field Ambulance, which had moved up to the fortress area with 6 Brigade on 27 June.

It was with difficulty that 4 and 5 Field Ambulances were found on the morning of 28 June and ordered to move back with the Division to the El Alamein line. The ADMS NZ Division was not clear as to the exact location of the two units. In a completely featureless and deserted part of the desert it was only by a stroke of good fortune that they were found. The 5th MDS, being closed, had begun to move back of its own accord, but 4 MDS was open and oblivious of the general situation, and at this time was actually the most westerly placed unit of the Division as the main body was withdrawing. Thus, this unit might easily have been captured.

Medical sections seem to have brought up the rear in the withdrawal. For instance, Captain Bryant, [1] RMO 5 Field Regiment, did not reach the El Alamein area until dusk on 29 June. At first light on the 28th

Captain Bryant halted his RAP and remained until mid-morning attending to the wounded of 5 Field Regiment and infantry units. By this time the brigade had long since gone on, and capture by an enemy column seemed imminent.

The three trucks carrying the wounded moved eastwards independently at slow speed. They travelled throughout the 28th and 29th, with the RMO attending to the wounded as occasion demanded. Although the patients included men with severe internal wounds and haemorrhage, no life was lost. This, combined with devotion to duty at Minqar Qaim itself, earned for Captain Bryant the award of the Military Cross.

Likewise, Driver Burling, who was attached to 5 ADS and carried wounded men in his ambulance car, was separated from the rest of the convoy after the breakthrough but resourcefully found his way back to the Alamein line. On 27 June this driver had led out an ambulance convoy from Minqar Qaim to the main dressing station and for his general initiative was awarded the MM.

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[1] **Maj A. L. Bryant, MC, m.i.d.; born NZ 25 Apr 1917; house surgeon, Southland Hospital; medical officer 5 Fd Regt Dec 1941–Jun 1943; 5 Fd Amb Jun 1943–Jul 1944; 1 Mob CCS Jul–Dec 1944; 1 Conv Depot Dec 1944–Aug 1945.**

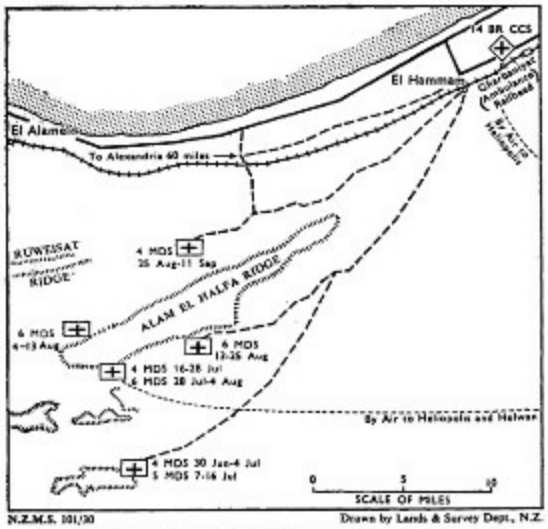
The action at Minqar Qaim assisted in slowing down the momentum of the enemy's advance at this dangerous stage in the Battle for Egypt. The enemy, including one of the panzer divisions, suffered heavy casualties, and in the night charge one infantry battalion was almost destroyed.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE ALAMEIN LINE

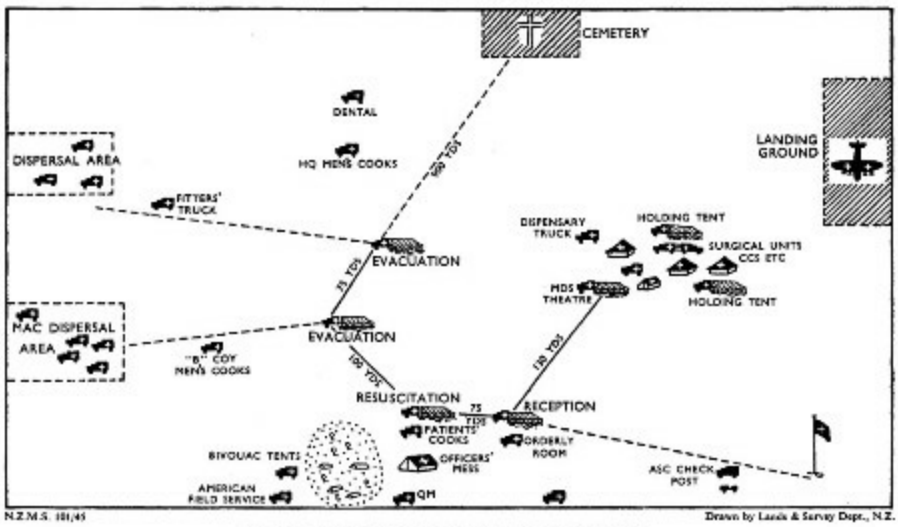
The Alamein Line

The Alamein line, where General Auchinleck had decided to make his stand, was at the end of June merely a loosely connected system of defended localities. The line, beginning at the village of Alamein on Arab's Gulf, extended south-south-west across Ruweisat Ridge a distance of 35 miles to the north-east tip of the impassable Qattara Depression. The defences included three strongpoints: Alamein in the north; Qaret el Abd (Kaponga Box), [1] a fortified central point; and Naqb Abu Dweis, a defensive position in the southern sector bordering the Qattara Depression. When 6 Brigade moved up during the battle of Minqar Qaim it occupied the Kaponga fortress upon which 5 Brigade had worked a year before.



Pre-Alamein battles: Medical Units and Lines of Evacuation

Pre- Alamein battles: Medical Units and Lines of Evacuation



4 NZ Field Ambulance 16–28 July 1942 (Not to scale)

4 NZ Field Ambulance 16–28 July 1942 (Not to scale)

When columns of 4 and 5 Brigades arrived in the fortress area on the morning of 29 June they re-formed north-west of the Kaponga Box, which was held by 6 Brigade, with mobile patrols maintaining a protective screen to the north and west. Similarly, farther south, troops of 5 Indian Division occupied Naqb Abu Dweis. At night there was a certain amount of aerial bombardment.

On 30 June both 4 and 5 Field Ambulances moved some miles east and 5 Field Ambulance remained closed in reserve, while 4 Field Ambulance opened an MDS at Deir el Tarfa, which it maintained until 7 July. Each field ambulance had an ADS company operating with its brigade. Evacuations were carried out by 16 MAC and 2 MAC. At that time 14 CCS was functioning at the medical centre of Gharbaniyat whilst 15 CCS, after moving back steadily in the retreat, was temporarily sited on the El Halfa ridge on the line of evacuation behind 4 MDS. Ambulance cars were redistributed among the New Zealand units as follows: 4 Field Ambulance, 7 New Zealand cars and 11 AFS cars (7 being at the ADS); 5 Field Ambulance, 4 New Zealand cars and 8 AFS cars (5 being at the ADS); and A Company 6 Field Ambulance, 4 New Zealand cars. At this stage medical supplies were unprocurable and stocks of blankets and stretchers, etc., were rapidly diminishing because the CCSs were unable to replace them.

Our casualties were evacuated by desert tracks to the old road near the railway where a medical centre had been formed by 14 British CCS.

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[1] **The position was also known as the Qattara Box, from its position on Bab el Qattara.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ENEMY ATTACKS

Enemy Attacks

On the morning of 1 July the enemy opened the battle for the Nile valley when 1 South African Division around Alamein itself was attacked. This attack was repulsed, but 18 Indian Infantry Brigade to the north of Kaponga Box was overrun. Although this advance was finally halted, it showed that, except for the semipermanent fortifications around Alamein, our general position was still weak. Strongpoints were disconnected and lacked depth, and there was a serious shortage of troops to hold the extended front. The defence of the all-important Ruweisat Ridge position had to be entrusted to battle groups weak in infantry, backed by what remained of our armour. There was a very real danger that the enemy might break through our defences with a sudden and concentrated attack.

On 2 July further attacks were repulsed, and the following day a valuable New Zealand counter-attack on the *Ariete Division* routed the Italians, who left behind over 300 prisoners, 44 field guns, 2 tanks, trucks, and valuable medical supplies. This New Zealand attack relieved pressure on the southern sector and, what was more important still, Rommel lost an important part of the artillery he needed for any offensive thrust.

From enemy documents we learn that on 3 July *Panzerarmee Afrika* reported: 'The enemy's strength, our own numerical weakness and overstrained supply position, all compel us to halt our large-scale attack temporarily'; and on 4 July the entry included: 'Our intention is to hold our frontline positions and regroup with a view to encircling and destroying 2 NZ Division'.

The turning point in the battle to stabilise the line had been reached

by 4 July, when the failure of Rommel's attacks led him to give orders to go over to the defensive. It seemed that Rommel would have to postpone the date of his much-advertised triumphal march to Alexandria.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WITHDRAWAL FROM KAPONGA BOX

Withdrawal from Kaponga Box

As the positions in the Kaponga Box constituted a salient vulnerable to flank attack, it was decided in the face of steady enemy pressure to withdraw from the fortress and establish the line of the central sector farther east. This was done on 8 July, and *21 Panzer Division* captured the empty fortress on 9 July. The front became almost static at this stage and the New Zealanders began to consolidate their positions between Deir el Munassib and Alam Nayil in the north. Sixth Brigade was ordered back to Amiriya, near Alexandria. The immediate crisis had passed—a crisis sufficiently alarming for measures to be taken at Maadi Camp in the event of the need for withdrawal even from there.

Facing a line which he had failed to pierce, the enemy was now confronted with difficulties of supplying an army with land lines of communication stretching 600 miles to the west; an army, moreover, which was in immediate need of reinforcement in men and equipment. Mersa Matruh and Tobruk became important bases for coastal shipping and barges, and therefore, at the same time, the object of ever-increasing bombing raids. From many quickly prepared aerodromes behind the Alamein line more and more planes were coming into action to give us air superiority. While the enemy line was stretched, Eighth Army enjoyed the shortest lines of communication in its history; dangerously close to its base it is true, but as a result it was able to build up and reorganise more quickly.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL UNITS

Medical Units

In the early days of July 4 MDS remained open for the treatment of casualties and sick. Considerable quantities of blood, plasma, serums, and saline were given to patients, a number of whom had received severe injuries in heavy dive-bombing attacks, and voluntary blood donors were used extensively. The CO 14 CCS, in fact, sent a verbal message to CO 4 Field Ambulance congratulating him on the excellent state of the patients received from the unit. This, it was felt, was due to a great extent to the rapid evacuation to the MDS and the generous use of intravenous fluids, plasma, serum, and blood transfusions.

On 1 July arrangements were made to evacuate cases by 2 MAC through 15 CCS, stationed on the line of evacuation to the medical centre at Gharbaniyat, and a section of 2 MAC was attached to 4 MDS for this purpose. It had been decided previously, however, by Eighth Army to utilise a fresh desert axis leading from the south flank of the front deep across the desert to join the Cairo- Alexandria road, and 15 CCS and 2 MAC were detailed to operate on this axis. A small convoy was sent to 15 CCS on 1 July, but next day neither 15 CCS nor 2 MAC could be contacted as they had moved off without notifying the MDS. The 16th MAC, however, had made contact with the MDS late in the evening of 2 July and evacuated sixty-six cases next day.

On 4 July a reconnaissance was made of the route taken by 15 CCS and it was found to be impossible for ambulance evacuation; and, in the meantime, all cases were evacuated to 14 CCS at Gharbaniyat, partly by our own New Zealand ambulances and trucks and partly by 16 MAC from 30 Corps. Strong representations to Headquarters 13 Corps by ADMS 2 NZ Division resulted in the MAC service being re-established on 6 July,

still evacuating to 14 British CCS.

Medical equipment and Red Cross stores arrived from Maadi Camp on 3 July and were divided equally between 4 and 5 Field Ambulances. Further medical stores arrived from Maadi on 8 July, and plasma on 10 July.

Casualties treated by the field ambulances from 27 June to 7 July were:

	Battle Casualties	*Sick*
4 Field Ambulance	612	304
5 Field Ambulance	157	133
6 Field Ambulance	47	109
	816	546

On 6 July 5 Field Ambulance moved west until it was just south of Kaponga Box and opened an MDS, but following an alteration in the divisional plan it moved back next day to the 4 MDS site at Deir el Tarfa, 4 MDS having closed earlier in the day and moved to Mirbat Aza. Then 5 MDS remained open until 16 July, during which time 1095 cases were treated. In addition to bomb and shell casualties, there were many wounded from the fierce battles for Ruweisat Ridge.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ATTACK ON RUWEISAT RIDGE

Attack on Ruweisat Ridge

Some 14 miles south of Alamein was the long, low Ruweisat Ridge ranging from 150 to 200 feet above sea level. It was an important ridge and became the scene of furious fighting. By 11 July the enemy was established on its western end and 5 Indian Division on the eastern end, while 2 NZ Division held the ridge at Alam Nayil. The capture of Ruweisat now became a major objective of the Eighth Army. The New Zealand Division and 5 Indian Division launched an attack against its western end on the night 14–15 July with the object of seizing the crest of the ridge for observation. The assaulting troops were fairly heavily engaged from enemy outpost positions, but by daylight had established themselves on the ridge. However, enemy tanks prevented most of our anti-tank guns and other supporting arms from moving up to give close support. During 15 July our infantry held on to the ridge under constant enemy shell and mortar fire, but the absence of armoured assistance prevented our final consolidation on the objective. Then an armoured counter-attack overran most of 4 Brigade, whose tank support had not come forward. The 19th and 20th Battalions suffered heavily, as did 21 and 22 Battalions in 5 Brigade's night advance. During the night of 15–16 July a withdrawal was ordered.

In this action Captain Thompson, [1] RMO 18 Battalion, was awarded an immediate DSO. The citation was as follows:

Captain Thompson, the MO attached to a NZ Brigade, followed up the attack on Ruweisat Ridge with his RAP truck. When enemy tanks overran another battalion and despite heavy fire, he continued to pick up stretcher cases and attend to the wounded. The truck was then captured and taken west, still collecting wounded. Captain Thompson

decided he would go no further so he stopped the truck and instructed his orderlies to unload the stretcher cases. The enemy threatened him and endeavoured to make him pick up enemy wounded only and go on. An opportunity offering, Capt. Thompson ordered the truck to be immobilised and the part removed buried. This was done and the enemy was convinced that the truck had broken down. Capt. Thompson then spent the day tending the wounded and frustrated every attempt on the part of the enemy to remove them. He was an inspiration throughout the day to those near the truck. Finally about 1900 hours Capt. Thompson ordered the truck to be loaded and drove back to our lines with all his party and the three enemy who had been left to guard the truck. Throughout the day, despite shelling and tank and machine-gun fire, Capt. Thompson's complete disregard for his personal safety was an example to all.

Our active New Zealand MDS was strongly reinforced for the battle by the attachment of British surgical teams from 15 CCS, which had withdrawn to Alexandria. A British FSU (the Greek unit) under Major G. Taylor was working for two days from 10 to 12 July and again from the 17th onwards. Major Keller was operating from 13 to 17 July, when he was temporarily replaced by Major R. Wilson. Some teams were attached till 8 August.

After the attack on Ruweisat Ridge 4 Field Ambulance was moved forward on 15 July, but owing to the uncertain battle situation did not open and withdrew east again the following day to open an MDS at Deir el Hima. Thereupon 5 Field Ambulance closed and moved into reserve. On this day 4 Brigade was withdrawn and replaced by 6 Brigade, which had arrived from Amiriya with 6 Field Ambulance under command. The latter unit, less one company forming an ADS for 6 Brigade, remained closed at Abu Shamla. Following the withdrawal of 4 Brigade, the ADS company of 5 Field Ambulance with 5 Brigade was replaced by a company from 4 Field Ambulance and the whole of 5 Field Ambulance was placed under command of 4 Brigade, with which it moved back to Maadi Camp.

The MDS was staffed by 4 Field Ambulance from 16 to 27 July, when the unit was relieved by 6 Field Ambulance. During this period 2183 cases were admitted and treated. By 17 July a number of units of 4 and 6 Brigades were located close to and almost entirely surrounding the MDS. Requests by ADMS 2 NZ Division for their removal had met with no response. Then at noon on 17 July German bombers circled the area, heavily bombing the surrounding troops but obviously intentionally avoiding the Red Cross. The combatant units were then moved to more distant locations. Colonel Ardagh followed the matter up strenuously with AA & QMG 2 NZ Division, requesting that all units be informed that, unless otherwise decreed by the tactical situation, they must keep their flanks at least half a mile clear of any MDS showing the Red Cross.

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[1] **Capt S. B. Thompson, DSO; Motueka; born Christchurch, 19 Dec 1916; house surgeon, Christchurch Hospital; medical officer 1 Mob Surg Unit Nov 1941–Mar 1942; RMO 18 Bn Mar 1942–Feb 1944; 2 Gen Hosp May 1944–Jan 1945.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE ATTACK ON EL MREIR DEPRESSION

The Attack on El Mreir Depression

Eighth Army had been attacking since 10 July and it continued to take the initiative. On the night of 21–22 July, intending to exploit the enemy's known weakness in tanks and shortage of reliable infantry, another attack was launched. The main attack was made in the central sector by 2 NZ Division and 5 Indian Division, the purpose being to cut the enemy forces in half. It was considered that if this attack succeeded the enemy's communications could be severed by our armour and the northern part of his forces squeezed back from the south and east. Supporting and diversionary attacks were made in the north by the Australians and South Africans and in the south by 7 Armoured Division.

The task allotted to 6 Brigade was the capture of the eastern tongue of the El Mreir Depression, while 5 Brigade assisted by fire from its positions south of Ruweisat Ridge. The attack was launched by 6 Brigade at 8.45 p.m. on 21 July. In pitch darkness the battalions advanced through minefields, clearing enemy positions at the bayonet point and attacking tanks and vehicles with sticky bombs and grenades. The forward battalions reached their objectives but, as dawn approached, were pinned to the ground by heavy fire. Then, at first light, the enemy armour appeared from north of the El Mreir Depression. It had not been possible to organise the position and the tanks of 1 Armoured Division did not come through the minefields in time to intervene. Remnants of 24 and 25 Battalions escaped in the confusion and 26 Battalion avoided being overrun only by withdrawing south-east on to 5 Brigade.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL UNITS IN BATTLE

Medical Units in Battle

On the evening of the attack 6 ADS moved up just before dark to Alam Nayil and set up in an advanced position behind the infantry. As the preliminary attack was to be made on foot, twenty-four additional stretcher-bearers were detailed from 6 Field Ambulance to collect wounded on to points on the brigade axis marked by shaded green lights, whence ambulance cars would lift them as opportunity arose. A party of twelve stretcher-bearers was attached to 24 and 25 Battalions. These parties were late in setting out and had to follow and locate their infantry battalions, with the result that one group found itself temporarily in advance of the infantry.

Casualties were received early from shelling before the troops had passed through the minefields. The stretcher-bearers carried the wounded to the collecting points, whence the ambulances took them to the ADS, negotiating the minefield in the dark. Some of the wounded were cleared to the ADS in a commandeered 3-ton truck and a battalion RAP runabout. The first casualties reached the ADS before midnight and continued to come in and be evacuated through the hours of darkness. In the morning the ambulances were able to clear further wounded from the stretcher-bearer parks and the ADS was kept busy until midday, but by 1 p.m. all patients had been cleared to the MDS.

Situated about 2 miles behind 6 ADS was 4 ADS, and this unit also received and treated a proportion of the wounded, approximately 100 cases as against 230 at 6 ADS.

At 4 MDS there was an almost overwhelming amount of work, but assistance was given by British units. A mobile blood transfusion unit had been attached on 19 July, and 151 Light Field Ambulance and 1

Light Field Ambulance were located adjacent to 4 MDS. Two surgical teams were still attached, and the arrival of Light Section 15 CCS at midday on 22 July provided two extra surgical teams.

From 9.15 p.m. on 21 July the MDS received patients in a steady stream. A high proportion of men were suffering from very severe wounds, so that it was necessary for Major Taylor's surgical team to work all night, while the unit's own operating section was busy until about 3 a.m. on 22 July. Then, at 6.30 a.m. casualties streamed in again and kept all sections of the MDS very busy. By evening 632 patients had been admitted during that day alone, and of these 394 had been evacuated to 14 CCS at Gharbaniyat, every available ambulance car being in use while the NZASC carried about one hundred on returning vehicles. It was necessary to hold over 300 patients overnight. Major Macfarlane, DADMS 2 NZ Division, and Major Boyd, OC 4 Field Hygiene Section and medical liaison officer, assisted the unit medical officers with anaesthetics during the afternoon and night. All operating sections worked right through until 3 a.m. when Major Taylor's team stopped for a few hours. The operating section of 4 MDS continued until 4.30 a.m. and then resumed again at 6.30 a.m. on 23 July. The transfusion unit also worked continuously for about forty hours.

Another very busy day was experienced on 23 July when a further 438 cases were admitted, and evacuation convoys left regularly during the day. On two ambulance planes seventeen severely wounded patients were sent direct to base hospitals in Cairo. (The same number had been evacuated the previous day in two planes, a hospital DH 86 and a Bombay.) It was arranged that one ambulance plane should have a refrigerator installed to carry supplies of blood direct from Cairo to the ambulance, and that urgently required medical stores also should be brought up by air. In the afternoon 1 British Light Field Ambulance offered to take over some patients, and from that time all British troops arriving at the MDS were passed straight on to this ambulance. During the afternoon and evening a large number of Indian troops was admitted, but then the pressure of work eased. Admissions the following

day dropped to 150, which enabled the staff to clear the MDS completely of patients.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL SITUATION

General Situation

In the desert towards the end of July it was clear that the initiative had been wrenched away from the enemy by what General Auchinleck described as 'sheer guts and hard fighting' and that the Axis was on the defensive. In the north on 26 July Eighth Army made another major attack from the Tell el Eisa salient which had previously been established by the Australians. Here, again, the infantry was forced to withdraw from hard-won ground when the supporting armour did not get through.

It was then evident that neither side was sufficiently strong to deliver a knockout blow to the other and that each required a breathing spell in order to accumulate the men, material, and supplies necessary for the resumption of full-scale operations. The full resources of the Eighth Army had been occupied in holding the extended front, and it had been impossible to form a real reserve and so allow troops to be rested, re-formed, and trained for fresh assaults. New formations were beginning to arrive in Egypt, but these had to be trained and would not be ready for some time. It was decided, therefore, to discontinue further offensive operations and to prepare for a new and decisive effort later.

The Eighth Army's casualties in battle during July were about 750 officers and 12,500 men; of these some 4000 belonged to the New Zealand Division—severe losses which testified to the bitterness of the fighting to stabilise the line.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF MEDICAL ASPECTS OF JULY CAMPAIGNS

Review of Medical Aspects of July Campaigns

In the vital and strenuous campaign following the Division's sudden recall from Syria the field medical units played a significant part. The total wastage from the Division from 27 June to 31 July was 6005, made up of: Killed and prisoners of war 2479 (later reduced by 100 or so); wounded 1864; and sick 1662. [1] Considering the heavy casualties suffered by other units in the Division, the New Zealand Medical Corps escaped very lightly during the campaign. Its losses were:

Medical officers: 1 prisoner of war (Captain Feltham) [2] and 2 wounded (Captains Macdonald [3] and A. W. Sutherland);

Other ranks: 1 killed in action; 15 prisoners of war (plus 4 NZASC attached), and 8 wounded. In addition, three AFS drivers were taken prisoner and one driver wounded.

The medical units treated all the battle casualties and sick from the Division together with many British, South African, Indian, and prisoner-of-war sick and wounded. The grand total of these for the period 27 June to 31 July came to 5223, of which 4 Field Ambulance treated 3202, 5 Field Ambulance 1460, and 6 Field Ambulance 561.

In the period under review all admissions and discharges were controlled by the field ambulance, even when the Light Section 15 CCS was attached. It was easier to arrange evacuation according to severity of cases—stretcher, sitting, and those for air evacuation—without duplicating orders and to co-ordinate with the MAC. When the Light Section 15 CCS was functioning it took over the nursing of cases from the attached surgical teams up to the time of their evacuation.

The British transfusion unit proved a boon. It gave 109 intravenous transfusions, while the MDS gave 193 and the ADS companies 46 transfusions from 24 June to 27 July. The transfusion unit, consisting of 1 officer, 3 medical orderlies, and 2 other ranks, was attached on 19 July and thereupon took over nearly all transfusions, giving 96 in the following seven days. Prior to this the field ambulance had organised its own separate transfusion squad and had used seventy blood donors for the supply of blood.

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[1] ***Panzerarmee*** **losses for July 1942 were reported as killed and missing 1981, wounded 3193, sick 5051, i.e., 10,225, apart from Italians.**

[2] **Maj R. J. Feltham; Hunterville; born Ohakune, 5 Jul 1914; medical practitioner; 2 Gen Hosp Sep–Dec 1941; RMO 20 Bn Dec 1941–Jul 1942; p.w. 15 Jul 1942.**

[3] **Maj R. A. Macdonald; Auckland; born Rotorua, 7 Jan 1912; medical practitioner; RMO Long Range Desert Group; 28 (Maori) Bn 1942; 1 Gen Hosp1944; wounded 4 Jul 1942.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

AIR EVACUATION

Air Evacuation

Air evacuation was established from temporary landing grounds alongside the MDS on 19 July and continued more or less regularly, upward of seventy cases being evacuated between then and the end of the month. These evacuations were carried out both by planes with Red Cross markings and by Bombays with ordinary RAF markings. On 24 July two of the latter were shot down adjacent to the MDS, fortunately without loss of life, but planes marked with Red Crosses were left untouched although obviously observed by enemy aircraft. Air evacuation was continued regularly until 25 August. Evacuation direct to Helwan aerodrome near 1 General Hospital began on 5 August and worked smoothly, eighteen patients arriving at the hospital by this means in August.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF OPERATIONS

Review of Operations

The ADMS 2 NZ Division, Colonel Ardagh, in an operational report, commented that for the first time in the war the New Zealand medical services had been able to operate under favourable conditions with a normal line of evacuation and regular channels of supply of equipment and reinforcements. Each ambulance had been complimented independently by 14 British CCS and the base hospitals on the excellent state in which the wounded arrived. This was due to the following factors: rapid evacuation, not only from MDS to base hospital, but from the battlefield to the surgical operating tables in the MDS; the performance of surgery as far forward as possible; the wide use of blood transfusion; immobilisation of fractures in plaster; sulphanilamide therapy locally and internally; sterilised vaseline gauze bandages; and the ability of ambulance medical officers to perform major surgical operations.

Colonel Ardagh also pointed out that although battle conditions, frequent moves, and uncertainty made routine administration awkward there had been no real difficulties. This was to a large extent due to good medical liaison between DMS 2 NZEF and ADMS 2 NZ Division, and frequent and full contact between ADMS, DADMS, and the officers commanding the field ambulances and ADSs, as well as with RMOs. The work of the RMOs, as in the past, had been magnificent. Field ambulances had given outstanding service and had met periods of heavy pressure with resolve and determination. Their service was as generous as it was efficient and allcomers, irrespective of origin, received the same treatment as New Zealanders, as was only to be expected of medical units.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

AMERICAN FIELD SERVICE

American Field Service

The American Field Service ambulance drivers continued to do excellent work for the New Zealand Division. All were keen to be where the fighting was thickest, and their invaluable help not only simplified the evacuation of casualties but enabled wounded to be operated on much earlier, and thus greatly enhanced their chances of recovery.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

1 NZ CASUALTY CLEARING STATION

1 NZ Casualty Clearing Station

On 8 July the Light Section of 1 CCS was moved to Benha, in the Nile Delta, and there opened 150 beds and undertook the staging of sick and lightly wounded proceeding to base hospitals by the Delta road. A surgical team was sent forward to the MDS from the CCS on 30 July when the military situation was more stabilised. It had a surgical van, tentage, and twelve beds to enable serious abdominal cases to be held for eight or ten days if necessary.

At this stage it became the policy in the Middle East to make light sections of casualty clearing stations fully mobile, and on 9 July 1 NZ CCS was placed second on the priority list for an additional vehicle, which was duly delivered.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

AXIS THREAT TO EGYPT

Axis Threat to Egypt

Towards the end of June the troops in Maadi Camp were organised into a reserve formation, known as 6 NZ Division. The personnel of 1 NZ Camp Hospital formed 23 NZ Field Ambulance, with the assistance of the ambulance cars of the attached NZASC Transport Wing. Provisional arrangements were also made to evacuate the members of the NZANS and WWSA in Egypt by sea to South Africa. With the turn of the tide of battle and the general improvement in the military situation early in July it became apparent that evacuation would not be necessary and the provisional arrangements were therefore cancelled.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK AT BASE HOSPITALS

Work at Base Hospitals

The heavy actions fought by 2 NZ Division from 27 June onwards resulted in a large number of battle casualties, and the trying conditions also produced a relatively high sick rate. The only New Zealand hospital able to admit patients from the forward areas was 1 General Hospital as 3 General Hospital was in Syria; and 2 General Hospital's setting up at El Ballah was postponed by GHQ MEF until near the end of July, when it was fairly certain that the enemy was being held at El Alamein.

The first casualties arrived at 1 General Hospital on 30 June, and during July 444 battle casualties were admitted, some coming by ambulance train from Alexandria and some by ambulance planes direct from the main dressing stations. Ambulance planes at first arrived at Heliopolis aerodrome, some 40 miles from Helwan, but it was later arranged for New Zealand patients to be landed for a time at Helwan aerodrome, only a mile from the hospital.

Many New Zealanders were admitted to British hospitals in Alexandria and in the Canal Zone, especially prior to the opening of 2 General Hospital on 29 July. On 20 July there were 752 New Zealand patients in British hospitals in the Canal Zone, but many of these were transferred to 2 General Hospital in the same locality early in August. This hospital, when established, also received casualties direct from the battle area.

At 1 General Hospital it was found that the condition of battle casualties on arrival was excellent in most cases, owing to the efficient treatment received in forward areas. Air evacuation was a noteworthy improvement. Most wounds were clean on arrival at Helwan, although five cases of virulent anaerobic infection, including three cases of gas

gangrene, were encountered. In the treatment of uninfected wounds the closed plaster method was used as little as possible. Local sulphonamide insufflation, tulle gras, and frequent saline dressings were used. This involved more work for the nursing staff, but the results were good and early skin grafting and secondary suture were possible. During August there were opportunities of effecting wound coverage by the use of Thiersch grafts, thereby accelerating healing, reducing fibrosis, and reducing the period of hospital treatment by many months in some cases. The saline bath unit was found to have a very wide sphere of usefulness in the treatment of battle casualties. The amputations were all done in the forward areas, and good results followed the cutting of unsutured flaps and the application of skin traction. Most wounds were due to bombs and shells, and there were relatively few bullet wounds. For this reason wounds with gross tissue loss were frequent and multiple wounds often occurred. Blast effects were common, including ruptured tympanic membrane, haemothorax, and cerebral concussion. The burns were mostly petrol burns due to trucks being set on fire by enemy action.

After arriving at El Ballah at the end of July, 2 General Hospital rapidly got into its stride and the surgical arrangements were very satisfactory. The wounded seen by the Consultant Surgeon at the hospital in August seemed to have developed more infection than those admitted to 1 General Hospital, possibly owing to the more frequent transfers from one hospital to another. Cross infection and infection during dressings was a factor in all cases with large surface wounds. Steps were taken to counteract the possible spread of infection by the provision of extra surgical equipment such as dressing forceps, and the adoption by sisters and orderlies of an improved aseptic technique.

At Beirut in Syria 3 General Hospital received only a few battle casualties from the Western Desert by ship, although the hospital, functioning practically as a British hospital, was kept very busy with local admissions, which were mainly medical. Admissions for the three months, July to September, came to the large total of 5234. Of these

only 592 were 2 NZEF troops.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SUMMER AT ALAMEIN

Summer at Alamein

After the July battles a lull of static warfare settled over the Alamein line. The New Zealand Division was deployed over the central ridges—not really ridges but the higher ground of smooth or rolling desert interspersed with sandy wadis and depressions. The whole area was covered with the litter of war—burnt-out tanks and vehicles, rough crosses or a steel helmet on a stick to mark the graves of friend or foe, demolished field guns, abandoned gunpits and sangars, spent ammunition, shell cases, and equipment.

Both sides wired and mined their front in depth. Our patrols went out almost every night seeking information and raiding, salvaging vehicles, and burying the dead. At dawn both sides lobbed shells at the other until the sunshine and dust began to create mirage effects and targets became blurred. From 10 a.m. to 4 p.m. quietness usually settled over the battlefront, broken only by occasional shell-fire and bombing raids, the latter decreasing as the RAF began to gain superiority over the Luftwaffe. In the late afternoon and during the night the guns became active again.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHANGES IN COMMAND

Changes in Command

Big changes in command took place in the Eighth Army in August. On 10 August Lieutenant-General Freyberg returned to the desert to resume command of the Division after a remarkably quick recovery from his wound. The General spoke with enthusiasm of the work of all the New Zealand medical services, and had also recently sent a laudatory cable to the Minister of Defence so that the people of New Zealand might be informed. The head of the British medical mission visiting the Middle East had stated to him that, from the point of view of organisation, efficiency, professional ability, and the obvious desire of all ranks to do the utmost for the patients at all times, 4, 5 and 6 Field Ambulances were considered the best in the Middle East.

Lieutenant-General W. H. E. Gott, Commander of 13 Corps, was shot down and killed when enemy fighters attacked the plane in which he was taking off for Cairo from a forward airfield, and on 11 August General Freyberg took over temporary command of the corps. Gott had been chosen to be the new Army Commander. In his stead Lieutenant-General B. L. Montgomery was appointed, and at the same time General Sir Harold Alexander became Commander-in-Chief of all Middle East Forces.

On 20 August Mr Churchill visited our sector of the front. Speaking to a gathering of New Zealanders, representatives from all units in the line, the British Prime Minister paid the Division a striking tribute, saying: 'You have played a magnificent, a notable, even a decisive part in stemming a great retreat which would have been most detrimental to the cause of the United Nations.'

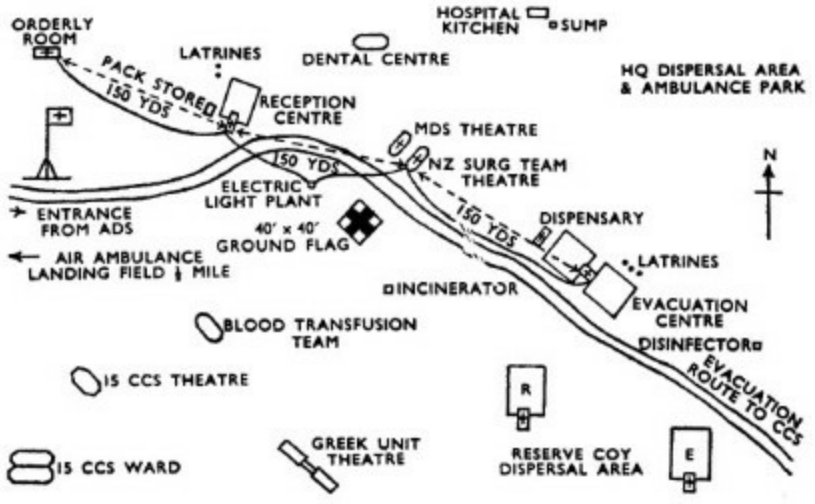
NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE MEDICAL UNITS

The Medical Units

During August the medical units were concerned mainly with the treatment of the sick. The relatively high sick rate of the Division was due to the prolonged nature of the battles and the trying conditions under which they were fought, not forgetting the summer heat with the water ration only three-quarters of a gallon a man a day. There was an increase in dysentery and diarrhoea (and later infective hepatitis) owing to the great number of flies, control being difficult because of the unburied dead lying beyond the forward defended localities out of reach of burial parties, and the prevailing wind blowing directly from the Italian lines.

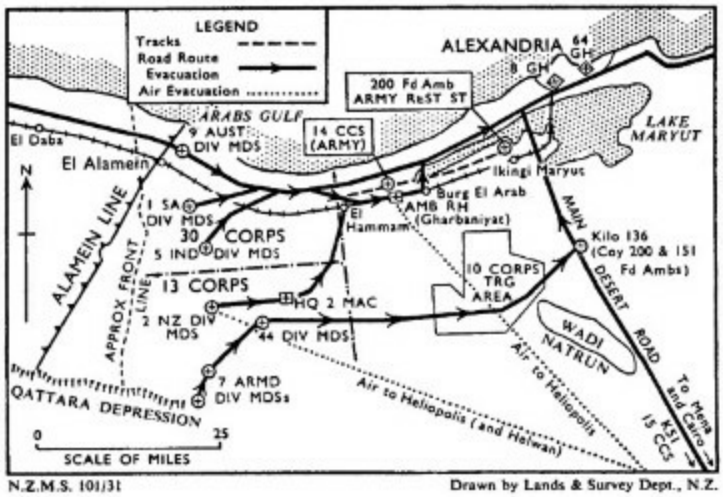
On 28 July 6 Field Ambulance took over the MDS from 4 Field Ambulance on the same site, Deir el Hima, and 4 Field Ambulance moved into reserve at Abu Shamla. Fifth Field Ambulance was still in Maadi Camp. A surgical team from 1 NZ CCS under the command of Major S. L. Wilson joined 6 Field Ambulance on 30 July, and the surgical teams from 15 British CCS under Majors Taylor and Keller were withdrawn soon after to rest and refit.



6 NZ Field Ambulance MDS, July–August 1942

6 NZ Field Ambulance MDS, July–August 1942

The 6th MDS moved on 4 August to another site at Deir el Hima to enable the previous site to be used as a defensive position. Here it stayed until 13 August, when the likelihood of an enemy attack made it apparent that the unit was too far forward to permit of sufficient mobility if overloaded with patients; it moved back but was still too close for 13 Corps' requirements. Fourth Field Ambulance, which had moved to Bir Abu Shineina on 19 August, took over and opened as MDS on 25 August after the New Zealand engineers had graded a satisfactory route to connect with the brigades. With the closing of 6 MDS, 1 NZ CCS surgical team and 6 Mobile Transfusion Unit joined 4 MDS. The location of 4 ADS and 6 ADS was Alam Nayil, and although 132 Brigade of 44 Division had come under command of 2 NZ Division, it was decided that, owing to the confined area, the two ADSs would be sufficient to treat casualties from all three brigades.



Alamein Line: Positions of Medical Units, August 1942

Alamein Line: Positions of Medical Units, August 1942

During the month 4 Field Ambulance treated 335 patients and 6 Field Ambulance 1616, of whom 103 were New Zealand battle casualties and 1310 sick from the Division.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE ENEMY ATTACKS

The Enemy Attacks

On the night of 30–31 August, Rommel resumed the offensive in a fresh endeavour to defeat the Eighth Army and capture Egypt and the Suez Canal. However, preparations had been made for this and Rommel's move came as no surprise. The enemy's armour in two main columns penetrated the minefields in the southern sector between Munassib and Himeimat. Rommel threw the whole *Afrika Korps* into the offensive. The light armoured forces watching the southern minefields fell back on to the main defences. During 31 August and 1 September the enemy established a narrow salient between the Qattara Depression and our fortified central ridges, in which confined area his closely packed concentrations of tanks and vehicles presented excellent targets for the RAF, which did much damage.

Rommel could not risk bypassing the Eighth Army with its considerable armoured forces and he then swung north against our southern flank, which consisted of a deep east-west defensive line along the Alam Nayil-Alam el Halfa ridge. His attacks were repulsed and he then found himself in a dangerous position vulnerable to artillery and bombers, which compelled a withdrawal in the early morning of 3 September.

During Rommel's attack eastwards the New Zealand Division had been holding the southern sector of the main defences on the high ground north of Deir el Munassib, shelling the enemy columns and waiting for a suitable opportunity to attack. On the evening of 3 September 6 Brigade, 132 British Brigade, and 5 Brigade launched a night attack with considerable success. The threat on the enemy's flank as he withdrew made him react violently. He made a number of counter-

attacks the following day, but these failed and the withdrawal of the main German army continued. By the morning of 5 September no doubt existed that the enemy had accepted defeat. Rommel withdrew his whole force behind the minefield. He had lost many men and a considerable amount of material and was left with the disquieting reflection that his own army would need reinforcements before he could resume the offensive. Time was now on the side of the Eighth Army. Rommel found it politic to call his failure a 'reconnaissance in force'.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

OPERATIONS OF MEDICAL UNITS

Operations of Medical Units

In the initial stages of the enemy attack both 4 and 6 ADSs were in an area subjected to a degree of shelling and bombing, but fortunately neither unit received damage. The offensive by 2 NZ Division involved cutting three gaps through minefields. Ambulance-car posts were established at minefield gaps and, as usual, an ambulance car was posted with each RMO. Casualties arrived at the ADSs in a steady stream throughout the night of 3–4 September. They were given treatment and held in the ADSs. Additional ambulance cars and 3-ton trucks had been sent up from 4 MDS to cope with the evacuation of patients, but it was not possible to send any wounded back before daylight as it was a dark night and the route out from the ADSs was by narrow, rough tracks through minefields.

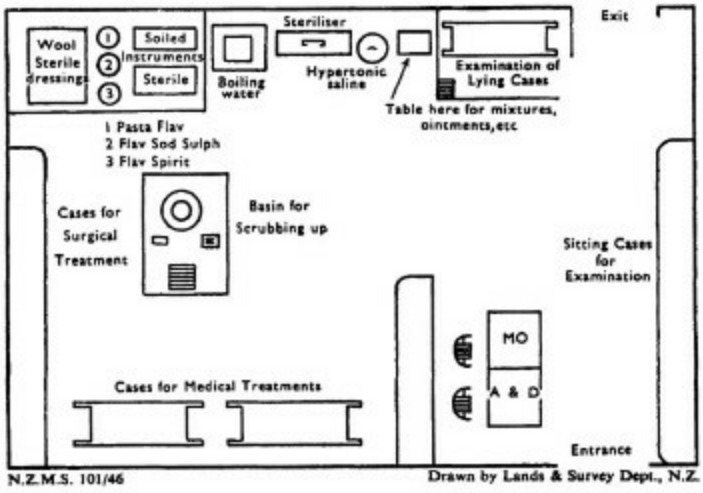
Evacuation proceeded smoothly in the morning and by 1.30 p.m. on 4 September the majority of the night's casualties had been passed on by the ADSs. By this time approximately 400 patients had been handled. Casualties continued to come in throughout the day, and by midnight on 4–5 September 4 MDS had handled 560 cases. A surgical team from 6 Field Ambulance was called upon and, together with the 1 NZ CCS team and surgeons from 4 Field Ambulance, four operating tables were utilised. On subsequent days bombing and shelling continued but casualties were much lighter.

During the night of 3–4 September at Deir el Angar Captain Rutherford, [1] who was RMO to 26 Battalion, displayed outstanding courage. His battalion had advanced to new positions and was subjected to continuous artillery, mortar, anti-tank and machine-gun fire, but Captain Rutherford and his sergeant personally visited all the exposed

positions on foot. He set up his RAP and throughout the night and through all of the following day attended to the wounded, not only from his own unit and attached troops, but from the whole of a neighbouring formation whose medical supplies and ambulances had been blown up. With a very limited staff, Captain Rutherford attended to over 200 cases. For his work in this action he was awarded the Military Cross.

From 1 to 11 September, the date on which the Division was withdrawn from the line, 4 MDS treated 744 battle casualties and 615 sick, of whom 234 and 289 respectively were New Zealanders.

The New Zealand Division was withdrawn from the line by stages from 8 to 11 September, being relieved by 1 Royal Greek Brigade and two brigades of 44 Division. The MDS was maintained by 4 Field Ambulance until 132 Field Ambulance set up nearby. Thereupon 4 Field Ambulance moved to Bir Hasein, near El Hammam, and opened another MDS which was taken over by 5 Field Ambulance when that unit arrived from Maadi on 12 September. On 13 September 4 Field Ambulance returned to Maadi Camp to rejoin 4 Infantry Brigade, which was training for conversion to an armoured brigade.



5 NZ Field Ambulance Medical Inspection Room (3 IPP tents) for sick and accidental injuries

5 NZ Field Ambulance Medical Inspection Room (3 IPP tents) for sick and accidental injuries

For the medical inspection room in Italy either three IPP tents or two adjacent rooms in a building were used, with an examination section separate from the treatment section. The treatment section (or room) was divided into medical and surgical departments. The distribution of the orderlies was as follows: 1 NCO (supervisor); 1 clerk (A & D); 1 medical orderly (medical treatments); 1 instrument orderly (sterilisation of instruments and dressings); 2 surgical orderlies (to do all dressings).

From 17 to 19 September 5 and 6 Brigades, with 5 and 6 Field Ambulances under command, moved to a training area south of Burg el Arab, where each field ambulance set up an ADS and an MDS. On 29 September 1 NZ CCS opened at Kilo 120 on the Cairo- Alexandria road, and thereafter New Zealand patients were evacuated to this unit for onward transmission to 1 General Hospital, Helwan.

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[1] **Capt A. M. Rutherford, MC and bar; Lower Hutt, born Dunedin, 27 Mar 1915; medical practitioner; RMO 26 Bn Oct 1941–Mar 1943; wounded 22 Mar 1943.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF MEDICAL ARRANGEMENTS

REVIEW OF MEDICAL ARRANGEMENTS

***Minqar Qaim*: The plan for the Minqar Qaim action was the attachment of an ADS to each brigade, with smaller sections to any detached group. Casualties were evacuated to the ADS by ambulance cars supplied both from the field ambulance and from the American Field Service group. Stretcher-bearers were detailed to carry casualties to the RAP, but help was generally given by combatant transport such as Bren carriers or by the ambulances going forward of the RAP. From the ADS, field ambulance and American Field Service cars evacuated wounded to the active MDS, another MDS being in reserve. Main dressing stations were some 20 miles back from the divisional units.**

From the MDS evacuation was carried out by 2 British MAC to British units, either Corps or Army CCSs, whence the cases were evacuated to the base hospitals in the Delta and in the Canal Zone.

***Alamein Line*: Two advanced dressing stations were similarly attached to the brigades evacuating to the active MDS. Arrangements were made to carry out all forward surgery at the MDS and British surgical teams were attached for this purpose. Later a Field Transfusion Unit was also attached. A surgical team from the New Zealand CCS was then sent forward to the MDS, and later this was strengthened by extra equipment and orderlies to allow abdominal and other serious cases to be held and nursed for up to ten days following operation. Air evacuation from improvised landing grounds alongside the MDS was also utilised for serious cases. Ambulance-car evacuation by 2 British MAC was to the Army CCS at the L of C medical area, from where road, rail, and air evacuation was provided.**

Evacuation of Wounded

1. ***Evacuation to the MDS*: The provision of twenty AFS ambulance cars at the beginning of the campaign built up adequate transport for the evacuation of cases from the actual battlefield back to the MDS. There were only eight ambulances normally available for each field ambulance at this period and five were destroyed during the Minqar Qaim breakthrough. The courage and efficiency of the ambulance drivers of both groups drew forth high praise, both at this time and generally throughout the later campaigns. The AFS's four-wheel-drive ambulance cars could go farther forward in soft sand or sticky mud than some of the other ambulance cars, and their drivers were always more than willing to take them farther forward to bring out wounded from battle areas. The foresight in obtaining the extra cars enabled many lives to be saved.**
2. ***Evacuation from the MDS*: This was regularly carried out by 2 British MAC. There was only one hitch when contact was lost during the retirement of 15 CCS with 2 MAC across the desert to the Delta, in accordance with an Army plan to provide a southern evacuation route, which was proved impracticable. Travelling by ambulance car over the rough desert militated greatly against the recovery of the serious cases. Extra transport by trucks was supplied at times for light cases by NZASC.**

From the Alamein line air transport was utilised from the MDS area, both by air ambulance and by transport planes. Two of the latter were destroyed by the enemy and few air ambulances were available. Abdominal cases and chest cases with disturbance of respiration were held, but head cases, spinal injuries, and fractures travelled well and were saved much pain and exhaustion.

Red Cross Protection

The protection of the Red Cross was utilised for the divisional medical units and the evidence is that it was respected by the enemy. The transport planes destroyed when being used to evacuate wounded were not marked with the Red Cross, and ambulance planes so marked were not molested. Deliberate bombing of medical units did not occur, though bombing of our forces was common at this period and was responsible for many casualties.

The Work of the Regimental Medical Officers

The RMOs were faced with difficulties and serious discomforts in their work during this period. Their equipment varied considerably, some having a 15-cwt truck, some a three-tonner, but generally an ambulance was also attached to each battalion. In some cases a 3-ton truck had been especially fitted up for the RAP. Four-wheel-drive vehicles were obtained if possible, as sandy areas had to be negotiated and the desert surface was often very rough. Unit trucks and Bren carriers were utilised to take the wounded to the RAP and ambulances to transport them to the ADS. Frequently ambulances were utilised in front of the RAP.

Casualties from minefields and from bombing were frequent. The minefields caused many casualties amongst the ambulance personnel when the ambulances were used away from the cleared tracks. Large Red Cross flags were flown by the RAPs, and large crosses painted on top of the 3-ton trucks.

Wound treatment was simple and splinting, except of the simplest kind, was generally left to the ADS. Speed of evacuation was the aim. The sand and heat were oppressive and there was only the minimum supply of water.

Surgery During the Campaign

The pre- Alamein period of the desert campaign is notable for the developments in the surgical treatment of the wounded in the forward areas. Very important innovations were made to enable efficient surgery and post-operative nursing to be carried out at the main dressing stations of the field ambulances. The difficulty of evacuating serious cases over the rough, trackless desert made it impossible to defer operation till the casualty could be brought back to the CCS. The fluid and uncertain military situation made it impossible for the forward (British) CCS to be stabilised and undertake operative work. In fact, the CCS was completely withdrawn a few days after its hurried withdrawal to the Alamein line. The full responsibility for forward surgery for 2 NZ

Division was thus undertaken by our active MDS. Fortunately, all our MDSs possessed extra equipment for this purpose and, particularly, each field ambulance had surgeons capable of performing major surgery. Surgical teams had been made available previously during the desert campaigns by the RAMC, and more had recently been supplied. Some of these British teams were attached to our active New Zealand MDS from 10 July till 8 August. During that period there were normally two extra teams attached. One was the Greek unit under Captain Taylor, RAMC, with its specially equipped operating van; the other, from 15 CCS, was supplied after that unit's withdrawal from the battle area. These teams were constituted of capable, well-trained surgeons experienced in forward surgery, all of whom combined well with our units and did most excellent work, dealing with the abdominal and other serious cases, while our own surgeons usually dealt with the less serious cases. The disadvantages of the lone surgical team were not present as there were always at least three teams available in the MDS and, if required, further help was available from the resting MDS.

At the end of July a surgical team under Major S. L. Wilson was sent forward from our New Zealand CCS. This team at first worked in conjunction with the British teams, but later, when operations quietened down, it enabled the British teams to be released. The adequate provision for surgery by means of these teams, concentrated as they were in one forward operating unit, was an eminently satisfactory development at this period. There was a well-sustained evacuation of cases from the MDS, mainly by ambulance over the rough and uneven desert, but partly by air from airstrips alongside the operating unit. Unfortunately, experience showed that air evacuation of abdominal cases shortly after operation, and of serious chest cases, was very dangerous, and this led to arrangements being made to retain the abdominal cases up to ten days at the MDS. For this purpose a section of 1 NZ CCS was attached to the active MDS. This section consisted of nursing orderlies, beds, and bedding, as well as the surgical van with lighting and sterilising units, and these facilities were thereafter always available when required in the field ambulances.

The surgical teams at that time were all conscious of difficulty in lighting, sterilisation, and the nursing of serious cases after operation. Arrangements were made so that, in the event of the MDS having to move quickly, a section of a field ambulance under an officer would immediately take over the patients and nurse them until they were fit to move to the CCS.

Resuscitation

The field ambulances were supplied with equipment for the giving of blood and plasma and personnel had been trained for this purpose. In one field ambulance dental mechanics proved eminently suited to this work. In the early part of the campaign blood drawn from seventy donors was used, and serum was also given. The position was markedly improved on 19 July when Captain D. D. Muir, RAMC, with his British field transfusion unit was attached to our active MDS. For transfusions there were then available highly skilled personnel and an ample and regular supply of blood from the base unit in Cairo. This blood was supplied to ADSs as well. It was noted that there were only a few minor reactions in the forward areas and that blood produced a much more satisfactory result than serum.

The OC British Transfusion Services provided boxes containing four bottles of liquid blood plasma and two sterile giving sets for issue to RMOs. Fifteen such sets were issued to the RMOs, thus providing a useful reserve for the Division. Serum, plasma, and saline solution had previously been given regularly at ADSs and, in anticipation of further operations, supplies of blood were similarly arranged. Blood supplies from 6 British Mobile Transfusion Unit were sent to ADSs daily in insulated containers packed with ice. Any unused blood was returned in twenty-four or forty-eight hours to the refrigerator and fresh supplies sent in exchange, thus avoiding wastage by deterioration.

Sterilised Dressings

A further development that contributed to good results was the

provision of sterilised dressings and theatre supplies, packed by the team of NZMC orderlies attached to 63 British General Hospital and by our own base hospitals.

Wound Treatment

As regards wound treatment, the utilisation of sulphanilamide, both locally to the wound and also by the mouth, was standardised and a special label introduced for the recording of dosage given during the evacuation to the Base.

Vaseline gauze was the normal wound dressing and this was available sterilised and in ample supply. Tulle gras dressings were also supplied.

Splinting

Fractured femurs were generally evacuated in Thomas splints, with posterior plaster slabs and circular plaster bandages incorporated with the splint, giving excellent stability and comfortable travelling. Fractured arms generally had light plaster splints applied. Fractured spines were sent down in body plasters. Difficulties were encountered in applying these plasters, and also plaster spicas, without a plaster table.

Treatment of Special Cases

***Heads*: These cases were mostly sent to the base unit in Cairo for operative treatment. In some cases early suture at the MDS was successful.**

***Chests*: The suture of the sucking wounds proved unsatisfactory, being generally septic when seen at the base hospitals. Firm pads kept in place either by elastoplast or by a few strong silkworm sutures tied over the pad were therefore utilised.**

***Abdomens*: Early evacuation militated against satisfactory results. The exteriorisation of the colon was utilised for colonic injuries.**

Sulphadiazine was first utilised for introduction into the peritoneum at operation. Gastric suction and continuous intravenous glucose and saline became routine treatment.

***Amputations*: These were numerous. Skin traction was frequently applied in the early stages and some cases lightly sutured over a tulle gras roll had done well. Generally the wounds were clean.**

***Burns*: Tanning had ceased to be employed. Instead, sulphanilamide in small quantities and tulle gras dressings were applied. At the base hospital our saline bath unit was utilised for treatment of these cases.**

Infection

There was less sepsis in the wounds than in the previous campaign owing to early operation and possibly to local sulphonamides. There were some cases of gas infection but none of the septicaemic variety, the cases seen being associated with deficient blood supply resulting in local gangrene of muscle groups. Amputations, however, even of the arm, had to be done for gas gangrene.

Anaesthesia

Pentothal was commonly used both for induction and for the shorter cases. Gas and oxygen was utilised by some of the surgical teams. Ether was used for the more severe cases.

General

The results generally were excellent and the experience gained in the Second Libyan Campaign had been used to assure first-class results. The work of our forward units earned high praise from senior British officers and British units on the L of C and at the Base. To this result the excellent British surgical teams attached to New Zealand medical units contributed greatly, as did the courageous work of the AFS drivers and other ambulance personnel.

The combination of skilled surgeons, adequate resuscitation, and markedly improved nursing facilities made a great difference in the surgical results obtained, and this was noted and commented on by all observers at Base. Colonel Ardagh, ADMS 2 NZ Division, a capable surgeon and a very able and forceful administrator, was largely responsible for the co-ordination and efficiency of the forward surgery in our Division at that period.

Standard of Surgery

The Consultant Surgeon, Middle East Force, in his report at the time, had the following comments to make on surgery generally during the summer battles of 1942:

.... The surgeons at base units had nothing but praise for the work of their colleagues in the forward units, and few criticisms were forthcoming. I formed the impression that there was yet a further improvement in the standard of the work, and several divisional surgeons voluntarily stated that they thought the work was 'first-class'. It was certainly an impressive sight to see so many severely wounded men looking remarkably well and free from pain, at all events, in these, the earlier days of their incapacity. From officers and other ranks who were casualties, I heard no complaints, in fact, much praise of the medical services.

During the period July to September 1942, including the battle of Alamein, Major S. L. Wilson was senior surgeon of a surgical team attached to New Zealand field ambulance dressing stations. He operated continuously during long periods without rest, providing major surgery for the most seriously wounded, with outstanding skill and devotion. This, taken in conjunction with his previous service, frequently under conditions of the greatest danger, was a most distinguished and meritorious contribution to battle surgery and earned him the DSO.

Hygiene and Sanitation

A remarkable feature of the period after the Division's return to the desert was that the Field Hygiene Section was not with the Division as a complete unit from the end of June until 19 November. When the main body of 4 Field Hygiene Section reached the Mersa Matruh area at the end of June, it had to hand over its vehicles to 27 (MG) Battalion as transport was in short supply and the Division was to adopt a mobile role. As they would be an encumbrance, the workshop and disinfestor sections of the unit were sent back to Maadi. The ten NCOs and men remaining with the Division were attached to 4 and 5 Field Ambulances and the OC, Major W. J. Boyd, became liaison medical officer on the staff of the ADMS. After 5 July there were left with the Division only the five NCOs and men with 4 Field Ambulance.

Before the end of July the Division was beginning to be pestered by a fly plague. At the end of July six members of 4 Field Hygiene Section were recalled to the Division, making eleven NCOs and men attached to the medical units, but still without transport or equipment. Sanitary appliances had to be improvised from discarded petrol tins and ammunition boxes, the only tools available being broken bayonets and tent mallets. The workshop at Maadi lent its support by the wholesale construction of fly-traps and incinerator latrine lids, made according to the unit's own design, and by making up gallons of fly poison, which began to arrive in quantity in the middle of August. On 11 August the members of the unit in the Division were reformed as a unit at Headquarters Rear Division. Activities of the section at this period were not confined to 2 NZ Division, assistance being given to the new British divisions which had just arrived from the United Kingdom. Having little idea of field sanitation and not being acclimatised, these units were experiencing a fairly heavy incidence of dysentery.

In August the blistering heat of summer, the dust, and the flies were at their peak. Despite the most vigorous counter-action, the flies clustered everywhere. To some extent the fly problem was uncontrollable owing to unburied dead lying beyond the reach of burial parties, and to the prevailing wind blowing directly from the Italian lines and bringing

flies with it.

The area then occupied by the troops had been fairly thickly populated by native tribes and was therefore so contaminated that fly-breeding was encouraged. The coastal sector, particularly along the railway, had always been the most thickly populated area, and this suffered most from flies. Vehicles had a great attraction for flies, and each one of the thousands of trucks running from the coastal sector, particularly from supply points, contributed its not inconsiderable quota to those already living and multiplying in the divisional area.

Hygiene measures within the Division were made as complete as possible from the first. Owing partly to lack of materials and partly to the rocky nature of the ground, deep-trench latrines were not practicable except in certain rear areas. Shallow-trench latrines were used and changed every twenty-four hours, with the copious use of oil and cresol following burning-out with petrol. All refuse was burnt before burial. Fly netting at first was in short supply and was issued only to cooks' trucks, RAPs, and dressing stations. Flytraps and poisons were not available in the initial stages at Alamein, but were put to good use when they were forthcoming early in August.

To make matters worse a cloud of mosquitoes, A. Pharoensis, covering an area at least 10 miles in diameter, was blown by an east wind from Wadi Natrun and the Delta over the battlefield on 28 July, and no one was exempt from their voracious bites, which raised nasty blisters on the skin. Fortunately, when the wind changed the mosquitoes disappeared. Later, inquiry in Alexandria revealed that the mosquito phenomenon was not unknown, and it was obvious that the mosquitoes had been wind-borne.

Campaign Against Flies

The fly menace, with its accompanying incidence of diarrhoea, had reached such alarming proportions by early August that a rigorous drive was developed against it. A New Zealand Division routine order of 7

August directed units to construct as many flytraps as possible and gave details for their construction in an appendix. A conference presided over by ADMS 2 NZ Division was held at Divisional Headquarters on 9 August to discuss measures to be taken in the campaign, and a copy of the minutes of the meeting was forwarded to all units. Colonel Ardagh explained that the conference had been called to increase the comfort of troops and to diminish the risk of sickness. Diarrhoea during the week had risen to 1000 cases, fortunately only of a mild nature, as evacuations totalled only 38 as against 51 for the previous week. The cycle of infection was explained and measures for prevention suggested to and discussed by unit representatives.

The following day the intensified campaign against flies was well under way. A truck arrived from Headquarters 2 NZEF, Maadi Camp, with 150 fly-traps, 20 gallons of formalin, and eight pounds of sodium arsenite which were delivered to units. On 11 August part of 4 Field Hygiene Section was reformed as a unit to play its major part in the campaign.

Models of improvised fly-proof latrines made from petrol tins, fly-traps of various kinds, and soak-pits were made and demonstrated to all units. For those units which were new to the desert, special lectures and demonstrations had been arranged and these had produced most gratifying results. A demonstration area was prepared at Rear HQ NZ Division and representatives of all units visited it. As a result they were able to produce appliances suitable to local conditions. Stress was laid on improvisation and nothing was shown that could not be made with petrol tins, a bayonet, and a shovel. Methods described in textbooks were of no use when the materials were not available; but the principles could be embodied in improvisation from salvage. Education was the responsibility of the medical services, but it was the responsibility of the unit to see that a high standard of hygiene and sanitation was maintained at all times. It was the thoughtlessness and carelessness of the individual which endangered health in situations where manpower was the most important factor.

The greatest handicap to a total anti-fly campaign had been the lack of material. It had to be recognised that while everything possible might be done to prevent breeding and to minimise infection, the psychological effect of killing flies and actually seeing them die was a great one. There was a pathological and psychological battle. The mere presence of flies has an effect on both morale and comfort which is almost as important as the danger of infection. Before the end of August the improved state as regards flies was most gratifying.

In regard to other sanitation arrangements, urinals were constructed of tin so as to form a pipe leading into a soakage pit under the sand—the desert-lily pattern.

Soakage pits were also dug at each vehicle and special pits, made from two petrol tins, constructed for cookhouses. All the pits were flushed daily with petrol. Altogether, the unprecedented conditions led to both a keen appreciation of the necessity for adequate sanitary measures and remarkable ingenuity and success in designing methods of dealing with the difficulties that arose.

Rations

Rations and the handling of them were specially investigated in view of the fly menace. Inspections carried out along the supply line from the field maintenance centre to units showed that precautions precluded the possibility of infection of food, except perhaps for bread, which was uncovered until it reached the field maintenance centre. The conclusion reached by OC 4 Field Hygiene Section after conversing with personnel of all units was that great satisfaction was felt concerning the rations. The standard was good and the supply sufficient. With the rations, plus those extras which most units provided out of regimental funds, it was considered that the diet was adequate.

While the men endured the discomforts of the desert a continuous stream of vehicles moved backwards and forwards over sandy desert tracks, great clouds of dust in their wake. They brought forward

increasing quantities of food, water, and ammunition. The main items in the rations were bread, biscuits, bully beef, tinned stew, tinned sausages, cheese, and margarine. Then, with improved organisation, came fresh tomatoes, lettuce, melons, marrows, potatoes, onions, and limes. The water ration was small—one water-bottle and then one gallon a day for each man—for drinking, washing, and cooking; occasionally the issue was increased to permit of a real wash. In spite of all they had gone through, the men were comparatively fresh—fit, lean, and very brown, but not hard.

Health of Troops

The incidence of diarrhoea and dysentery steadily dropped from its high level of July and early August, though it was still considerable. Its fall coincided with the reduction of flies consequent upon the strenuous measures instituted; other factors to be considered also were that the height of the late summer fly season was passing as the weather grew cooler, and that a certain amount of acquired immunity existed among the troops.

During August supplies of castor oil and sodium sulphate were short, but they improved again later. Sulphaguanadine became available in the Middle East Force in restricted quantities at this time and a supply was sent to the Division at the end of August for trial in the forward areas. It was found to be most effective.

After two and a half months of continuous fighting the troops were becoming more susceptible to minor illnesses, including septic skin conditions and sore throats. Infective hepatitis made its appearance and rose to epidemic proportions by October. There had been a number of cases of malaria, but most infections seemed to have been contracted amongst troops detached from the Division and temporarily stationed in the Nile Delta or in Maadi Camp.

Infective Hepatitis

Infective hepatitis first appeared in the Division at the end of September and then spread throughout Eighth Army. The disease was also present amongst the enemy troops at this time. It appeared that contact with infected troops or ground was responsible, and the infection arose when New Zealand troops took over from Italian troops ground that was grossly fouled and infested with flies. The flies and the difficulties of ensuring efficient sanitation added to the risks of infection.

Evacuation from the forward areas to the base, with a convalescence of four to six weeks, was proved necessary as cases retained in the Division were very slow to recover normal health. The disease caused serious wastage in the Division and it appeared that New Zealand personnel were particularly susceptible to the infection. No specific treatment was available, and rest and careful dieting was the routine.

Although hepatitis was only very rarely associated with severe illness or death, it caused marked debility with a slow convalescence and occasionally there was a relapse which necessitated invaliding.

It was found that the incidence in the different units was proportionate to the time they were stationed in the Alamein line. The Maoris had a much lower incidence. The epidemic began to decline in November when the Division passed out of the contaminated area after the Battle of Alamein, and the colder weather assisted in the control of the flies.

The number of cases reported in 2 NZEF during the period was as follows: June, 14; July, 23; August, 34; September, 146; October, 941; November, 793.

Physical Exhaustion

At this time psychoneurotic cases were being evacuated from the Division labelled as 'battle casualties'. This led to difficulties as such designation was undesirable from the military standpoint, and

inaccurate medically. At a conference of senior medical officers it was decided that the psychoneurotic cases should be carefully allocated to different categories according to their aetiology. Only those cases recorded by the RMO, on specially prepared forms, as having suffered from some definite battle injury or severe strain would in future be labelled as battle casualties, and in these cases the diagnosis of 'physical exhaustion' would be appropriate for those without any definite physical injury. (At this time GHQ MEF added 'physical exhaustion' to the official nomenclature of diseases.) The large majority, consisting of anxiety neurosis cases, would not be labelled as 'battle casualties' but as 'sick'. It was found that the physically exhausted soldiers generally responded rapidly to a short period of rest in comfortable surroundings at Base or in rest camps. The designation of anxiety cases as 'battle casualties' could have had far-reaching consequences, not only possibly conferring the honour of a wound stripe but also possibly affecting the question of pension, and in any case detracting from the connotation of the words 'battle casualty' and 'wounded'. A number of these cases were admitted from forward areas to 1 Camp Hospital, Maadi, owing to the full bed state of the general hospitals.

Base Medical Units

The epidemic of infective hepatitis placed a big strain on base medical units, particularly 1 General Hospital and also 2 General Hospital, 1 Camp Hospital, and 1 Convalescent Depot. On 2 October there were over 1000 patients in hospital at Helwan; on the 4th there were 1149 patients, by the 8th 1256, on the 11th 1288, until the highest total of 1327 in-patients was reached on 20 October. Extra tents were erected in 'Spencerfield' and jaundice patients admitted there direct, but large numbers of less seriously ill patients had to be transferred to Maadi Camp Hospital. With battle casualties and other admissions, 1 General Hospital had an average daily bed state for the month of October of 1136, the highest average ever reached by the hospital during the war. The course of infective hepatitis was mild, but complications seen were severe pruritis, haematemesis, persistent

pyrexia, and prolonged icterus, with relapses within one or two weeks of discharge. One case which died of cholaemia was found at post-mortem to have a paratyphoid C infection of the gall bladder.

Within a short time of becoming established at Kfar Vitkin, halfway between Tel Aviv and Haifa, in April 1942, 1 Convalescent Depot entered a period of maximum expansion as convalescent wounded and infective hepatitis patients reached the unit from hospital. With the wounded there was a large number with lesions requiring daily dressings, while two stoves intended to cook for 250 men each were called upon to supply the cooking requirements of 700 per stove. Sisters and cooks from 2 General Hospital helped with these duties while the hospital was in Palestine. During August there was an average of 285 patients daily attending the medical treatment room. The peak number of 1423 patients was reached on 30 August. The number of convalescents in the depot remained fairly constant around 1100, with occasional drops after an evacuation train to 1000, until late in October.

The Convalescent Depot had to contend with a number of difficulties, especially when it had such a big influx of patients in August. It was a major problem to feed 1400 patients from limited cookhouses and long queues for meals were an inevitable result. Sleeping accommodation, too, was fairly primitive with only groundsheets and palliasses supplied, but the shortage of timber made it almost impossible to provide any bedboards or frames, although some beds and bedboards were procured in October. Sleeping accommodation at British convalescent depots was similar. At no time during the period of maximum expansion was there any disturbance of morale. The unit was reorganised at this time into five companies varying in strength from 200 to 250. The staff was but little augmented and all departments acquitted themselves remarkably well.

23 NZ Field Ambulance

Maadi Camp Hospital had persisted since the days of the First Echelon and had never been given an adequate establishment as it was

felt that it could carry on with reinforcement personnel. Now that reinforcements were no longer forthcoming it was felt that it would be reasonable to set up a proper establishment, even if it was unlikely that it could be maintained at full strength. This was done in September and the unit became 23 NZ Field Ambulance, which designation it had originally been given at the end of June as part of the reserve formation organised in Maadi Camp. In October the unit expanded to 400 beds to take convalescent infective hepatitis cases from 1 General Hospital and so make room for battle casualties from the big offensive at El Alamein.

2 NZ Field Transfusion Unit

A special truck equipped with a refrigerator for the storage of blood had been ordered by the New Zealand Government in January and arrived at the end of September. Steps were immediately taken to form a Field Transfusion Unit, such as the British unit which had proved so valuable in the Western Desert battles. Great assistance was given by OC 1 British Base Transfusion Unit in the assembling of equipment and training of staff and the unit was able to play its part in the advance from El Alamein.

Return of Brigadier MacCormick

On 11 September Brigadier MacCormick returned from New Zealand and on 18 September resumed the appointment of DMS 2 NZEF. Brigadier Kenrick returned to New Zealand on 15 October on a tour of duty following arduous and distinguished service in the field in the campaigns in Greece, Crete, and the Western Desert and latterly in administration as DMS 2 NZEF.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

***Minqar Qaim*: The plan for the Minqar Qaim action was the attachment of an ADS to each brigade, with smaller sections to any detached group. Casualties were evacuated to the ADS by ambulance cars supplied both from the field ambulance and from the American Field Service group. Stretcher-bearers were detailed to carry casualties to the RAP, but help was generally given by combatant transport such as Bren carriers or by the ambulances going forward of the RAP. From the ADS, field ambulance and American Field Service cars evacuated wounded to the active MDS, another MDS being in reserve. Main dressing stations were some 20 miles back from the divisional units.**

From the MDS evacuation was carried out by 2 British MAC to British units, either Corps or Army CCSs, whence the cases were evacuated to the base hospitals in the Delta and in the Canal Zone.

***Alamein Line*: Two advanced dressing stations were similarly attached to the brigades evacuating to the active MDS. Arrangements were made to carry out all forward surgery at the MDS and British surgical teams were attached for this purpose. Later a Field Transfusion Unit was also attached. A surgical team from the New Zealand CCS was then sent forward to the MDS, and later this was strengthened by extra equipment and orderlies to allow abdominal and other serious cases to be held and nursed for up to ten days following operation. Air evacuation from improvised landing grounds alongside the MDS was also utilised for serious cases. Ambulance-car evacuation by 2 British MAC was to the Army CCS at the L of C medical area, from where road, rail, and air evacuation was provided.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION OF WOUNDED

Evacuation of Wounded

1. ***Evacuation to the MDS*: The provision of twenty AFS ambulance cars at the beginning of the campaign built up adequate transport for the evacuation of cases from the actual battlefield back to the MDS. There were only eight ambulances normally available for each field ambulance at this period and five were destroyed during the Minqar Qaim breakthrough. The courage and efficiency of the ambulance drivers of both groups drew forth high praise, both at this time and generally throughout the later campaigns. The AFS's four-wheel-drive ambulance cars could go farther forward in soft sand or sticky mud than some of the other ambulance cars, and their drivers were always more than willing to take them farther forward to bring out wounded from battle areas. The foresight in obtaining the extra cars enabled many lives to be saved.**
2. ***Evacuation from the MDS*: This was regularly carried out by 2 British MAC. There was only one hitch when contact was lost during the retirement of 15 CCS with 2 MAC across the desert to the Delta, in accordance with an Army plan to provide a southern evacuation route, which was proved impracticable. Travelling by ambulance car over the rough desert militated greatly against the recovery of the serious cases. Extra transport by trucks was supplied at times for light cases by NZASC.**

From the Alamein line air transport was utilised from the MDS area, both by air ambulance and by transport planes. Two of the latter were destroyed by the enemy and few air ambulances were available. Abdominal cases and chest cases with disturbance of respiration were held, but head cases, spinal injuries, and fractures travelled well and were saved much pain and exhaustion.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RED CROSS PROTECTION

Red Cross Protection

The protection of the Red Cross was utilised for the divisional medical units and the evidence is that it was respected by the enemy. The transport planes destroyed when being used to evacuate wounded were not marked with the Red Cross, and ambulance planes so marked were not molested. Deliberate bombing of medical units did not occur, though bombing of our forces was common at this period and was responsible for many casualties.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE WORK OF THE REGIMENTAL MEDICAL OFFICERS

The Work of the Regimental Medical Officers

The RMOs were faced with difficulties and serious discomforts in their work during this period. Their equipment varied considerably, some having a 15-cwt truck, some a three-tonner, but generally an ambulance was also attached to each battalion. In some cases a 3-ton truck had been especially fitted up for the RAP. Four-wheel-drive vehicles were obtained if possible, as sandy areas had to be negotiated and the desert surface was often very rough. Unit trucks and Bren carriers were utilised to take the wounded to the RAP and ambulances to transport them to the ADS. Frequently ambulances were utilised in front of the RAP.

Casualties from minefields and from bombing were frequent. The minefields caused many casualties amongst the ambulance personnel when the ambulances were used away from the cleared tracks. Large Red Cross flags were flown by the RAPs, and large crosses painted on top of the 3-ton trucks.

Wound treatment was simple and splinting, except of the simplest kind, was generally left to the ADS. Speed of evacuation was the aim. The sand and heat were oppressive and there was only the minimum supply of water.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGERY DURING THE CAMPAIGN

Surgery During the Campaign

The pre- Alamein period of the desert campaign is notable for the developments in the surgical treatment of the wounded in the forward areas. Very important innovations were made to enable efficient surgery and post-operative nursing to be carried out at the main dressing stations of the field ambulances. The difficulty of evacuating serious cases over the rough, trackless desert made it impossible to defer operation till the casualty could be brought back to the CCS. The fluid and uncertain military situation made it impossible for the forward (British) CCS to be stabilised and undertake operative work. In fact, the CCS was completely withdrawn a few days after its hurried withdrawal to the Alamein line. The full responsibility for forward surgery for 2 NZ Division was thus undertaken by our active MDS. Fortunately, all our MDSs possessed extra equipment for this purpose and, particularly, each field ambulance had surgeons capable of performing major surgery. Surgical teams had been made available previously during the desert campaigns by the RAMC, and more had recently been supplied. Some of these British teams were attached to our active New Zealand MDS from 10 July till 8 August. During that period there were normally two extra teams attached. One was the Greek unit under Captain Taylor, RAMC, with its specially equipped operating van; the other, from 15 CCS, was supplied after that unit's withdrawal from the battle area. These teams were constituted of capable, well-trained surgeons experienced in forward surgery, all of whom combined well with our units and did most excellent work, dealing with the abdominal and other serious cases, while our own surgeons usually dealt with the less serious cases. The disadvantages of the lone surgical team were not present as there were always at least three teams available in the MDS and, if required, further help was available from the resting MDS.

At the end of July a surgical team under Major S. L. Wilson was sent forward from our New Zealand CCS. This team at first worked in conjunction with the British teams, but later, when operations quietened down, it enabled the British teams to be released. The adequate provision for surgery by means of these teams, concentrated as they were in one forward operating unit, was an eminently satisfactory development at this period. There was a well-sustained evacuation of cases from the MDS, mainly by ambulance over the rough and uneven desert, but partly by air from airstrips alongside the operating unit. Unfortunately, experience showed that air evacuation of abdominal cases shortly after operation, and of serious chest cases, was very dangerous, and this led to arrangements being made to retain the abdominal cases up to ten days at the MDS. For this purpose a section of 1 NZ CCS was attached to the active MDS. This section consisted of nursing orderlies, beds, and bedding, as well as the surgical van with lighting and sterilising units, and these facilities were thereafter always available when required in the field ambulances.

The surgical teams at that time were all conscious of difficulty in lighting, sterilisation, and the nursing of serious cases after operation. Arrangements were made so that, in the event of the MDS having to move quickly, a section of a field ambulance under an officer would immediately take over the patients and nurse them until they were fit to move to the CCS.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RESUSCITATION

Resuscitation

The field ambulances were supplied with equipment for the giving of blood and plasma and personnel had been trained for this purpose. In one field ambulance dental mechanics proved eminently suited to this work. In the early part of the campaign blood drawn from seventy donors was used, and serum was also given. The position was markedly improved on 19 July when Captain D. D. Muir, RAMC, with his British field transfusion unit was attached to our active MDS. For transfusions there were then available highly skilled personnel and an ample and regular supply of blood from the base unit in Cairo. This blood was supplied to ADSs as well. It was noted that there were only a few minor reactions in the forward areas and that blood produced a much more satisfactory result than serum.

The OC British Transfusion Services provided boxes containing four bottles of liquid blood plasma and two sterile giving sets for issue to RMOs. Fifteen such sets were issued to the RMOs, thus providing a useful reserve for the Division. Serum, plasma, and saline solution had previously been given regularly at ADSs and, in anticipation of further operations, supplies of blood were similarly arranged. Blood supplies from 6 British Mobile Transfusion Unit were sent to ADSs daily in insulated containers packed with ice. Any unused blood was returned in twenty-four or forty-eight hours to the refrigerator and fresh supplies sent in exchange, thus avoiding wastage by deterioration.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

STERILISED DRESSINGS

Sterilised Dressings

A further development that contributed to good results was the provision of sterilised dressings and theatre supplies, packed by the team of NZMC orderlies attached to 63 British General Hospital and by our own base hospitals.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WOUND TREATMENT

Wound Treatment

As regards wound treatment, the utilisation of sulphanilamide, both locally to the wound and also by the mouth, was standardised and a special label introduced for the recording of dosage given during the evacuation to the Base.

Vaseline gauze was the normal wound dressing and this was available sterilised and in ample supply. Tulle gras dressings were also supplied.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SPLINTING

Splinting

Fractured femurs were generally evacuated in Thomas splints, with posterior plaster slabs and circular plaster bandages incorporated with the splint, giving excellent stability and comfortable travelling. Fractured arms generally had light plaster splints applied. Fractured spines were sent down in body plasters. Difficulties were encountered in applying these plasters, and also plaster spicas, without a plaster table.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TREATMENT OF SPECIAL CASES

Treatment of Special Cases

***Heads*: These cases were mostly sent to the base unit in Cairo for operative treatment. In some cases early suture at the MDS was successful.**

***Chests*: The suture of the sucking wounds proved unsatisfactory, being generally septic when seen at the base hospitals. Firm pads kept in place either by elastoplast or by a few strong silkworm sutures tied over the pad were therefore utilised.**

***Abdomens*: Early evacuation militated against satisfactory results. The exteriorisation of the colon was utilised for colonic injuries. Sulphadiazine was first utilised for introduction into the peritoneum at operation. Gastric suction and continuous intravenous glucose and saline became routine treatment.**

***Amputations*: These were numerous. Skin traction was frequently applied in the early stages and some cases lightly sutured over a tulle gras roll had done well. Generally the wounds were clean.**

***Burns*: Tanning had ceased to be employed. Instead, sulphanilamide in small quantities and tulle gras dressings were applied. At the base hospital our saline bath unit was utilised for treatment of these cases.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INFECTION

Infection

There was less sepsis in the wounds than in the previous campaign owing to early operation and possibly to local sulphonamides. There were some cases of gas infection but none of the septicaemic variety, the cases seen being associated with deficient blood supply resulting in local gangrene of muscle groups. Amputations, however, even of the arm, had to be done for gas gangrene.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ANAESTHESIA

Anaesthesia

Pentothal was commonly used both for induction and for the shorter cases. Gas and oxygen was utilised by some of the surgical teams. Ether was used for the more severe cases.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL

General

The results generally were excellent and the experience gained in the Second Libyan Campaign had been used to assure first-class results. The work of our forward units earned high praise from senior British officers and British units on the L of C and at the Base. To this result the excellent British surgical teams attached to New Zealand medical units contributed greatly, as did the courageous work of the AFS drivers and other ambulance personnel.

The combination of skilled surgeons, adequate resuscitation, and markedly improved nursing facilities made a great difference in the surgical results obtained, and this was noted and commented on by all observers at Base. Colonel Ardagh, ADMS 2 NZ Division, a capable surgeon and a very able and forceful administrator, was largely responsible for the co-ordination and efficiency of the forward surgery in our Division at that period.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

STANDARD OF SURGERY

Standard of Surgery

The Consultant Surgeon, Middle East Force, in his report at the time, had the following comments to make on surgery generally during the summer battles of 1942:

…. The surgeons at base units had nothing but praise for the work of their colleagues in the forward units, and few criticisms were forthcoming. I formed the impression that there was yet a further improvement in the standard of the work, and several divisional surgeons voluntarily stated that they thought the work was 'first-class'. It was certainly an impressive sight to see so many severely wounded men looking remarkably well and free from pain, at all events, in these, the earlier days of their incapacity. From officers and other ranks who were casualties, I heard no complaints, in fact, much praise of the medical services.

During the period July to September 1942, including the battle of Alamein, Major S. L. Wilson was senior surgeon of a surgical team attached to New Zealand field ambulance dressing stations. He operated continuously during long periods without rest, providing major surgery for the most seriously wounded, with outstanding skill and devotion. This, taken in conjunction with his previous service, frequently under conditions of the greatest danger, was a most distinguished and meritorious contribution to battle surgery and earned him the DSO.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HYGIENE AND SANITATION

Hygiene and Sanitation

A remarkable feature of the period after the Division's return to the desert was that the Field Hygiene Section was not with the Division as a complete unit from the end of June until 19 November. When the main body of 4 Field Hygiene Section reached the Mersa Matruh area at the end of June, it had to hand over its vehicles to 27 (MG) Battalion as transport was in short supply and the Division was to adopt a mobile role. As they would be an encumbrance, the workshop and disinfestor sections of the unit were sent back to Maadi. The ten NCOs and men remaining with the Division were attached to 4 and 5 Field Ambulances and the OC, Major W. J. Boyd, became liaison medical officer on the staff of the ADMS. After 5 July there were left with the Division only the five NCOs and men with 4 Field Ambulance.

Before the end of July the Division was beginning to be pestered by a fly plague. At the end of July six members of 4 Field Hygiene Section were recalled to the Division, making eleven NCOs and men attached to the medical units, but still without transport or equipment. Sanitary appliances had to be improvised from discarded petrol tins and ammunition boxes, the only tools available being broken bayonets and tent mallets. The workshop at Maadi lent its support by the wholesale construction of fly-traps and incinerator latrine lids, made according to the unit's own design, and by making up gallons of fly poison, which began to arrive in quantity in the middle of August. On 11 August the members of the unit in the Division were reformed as a unit at Headquarters Rear Division. Activities of the section at this period were not confined to 2 NZ Division, assistance being given to the new British divisions which had just arrived from the United Kingdom. Having little idea of field sanitation and not being acclimatised, these units were

experiencing a fairly heavy incidence of dysentery.

In August the blistering heat of summer, the dust, and the flies were at their peak. Despite the most vigorous counter-action, the flies clustered everywhere. To some extent the fly problem was uncontrollable owing to unburied dead lying beyond the reach of burial parties, and to the prevailing wind blowing directly from the Italian lines and bringing flies with it.

The area then occupied by the troops had been fairly thickly populated by native tribes and was therefore so contaminated that fly-breeding was encouraged. The coastal sector, particularly along the railway, had always been the most thickly populated area, and this suffered most from flies. Vehicles had a great attraction for flies, and each one of the thousands of trucks running from the coastal sector, particularly from supply points, contributed its not inconsiderable quota to those already living and multiplying in the divisional area.

Hygiene measures within the Division were made as complete as possible from the first. Owing partly to lack of materials and partly to the rocky nature of the ground, deep-trench latrines were not practicable except in certain rear areas. Shallow-trench latrines were used and changed every twenty-four hours, with the copious use of oil and cresol following burning-out with petrol. All refuse was burnt before burial. Fly netting at first was in short supply and was issued only to cooks' trucks, RAPs, and dressing stations. Flytraps and poisons were not available in the initial stages at Alamein, but were put to good use when they were forthcoming early in August.

To make matters worse a cloud of mosquitoes, A. Pharoensis, covering an area at least 10 miles in diameter, was blown by an east wind from Wadi Natrun and the Delta over the battlefield on 28 July, and no one was exempt from their voracious bites, which raised nasty blisters on the skin. Fortunately, when the wind changed the mosquitoes disappeared. Later, inquiry in Alexandria revealed that the mosquito phenomenon was not unknown, and it was obvious that the mosquitoes

had been wind-borne.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CAMPAIGN AGAINST FLIES

Campaign Against Flies

The fly menace, with its accompanying incidence of diarrhoea, had reached such alarming proportions by early August that a rigorous drive was developed against it. A New Zealand Division routine order of 7 August directed units to construct as many flytraps as possible and gave details for their construction in an appendix. A conference presided over by ADMS 2 NZ Division was held at Divisional Headquarters on 9 August to discuss measures to be taken in the campaign, and a copy of the minutes of the meeting was forwarded to all units. Colonel Ardagh explained that the conference had been called to increase the comfort of troops and to diminish the risk of sickness. Diarrhoea during the week had risen to 1000 cases, fortunately only of a mild nature, as evacuations totalled only 38 as against 51 for the previous week. The cycle of infection was explained and measures for prevention suggested to and discussed by unit representatives.

The following day the intensified campaign against flies was well under way. A truck arrived from Headquarters 2 NZEF, Maadi Camp, with 150 fly-traps, 20 gallons of formalin, and eight pounds of sodium arsenite which were delivered to units. On 11 August part of 4 Field Hygiene Section was reformed as a unit to play its major part in the campaign.

Models of improvised fly-proof latrines made from petrol tins, fly-traps of various kinds, and soak-pits were made and demonstrated to all units. For those units which were new to the desert, special lectures and demonstrations had been arranged and these had produced most gratifying results. A demonstration area was prepared at Rear HQ NZ Division and representatives of all units visited it. As a result they were

able to produce appliances suitable to local conditions. Stress was laid on improvisation and nothing was shown that could not be made with petrol tins, a bayonet, and a shovel. Methods described in textbooks were of no use when the materials were not available; but the principles could be embodied in improvisation from salvage. Education was the responsibility of the medical services, but it was the responsibility of the unit to see that a high standard of hygiene and sanitation was maintained at all times. It was the thoughtlessness and carelessness of the individual which endangered health in situations where manpower was the most important factor.

The greatest handicap to a total anti-fly campaign had been the lack of material. It had to be recognised that while everything possible might be done to prevent breeding and to minimise infection, the psychological effect of killing flies and actually seeing them die was a great one. There was a pathological and psychological battle. The mere presence of flies has an effect on both morale and comfort which is almost as important as the danger of infection. Before the end of August the improved state as regards flies was most gratifying.

In regard to other sanitation arrangements, urinals were constructed of tin so as to form a pipe leading into a soakage pit under the sand—the desert-lily pattern.

Soakage pits were also dug at each vehicle and special pits, made from two petrol tins, constructed for cookhouses. All the pits were flushed daily with petrol. Altogether, the unprecedented conditions led to both a keen appreciation of the necessity for adequate sanitary measures and remarkable ingenuity and success in designing methods of dealing with the difficulties that arose.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RATIONS

Rations

Rations and the handling of them were specially investigated in view of the fly menace. Inspections carried out along the supply line from the field maintenance centre to units showed that precautions precluded the possibility of infection of food, except perhaps for bread, which was uncovered until it reached the field maintenance centre. The conclusion reached by OC 4 Field Hygiene Section after conversing with personnel of all units was that great satisfaction was felt concerning the rations. The standard was good and the supply sufficient. With the rations, plus those extras which most units provided out of regimental funds, it was considered that the diet was adequate.

While the men endured the discomforts of the desert a continuous stream of vehicles moved backwards and forwards over sandy desert tracks, great clouds of dust in their wake. They brought forward increasing quantities of food, water, and ammunition. The main items in the rations were bread, biscuits, bully beef, tinned stew, tinned sausages, cheese, and margarine. Then, with improved organisation, came fresh tomatoes, lettuce, melons, marrows, potatoes, onions, and limes. The water ration was small—one water-bottle and then one gallon a day for each man—for drinking, washing, and cooking; occasionally the issue was increased to permit of a real wash. In spite of all they had gone through, the men were comparatively fresh—fit, lean, and very brown, but not hard.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF TROOPS

Health of Troops

The incidence of diarrhoea and dysentery steadily dropped from its high level of July and early August, though it was still considerable. Its fall coincided with the reduction of flies consequent upon the strenuous measures instituted; other factors to be considered also were that the height of the late summer fly season was passing as the weather grew cooler, and that a certain amount of acquired immunity existed among the troops.

During August supplies of castor oil and sodium sulphate were short, but they improved again later. Sulphaguanadine became available in the Middle East Force in restricted quantities at this time and a supply was sent to the Division at the end of August for trial in the forward areas. It was found to be most effective.

After two and a half months of continuous fighting the troops were becoming more susceptible to minor illnesses, including septic skin conditions and sore throats. Infective hepatitis made its appearance and rose to epidemic proportions by October. There had been a number of cases of malaria, but most infections seemed to have been contracted amongst troops detached from the Division and temporarily stationed in the Nile Delta or in Maadi Camp.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INFECTIVE HEPATITIS

Infective Hepatitis

Infective hepatitis first appeared in the Division at the end of September and then spread throughout Eighth Army. The disease was also present amongst the enemy troops at this time. It appeared that contact with infected troops or ground was responsible, and the infection arose when New Zealand troops took over from Italian troops ground that was grossly fouled and infested with flies. The flies and the difficulties of ensuring efficient sanitation added to the risks of infection.

Evacuation from the forward areas to the base, with a convalescence of four to six weeks, was proved necessary as cases retained in the Division were very slow to recover normal health. The disease caused serious wastage in the Division and it appeared that New Zealand personnel were particularly susceptible to the infection. No specific treatment was available, and rest and careful dieting was the routine.

Although hepatitis was only very rarely associated with severe illness or death, it caused marked debility with a slow convalescence and occasionally there was a relapse which necessitated invaliding.

It was found that the incidence in the different units was proportionate to the time they were stationed in the Alamein line. The Maoris had a much lower incidence. The epidemic began to decline in November when the Division passed out of the contaminated area after the Battle of Alamein, and the colder weather assisted in the control of the flies.

The number of cases reported in 2 NZEF during the period was as follows: June, 14; July, 23; August, 34; September, 146; October, 941;

November, 793.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PHYSICAL EXHAUSTION

Physical Exhaustion

At this time psychoneurotic cases were being evacuated from the Division labelled as 'battle casualties'. This led to difficulties as such designation was undesirable from the military standpoint, and inaccurate medically. At a conference of senior medical officers it was decided that the psychoneurotic cases should be carefully allocated to different categories according to their aetiology. Only those cases recorded by the RMO, on specially prepared forms, as having suffered from some definite battle injury or severe strain would in future be labelled as battle casualties, and in these cases the diagnosis of 'physical exhaustion' would be appropriate for those without any definite physical injury. (At this time GHQ MEF added 'physical exhaustion' to the official nomenclature of diseases.) The large majority, consisting of anxiety neurosis cases, would not be labelled as 'battle casualties' but as 'sick'. It was found that the physically exhausted soldiers generally responded rapidly to a short period of rest in comfortable surroundings at Base or in rest camps. The designation of anxiety cases as 'battle casualties' could have had far-reaching consequences, not only possibly conferring the honour of a wound stripe but also possibly affecting the question of pension, and in any case detracting from the connotation of the words 'battle casualty' and 'wounded'. A number of these cases were admitted from forward areas to 1 Camp Hospital, Maadi, owing to the full bed state of the general hospitals.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BASE MEDICAL UNITS

Base Medical Units

The epidemic of infective hepatitis placed a big strain on base medical units, particularly 1 General Hospital and also 2 General Hospital, 1 Camp Hospital, and 1 Convalescent Depot. On 2 October there were over 1000 patients in hospital at Helwan; on the 4th there were 1149 patients, by the 8th 1256, on the 11th 1288, until the highest total of 1327 in-patients was reached on 20 October. Extra tents were erected in 'Spencerfield' and jaundice patients admitted there direct, but large numbers of less seriously ill patients had to be transferred to Maadi Camp Hospital. With battle casualties and other admissions, 1 General Hospital had an average daily bed state for the month of October of 1136, the highest average ever reached by the hospital during the war. The course of infective hepatitis was mild, but complications seen were severe pruritis, haematemesis, persistent pyrexia, and prolonged icterus, with relapses within one or two weeks of discharge. One case which died of cholaemia was found at post-mortem to have a paratyphoid C infection of the gall bladder.

Within a short time of becoming established at Kfar Vitkin, halfway between Tel Aviv and Haifa, in April 1942, 1 Convalescent Depot entered a period of maximum expansion as convalescent wounded and infective hepatitis patients reached the unit from hospital. With the wounded there was a large number with lesions requiring daily dressings, while two stoves intended to cook for 250 men each were called upon to supply the cooking requirements of 700 per stove. Sisters and cooks from 2 General Hospital helped with these duties while the hospital was in Palestine. During August there was an average of 285 patients daily attending the medical treatment room. The peak number of 1423 patients was reached on 30 August. The number of convalescents in the

depot remained fairly constant around 1100, with occasional drops after an evacuation train to 1000, until late in October.

The Convalescent Depot had to contend with a number of difficulties, especially when it had such a big influx of patients in August. It was a major problem to feed 1400 patients from limited cookhouses and long queues for meals were an inevitable result. Sleeping accommodation, too, was fairly primitive with only groundsheets and palliasses supplied, but the shortage of timber made it almost impossible to provide any bedboards or frames, although some beds and bedboards were procured in October. Sleeping accommodation at British convalescent depots was similar. At no time during the period of maximum expansion was there any disturbance of morale. The unit was reorganised at this time into five companies varying in strength from 200 to 250. The staff was but little augmented and all departments acquitted themselves remarkably well.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

23 NZ FIELD AMBULANCE

23 NZ Field Ambulance

Maadi Camp Hospital had persisted since the days of the First Echelon and had never been given an adequate establishment as it was felt that it could carry on with reinforcement personnel. Now that reinforcements were no longer forthcoming it was felt that it would be reasonable to set up a proper establishment, even if it was unlikely that it could be maintained at full strength. This was done in September and the unit became 23 NZ Field Ambulance, which designation it had originally been given at the end of June as part of the reserve formation organised in Maadi Camp. In October the unit expanded to 400 beds to take convalescent infective hepatitis cases from 1 General Hospital and so make room for battle casualties from the big offensive at El Alamein.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

2 NZ FIELD TRANSFUSION UNIT

2 NZ Field Transfusion Unit

A special truck equipped with a refrigerator for the storage of blood had been ordered by the New Zealand Government in January and arrived at the end of September. Steps were immediately taken to form a Field Transfusion Unit, such as the British unit which had proved so valuable in the Western Desert battles. Great assistance was given by OC 1 British Base Transfusion Unit in the assembling of equipment and training of staff and the unit was able to play its part in the advance from El Alamein.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RETURN OF BRIGADIER MACCORMICK

Return of Brigadier MacCormick

On 11 September Brigadier MacCormick returned from New Zealand and on 18 September resumed the appointment of DMS 2 NZEF. Brigadier Kenrick returned to New Zealand on 15 October on a tour of duty following arduous and distinguished service in the field in the campaigns in Greece, Crete, and the Western Desert and latterly in administration as DMS 2 NZEF.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

LESSONS LEARNT FROM THE CAMPAIGN

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A full report on this subject was submitted by Colonel Ardagh, ADMS 2 NZ Division, and a shorter report by Lieutenant-Colonel King, OC 4 Field Ambulance. Colonel Ardagh stressed three main factors in the successful working of a divisional medical service and in the efficient treatment of battle casualties:

(*a*) Early collection and evacuation from place of injury to the nearest station providing surgery.

(*b*) Provision of resuscitation at ADS and/or MDS.

(*c*) Provision of efficient surgery as nearly as possible within the optimum period of six to twelve hours.

His report ran:

(*a*) Early evacuation cannot be ensured without an adequate supply of ambulance cars on the line of evacuation, RAP to ADS to MDS. It can fairly be said that, unless casualties can be collected quickly, given initial treatment including shock therapy, and evacuated early to the nearest station providing surgery, the benefits of modern surgery and skilled surgical teams will be largely negatived; the result will be, in proportion to the delay past the optimum period, increased loss of life, limb or function, with relatively much lengthened periods of recovery and convalescence in general. It is well known that wounds in modern warfare are accompanied by considerable shock, apart from haemorrhage, and that if wounded are left lying out in the field or around RAPs for any length of time, with the attendant nervous strain from the proximity of shell or bomb explosions, this shock is considerably aggravated, just as loss of body heat and dehydration are accentuated by the delay in receiving resuscitation. The supply of ambulance cars necessary to deal with busy periods and thus avoid this delay can be effected by increasing the establishment to 20 cars for Field Ambulance as is the case in Light Field Ambulances, or by attaching extra cars whenever a Division is going into an active role.

2 NZ Div. has right through this campaign had sufficient cars attached by DDMS Army or Corps to make this quick evacuation possible, permitting at least one car with each RAP and nine cars at each ADS.

(*b*) Resuscitation which includes administration of fluids, warmth, comfort and especially relief of pain, with, in more severe cases intravenous use of blood and/or plasma must be available at an ADS, unless an MDS underground could be close enough to dispense with the necessity for an ADS. In the period July to August this was most essential at certain periods where travel was rough, as many patients transfused at the ADS would not otherwise have survived the rough journey to the MDS. At the MDS, with surgical teams attached, resuscitation is necessary on a large scale, not only to prepare serious cases for operation, but to fit them for the journey, often long and rough, to the CCS or, in rarer cases to fit them for air ambulance evacuation to Base Hospital. It is the definite and considered opinion of all surgeons and experienced Field Ambulance officers that 'whole blood' even if held in the refrigerator for 14 days is much superior to 'plasma', inasmuch as not only does it produce a quicker response, but maintains the improvement much longer. With this end in view and also in order to conserve supplies of blood, the administration of plasma may be used in conjunction with whole blood.

The attachment of a Transfusion Unit to the MDS is a big advantage as it supplies a skilled team to attend solely to intravenous therapy, thus relieving the MDS staff and surgical teams in busy periods of much work, and it ensures an adequate supply of blood kept at the correct temperature in the special refrigerator. The alternative is an easily available 'Blood Bank' provided by Corps. A shuttle service of blood between MDS and ADS was provided in August and in the recent battle and undoubtedly saved a considerable number of lives by early administration at the ADS. [1]

(*c*) It will be accepted by all that at least lifesaving surgery should be done at the most forward operating centre for even the delay of an hour or two will deprive the patient of prospects of recovery and this is especially so in the penetrating abdominal wounds. In these cases provision should be made to nurse them in hospital beds and so hold them for the necessary period varying from 2 to 10 days. In static conditions, or in an advance this is always possible, for if the MDS has to move, sufficient personnel to continue nursing these patients in situ can be provided, and throughout most of the campaign as

many as 20 patients at a time were held in the MDS, nursed in beds with an additional saving of life thereby. If a retirement should be ordered, or a sudden retreat enforced, it would obviously be necessary for the MDS to evacuate these patients, or to carry them with the Field Ambulance in ambulance cars. The alternative of leaving them with the enemy would not be voluntarily considered as it is certain that the enemy would in any case move them and would be unlikely in doing so to give them as good treatment as our own units. Where the tactical situation makes it possible, or where the route of evacuation is long and rough as in the period June to September, more than merely life-saving surgery can and should be done at the MDS, except on rare occasions such as the period 23 Oct. to 4 Nov. when the CCS was distant from the MDS only two hours on a smooth main road. Once the optimum period is passed even a short delay of a few hours in providing surgery, and even in less serious wounds, lessens the prospects of quick recovery and control or prevention of wound infection, and increases the risk and degree of loss of function, as well as necessitating for such patients much longer periods of hospitalisation and convalescence. So far in the desert campaign from June last it has always been possible and beneficial to the wounded to provide resuscitation, surgery and nursing at the open MDS without in any way impeding the ability of the Field Ambulance to close, move or open when and as required.

Lieutenant-Colonel King stressed the necessity of having attached to our active MDS two surgical teams, one of which should be a light section of a CCS with facilities for post-operative nursing. He considered the surgical team should contain three medical officers to allow a measure of relief. Strong support was given to the attachment of an FTU to the MDS and the highest praise expressed for the work done by Captain Muir and his staff. He stated that on 4 September no fewer than seventy-nine vehicles were used for the evacuation of casualties in 2 NZ Division's area and from the MDS to the CCS, all but ten of them being ambulances, and they were fully employed.

The lessons learnt are clearly enunciated in these reports, and could be summarised as:

1. **The importance of a considerable increase in the provision of ambulance cars in the forward areas.**
2. **The great value of early blood transfusion with the attachment of an**

FTU to the operating MDS.

3. The need for the attachment of at least two surgical teams and a nursing section from a CCS to the MDS to ensure skilled surgery and post-operative nursing.
4. Early air evacuation is dangerous for abdominal cases and chest cases with any respiratory distress. It is eminently suitable for all other cases.
5. Wireless inter-communication between medical units is desirable in mobile warfare.
6. The value of sterilised dressings forwarded from the base.

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[1] CO 6 Field Ambulance in January 1943 said: '"Blood Forward" is the greatest single advance of the last year.'

Importance of Hygiene

Though circumstances were admittedly difficult at the time, it seems that the importance of the hygiene unit in the safeguarding of the health of the Division was not fully appreciated. When conditions were the most difficult in the history of the Division from the sanitation point of view, 4 Field Hygiene Section was allowed to remain at its weakest—depleted in numbers, without equipment and without transport, and, until August, dispersed among medical units. The unit was not re-equipped with vehicles until the end of October, when it was sited next to 1 NZ CCS, and the whole unit did not rejoin the Division until it was in the Bardia area.

It is recognised, however, that the steady supply of fly-traps and poisons, latrine lids, and the constant inspections by the hygiene personnel diminished the number of flies and checked the incidence of excremental disease. On 10 September the ADH 13 Corps stated that the sickness rate in the Division was the lowest in 13 Corps' area. This position contrasts with that obtaining in the enemy lines.

The enemy's deficiencies in hygiene and sanitation, with consequent deterioration in the health of his troops, played an important part in the

outcome of the Battle of Alamein. A captured enemy report of 13 October from the headquarters of *Panzerarmee* to Field Marshal Rommel (then in Germany) stated: 'The personnel situation has deteriorated considerably, and reinforcements have been few. The sickness rate has been particularly high in 164 Lt. Div. At present all its regimental commanders and adjutants are ill, and some companies are under the command of NCOs.... It is hoped however that the position will gradually improve, especially in the case of jaundice.'

General Alexander, in a despatch published in *The London Gazette* on 5 February 1948, said:

These arrivals (of enemy reinforcements) which averaged about 5,000 men a week, [1] were unable to keep pace with the very heavy sick rate. Possibly owing to the congestion of troops on the ground, greater than ever known before in the desert, and to an inadequate medical and sanitary organisation, especially among the Italians, diseases such as Dysentery and infective jaundice were extraordinarily prevalent among the Axis troops. Some units suffered up to as much as 25 per cent of their strength. Thanks to the efficiency of our own medical services our sickness did not rise above normal for the time of the year, and to nothing like the extent on the enemy side of the line. The most prominent Axis casualty was the Army Commander. Rommel had been in poor health since August, and in September he left for Germany, technically on leave. It appears, however, that he was not intended to return and he was replaced by General Stumme.

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Recuperation

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was granted to a percentage of men from each unit. All this helped to set them up again, and a month's training in the desert followed to prepare for the coming offensive at Alamein.

Messages of Appreciation

When the New Zealand Division withdrew for a spell from the Alamein line the DDMS 13 Corps, Brigadier E. Phillips, took the opportunity of sending the following message of appreciation to ADMS 2 NZ Division, Colonel Ardagh, on 10 September:

The New Zealand Division has been now in this Corps for some three months; during this time we have been through some arduous times together which have entailed much hard work, accompanied by no little danger. The three NZ Field Ambulances under your command have nearly all the time been the nodal point of evacuation and through the Main Dressing Stations have passed United Kingdom and Indian troops in addition to your own. Throughout all this time there never has been one other word than that of praise from the patients for the sympathetic care and attention they have received, while the Casualty Clearing Stations and General Hospitals have expressed over and over again their admiration at the way in which patients from the New Zealand Field Ambulances had been treated and the excellent state in which they arrived at these Hospitals.

Sickness Figures, , 1942

	Eighth Army (Admissions to Field Medical Units)			*Panzerarmee Afrika (Admissions to Army Medical Stations)*		
	Sep	*Oct*	*Nov*	*Sep*	*Oct*	*Nov*
Dysentery/Diarrhoea	1,793	1,391	1,293	4,832	4,014	1,508
Digestive	933	816	517			
Skin diseases	927	944	622	1,516	1,048	701
Infective hepatitis	449	1,438	1,861	799	957	505

Pyrexia not yet diagnosed	**1,073**	**847**	**591**			
Diphtheria and tonsils				**679**	**424**	**206**
Accidental injuries	**858**	**825**	**736**	**489**	**611**	**489**
Other diseases	**4,384**	**4,883**	**3,078**	**2,739**	**2,900**	**1,659**
Total	**10,417**	**11,144**	**8,698**	**11,054**	**9,954**	**5,068**
Strength of Army	**177,000**			**52,000?**		
Sick rate per 1000	**59**	**63**	**48**	**200**	**191**	**97**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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For a week or so in September most of the troops had a spell at Burg el Arab on the sea coast. Swimming was a popular pastime, while brigade bands and the Kiwi Concert Party entertained and YMCA canteens and Naafi stores were open. Short leave of a few days in Cairo or Alexandria was granted to a percentage of men from each unit. All this helped to set them up again, and a month's training in the desert followed to prepare for the coming offensive at Alamein.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MESSAGES OF APPRECIATION

Messages of Appreciation

When the New Zealand Division withdrew for a spell from the Alamein line the DDMS 13 Corps, Brigadier E. Phillips, took the opportunity of sending the following message of appreciation to ADMS 2 NZ Division, Colonel Ardagh, on 10 September:

The New Zealand Division has been now in this Corps for some three months; during this time we have been through some arduous times together which have entailed much hard work, accompanied by no little danger. The three NZ Field Ambulances under your command have nearly all the time been the nodal point of evacuation and through the Main Dressing Stations have passed United Kingdom and Indian troops in addition to your own. Throughout all this time there never has been one other word than that of praise from the patients for the sympathetic care and attention they have received, while the Casualty Clearing Stations and General Hospitals have expressed over and over again their admiration at the way in which patients from the New Zealand Field Ambulances had been treated and the excellent state in which they arrived at these Hospitals.

Sickness Figures, , 1942

	Eighth Army (Admissions to Field Medical Units)			*Panzerarmee Afrika (Admissions to Army Medical Stations)*		
	Sep	*Oct*	*Nov*	*Sep*	*Oct*	*Nov*
Dysentery/Diarrhoea	**1,793**	**1,391**	**1,293**	**4,832**	**4,014**	**1,508**
Digestive	**933**	**816**	**517**			
Skin diseases	**927**	**944**	**622**	**1,516**	**1,048**	**701**

Infective hepatitis	**449**	**1,438**	**1,861**	**799**	**957**	**505**
Pyrexia not yet diagnosed	**1,073**	**847**	**591**			
Diphtheria and tonsils				**679**	**424**	**206**
Accidental injuries	**858**	**825**	**736**	**489**	**611**	**489**
Other diseases	**4,384**	**4,883**	**3,078**	**2,739**	**2,900**	**1,659**
Total	**10,417**	**11,144**	**8,698**	**11,054**	**9,954**	**5,068**
Strength of Army	**177,000**			**52,000?**		
Sick rate per 1000	**59**	**63**	**48**	**200**	**191**	**97**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 10 — ALAMEIN TO TRIPOLI

Contents

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

IN September and October 1942 Eighth Army made its elaborate preparations for the offensive at Alamein. Reinforcements in troops and equipment were arriving. The New Zealand Division was taken from the front line to undergo special training for its role in the offensive. Vast administrative arrangements were made to sustain a concentrated attack for ten to fifteen days by seven infantry and three armoured divisions on prepared enemy positions and a subsequent rapid advance. Meanwhile every effort was made to hinder the enemy by air and naval attack on his lines of communication in the Mediterranean and North Africa from building up his reinforcements. In October the enemy was estimated to have 108,000 men and 540 tanks. Eighth Army numbered 177,000 men and in tanks, artillery, and in the air was superior.

At the end of September, under conditions as similar as possible to those anticipated in the actual attack, the New Zealand Division worked out and tested a technique for the initial assault. The medical units of the Division took part in the special training of the Division. The particular aspect affecting the Medical Corps was the planned evacuation of casualties through the minefields, which is set out later. On 30 September General Montgomery paid a visit to the Division and spent twelve hours with the New Zealanders, during which he travelled many miles over the desert training area behind the Alamein defences. He inspected four large parades and spoke to almost the complete New Zealand fighting force in the field. His policy of letting the Eighth Army know exactly what was going to happen and how it was going to happen was of the greatest value. All ADsMS and commanders of medical units were instructed at frequent conferences, and in the greatest detail, as the 'G' plan unfolded. The value of these conferences cannot be exaggerated.

For the first two weeks of October brigade and battalion training followed the divisional exercises. During this period 5 and 6 Field Ambulances and 166 British Light Field Ambulance ran both ADSs and MDSs for 5 and 6 Infantry Brigades and 9 British Armoured Brigade which was under command. Fourth Field Ambulance was located in Maadi with 4 NZ Armoured Brigade. On 14 October 2 NZ Division moved back to the coast where time was spent in swimming and resting prior to 22 October, when 5 and 6 Brigades took over for the big offensive the part of the Alamein line between 51 Highland Division and 1 South African Division.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PLAN FOR THE OFFENSIVE

Plan for the Offensive

Alamein presented a new problem in desert warfare. Both sides were firmly established behind carefully prepared and extensively mined positions with both flanks secure. There was no alternative but to break through with infantry. The plan was to attack in the northern sector and, at the same time, to carry out a diversionary attack in the south to draw off a portion of the enemy's armour, which was at that time widely dispersed. It was hoped that the enemy would be deceived at the start as to our intentions, and that it would be possible to launch our armour through the gap made by the infantry while his armoured forces were still divided. Behind the enemy's front, which was held by mixed German and Italian infantry, *15 Panzer Division* was located in the northern and *21 Panzer Division* in the southern sector, while *90 Light Division* was engaged in coast protection at Ghazal. Italian divisions were wedged in between these German forces.

The British 30 Corps was assigned the task of making the necessary gaps in the northern defences. In 30 Corps were 9 Australian Division, 51 Highland Division, 1 South African Division, and 4 Indian Division, with supporting artillery. The New Zealand Division was to come under the command of 30 Corps for the first attack and 10 Corps for the breakout. The southern sector was held by 13 Corps, which included an armoured division, 50 Northumbrian Division, including one Greek brigade, and 44 Home Counties Division. The plan adopted involved extensive changes of disposition in the battle area and the quick move of armoured forces to the fronts, with the inevitable road congestion. It was essential, therefore, that enemy air activity should be restricted in order to prevent disorganisation at this vital stage of the offensive. Actually, the subjugation of the enemy air force was completed before

the battle began. Lastly, every effort was made to conceal our preparations and make it appear that the main attack would be launched in the south.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TERRAIN OF THE BATTLE AREA

Terrain of the Battle Area

The 35 miles of front extending from the sea to the Qattara Depression was mostly barren, rocky desert with, in the central part, two almost parallel rocky ridges, Ruweisat and Alam el Halfa. In the southern half of the line the desert was more irregular with some shallow depressions, including Deir el Munassib and Deir el Ragil, and more isolated and shorter high ridges, the general level of the country being higher. On the north, sand dunes and low-lying soft sand, impassable after rain, lay between the coastal road and the sea, and the railway ran close to and south of the road. The main coastal road was the only road right up into Libya. Otherwise travel by car was difficult and rough, throwing a great strain on the seriously wounded men during evacuation. Areas of soft sand had frequently to be avoided or negotiated. Tracks were constructed by the Army with the help of bulldozers, and these helped both to make the motor traffic easier and to allow definite axes to be given to the different formations. These tracks were picturesquely designated with signs, such as Sun, Moon, Hat, Barrel, all running parallel to the coastal road. At intervals there were roads at right angles which facilitated cross communication and access to the coastal road; they were given names such as Springbok, Sydney, and Bombay to signify the composition of the Army.

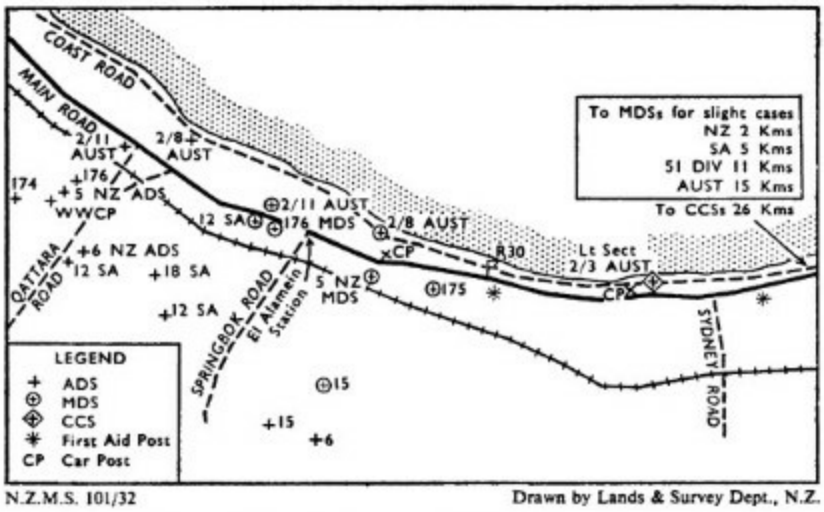
The evacuation of wounded in comfort was possible only by the coastal road and railway, though there was an old road alongside the railway which, though not in very good condition, was available and was utilised to some extent.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL PLAN FOR THE BATTLE

Medical Plan for the Battle

The Alamein line had been stabilised for some time and it had been possible to make thorough preparation for the treatment of the large number of casualties expected from the battle, a number estimated at 12,000 apart from prisoners.



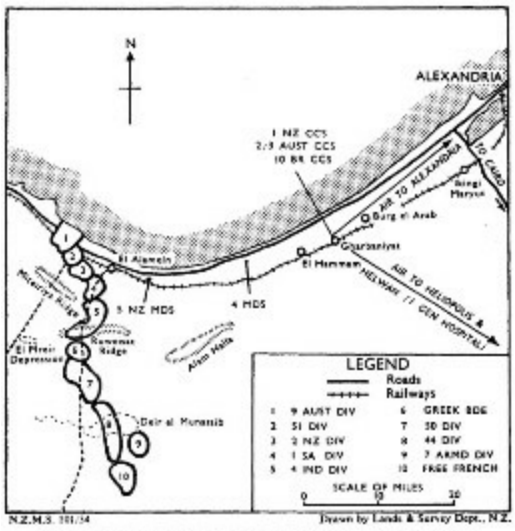
30 Corps Medical Units at noon 23 October 1942, Battle of Alamein

30 Corps Medical Units at noon 23 October 1942, Battle of Alamein

An ample supply of ambulance cars and some lorries for walking wounded were attached to the field ambulances to ensure rapid evacuation from the RAPs to the ADS and from the ADS to the MDS. Each battalion had also been supplied with an ambulance car before the battle. There were also ambulance cars and trucks available in large numbers for further evacuation to the hospital area at Gharbaniyat, and from there to Alexandria, the railhead, or the landing ground.

A group of MDSs had been sited around the Alamein railway station and alongside the main road in that area, to which the casualties would be evacuated from the field. Cases of primary injury, including

abdominals, were to be operated on at this level, and FSUs and FTUs were attached to the different dressing stations for this purpose. Three underground dressing stations had been constructed well forward close to the railway station and these were manned by British, Australian, and South African units. Another Australian unit was sited nearby on the coast, and our New Zealand dressing station was between the railway and the road, one and a half miles from the station.



Battle of Alamein: Dispositions at 23 October 1942

Battle of Alamein: Dispositions at 23 October 1942

Evacuation from this group of dressing stations, including cases of secondary urgency for operation, was by road to the hospital centre, which had been active for some time at Gharbaniyat and was situated on the old road running close to the railway and about 30 miles behind the dressing stations. This was a medical centre containing 10 British CCS, 2/3 Australian CCS, 1 NZ CCS, 2 Indian CCS, 14 British Field Ambulance, and 1 MAC. At a conference on 7 October ADMS 86 Sub-Area explained to the officers commanding these units that their units would clear all casualties from the whole Eighth Army area when the battle began. Each unit would be required to expand—10 British CCS and 2 Indian CCS, being complete, would accommodate 425 patients each; 2/3 Australian CCS and 1 NZ CCS, being without light sections, would provide 300 and 350 beds and stretchers respectively.

The 14th British Field Ambulance came first on the line of

evacuation and was to perform the double duty of sorting out and relaying the serious cases to the CCSs, treating the minor cases, holding up to 400, and evacuating them continuously to 200 British Field Ambulance at Ikingi Maryut, close to the Cairo- Alexandria road. The Indian CCS in the group was to take all Indian cases not requiring operative treatment. The three other CCSs, 10 British, 2/3 Australian, and 1 New Zealand, were to receive the major cases in rotation. Extra tentage would be supplied but would not be erected before the opening of the offensive.

Evacuation would ordinarily be by train to the Delta and Canal areas from Gharbaniyat, which was the railhead. Special cases (chest, head, maxillo-facial) and casualties from Australian, Free French, and Greek forces would go by road to general hospitals in the Alexandria area. The 1st MAC would be responsible for evacuations to the train and by road to Alexandria. (Air evacuation arranged later from LGs 28 and 171 (landing grounds) was to Heliopolis aerodrome in Cairo for head and other special cases, and New Zealand cases were also sent to Helwan to be admitted to our general hospital.) The compactness of the area and the concentration of the medical units, along with the short lines of evacuation, contributed greatly to the efficiency of the planning.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DIVISIONAL MEDICAL ARRANGEMENTS FOR THE BATTLE

Divisional Medical Arrangements for the Battle

The New Zealand medical arrangements consisted in the employment of two advanced dressing stations in the forward areas servicing the two brigades and attached troops. Each RAP had an ambulance car attached and the Divisional Cavalry had two. Attached to the Division were eight ambulance cars from the inactive 4 Field Ambulance and fifteen cars from the American Field Service, as well as twelve trucks from the NZASC for lightly wounded. The newly formed New Zealand Section MAC, consisting of twenty-three cars lent by the British Red Cross, was now available for use in evacuating cases from the MDS to the CCS. The cars were not suitable for desert work but were of value on main roads.

The active MDS had attached to it the New Zealand Surgical Team and extra personnel to enable it to undertake urgent surgery, including the abdominals, and to hold and nurse serious cases. Only urgent cases were to be dealt with at the MDS and the remainder sent to the CCS, which was within easy reach over a reasonably good road.

The ADMS 2 NZ Division, Colonel Ardagh, was granted permission to call on the NZ FTU and the Light Section of the CCS if conditions warranted their use. (Both units were called up.) A section of 4 Field Ambulance was detailed to take over cases from the MDS when this unit moved forward. Ample medical stores were available in the different units and ample Red Cross comforts. Sterilised dressings were in good supply and blood, plasma, and serum, as well as glucose and saline solutions, were all available in large quantities.

The 5th MDS was stationed in the narrow space between the main coast road and the railway, one and a half miles east of Alamein station

and just east of the Springbok road, which ran south at right angles from the coast road, and so was very favourably placed to receive casualties from the Division, whose axis lay on the Star track running parallel to and not very far south of the main road.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SITING OF NEW ZEALAND MEDICAL UNITS

Siting of New Zealand Medical Units

When 2 NZ Division entered the line on 22 October, 5 Field Ambulance, under Lieutenant-Colonel McQuilkin, opened an MDS as already mentioned. A Company 5 Field Ambulance, under Major Dempsey, was placed under the command of 5 Infantry Brigade to run an ADS. One company (also A Company) from 6 Field Ambulance, under Major R. A. Elliott, provided an ADS for 6 Infantry Brigade. An ADS for 9 Armoured Brigade under command, and one for 3 Echelon 9 Armoured Brigade, were provided by sections of 166 British Light Field Ambulance. The remainder of 6 Field Ambulance and 166 British Light Field Ambulance were held in reserve; 4 Field Ambulance, under Lieutenant-Colonel R. D. King, which was at Maadi Camp with 4 Brigade, came forward on 26 October to open a Divisional Rest Station near Gharbaniyat.

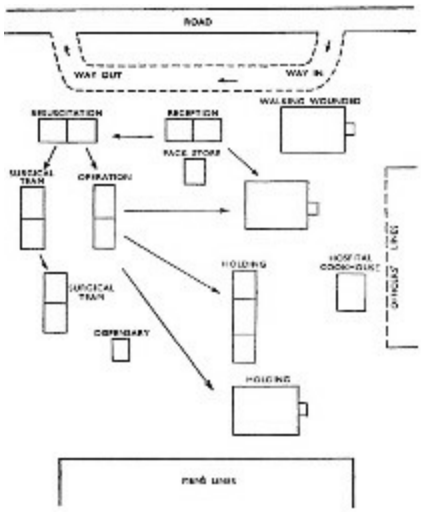
To 5 MDS were attached 2 NZ Surgical Team and a surgical team from Light Section 1 NZ CCS under Majors D. McKenzie and S. L. Wilson respectively. From their site on the Cairo- Alexandria road, 1 CCS under Lieutenant-Colonel Hunter moved on 4 October to the medical centre at Gharbaniyat.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BATTLE OF ALAMEIN BEGINS

Battle of Alamein Begins

With dramatic suddenness, after weeks of static warfare, the Battle of Alamein began on 23 October. At 9.40 p.m. the greatest artillery barrage yet fired in Africa began. With a single crash about a thousand guns opened fire and 30 Corps began to advance. In position along this sector, from north to south, were 9 Australian Division, 51 Highland Division, 2 NZ Division, and 1 South African Division. The attack began under the light of a brilliant moon, later hidden by dust and smoke. As the artillery barrage thundered ahead of them, the infantry moved forward to their objectives on Miteiriya Ridge on a two-brigade front, 5 Brigade on the right and 6 Brigade on the left. The 23rd Battalion attacked the first objective on the right and 24 Battalion the first on the left. The 28th (Maori) Battalion followed behind mopping up enemy strongpoints which the forward battalions had passed. Then the other four battalions, 21 and 22 on the right and 25 and 26 on the left, leap-frogging through the advanced battalions, pressed forward fan-wise to attack the final ridge that was the objective. Scores of tanks now roared forward through the lighted lanes in the minefields.



5 NZ Field Ambulance MDS, Alamein battle
(839 casualties admitted in 24 hours, 24 October 1942)

5 NZ Field Ambulance MDS, Alamein battle (839 casualties admitted in 24 hours, 24 October 1942)

The opposition in the first stages of the attack had been mainly from mortar and machine-gun fire, with many casualties from anti-personnel mines, but in the second stage the infantry found strongly defended posts and snipers. Strongpoint after strongpoint had to be taken with the bayonet. At dawn on 24 October the battle was still raging, but by 7 a.m. Miteiriya Ridge was in our hands. On 24 October enemy counter-attacks by armour and infantry on the right of the New Zealand sector were broken up by artillery and supporting fire from our tanks, and the infantry consolidated.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE WORK OF THE REGIMENTAL MEDICAL OFFICERS

The Work of the Regimental Medical Officers

Each RMO utilised his attached ambulance car to collect accessible cases on the battlefield. Evacuation back to the ADS was carried out by cars sent forward from the ADS. The minefields through which the advance had been made rendered the collection of wounded very difficult. Stretcher-bearing was particularly irksome and dangerous, as it was necessary to pick up the casualties away from the main tracks, especially in the region of the minefields, and carry them to the ambulances moving on the tracks.

The New Zealand Division evolved a particular system of evacuation through minefields. Casualties at the start line were collected by an ambulance stationed there. All men were instructed before the battle that if they became casualties they must make their way to one of the definite brigade axes. There were two axes for 6 Brigade in its attack on Miteiriya Ridge. Stretcher-bearers were to collect to these tracks also. As soon as the first gap was signalled as being open, a convoy of ambulance cars was sent to clear the RAP which had been established just through the first minefield. The tracks were then patrolled by ambulance cars up to the second minefield; when the latter was cleared a similar drill was carried out. Walking wounded were instructed to walk back to the first gap, from which signs led to the ADS. Provosts were specially instructed to direct them. A red light was shown at the ADS as soon as it was safe to do so. Provosts on the lights marking the gaps were instructed to guide returning ambulance cars by turning their lights to show both ways as soon as operations permitted. Before this, if they heard an ambulance car approaching, they could guide it by voice or by reversing their light for a brief moment.

Ambulance cars were instructed not to leave the lit routes because of scattered mines, and men between the routes had to be brought to them by hand carriage. Ambulances had to proceed forward to the RAPs at all costs and not turn back with wounded picked up on route. If available, a 3-ton truck marked 'walking wounded' patrolled the routes.

The ADS commander had to avoid committing so many ambulance cars forward that he could not evacuate to the MDS. This minefield drill became the standard practice in the British Army.

All the medical officers attached to the British armoured units with our Division became casualties during the battle and our own RMOs took over their work. The type of work carried out by the RMO is illustrated by the citations upon which Captain Rutherford gained an immediate bar to his MC and Captain McCarthy [1] an immediate MC.

After the attack on the night of 23–24 October and on the three succeeding days, says Rutherford's citation, 26 Battalion was in position on the forward slope of Miteiriya Ridge which was exposed to small arms, mortar, and shell fire. Captain Rutherford, 26 Battalion's RMO, was personally responsible for the evacuation of all wounded from the position. He covered the whole of the area in a bantam many times both by day and by night through both marked and unmarked minefields, attending and evacuating wounded. On one occasion he drove through a marked minefield to evacuate some wounded tank personnel and wounded German prisoners, and he was directed through the marked gap by the prisoners on the return journey.

Captain McCarthy was RMO to 25 Battalion in this attack. On 24 October his RAP was under heavy shellfire all day and, although he was at all times liable to become a casualty himself, he carried on with his work under great difficulties, never ceasing to attend to wounded whenever they were brought in. Throughout the night

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[1] **Maj L. C. McCarthy, MC; Wanganui; born Hawera, 30 Dec 1911; medical practitioner; medical officer Burnham MC, Apr–**

Nov 1940; RMO 25 Bn Mar 1941–Feb 1943; 2 Gen Hosp Feb 1943–Mar 1945.

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of 24–25 October McCarthy attended to wounded from a neighbouring British unit as well as to wounded of his own battalion. He carried on all night without sleep, and then continued the next day in the same manner. On the night of 26–27 October Captain McCarthy's battalion carried out another attack and he continued with his good work—at all times giving unceasing attention, not only to members of his own battalion, but to those of neighbouring units.

An extract from the diary of Captain Borrie, [1] RMO 24 Battalion, gives an indication of the battle atmosphere for the RAP activities:

In the evening (of the 23rd) after dusk troops began to form up.... The RAP truck was to go to the start line 20 min. after the Bn started, and to move up to the Bn with the remaining transport when the minefield was cleared.

Our troops moved forward about 2115 and crossed the start line at 2130. I took my place at the start line at 2150 hrs and received any walking wounded and directed them on.... We were in slit trenches or working in the ambulance which had duly arrived. Flying over our heads was a continual sweep of 25-pounder shells making a deafening roar.

Our transport came about 0100 hrs and we went up the track as directed.... I met some orderlies with wounded, filled the truck with two lying cases, and went further forward to collect two more near a front minefield. Machine gun fire and tracer bullets went past.

I ordered more ambulances. In the meantime there were more wounded up front, so I went off and got two Bren gun carriers and took these up to the same place and collected four more lying cases. I felt much safer in a Bren carrier with low-firing MG fire.... Four American ambulances came up so I sent one away full, left one with me half-full, and sent two up to Sam Rutherford (26 Bn). They did not contact him

but came back full.

I was then given a guide and he led me in, but first I picked up some 25 wounded, and sent the walking wounded back and told them to get on the American ambulance. I eventually arrived at 24 Bn, filled up the ambulance and sent it back with the guide to collect my 3-tonner, which got lost but eventually arrived, and later an ambulance returned and I got cases away.

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[1] **Maj A. W. H. Borrie, OBE, MC; Dunedin; born Port Chalmers, 10 May 1917; medical practitioner; medical officer 1 Gen Hosp Aug–Dec 1941; 6 Fd Amb Dec 1941–Jul 1942; RMO 24 Bn Jul 1942–Oct 1944; 3 Gen Hosp Oct 1944–May 1945.**

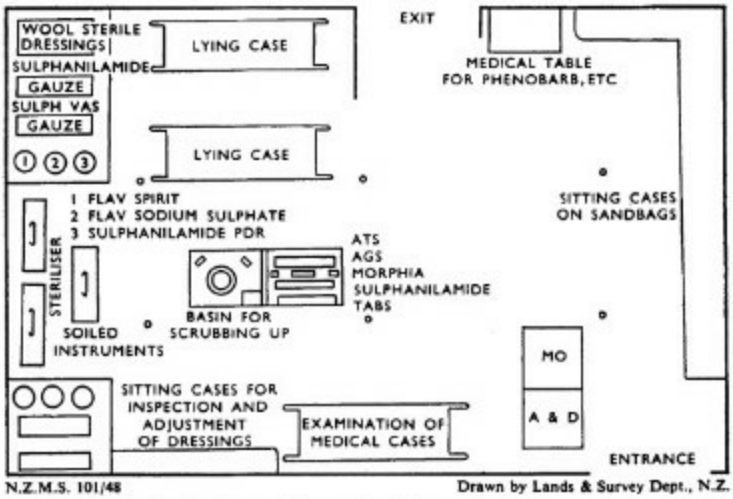
NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FUNCTIONING OF MEDICAL UNITS

Functioning of Medical Units

For the attack A Company 5 Field Ambulance under Major Dempsey was located just off Star track and behind a slight escarpment but in front of the artillery. A Company 6 Field Ambulance, under Major R. A. Elliott, moved up the Boat track and was likewise in front of the artillery. The ADS companies reached these sites just before the barrage opened and dug in and sandbagged the dressing posts. Sixth Field Ambulance was able to make use of slit trenches and dugouts already in the area. The first casualties were admitted to 5 ADS at 10.30 p.m. while the first at 6 ADS were admitted at midnight.

Although not many casualties had been expected to arrive until dawn, a steadily increasing number poured in during the night. At 1 a.m. on 24 October ambulances began evacuating cases from 5 ADS to 5 MDS 6 miles away—some 5 miles being along a road. The evacuation from 6 ADS to 5 MDS did not start until first light, it being impossible to do so beforehand as densely packed armour was moving behind the ADS until that time.



5 NZ Field Ambulance Reception Tent (3 IPP tents) for battle casualties

5 NZ Field Ambulance Reception Tent (3 IPP tents) for battle casualties

The task of the forward ambulances working between the ADS and the RAPs was most difficult. The desert tracks were ill-defined and difficult to follow, and were congested with armour, particularly on the narrow tracks leading through the minefields. These latter tracks had, however, been lighted and marked by the engineers and could readily be picked out. The method of sending one ambulance forward with each RMO was welcomed both by the RMOs and the ADS. Communication between the RAPs and ADS was much easier, facilitating a call for more ambulance cars if necessary.

The task of the ambulance car drivers is illustrated by the citation giving Driver Henderson [1] the DCM. This soldier was the driver of an ambulance car during the night 23–24 October 1942 and during the subsequent operations. He drove his car up the brigade routes

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[1] **Dvr E. A. Henderson, DCM; Invercargill; born NZ, 4 Nov 1913; lorry driver.**

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under heavy fire and collected wounded in the early stages of the attack; and his was one of the first vehicles through the gap in the minefields. During the first and subsequent nights he passed many times up and down these tracks, where many vehicles were being destroyed by mines, and his vehicle was often the only one moving in the forward areas and under heavy fire. He used his knowledge thus gained to guide up other ambulance cars and was thus instrumental in saving many lives.

The American Field Service drivers with our units also shared the risks. Evan Thomas, writing of the American Field Service at the Battle of Alamein, said:

Three of my sections were attached to 5 and 6 New Zealand Field Ambulances (one at 5 ADS, one at 6 ADS and one at 5 MDS).... On the

night the battle started (the 23rd) I was asked to deliver a case of fresh blood to 6 ADS.... It wasn't until 1.30 that our Field Service cars were called on to start working, and then five cars were ordered to 24 Bn RAP. I decided to go along as a spare driver. We drove westward on a dusty track crowded with tanks and Bren carriers getting ready to move out and cover the infantry positions at dawn. It was touchy work by-passing the concentrations of armour, since it was, of course, necessary to leave the proper path of the track at times and take a chance of running into a slittrench or perhaps a stray mine. However, we found the 24 Bn RAP truck without mishap and loaded three of our cars quickly. I was about to settle down and wait for more casualties to fill the two remaining cars, when a very excited padre came rushing up and told me that 25 Bn was a few hundred yards to the west and needed ambulances in the worst way.... It took us two hours to find 25 Bn, and by the time we got there, it was a good three miles west of where it should have been according to our informant. We had to work our way through and around tanks, across the British minefields, across what had been no man's land, and across the German minefields, before we reached our destination. We had to wait for an hour, in company with a great number of tanks, on the east side of the German minefield, while the engineers cleared a lane. When we did get there we found that neither the battalion doctor nor his RAP truck had put in an appearance. The battalion had just taken its second objective, but the wounded were still scattered all over. [1] **I found a young captain who said they really hadn't had time to collect their wounded and suggested we do that.... I had a good chance to find out just what a nasty job a stretcher bearer had. At one time Brook Cuddy and I accompanied two New Zealanders out in front of the infantry positions and had the unpleasant experience of finding ourselves sitting among a group of mangled bodies while an enemy machine-gun sprayed a stream of tracer in our direction.... We drove back to the ADS just as dawn was breaking. Once again we had to fight our way past the tanks and through the narrow minefield lanes.** [2]

Casualties began to arrive at 5 MDS before 12.30 a.m. on 24 October and Major McKenzie's attached surgical team was doing

[1] 25 Battalion did not in fact reach its objective on the night of 23-24 October. See also pp. 384– 5 for account of the RMO's work during this action.

[2] From *Ambulance in Africa* by Evan Thomas. Copyright 1943, Evan Thomas. Reprinted by permission of the publishers, Appleton-Century-Crofts, Inc.

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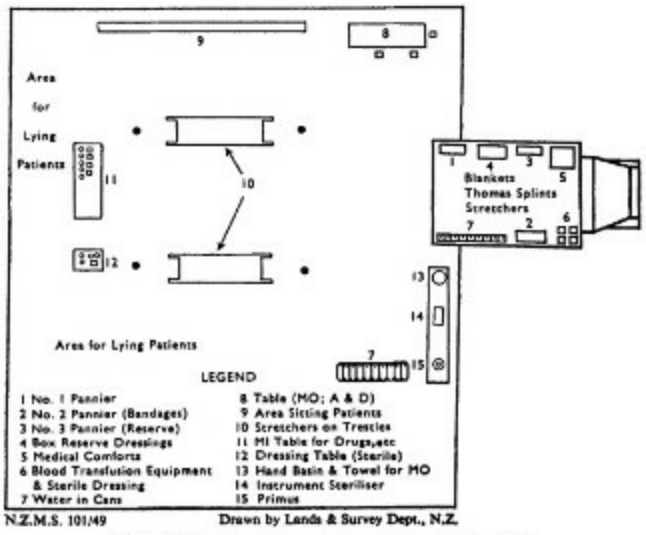
abdominal surgery before 1 a.m., and worked continuously for sixteen hours. For the next thirty-six hours there was very little let-up. In the first twenty-four hours 5 ADS admitted and transferred 456 patients and 6 ADS 343 patients. On 24 October 839 cases were handled by 5 MDS, of whom 504 were New Zealanders, while on 25 October nearly 500 were dealt with, and on 26 October a further 300.

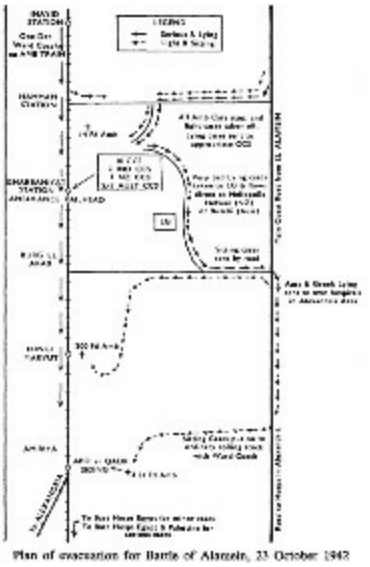


6 NZ Field Ambulance Reception Tent, 1942

6 NZ Field Ambulance Reception Tent, 1942

Extra transport had been allotted to the dressing stations for the attack, for example, five AFS cars were attached to 5 ADS, but in the sudden rush still more transport was needed. Four extra cars were sent forward to 6 ADS on the morning of 24 October. Each RMO in 5 Brigade took an ambulance forward with him and 5 ADS had a further four ambulances in reserve to work forward. Arrangements had been made for 3-ton trucks to patrol the axis through the minefields and collect

walking wounded. These did not function as they were not allowed up until after dawn. Their place was taken by an ambulance car, which ran continuously from 1 a.m. until midday on 24 October. One ambulance was lost in a minefield and the other two ambulances were used to evacuate from whatever RAP was holding the most cases. Reports from RMOs indicated that, although there were times when many more ambulances could have been filled, they were able to evacuate steadily and were never holding large numbers for long. Three-ton trucks were used in evacuations from ADS to MDS. The trucks could accommodate in reasonable comfort a large number of walking wounded, who formed over half the cases, thus relieving the strain on the ambulances.



Plan of evacuation for Battle of Alamein, 23 October 1942

Plan of evacuation for Battle of Alamein, 23 October 1942

The ADS cars were not allowed to go beyond the MDS but were returned immediately to the ADSs with stocks of blood, blankets, and comforts. This was appreciated by the ADS commanders. But the MDS had difficulty regarding evacuation to the CCSs. These were only 30 miles away and there were apparently enough ambulance cars (AFS ambulances, 1 British MAC cars, sixteen NZ Section MAC cars, and six 3-ton trucks) but the turn-round at the CCS was too slow. At one CCS there was an interval of three hours between arrival and departure on the return trip. When the cars, sent away before 9 a.m., had not returned by mid-afternoon, there were 300 casualties waiting at the MDS

to be evacuated. However, the situation cleared magically after ADMS 2 NZ Division had seen DDMS Corps. As the sun declined forty ambulance cars pulled in to the MDS and these, plus the returning cars, cleared before nightfall every case fit to go. The next day there was an adequate fleet of ambulance cars available at any time.

On 24 October ADMS 2 NZ Division obtained permission for Major S. L. Wilson's surgical team from Light Section 1 NZ CCS to proceed to 5 MDS. This team set up at the MDS at 5 p.m. and worked continuously for fourteen hours. During 24 October nearly ninety blood transfusions had been given by 5 MDS. The unit fortunately had plasma, serum, glucose saline, and blood in abundance, as well as a profusion of medical comforts and Red Cross supplies. The treatment of 839 cases in twenty-four hours was a record for a New Zealand MDS during the war, and yet in only one department—evacuation—was there the slightest anxiety. All men worked continuously with extraordinary efficiency, and attached ASC personnel gave great assistance. The value of training manifested itself abundantly in those few days in late October.

Casualties continued to arrive, and throughout the night of 24–25 October and on 25 October 6 ADS admitted heavy casualties, mostly from British armoured units which were engaged in tank battles. After an initial rush on 25 October, 6 ADS managed to clear all casualties by 2 p.m. and thereafter evacuation kept up easily with reception. The Light Section of 166 British Field Ambulance arrived to assist at 5 p.m., but the heaviest work was then over. The staff of 6 ADS was tired and feeling the strain, its total of cases having reached 600 by 6 a.m. on 26 October. Thereafter, casualties were much lighter. This was also the experience of 5 ADS, whose admissions on 25 October totalled 94, on 26 October 68, and on 27 October 43.

At dusk on 26 October over thirty enemy planes dropped some bombs on front-line areas and bombed artillery positions behind. Wounded from this raid were brought in to both ADSs by AFS cars.

On the night of 27–28 October 1 South African Division took over 2

NZ Division's section of the line and the New Zealand brigades withdrew for rest. The ADSs accompanied their respective brigades but 5 MDS remained in its former position, being called upon to treat only a few casualties.

In his operational report Lieutenant-Colonel McQuilkin summed up the activities of the MDS in these words: 'No praise is too great for all the personnel—officers, nursing orderlies, stretcher bearers, drivers, clerks, theatre staff, cooks—all were eager and efficient. On these few days they showed their worth and reaped the reward of long dull periods of training and minor activity—the satisfaction of a job well done.'

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL SITUATION

General Situation

Following the original 'Break-in' of the battle from 23 to 25 October, there was a 'Dog-fight' prior to the 'Break-out' and pursuit, as described by General Montgomery. In the second phase from 25 October to 1 November, the salient in the north was extended by 9 Australian Division, while the enemy wasted his strength in vain counter-attacks. Constant pressure was maintained by Eighth Army to keep the initiative and force the enemy to commit his reserve and expose his troops to the concentrated weight of the Army's artillery and air force.

The enemy apparently came to the conclusion that Eighth Army was staking all on a breakthrough down the main road in the north, and he moved his reserves to meet that threat. The Army was well placed to take advantage of the situation. A plan was made for the New Zealand Division to attack, along with 151 and 152 Infantry Brigades from 50 and 51 Divisions, south of the Australian sector and make a breach to launch 10 Corps into the open desert beyond the enemy's defences, thus dividing him in two.

The assault was to be carried out by 151 (Tyneside) Brigade and 152 (Highland) Brigade, with 28 (Maori) Battalion on the extreme right to clear an enemy position on the flank. New Zealand infantry were to take over the line during the assault and later move forward and relieve the assault brigades.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS

Medical Arrangements

For the attack ADMS 2 NZ Division was responsible for the medical arrangements of the British brigades under the Division's command as well as for the New Zealand units. These attached brigades were 9 Armoured Brigade, 23 Armoured Brigade, 151 Brigade, and 152 Brigade. Each had a medical unit, namely, 166 Light Field Ambulance, 7 Light Field Ambulance, 149 Field Ambulance, and 175 Field Ambulance.

On the night of the attack, 1–2 November, the medical units were disposed as follows: 6 NZ ADS, for which a special site dug in by bulldozers had been made by the engineers, and 175 Field Ambulance ADSs on Double Bar track; 149 Field Ambulance and 7 Light Field Ambulance ADSs on Diamond track; two sections of 166 Light Field Ambulance formed ADSs for 9 Armoured Brigade; while 5 NZ MDS and 166 Light Field Ambulance MDS were located together on the main road east of Alamein station. The 1st NZ CCS was still at Gharbaniyat and 4 Field Ambulance continued to function as a divisional rest station.

All evacuations from the ADSs would be to 5 MDS and 155 MDS, the serious cases going to 5 MDS, where the two surgical teams were still attached. The 2nd NZ FTU was also sent up on 1 November to 5 MDS from 1 NZ CCS. It was arranged that 16 MAC would supply extra ambulance cars if required, although twenty-five cars from NZ Section MAC were attached to 5 MDS as well as twelve 3-ton trucks, which were thought to be sufficient.

Surgical policy had to be adjusted to the demand for mobility should there be a 'break-through', when 2 NZ Division would go forward through the gap along with 10 Corps armoured forces. It was decided to limit the work of the surgical teams at 5 MDS to the most serious cases

demanding immediate surgery. As the journey to the CCS area was only of about two hours' duration along a good road, the majority of cases were to be sent there to prevent accumulations at the MDSs.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BATTLE OF THE 'BREAK-OUT'

Battle of the 'Break-Out'

It was 1.5 a.m. on the morning of 2 November when every gun on the Corps' front opened up a terrific barrage. One hundred and fifty thousand rounds were fired on a 4000-yard front during the next four and a half hours. Under this umbrella the assault brigades advanced. New Zealand sappers worked with the British infantry, lifting mines and marking lanes through which tanks and guns could advance in close support. Shortly after 4 a.m. word came through that the first objectives had been taken, and two hours later both brigades were on their final objectives and consolidating. Meanwhile, 28 (Maori) Battalion had cleared out the enemy pocket on the right flank and linked up with the Australians. At a quarter past six 9 Armoured Brigade passed through to carry on the attack. In a fierce and most gallant battle against a powerful anti-tank screen, the three armoured regiments fought their way forward. Their casualties in tanks were extremely heavy but the result of their attack was decisive. Enemy tanks counter-attacked our salient in the afternoon, but 1 and 10 British Armoured Divisions were deployed forward in time. All but one of our armoured divisions were engaged and all the enemy's.

Throughout the night of 2–3 November and the next morning the battle continued along the whole front. On the New Zealand sector the infantry came forward during the night, taking over from the assault brigades, and held the salient securely on 3 November while our armour widened the gap. It was clear that the enemy's resistance had been broken, and on 3 November our tactical reconnaissance aircraft observed lines of enemy transport moving west, against which the bomber force flung its full strength. On the night of 3–4 November 9 Australian Division advanced its line north towards the coast, the

Highlanders advanced across the Rahman track, and early the next morning 10 Corps, including 2 NZ Division, began the chase. At the same time 13 Corps in the south advanced. What was left of the *Afrika Korps*, with some remnants of the Italian *Mobile Corps*, was in full retreat, leaving five Italian infantry divisions to their fate.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL UNITS IN THE BATTLE

Medical Units in the Battle

By 5 a.m. on 2 November casualties were reaching 6 ADS from the attack and the wounded continued to flow in to the medical units for the next two days. At 9 a.m. 77 casualties had been received at 6 ADS, 50 at 152 ADS, and 120 at 151 ADS. At 2 p.m. a total of 302 patients had passed smoothly through 5 and 166 MDSs on their way to the CCSs. Of these, sixty-four were New Zealanders and the balance mainly British. During the day 6 ADS put through 268 cases, and the other ADSs a corresponding number, that of 151 ADS being over 400.

On the night of 2–3 November 151 and 152 Brigades and 23 Armoured Brigade passed from the command of 2 NZ Division, 6 NZ Infantry Brigade taking over from 151 Brigade in the line. Casualties on 3 November were less heavy and came mostly from armoured units in the tank battle, 6 ADS admitting 115.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF CAMPAIGN FROM MEDICAL POINT OF VIEW

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

The campaign culminating in the breakout at Alamein was the first time 2 NZEF medical units had the opportunity to operate as a complete ordered chain. In Greece and Crete the medical units were called upon to function mainly in retreat, and in Libya in 1941 the fluid state of the battle promoted disorganisation and led to the capture of the bulk of the field medical units. In the Alamein battles the CCS first functioned in battle as a complete unit, and the newly formed FTU was first used. In addition, farther back at Base, it was found that the New Zealand policy of getting 2 NZEF sick and wounded into New Zealand base hospitals was more generally known among other formations, and more help in this direction was received.

In connection with medical arrangements generally the ADMS 2 NZ Division paid frequent calls to 10 and 30 Corps and also to the ADsMS of 9 Australian Division, 1 SA Division, and 51 Highland Division, and was able to make the comment: 'The mutual co-operation of all forces in this respect was most pleasing. The medical arrangements by Army, 10 and 30 Corps were excellent throughout, and the organisation of medical supplies etc., and provision of ambulance cars left nothing to be desired.'

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE WORK OF THE ADVANCED DRESSING STATIONS

The Work of the Advanced Dressing Stations

The standard of work at the two active ADSs was excellent and earned high praise from the MDS which received their patients.

The work of the ADS was primarily the collection of cases from the forward areas and the RAPs, and their rapid evacuation to the MDS. First-aid treatment was given to the wounds not already adequately dealt with at the RAP, and, apart from the simple means of resuscitation—such as the giving of copious hot drinks of tea, and providing comfort and warmth and, if necessary, morphia—blood and serum were given to the exsanguinated and collapsed patients.

Field medical cards were carefully written up, with prominent indication to the MDS as to any special type of case or advice on subsequent treatment. Splints, particularly Thomas splints, were also applied to fracture cases. The work of collection through the minefields was most efficiently carried out and the ambulance drivers, including those of the AFS, did fearless and excellent work. Both the active ADSs were working at high pressure during the battle.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE WORK OF THE MAIN DRESSING STATIONS

The Work of the Main Dressing Stations

The layout of the MDS provided for a special bypass road leading in from the main road, running alongside the reception, resuscitation, and walking wounded tents. [1] The operating tents of the surgical team and the unit lay behind the resuscitation tent and the holding wards behind the reception tent, the hospital cookhouse being centrally sited near the wards.

EPIP tents were used for operating theatres and wards, and dispersal was limited to a maximum of 40 yards. The EPIP tents were readily fly, light, and sand proofed. There were on an average twenty cases held for nursing.

The cases passed rapidly through the reception tent, where clerks entered all essential details and a medical officer sorted out the cases according to whether resuscitation and urgent operation was required, or for evacuation to the medical centre. The walking wounded were transferred to a larger holding tent where dressings could be adjusted, and from where they could be rapidly loaded into ambulance cars or trucks.

In the meantime a constant supply of hot drinks and light meals was provided, the special Red Cross hospital comforts being very valuable. Every member of the unit was trained for his special task and worked at high pressure to keep the cases moving on and so avoid congestion.

The serious cases referred to the resuscitation tent were carefully examined and sorted into those, including abdominals, for operation by the attached surgical teams, and those to be dealt with by the unit's own surgical teams. Large quantities of blood, but also of serum and plasma

and glucose salines, were given by a specially trained team, including dental mechanics, until 2 NZ FTU was attached. A very efficient forward operating centre was then complete and functioned smoothly.

By this time all the surgical teams were well trained and worked speedily and we had two very experienced abdominal surgeons. The abdominal cases were held and nursed before evacuation, and nursing orderlies from the CCS were available for this purpose.

The pre- Alamein experience had rendered the ambulances, both the ADS and the MDS, highly efficient and this was shown by their ability to handle the exceptionally large numbers during the Alamein battles.

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[1] **See diagram on p. 382**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK AT 1 NZ CCS

Work at 1 NZ CCS

At Gharbaniyat 1 NZ CCS (under Lieutenant-Colonel Hunter) was widely dispersed, though not quite up to the regulation of 100 yards beween the tented wards. The Light Section under Major Wilson had moved on the first day of the battle to be attached to 5 MDS as an extra surgical team and nursing unit. Two surgical teams were still available, those of Major T. Harrison and Captain Douglas, [1] and they worked an eight-hour shift for the first seventy-two hours following the battle, when Captain Douglas became

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[1] Maj A. W. Douglas; Palmerston North; born Napier, 23 Oct 1910; surgeon 1 Mob CCS Jan 1942–Apr 1943; OC NZ Surg Team Apr–Jun 1943; 1 Gen Hosp Jun–Oct 1943; OC 1 Fd Surg Unit Oct 1943–Aug 1944; 1 Gen Hosp Aug 1944–1945.

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disabled with a septic finger. Major W. Mark Brown, [1] who had been attached from 1 NZ General Hospital, then took Douglas's place and Colonel Stout, the Consultant Surgeon, was also available, working mainly in the pre-operation tent.

Major Stewart [2] with 2 FTU gave valuable assistance till he was transferred to assist 5 MDS on 1 November.

The unit took in cases from all forces in rotation with 10 British and 2/3 Australian CCSs and dealt with 380 wounded cases in the first twenty-four hours after the start of the battle. Cases of first urgency, including most of the abdominals, had been dealt with at the MDS, but they were able to deal with only a proportion of them. Even the CCS was not able to deal with all cases requiring operation, and many of these

were sent on urgently by ambulance to the two British hospitals at Alexandria, which were acting temporarily as CCSs and not as holding hospitals. This arrangement allowed the spread of operation cases amongst the three areas—the MDSs, the CCSs at the Medical Centre, and the hospitals at Alexandria. Even then many cases, mostly minor ones, had to be evacuated to the base hospitals without any primary surgical treatment. Fortunately, little sepsis arose in these minor injuries. The work continued at high pressure, with a further peak after the breakthrough attack on 2–3 November. Urgent representations were made to Brigadier MacCormick, DMS 2 NZEF, for another surgeon, and Major Bridge [3] was sent forward on 5 November and remained for three weeks with the unit.

During October alone the unit dealt with 1400 battle casualties and 2400 sick. Two hundred and four battle casualties were operated on, and altogether 264 operations were performed; forty patients were given blood and plasma transfusion, over 80 per cent being given whole blood. It was the unit's first battle experience and, in spite of the weakening of the unit by the loss of Major Wilson and the light section, it functioned well. Fortunately, thirty Mauritians were available as extra staff for stretcher carrying, as the wide dispersal made this work slow and arduous, especially in the darkness.

The nursing of the cases was under the charge of the six sisters attached and was especially arduous because of the rapid turnover of cases made possible by the very efficient system of evacuation.

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[1] Maj W. Mark Brown, m.i.d.; Christchurch; born Lyttelton, 8 Jul 1895; gynaecologist; Surg Sub-Lt RNVR 1918; Asst SMO Burnham MC, Jun–Oct 1941; medical officer Maadi Camp Hosp Jan–Oct 1942; 1 Mob CCS Oct 1942–Dec 1943; 1 Gen Hosp Dec 1943–Apr 1944.

[2] Maj D. T. Stewart; Christchurch; born. Wanganui, 3 Aug 1911; pathologist, Christchurch Hospital; pathologist 1 Gen Hosp Mar 1940–Jun 1944, except while OC 2 FTU, Oct 1942–Feb

1943; Director of Pathology, Christchurch Hospital.

[3] Lt-Col K. B. Bridge, OBE; Wellington; born Gisborne, 4 Jul 1903; surgeon; surgeon HS *Maunganui* Apr 1941–Apr 1942; 1 Mob CCS and 1 Gen Hosp surg team Nov 1942–Jun 1943; 1 Gen Hosp Jun 1943–Sep 1945 – in charge surgical division 1 Gen Hosp Mar 1944–Sep 1945; CO 1 Mob CCS Sep–Oct 1945; CO 6 Gen Hosp Oct–Dec 1945.

This was the first time during the war that sisters of the NZANS had been attached to a forward medical unit during a battle.

The CCS continued to function at Gharbaniyat till the breakthrough. It then closed and moved forward to Garawla on 8 November. In the first six days of November, until it closed, the CCS dealt with 416 battle casualties and 129 sick. This made a total of over 1800 battle casualties dealt with during the Alamein battle.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DISPERSAL AND RED CROSS PROTECTION

Dispersal and Red Cross Protection

At that time it was laid down that tents of the medical units should be widely dispersed, to the extent of 100 yards between the main tents. The 5th MDS, however, planned only for a forty yards' dispersal, considering that the improvement in our air protection warranted this. At the ADS level digging in by bulldozer and sandbagging was commonly resorted to along with dispersal. Red Cross signs were displayed by medical units except in the forward areas prior to active operations, when their use was held to convey valuable information to the enemy of an impending attack.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK OF THE AMBULANCE CARS

Work of the Ambulance Cars

There was an ample supply of ambulance cars attached to our medical units during this period. They were boldly and courageously used in the field for the collection of wounded, passing through the lanes in the minefields to clear the RAPs, as well as collecting cases to carry to the RAP. They worked at night guided by the lights along the tracks. Except for some delay at the medical centre on the first day of the battle, evacuation worked smoothly and efficiently in spite of the large numbers dealt with. The AFS drivers were, as usual, assiduous in their work.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGERY AT ALAMEIN

Surgery at Alamein

The Consultant Surgeon 2 NZEF made the following observations with more particular reference to surgery at the MDS and farther back during the Battle of Alamein:

With the Light Sec. 1 CCS and 2 Surgical Team attached, 5 MDS was able to cope with the urgent cases, such as abdominals, satisfactorily. The CCS, with its Light Sec. detached, was not so fortunately placed, and though carrying out the work with great success ... would have benefited by the attachment of two extra surgical teams.... Before the action the services of an extra surgeon, as well as those of the Consultant Surgeon, were made available, and an extra team was sent later after the battle from 2 NZ Gen. Hospital.

The blood transfusion service functioned perfectly, and blood seemed available to all units in very large quantities and was instrumental in both rendering many operations possible and saving many lives....

The allocation of patients to the operating units functioned excellently, and the sorting out of cases for the CCS, by a Field Ambulance stationed between Hamman [Hammam] and Burg-el-Arab, was very efficiently done. The evacuation from the CCS area to the Base was also well-nigh perfect....

The provision of air transport not only gave a better chance of survival to the very serious cases, but also allowed of their early evacuation from the CCS, so lightening the burden of nursing to the small staff of Sisters available. The rapidity of evacuation from the CCS area permitted of the handling of a very large number of seriously wounded in an incredibly short period of time. The 1 NZ CCS handled

over 1300 seriously wounded cases in less than ten days, many of the cases being only a few hours in the CCS before transfer.

Further, in regard to abdominal cases:

Large numbers of these cases were operated on at the MDS and also at the CCS. There is no doubt that the most forward operating unit should give first preference to these cases after actual life-saving measures such as the control of haemorrhage. The results achieved after the Alamein battle I am sure warrant this preference.... I think that the battle of Alamein will be medically remembered as a triumph in the treatment of abdominal injuries.

In confirmation of this latter point, a report by the Consultant Surgeon GHQ MEF (Brigadier W. H. Ogilvie) stated:

Abdominals were treated almost exclusively by the Field Surgical Units, the surgeons of the CCSs and the surgical teams sent forward from Base Hospitals by the AIF and NZEF.... The results appear to have been better than in any previous campaign. This very satisfactory state of affairs is only partly due to the short lines of evacuation, for under such conditions many hopeless cases reach the operating centre alive; credit must also be given to the high standard of technical work among the forward surgeons, to the advanced sites in which they operated, often at some risk, to the provision of beds even at MDS, to the routine use of sulphadiazine, intravenous fluids and gastric suction after operating, and to the policy of retaining abdominal cases till they had established equilibrium.... The field surgical units did grand work and fully justified the foresight of those who planned them as the solution of the primary surgery of wounds in mechanised warfare.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGICAL TREATMENT DURING THE BATTLE OF ALAMEIN

Surgical Treatment During the Battle of Alamein

With regard to the actual surgical treatment of the different types of wound there was no radical alteration, but there was a more thorough carrying-out of established techniques and a better documentation of the cases.

The New Zealand style of Tobruk plaster fixation in the Thomas splint was now standardised. The use of plaster bandages to bandage the arm to the body in cases of fracture of the humerus was a definite improvement at this period. Instructions had been given to pad and splint all forward plasters, but this was not satisfactorily carried out. The insertion of a rubber tube while applying the plaster facilitated the subsequent cutting.

Head cases during the Alamein battle were all evacuated to the base neurosurgical unit in Cairo.

Facio-maxillary cases were evacuated to the base units. Dentists attached to the CCS were utilised for the treatment of fractured jaws.

Sucking chest wounds were dealt with by excision of the wound and tamponage with a vaseline pack stitched loosely to the skin.

In abdominal cases difficulty arose in dealing with many late cases. Colonel Donald, British consultant surgeon to the forward areas, introduced at that time a small suprapubic exploration incision in doubtful cases to ascertain whether there was blood in the pelvis, a sign of intra-abdominal injury. Exteriorisation of the colon had become standardised. The retention of abdominal cases in the forward operating unit following operation had become the routine.

Amputations were frequently performed following the severe mine injuries. It was in these cases particularly that blood transfusions proved invaluable. They were dealt with conservatively, and site-of-election operations were no longer performed. Severe sepsis had been noted in traumatic amputations which had not had thorough wound excision.

Knee joints: A solution of sulphathiazole in oil was being utilised for injection into these joints at operation. The patella was being completely excised in compound fractures by many surgeons.

***Anaerobic Infection*: In the forward areas serious gas infection was uncommon, apart from a gangrene supervening on the destruction of the main vascular supply of the limb. Occasionally, in large wounds of the buttock, thigh, or deltoid, the muscle was involved to some degree but free local excision proved quite satisfactory. The presence of gas in the tissues was often noted without serious infection or toxaemia. Only the rarest cases required amputation, and that generally when the blood supply of the limb was seriously interfered with.**

***Sulphonamides*: The dusting of a fine coating of sulphanilamide powder on the wound had become universal. Sulphathiazole was given intravenously in cases of anaerobic infection and intra-abdominally in abdominal wounds. Sulphadiazine was given to abdominal and head cases. For abdominal cases it was introduced by tube to the infected area for the first forty-eight hours. In head cases it was given intravenously in cases with dural perforation. Sulphonamide by mouth was given by routine to every wounded man, the dosage being noted either on the AF 3118 or on a special slip.**

***Serums*: ATS was given as a routine. Anti-gas serum was given in cases of anaerobic infection or of gross muscle injury.**

***Blood Transfusion*: The organisation of blood transfusion units had led to what was at the Battle of Alamein a well-nigh perfect result. Blood was made available in very large quantities to all forward units and the supply was kept up from the base, from which it was sent forward by**

transport planes. The normal dose of blood given was two pints, but sometimes much more was required. Serum was less often indicated, and glucose saline was utilised freely for continuous transfusions in abdominal cases.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BASE HOSPITALS

Base Hospitals

The large majority of the New Zealand casualties were evacuated to the New Zealand base hospitals then sited at Helwan and El Ballah, and some were admitted to our hospital then functioning at Beirut. Numbers were, however, still evacuated to the British hospitals in the Canal area and many to Palestine. Many of the more serious cases came by air to Helwan and arrived in good condition. It was noted that less surgical attention than usual had been given in the forward areas, especially during the beginning of the battle. The cases which had had surgical toilet had arrived with cleaner wounds.

A large proportion of very severe wounds from anti-tank and anti-personnel mines was noted, and bilateral crush fracture of the os calcis was present in several cases. Some serious and infected chest cases were seen. The amputations were generally satisfactory, but skin traction had not been fully utilised. The importance of the avoidance of the introduction of fluid or drops into the ears following blast injury was stressed.

In a few cases of fracture sent back without splints very definite evidence of shock was seen, in marked contrast to the condition of those adequately splinted, which arrived at the base in excellent condition. The deleterious effect of long journeys in severe cases was particularly noted by 2 NZ General Hospital at El Ballah, this corresponding with their experience at Garawla during the Second Libyan Campaign. The cases seen at Beirut arrived in good condition by hospital ship from Alexandria.

The Consultant Surgeon 2 NZEF, in a survey at the time, said:

Summing up, one's impression of forward surgery at the battle of Alamein is one of exceedingly efficient work. The administrative arrangements for evacuating the wounded were excellent. The provision of many new forward surgical units allowed a great many cases, though not all, to be dealt with. Abdominal cases were able to be operated on in large numbers, and post-operative treatment in the forward areas was good. The provision of beds for the serious cases, mainly abdomens, held during the critical periods in the forward operating centres, has rendered satisfactory nursing possible. Head injuries were mostly evacuated to the Head Centre at Cairo. Fractures were dealt with adequately and splinted very well, especially the femurs. The too-frequent changing of dressings was prevented, many cases arriving at the Base with their field dressings on, which in the great majority of cases, meant sensible discretion on the part of the forward units. It is being realised more and more that a real wound toilet means operative treatment, that re-dressing a wound means another chance of contamination. The corollary is that for efficient wound treatment the maximum of forward surgical operating teams is essential. Our own New Zealand units are to be highly commended for their hard and efficient work.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL LESSONS FROM ALAMEIN BATTLE

Medical Lessons from Alamein Battle

There were certain lessons to be learnt from the work carried out by the Medical Corps during the Battle of Alamein.

The carefully planned scheme for the evacuation of the wounded through the minefields proved highly successful and became standardised in the Army.

The main lesson was the great value of concentration of the medical units, especially those responsible for forward surgery, in the handling of large numbers of casualties. This allowed the even distribution of surgery between the MDS group and the CCS group. The utilisation of a field ambulance in front of the CCS group as a sorting centre and a treatment centre for the minor cases proved invaluable.

Early operation on the abdominal cases and the holding of these cases in the unit following operation gave excellent results. The surgical potential available was insufficient to cope with all the casualties in spite of the attachment of many excellent FSUs.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL PLAN OF 10 CORPS FOR ADVANCE

Medical Plan of 10 Corps for Advance

The planning for the advance of 10 Corps was entirely different from the first set battle as now mobility and long lines of evacuation had to be dealt with. Provision was made for a large number of mobile Corps medical units: two mobile CCSs, 15 British CCS and 8 SA CCS, and the light section of 1 NZ CCS. Three self-contained and mobile FSUs and one FTU, and two light field ambulances—the 12th and 151st—were attached to 10 Corps, apart from New Zealand field ambulance units.

One hundred and sixty-six AFS four-wheel-drive Dodge cars, each capable of carrying three stretcher cases or six sitting cases, were also available. During the advance two lines of communication were arranged, one along the coastal road and the other some 20 to 30 miles south, mostly over rough desert studded with small hummocks of camel grass. At first only small medical units could accompany the armour, but later it would be necessary to bring the other Corps units up to deal with casualties during the rapid advance by leapfrogging the medical units and leaving behind sections to nurse serious cases, and at times possibly carrying cases forward for a time with the units. The plans had all been carefully worked out and explained to all units, and a period of realistic training had taken place, with a rehearsal of the battle as planned.

The blood transfusion service had made full preparations and had ready an ample supply of blood. Medical supplies were ample and all field units carried fourteen days' reserve expendable stores, and an advanced depot of medical stores was to move forward with the Corps.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SIGNAL COMMUNICATION

Signal Communication

The armoured divisions all had a complete chain of wireless links. In each division each field ambulance was in direct communication with its ADMS and each ADMS in direct communication with DDMS 10 Corps.

The 2nd NZ Division, as an infantry division, had no such wireless contact on establishment, 166 Light Field Ambulance of 9 Armoured Brigade, under the Division's command, having the only wireless link in our medical layout.

DDMS 10 Corps made great efforts on our behalf to secure such necessary communication, which was necessary in view of the fact that 2 NZ Division was to move forward in a mobile role under 10 Corps as soon as a breakthrough occurred. Ultimately, the best that could be arranged was the supply of one extra set to be attached to one of the New Zealand field ambulances. This set, and that of 166 Light Field Ambulance, was on a link to ADOS set at Rear HQ 2 NZ Division. In addition, it was arranged that ADMS would use the 'Q' link from Rear to Main HQ 2 NZ Division. This arrangement was a great help, but it was not expected to be satisfactory when the mobile phase arrived, as using two such overloaded sets as ADOS and Q would not permit of sufficiently urgent results, and the impossibility of direct contact between DDMS Corps and ADMS Division was a serious one.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS OF 2 NZ DIVISION FOR THE ADVANCE

Medical Arrangements of 2 NZ Division for the Advance

Following the GOC's conference on the afternoon of 3 November, ADMS 2 NZ Division made medical arrangements for the coming breakthrough and advance. Both 5 MDS and 166 MDS were to close at midday on 4 November but 166 MDS would reopen on the site of 6 ADS. A section from 4 Field Ambulance was to move up to 5 MDS and nurse severe post-operative cases until they were well enough to move to a CCS. Sixth Field Ambulance was to move forward to the site of 6 ADS and be ready to move through with the Division as an open MDS. The wireless truck and 2 NZ Surgical Team were attached to 6 Field Ambulance, which laid in a supply of blood and liquid plasma. The Field Transfusion Unit was to move forward with 5 MDS. Both 5 and 6 ADSs closed on the morning of 4 November and moved 3 miles westwards to join their respective brigades, and the other medical arrangements were completed by midday.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE ADVANCE BEGINS

The Advance Begins

Shortly after midday on 4 November the Division, with 4 Light Armoured Brigade under command, left the Alamein position in an encircling movement on Fuka. Fifth Brigade was fired on during the night by a stray enemy party but the casualties (15) were carried in the ADS cars until they could be taken over by 6 MDS. Following the first twenty-four hours, when all cases had to be carried with the column, no difficulty was experienced in evacuation owing to the rapidity with which 10 Corps' medical units came forward.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL SITUATION - THE PURSUIT TO THE FRONTIER

General Situation - The Pursuit to the Frontier

The aim of the Division's outflanking movement on Fuka from the breakout at the Alamein line was to cut off the enemy retreat along the coast road. But the enemy made a quick withdrawal defeating the original aim. Near Fuka on 5 November our armour engaged an enemy rearguard covering a minefield. Resistance was not stubborn, and by the morning of 6 November the enemy had withdrawn from Fuka and the Division drove on westward in the desert, still with an outflanking move in view. It was then that the elements defeated this objective. On 6 November torrential rain began and next morning the Division's transport was hopelessly bogged—the desert had turned into an impassable morass. This gave the enemy, who was using the main road, a full day's reprieve.

It was not until 8 November that the New Zealanders were able to advance again, and that day they pushed on to stop the night south of Mersa Matruh, still well away from the main road. At Matruh the enemy did not make a stand and, while 6 Brigade moved in to clear and occupy the town, the rest of the New Zealanders moved up to the main road west of Matruh and towards Sidi Barrani. The sides of the main road, which was followed in the next lap of the advance, were littered with wreckage from merciless RAF strafing of the retreating columns.

As it screened the advance 4 Light Armoured Brigade encountered road blocks and shellfire, but no serious resistance was met until a minefield was reached at the foot of Halfaya Pass. Here again the main enemy force withdrew before our infantry could deploy to attack, but 21 Battalion on 11 November, in an engagement with an Italian rearguard holding the pass, captured 612 prisoners with only two casualties to

themselves, one killed and one wounded.

With the capture of Halfaya Pass all organised resistance by the enemy in Egypt itself was ended. Capuzzo, Sollum, Bardia, and Sidi Azeiz were not contested. British armoured forces continued the chase through Gazala and Tobruk to El Agheila, a thousand miles from Alamein, but the New Zealand Division stopped on 11 November south of Bardia to rest and refit.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE MEDICAL UNITS

The Medical Units

From the medical point of view the chase following the breakthrough was relatively unimportant, very few casualties occurring in the Division. In the first forty-eight hours after the move forward the Division's wounded were reported to be only forty. However, 6 Field Ambulance was called upon to treat 126 battle casualties (including 33 prisoners of war) on the morning of 6 November. Most of these cases came from a skirmish which developed about 7 a.m. near the area in which 6 Field Ambulance was laagered. In this action 26 Battalion captured 500 Italians and some Germans, and released about fifty men of 22 British Armoured Brigade who had been captured by the enemy the night before. In addition, there were a few New Zealanders brought back from a minor clash with the enemy farther forward. Treatment of the wounded was limited to the giving of blood transfusions and the application of splints, no operations being performed. By noon all were evacuated by 16 MAC and NZASC trucks. Sixth Field Ambulance moved on at 2 p.m. to the region south of Baggush, where several of the unit's trucks got stuck in the mud.

When 6 Brigade occupied Mersa Matruh on 9 November, 5 Field Ambulance, less one company, accompanied it. The sickness cases from the Division, plus occasional battle casualties, were handled en route to Sidi Barrani by 6 MDS. They were carried with the unit until a sufficient number accumulated, and were then sent back in convoys to seek a stationary medical unit. At one stage seventeen ambulance cars and eight 3-ton trucks in three separate convoys were simultaneously away from the unit, but all rejoined it without incident. By 10 November 1 NZ CCS had moved up to the old site of 2 NZ General Hospital at Garawla and opened there.

In the advance from 8 to 11 November it was necessary to carry petrol for 200 miles and rations and water for six days. CO 6 Field Ambulance commented that this placed an unfair strain on unit vehicles, especially as the extra petrol for the ambulance cars attached had to be carried on them. As a result the chassis of three trucks were bent, this pointing to the need in such long journeys of extra transport being provided for field ambulances as it was for battalions. The accumulation of transport at the bottom of Halfaya Pass as units advanced was a sitting target for enemy planes, but fortunately the RAF had control of the air.

On 12 November 6 Field Ambulance established an MDS south of Bardia and continued to serve the Division, holding an average of over one hundred sick, mostly infective hepatitis cases, and performing minor operations. Evacuations were first made to 1 Mobile Military Hospital, and then on 22 November to 1 NZ CCS, which had moved up from Garawla to Tobruk. Attached to 6 Field Ambulance were 2 NZ FTU and 2 NZ Surgical Team. These had accompanied 6 Field Ambulance in the breakthrough, as it had appeared possible that evacuation routes might be interrupted, necessitating the holding of casualties, but happily no such emergency arose.

When 4 Field Ambulance, 4 Field Hygiene Section, and 1 Mobile Dental Unit arrived in the Bardia area on 19 November, 4 Field Ambulance opened a divisional rest station again, and the last two units operated in their usual capacity. On 22 November 5 Field Ambulance accompanied 6 Brigade when it went from Mersa Matruh to Bardia to rejoin 2 NZ Division, but on 25 November 5 Field Ambulance moved on to Tobruk to set up adjacent to 1 NZ CCS and assist in holding and treating patients until 500 cases were accumulated, sufficient to necessitate the provision of a hospital ship.

Both 4 Light Armoured Brigade and 9 Armoured Brigade passed from command of 2 NZ Division on 12 November, and with them went 14 Light Field Ambulance and 166 Light Field Ambulance.

From Tobruk on 15 November 6 Field Ambulance salvaged an operating table and autoclave which added considerably to the efficiency of the unit. In Tobruk, too, the valuable stock of an Italian medical store was taken over by DDMS 10 Corps.

An Italian mobile shower unit was salvaged, repaired, and put into operation by 4 Field Hygiene Section. This equipment gave the unit a complete disinfestation plant when used in conjunction with its ASH portable disinfestor. In quiet periods the unit henceforth provided hot showers for the Division. Such hot showers were commenced on 27 November, water being drawn from a cistern of several thousand gallons located by 4 Field Ambulance. The water, if conditions demanded, could be sedimented, filtered, superchlorinated, and used again. This was done for the first two days the shower unit was in use, and it was found that the wastage averaged one pint a man. It was possible to provide hot showers for 1000 men a day with the equipment.

Thenceforth the campaign in North Africa was to be carried on in winter and completed in spring. The change of seasons was marked by the issue of battledress to the troops from 17 November onwards. Occasional wet spells in November turned the desert into a quagmire and made living conditions in the open most trying. With the advent of colder weather, colds and upper respiratory tract infections were rather more prominent. Infective hepatitis was still much in evidence but was showing a steady decline. Preventable disease generally was at a very low level.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL SITUATION, DECEMBER 1942

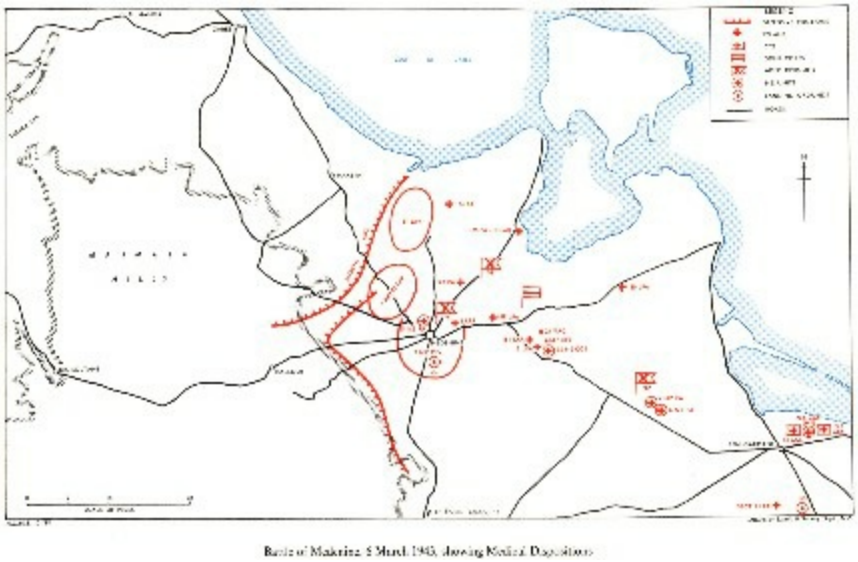
General Situation, December 1942

In November Rommel had retired to his old line at El Agheila, the 'impregnable' stronghold from which he had twice launched offensives and driven our forces back into Egypt. Opposite the Agheila position Eighth Army prepared for the next attack. For this attack supplies of ammunition, petrol, and food had to come up many hundreds of miles from the Nile Delta. While supplies were being built up plans were worked out for the attack and 2 NZ Division was given the role of outflanking the El Agheila line.

The Division was equipped and trained for the task it was to undertake. During the desert campaigns complete mobility had been aimed at and achieved. The entire force moved on wheels or tracks. When complete it comprised two New Zealand lorry-borne infantry brigades (4 Infantry Brigade having been withdrawn for conversion to an armoured brigade); a British armoured brigade armed with Sherman tanks; a gun group of British medium artillery; the New Zealand Divisional Artillery of three field regiments, an anti-tank regiment and an anti-aircraft regiment; the Divisional Cavalry in light tanks, and a machine-gun battalion, plus engineer, ASC, ordnance, and medical units. It was the most powerful division in the Western Desert, combining in one formation the capabilities of the armoured division and the ordinary infantry division. Mobility and striking power were the keynotes of the Division's part in the remarkable six months' campaign in which the enemy was driven back through Cyrenaica and Tripolitania to final defeat in Tunisia.

The enemy position at Agheila was a strong one, flanked on the north by the sea and on the south by a desert of soft sand, and covered

frontally by salt marshes. Out into the sand 2 NZ Division was to make an outflanking movement, a 'left hook', coinciding with a frontal assault by British forces on the Agheila line. When the Division received its role it was still at Bardia, 350 miles from the front, but early on the morning of 4 December the force moved west and in three days crossed 356 miles of desert to an assembly area at El Haseiat, east of the Agheila position. The Division was under command of 30 Corps. All three field ambulances accompanied the Division, while 4 Field Hygiene Section and 1 Mobile Dental Unit remained near 1 CCS and moved with that unit later to Agedabia.



Battle of Medenine, 6 March 1943, showing Medical Dispositions

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL PREPARATIONS FOR 'LEFT HOOK'

Medical Preparations for 'Left Hook'

At El Haseiat final preparations were made for the long 300-mile sweep into the desert as a self-contained force without roads or supply lines. Petrol for 400 miles and food and water for ten days were loaded up, and among medical units such arrangements were made that the standard of medical service available and the equipment provided were in no way impaired by the unusual nature of the manoeuvre. In a move of 300 miles or more with no established lines of communication, the evacuation of patients was not practicable. It was therefore decided to provide enough medical personnel and ambulance cars to open dressing stations and operate wherever necessary and to hold patients or carry them with the Division as conditions demanded. It was arranged that 5 and 6 Field Ambulances and 14 Light Field Ambulance (the medical unit of 4 Light Armoured Brigade again under command) should move with the Division. Also to move with the field ambulances were two complete surgical teams equipped with hospital beds and additional equipment for brain, chest, and abdominal surgery, and 2 FTU carrying full stocks of plasma and serum and 104 pints of fresh blood, adequately preserved in special refrigerators. Remaining in reserve at Agedabia ready to be called up at short notice were 4 Field Ambulance, 4 Field Hygiene Section, and 1 Mobile Dental Unit. All medical units were equipped with wireless, ready to be summoned or moved quickly as the need arose. Large quantities of extra dressings, blankets and stretchers, and Red Cross supplies were also carried.

Twenty-five extra AFS cars were attached to 2 NZ Division and ten extra to 14 Light Field Ambulance to build the total of ambulance cars up to seventy-five so that mobility could be maintained in case of heavy casualties. In the event of complete isolation the medical organisation,

by using available empty ASC trucks for the carriage of light cases, would have enabled many hundreds of patients to be treated and held or carried with the Division.

The 1st NZ CCS was moved from Tobruk, the Light Section having rejoined the unit at the end of November, to Agedabia, where it set up on 11 December along with 8 SA CCS.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

'LEFT HOOK' AT AGHEILA

'Left Hook' at Agheila

The Army plan for the offensive at Agheila was advanced by forty-eight hours as it was thought the enemy might be withdrawing, and the object was to hit him hard before he disengaged. This acceleration provided complications, but on 13 December the whole Division moved out at 7 a.m. on the left hook. Rain had fallen and this helped rather than hindered the going, and the worst of the obstacles, Chrystal's Rift, was crossed successfully. By nightfall on 13 December the Division was south of the enemy's outposts. Reports of enemy withdrawals from parts of the Agheila position came in during the night. The advance was pushed forward next day with all speed over very difficult country, with the object of seizing the escarpment dominating the Marble Arch area in the coastal belt behind the Agheila line. By early morning on 15 December the force had swung to the north-west to reach Bir el Merduma before cutting across to the coast road. Unfortunately, in the final advance to the objective over particularly broken country during 15 December and in the night, the Division travelled further west than had been intended. Thus, when 5 and 6 Brigades deployed during the night to cut off the enemy rearguard there was a gap of about 6 miles between them.

A strong enemy tank force lay to the east. Clashes with this force developed on the morning of 16 December, but in the darkness the Division had not been able to get firmly astride the enemy's line of retreat. Our tanks and artillery engaged the enemy tanks but they were able to escape, along with other elements of the enemy force, through the gap between 5 and 6 Brigades, with few losses.

As an enemy rearguard was holding Nofilia further west along the

coast it was decided to outflank this position on 17 December. This advance meant going to the limit of the petrol supplies, and no support could be expected from the British forces advancing along the coast as they were delayed by mines and extensive demolitions. On the morning of 17 December Sherman tanks of the Royal Scots Greys of 4 Light Armoured Brigade joined battle with enemy armour and guns south of Nofilia. Behind them the rest of the force swung into position under shellfire, but were held up short of the main road. During the night the infantry advanced and mined the road to the west of Nofilia and artillery harassed it, but the main enemy force had already escaped, and on the morning of 18 December Nofilia was found to be deserted. The enemy withdrew a further 100 miles to Buerat. The Division remained at Nofilia.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

Part of Medical Units

In the actual movement around the flank of the enemy line there were no battle casualties, and the medical units were not called upon until the Division deployed across the enemy's line of retreat west of Agheila on the night of 15 December. That night 6 MDS, with a surgical team and transfusion unit attached, opened 2 miles west of Divisional Headquarters. An ADS company went with 6 Brigade as it moved north to cut the main road, and another company went with 5 Brigade when it took up a position northeast of Divisional Headquarters, but separated from 6 Brigade by a gap of 6 miles. The MDS of 14 Light Field Ambulance of 4 Light Armoured Brigade was located 2 miles south-west of Divisional Headquarters and opened with arrangements to send all cases to 6 MDS. In reserve 10 miles east of Divisional Headquarters was 5 Field Ambulance, but because of a threat by an enemy column this group moved a further 10 miles back during the night.

From engagements on the morning of 16 December there were twenty-three battle casualties admitted to 6 MDS through the ADSs. One AFS ambulance car, with an American driver, a New Zealand orderly, and three patients en route from 6 ADS to 6 MDS, was captured by a German column. On 17 December the sick and wounded, totalling 84, were placed in charge of A Company 6 Field Ambulance, which was instructed to go back by the divisional route. The track proved so rough and so hard on the wounded that the OC, Major R. A. Elliott, decided to cut across down the Marada track to the coast road at Agheila, where the leading units of 51 Division were contacted and the patients handed over to 16 MAC. The ADS then rejoined the Division by the coast road, following closely behind the mine-clearing parties.

When the Division moved to the west of Nofilia on the morning of 17 December 6 MDS, with a surgical team and 2 FTU, opened 8 miles south-west of Nofilia. Here thirty wounded from 4 Light Armoured Brigade were

admitted, and here at an isolated spot in the Tripolitanian desert seriously wounded men received high-grade surgery in what was really a field hospital. Severe cases, including brain wounds, were operated on within a short time of being wounded, and received the benefit of blood transfusions and the most modern drugs.

Evacuation of the serious cases was effected by two Red Cross planes from Nofilia aerodrome on 21 December after the New Zealand Engineers had formed a track across the rough desert with bulldozers. The remainder of the patients (81) at 6 MDS were evacuated that day by road convoy to Marble Arch after the road had been cleared of mines. A few miles west of Marble Arch 4 Field Ambulance was acting as a Corps MDS, with one company at Marble Arch airfield as an air evacuation centre. From the aerodrome all cases were flown further back to El Adem by transport planes on their return trips after bringing up supplies. This was a more or less impromptu arrangement by 4 Field Ambulance which worked most satisfactorily, and resulted in the evacuation of 253 patients in six days.

On 21 December 2 NZ Division moved to the coastal area near Nofilia and 5 Field Ambulance opened an MDS, with 6 Field Ambulance remaining closed alongside. Thereafter until the end of December, while the position remained static, 5 MDS treated a constant small stream of casualties resulting from mine explosions. Moving further west on 26 December, 4 Field Ambulance rejoined the Division, while on 22 December 14 Light Field Ambulance had reverted with 4 Light Armoured Brigade to the command of 7 Armoured Division further forward.

The battle casualties and sick handled by the two New Zealand medical units in the Agheila operation from 11 to 21 December totalled 104 and 164, of whom 69 and 149 respectively were New Zealanders.

In regard to administration generally, ADMS 2 NZ Division was pleased to make the comment: ‘The Division was never better served by Corps and Army than in this period. Supplies were adequate and came forward quickly, extra ambulances were provided early, so that even in

the long desert move we felt quite happy and confident that we could deal with all possible casualties; air evacuation was arranged quickly in answer to our signals.'

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE ADVANCE TO TRIPOLI

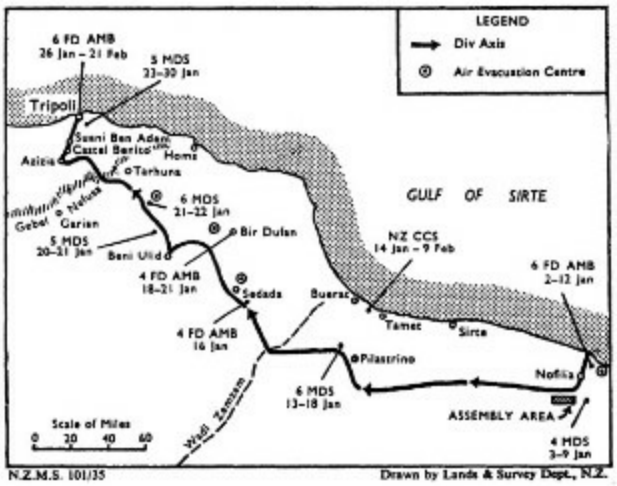
The Advance to Tripoli

The enemy in Africa was now facing the Allies on two fronts. In Tunisia the Anglo-American forces were closing in, but the Germans had heavily reinforced the garrison there and it was clear that Allied progress would be slow until supplies could be built up for a full-scale offensive. Similarly, Eighth Army had to be supplied from a badly battered port at Benghazi and by road from Tobruk. It was not known whether Rommel intended to fight hard for Tripolitania or whether he would go straight back to Tunisia. No risks could be taken as the enemy was still strong, and Rommel could be depended upon to hit back if the opportunity offered.

The enemy's defensive position at Buerat was covered by steepsided wadis which were deep and very difficult to cross, especially on anything like a broad front. Reconnaissance patrols, however, had again found places where an outflanking force could get through with the help of bulldozers. The Division, again with a regiment of Sherman tanks (the Royal Scots Greys) under command, was given an outflanking role. Eighth Army's advance was to be on a three-division front, with 51 (Highland) Division on the coastal sector, and 7 British Armoured Division and 2 NZ Division following the inland route on the open left flank. These three divisions formed 30 Corps. Behind this force 22 Armoured Brigade was in reserve under the command of the Army Commander, General Montgomery. It was an army, therefore, of three divisions and a brigade which had the task of capturing Tripoli.

Early in January 1943 preparations by 2 NZ Division for another left hook were completed on the same basis as for the Agheila operation, vehicles being loaded with water, petrol, ammunition, and food for

eleven days. On 3 January the Division concentrated in the desert south of Nofilia and grouped for the next advance, while 5 Brigade moved up near to Wadi Tamet to prepare a new landing ground for the Desert Air Force. Here, on 5 January an enemy air raid resulted in ten being killed and twenty-seven wounded. The casualties were treated by B Company 5 Field Ambulance as ADS to the brigade, surgery being performed by 2 Field Surgical Unit attached to 151 Light Field Ambulance, 2 miles away. When the Desert Air Force moved up to the landing ground a few days later, enemy dive-bombers and fighters, which had been dominating the forward area, were soon driven back by Spitfire squadrons.



Nofilia to Tripoli showing Medical Units,
2 January – 21 February 1943

Nofilia to Tripoli showing Medical Units, 2 January – 21 February 1943

Then on 12 January the Division moved forward to Wadi Tamet to lie up in broken country with all vehicles camouflaged. At dawn on 15 January 2 NZ Division, as well as 7 Armoured Division and 51 (Highland) Division to the north, was in contact with the enemy. The enemy position was strong, so orders were given to 2 NZ Division to carry out an outflanking attack. By nightfall the Division threatened the enemy flank and was in a strong position to complete the 'hook' in the morning. The enemy was also aware of this and withdrew from the Buerat position.

For the next stage in the advance 51 (Highland) Division continued along the coast clearing mines and bypassing demolitions, while 7

Armoured Division and 2 NZ Division cut across the desert in a wide outflanking drive.

During the next seven days the advance continued without any important engagements. From Buerat to Azizia the route lay over stony desert, cut by deep and difficult cross wadis, with occasional patches of soft sand. Beyond Tarhuna, as the road was destroyed, the Gebel was crossed by a mountain pass, after which a difficult patch of sand had to be overcome to reach the main road. Movement was slowed down, not so much by the enemy as by the broken nature of the country, which became progressively worse as the columns approached the Gebel Garian range between the desert hinterland and the plain of Tripoli. On 21 January the Division began to cross this range by a winding road. By moving all night the Division was able to debouch into the plains on 22 January. Enemy rearguards were still guarding the approaches to Tripoli. Eighth Army advanced guards, moving on their different routes, were almost equidistant from Tripoli. Still delayed by demolitions and mines, 51 Division was completing its advance along the coast road, 7 Armoured Division near Tarhuna was directed on Castel Benito airfield, and the New Zealanders were closing in from the south. In face of these combined threats the enemy withdrew from Azizia on the night of 22–23 January, and on the 23rd an endless stream of vehicles began to roll into Tripoli.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS FOR ADVANCE TO TRIPOLI

Medical Arrangements for Advance to Tripoli

Medical arrangements for the advance to Tripoli were similar to those for the Agheila operation. This time 4 and 5 Field Ambulances accompanied the Division and 6 Field Ambulance served as a Corps MDS. A total of twenty-five extra ambulance cars from 15 MAC was attached to 4 and 5 Field Ambulances, which formed MDSs for the Division. The transfusion unit and a surgical team from 1 NZ CCS, under Captain A. Douglas, were attached to 5 Field Ambulance, which formed a mobile open MDS for the Division. Attached to 5 Field Ambulance was B Company 4 Field Ambulance with a CCS surgical team under Major Wilson. Provision was made for it to be left with any patients who required to be held for a time awaiting evacuation following operation, or to be detached as an air evacuation unit as necessity arose. To 6 Field Ambulance was attached 2 NZ FSU, under Major McKenzie, and 4 Field Hygiene Section moved with 4 Field Ambulance.

It was arranged that 7 Armoured Division's medical units would evacuate through 151 Light Field Ambulance to the nearest of the New Zealand medical units, which were to form the backbone of the evacuation chain. A general arrangement was made that 2 NZ Division would post a dressing station at Sedada in the course of the advance, and also close to any landing ground functioning or likely to function on the route. From these landing grounds air evacuation was planned to Tamet airfield, 7 miles to the east of which 1 NZ CCS set up on 14 January.

Colonel Ardagh, ADMS 2 NZ Division, joined Main HQ 30 Corps on 16 January, at the request of the Corps Commander and DDMS, to co-cordinate these forward medical arrangements for the inland column,

and remained attached until 24 January. Lieutenant-Colonel R. D. King, 4 Field Ambulance, acted as ADMS 2 NZ Division in his stead. For the co-ordination of arrangements wireless was most useful.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORKING OF MEDICAL UNITS

Working of Medical Units

Before the actual start of the advance, 6 Field Ambulance on 13 January moved near to Pilastrino and set up an MDS. At that time the unit was 40 miles ahead of 2 NZ Division, with only an armoured-car screen between it and the enemy positions in Wadi Zemzem. Evacuations were made by MAC to 1 NZ CCS at Tamet. B Company 4 Field Ambulance established an air evacuation centre at Sedada when the Division reached there. This was taken over by 8 SA CCS, upon which 6 Field Ambulance closed and moved forward on the divisional axis. In a series of leapfrogging movements, all our medical units maintained a chain of evacuation, and air evacuation units worked from Bir Dufan and Tarhuna as well as Sedada, and later from Castel Benito. Air evacuations were effected within a matter of hours of the advancing units reaching the landing grounds, and avoided the dangers of ambulance-car evacuation over rough country on this 200-mile sweep. Where cases were not fit for air evacuation immediately, detachments of medical units remained to nurse them while the main bodies of units moved ahead to form further staging posts. The chain of evacuation worked excellently. An abundance of ambulance cars with short runs between staging posts, and also adjacent airfields, made evacuation very easy indeed. Wireless played an invaluable part in the smoothness of operations. Casualties were extraordinarily light as the enemy did not stay to fight. Mine and booby-trap casualties, however, were frequent and caused both serious and multiple injuries. The attached surgical units were able to remain temporarily in the rear of their parent units to attend to the very few requiring surgery.

Air evacuations from the landing grounds at Sedada, Bir Dufan, and Tarhuna for the period 17 to 24 January totalled 277 battle casualties

and 60 sick. These were British and New Zealand patients from the inland column. In addition, some patients from the inland column sent from 6 Field Ambulance at Pilastrino on 15 and 16 January to 1 NZ CCS were evacuated by air from Tamet. The evacuations from there from 17 to 19 January were 48 battle casualties and 71 sick, including patients from both the coastal and inland columns.

The 1st NZ CCS had moved to Sirte on 4 January and to Tamet on 14 January so as to be near the landing ground there. It was largely servicing the coastal army and dealt with a steady stream of casualties for the first few days of the advance. Its staff had been greatly strengthened by the attachment of a British FSU under Major Lowden on 23 December, a British FTU under Major Waterston on 7 January, and a British neurosurgical unit under Major Eden on 13 January. (A British mobile ophthalmic unit under Major Dansey-Browning had been attached since October.)

The CCS dealt with 154 battle casualties and 331 sick at Sirte and 287 battle casualties and 468 sick at Tamet. The great majority of the patients were evacuated by road to Nofilia, staged there, and then were taken on to Marble Arch, and finally to Benghazi, a total distance of 360 miles. Only limited accommodation on Red Cross planes was available as air transport for the evacuation of patients, as Tamet never fulfilled the expectation of being the terminus of air supplies. This was due mainly to almost constant enemy bombing before the advance started.

The essentials for successful air evacuation in the circumstances were regarded to be the early notification to medical units of selected sites for landing grounds (the liaison work performed by New Zealand medical officers on the landing grounds was of great value and led to a recommendation that in future a medical officer should be attached to the air reconnaissance party), and a prior arrangement whereby ADsMS were prepared to place a section of a field ambulance at once near the selected site and notify all concerned by the quickest means possible. Our medical units seemed to have a flair for making contacts and gaining knowledge of developments, and also in arranging with the

pilots of transport planes to take the cases.

In regard to air evacuation in this advance, the senior air officer in charge of air evacuations remarked to ADMS 2 NZ Division: 'It was marvellous the way your medical units got so quickly on to landing grounds for air evacuation. The RAF were thrilled with it and felt at last it really had been a great success.'

The majority of the casualties were sent back by transport plane, but ambulance planes were also utilised for serious cases from the forward areas. The planes available for evacuations were DC3s, which took ten stretchers (18 of USA pattern) or twenty-eight sitting, and also took equipment; Lockheeds, which took fifteen sitting cases with equipment; and Bombay Red Cross planes able to take six lying and two sitting cases, but with little room for equipment.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

AT TRIPOLI

At Tripoli

Fifth Field Ambulance opened an MDS in the divisional area on the outskirts of Tripoli on 23 January. To assist 8 SA CCS in taking over and running one of the Italian military hospitals, 6 Field Ambulance with 2 Surgical Team and 2 FTU moved into Tripoli itself. The hospital was taken over by 48 General Hospital on 21 February. Coming from reserve on 30 January, 4 Field Ambulance opened an MDS in the medical area and relieved 5 Field Ambulance.

Under command of 30 Corps, 1 NZ CCS remained at Tamet until 9 February and then moved up to Zuara, west of Tripoli. Following the capture of Ben Gardane (on 15 February), it was moved to a site 20 miles west of Ben Gardane by 30 Corps on 26 February.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL LESSONS FROM THE ADVANCE TO TRIPOLI

Medical Lessons from the Advance to Tripoli

The value was demonstrated of fully mobile medical units with attached FSUs capable of carrying out major surgery in the desert. Their long and assiduous training in desert conditions, with staff specialisation, enabled them to shift and set up rapidly. Each section had its place on a standardised field plan and each man had his special place and work. The combination of truck and tarpaulin shelter worked well in the desert and many light tents, and other captured enemy equipment, were utilised.

For the first time adequate wireless communication was available between medical units, and this was to a great extent responsible for the smooth functioning of our medical units in spite of the rapid and frequent movements. The utilisation of transport planes for the evacuation of casualties from the forward areas proved practicable and most valuable. The attachment of sections of field ambulances to the landing grounds for the treatment and evacuation of the cases was found to be essential.

Head surgery performed in the forward areas by experienced head surgeons of a neurosurgical unit gave better results than delayed operation at the base. A mobile depot of medical stores of, say, two trucks, to carry stores such as bandages, anaesthetics, splints, etc., would have been useful, if available, to accompany the Division when cut off from supply sources. There were times during the advance from Alamein to Tripoli when it was necessary to travel back long distances to obtain supplies.

In the three months from the launching of the offensive at Alamein on 23 October Eighth Army had advanced 1500 miles, and the medical

services of 2 NZ Division had functioned without a hitch and at the highest standard throughout this tremendous advance.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HYGIENE AND SANITATION IN TRIPOLI

Hygiene and Sanitation in Tripoli

Tripoli was the first enemy city to be occupied by Eighth Army. As a city it presented problems in hygiene and sanitation in that the health of the troops had to be protected by the control of the diseases of the civilian population. In 2 NZ Division the needs in this connection were anticipated, and as early as 11 January the ADMS, DADMS, DAPM, and OC 4 Field Hygiene Section held a conference on the matter, the last-named setting out in a report some of the important factors.

When the New Zealanders entered Tripoli on 23 January OC 4 Field Hygiene Section reported to ADH 30 Corps, who stated that prevalent diseases in the city were relapsing fever, typhus, dysentery, and typhoid, but that there was no smallpox or malaria. The water supply was intact and working, as was the system of water carriage of sewage (although this was temporarily disrupted later). Brothels were in existence, with a control by means of registration and a medical examination of prostitutes. The civil hospitals were intact and functioning, including a research laboratory. The comparative lack of disruption of the civil hygiene and sanitation services simplified the problem for the Eighth Army hygiene units, but nevertheless many important duties had to be undertaken.

It was arranged that detachments of 4 Field Hygiene Section should be quartered with 7 British Field Hygiene Section in Tripoli. (Most of the troops, after the first occupation, were withdrawn to the outskirts of Tripoli but were admitted to the city on leave.) The hygiene personnel undertook the duties of inspecting and reporting on restaurants, caféAs, bars, hairdressers and, in conjunction with supply authorities, local sources of food supplies.

Regulations were drawn up by 4 Field Hygiene Section in English, French, and Italian, setting out the standards required by the British Army medical authorities in the conduct of all these business premises, which, generally speaking, were of a higher standard hygienically than in Egypt. Although opinion among the medical officers of 2 NZ Division was against the institution of controlled brothels for troops, the Army authorities decided to open a number of houses. A prophylactic ablution centre was attached to each and the prostitutes were medically examined three times a week.

While the New Zealand troops were resting outside Tripoli, 4 Field Hygiene Section carried out a heavy programme of showering and disinfestation. The capture of Italian disinfestors and a mobile shower unit greatly increased the available facilities. The new shower unit was a most valuable addition to the section's equipment and enabled 200 men an hour to have a full shower if the water supply was adequate.

Altogether the effective enforcement of hygiene precautions prevented any outbreak of disease of an epidemic nature, and the health of the troops remained good. For the advance into Tunisia detailed plans were made beforehand for combating disease, again with creditable results. The precautions against malaria were not fully tested as the campaign ended before the onset of the malaria season.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ADMS 2 NZ DIVISION PROMOTED TO DDMS 30 CORPS

ADMS 2 NZ Division Promoted to DDMS 30 Corps

Early in February General Montgomery made a request to the Commander-in-Chief Middle East Forces that ADMS 2 NZ Division, Colonel Ardagh, be appointed DDMS Eighth Army. The DMS GHQ MEF pointed out that this would create difficulties as DDMS Eighth Army was in command of all RAMC personnel in Eighth Army. As a compromise it was agreed that Colonel Ardagh should be appointed DDMS 30 Corps. Colonel Ardagh for his part did not seek, nor did he wish to take, either position, preferring to remain with 2 NZ Division. General Freyberg considered that it was his duty to accept the appointment, and on 16 February Colonel Ardagh became DDMS 30 Corps with the rank of brigadier. His departure was a big loss to the Division. The CO 6 Field Ambulance, Colonel F. P. Furkert, was appointed ADMS 2 NZ Division in his stead.

2 NZEF Casualties

	Killed and Died of Wounds	*Prisoners of War*	*Wounded*
23 October 1942 – 21 November 1942 Alamein– Bardia	380	41	1290
22 November 1942 – 14 January 1943 Agheila	56	15	170
15 January 1943 – 2 February 1943 To Tripoli	22	1	67

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 11 — TUNISIA

Contents

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

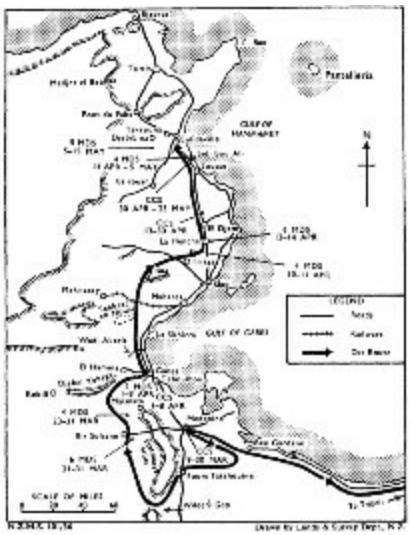
ALL February 1943 the New Zealand Division was in bivouac areas near Tripoli, but it had been given its role, and planning and reconnaissance were going ahead to carry out an attack round the flank of the Mareth line on the assumption that the enemy would make a stand. Meanwhile, elements of the Eighth Army had pushed westwards across the Tunisian frontier and were facing the Mareth defences.

The enemy, fighting a rearguard action to delay Eighth Army's advance as much as possible, withdrew *21 Panzer Division* to central Tunisia and with *10 Panzer Division* made a determined attack on the American forces, commencing in the latter half of February. This attack succeeded beyond expectations, causing the Americans to retreat hastily with considerable losses and to evacuate Gafsa, Kasserine Pass, and Sbeitla, the enemy forces reaching a point within a few miles of Thala, thereby threatening to turn First Army's right flank.

The Eighth Army commander, in response to an urgent request from General Alexander, hastened his advance towards the Mareth line so that on 28 February all dispositions, including medical, were made for a continued gradual advance.

On 28 February Commander 30 Corps called a conference of heads of services and stated that the increased tempo of the Eighth Army advance had been largely instrumental in forcing the enemy forces in central Tunisia to withdraw and in permitting the First Army, American, and French forces to advance and retake most of the ground previously lost. It was then pointed out that *10* and *21 Panzer Divisions* were moving south and that a heavy attack by the major part of the enemy panzer forces was expected to be made against Eighth Army some time on or after 3 March.

The intention of the enemy appeared to be to catch Eighth Army unbalanced and surround it forward of the Ben Gardane bottleneck, or at least cause us grievous losses in men and equipment and thus weaken and delay our offensive. It was thus necessary for Eighth Army to alter its disposition to that of strong defence. For these reasons 201 Guards Brigade, 8 Armoured Brigade, and 2 NZ



Medenine to Enfidaville showing Medical Units

Medenine to Enfidaville showing Medical Units

The left-hook round the Mareth line took the New Zealand Corps through broken country south and west of the Matmata Hills. Because of the rough going an air evacuation centre was established by 5 Field Ambulance near Bir Soltane on 23 March, and by the end of the month 402 patients out of a total of 1190 sick and wounded had been flown out to Senem airfield near Medenine.

Division were hurried forward to reinforce 7 Armoured Division and 51 (Highland) Division already in position, and so re-establish the balance which had been lost during the accelerated advance. It was an emergency move for 2 NZ Division and a very fast one. Orders were received on 1 March, and the same morning the first column was on the move. The road was largely causeway across salt marsh, making travel off it impossible. Within Tunisia the marsh changed to soft and hummocky sand. Within forty-eight hours the entire force had completed the 180 miles over a single road, had dug in, and was ready to

defend its sector of Eighth Army's line. A new phase in the North African campaign was about to begin.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE MARETH LINE

The Mareth Line

The Mareth line—known as 'the African Maginot'—was a formidable position. The defensive zone stretched from Zarat on the Gulf of Gabes to Ben Kreddache in the Matmata Hills, a distance of less than 30 miles. Originally the line was built across the gap between the hills and the sea by French military engineers. The position comprised not so much a line as a series of fortifications in depth which included permanent anti-tank obstacles and concrete emplacements. The Wadi Zigzaou, running from the Matmata Hills to the sea, had steep sides and could not be crossed by armour and was thus a very efficient tank trap. The whole position was served by a system of military roads which allowed quick movement for mobile reserves. To the north the line was covered by a coast unsuitable for landings, and to the south by rough and difficult country.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SITING OF MEDICAL UNITS

Siting of Medical Units

When the Division moved up on 1 March both 5 and 6 Brigades had their ADSs, and 5 Field Ambulance under Lieutenant-Colonel McQuilkin opened an MDS within the fortified perimeter of Medenine. It was rather more forward than usual, being within half a mile of 6 ADS and 4 miles of 5 ADS. To the MDS were attached the surgical team from 1 NZ General Hospital and also 2 NZ FTU. With Rear 2 NZ Division, some 30 miles back towards Ben Gardane, were 4 and 6 Field Ambulances and 4 Field Hygiene Section.

From the Corps medical point of view, however, it was considered necessary to have an efficient forward medical area so that patients could be rested, treated and fed, and the major cases operated on before evacuation by a long and rough road to Ben Gardane. An alternative line of evacuation by the Medenine–Zarsis– Ben Gardane road was considered, but the road became so damaged in the salt pans south of Zarsis that it was considered it would prove inadequate for large numbers of ambulance cars.

At a Corps medical conference called by Brigadier Ardagh a plan was devised to meet the tactical situation and, at the same time, provide a satisfactory medical service for the battle. The 5th British Light Field Ambulance, less three sections, and 151 British Light Field Ambulance were grouped with Light Section 1 NZ CCS as the forward corps medical area, the field surgical unit and field transfusion unit with 151 Light Field Ambulance joining Light Section 1 NZ CCS to form a surgical centre to deal with all necessary surgery. The CO 1 NZ CCS (Lieutenant-Colonel L. J. Hunter) remained to act as SMO Forward Corps Medical Area.

The policy enunciated was that only life-saving and urgent major surgery was to be done and that, until it was seen how the battle developed, all other casualties were to be sent to Rear Medical Area at Ben Gardane as soon as possible after any necessary rest, readjustment, relief of pain, resuscitation, or food had been provided. A control post was established at the western end of the forward area to admit cases firstly to 151 Light Field Ambulance until it was full or working to capacity, when admissions would be diverted to 5 British Light Field Ambulance, all of these patients being recorded as direct Corps admissions. All cases for surgery or major resuscitation were to be transferred at once to the Light Section 1 NZ CCS surgical centre. A track was marked from this area north-east to the Zarsis road to permit the medical units to withdraw if necessary without having to go north-west and then east by the main road. An effort was to be made at all times to retain sufficient ambulance cars at the surgical centre to lift and carry at short notice all the severe lying cases there, and both light field ambulances were to be kept as empty as possible by continuous evacuation to Corps rear medical area at Ben Gardane.

As a precaution the 'drill' in case of a move being necessary at short notice, and if it should be impossible in the time to move all serious cases, was discussed. It was expected that even should the enemy armour or other forces occupy the area they would be mopped up or driven out in a very short time, and it was felt that if the severely wounded were there with the minimum staff to attend to them they would not be molested deliberately. On the other hand surplus staff, and in particular senior officers, would be taken away as prisoners as at Sidi Rezegh in November 1941.

It was therefore laid down as a direction that prior arrangements would be made in such circumstances to leave the minimum staff necessary to attend adequately to the wounded, with sufficient food and medical supplies, etc., but that all senior officers and all others would move off and all vehicles would be taken away.

On 28 February the Corps layout had consisted of 1 NZ CCS in the forward medical area with 151 Light Field Ambulance in close proximity, and 15 (Mobile) CCS in the Ben Gardane area. The forward area was on the Medenine– Ben Gardane road, a few miles east of the Zarsis road junction, and it was thought possible that the position might be endangered by a southerly outflanking thrust. With this in mind, the Heavy Section and sisters of 1 NZ CCS were sent back on 3 March to Ben Gardane to join 15 (Mobile) CCS, forming a 30 Corps rear medical area.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE BATTLE OF MEDENINE

The Battle of Medenine

From the Mareth line Rommel launched his last attack in Africa. He had concentrated his two infantry divisions (*90 Light* and *164 Light*) and the panzer divisions of the *Afrika Korps* (*15* and *21*), and *10 Panzer Division* had come down from the north. In addition, he had Italian infantry formations which could hold the Mareth defences as a base. It was estimated that he could field a force of about 200 tanks.

Facing these forces were 51 (Highland) Division on the coast, then 7 Armoured Division and 2 NZ Division on the left, with 4 Light Armoured Brigade as a mobile force covering the open southern flank. Their defences were arranged as at Alamein—defence in depth with artillery and anti-tank guns deployed and tanks ready to move to pre-arranged positions when the direction of the attack became clear. The attack was expected as early as 3 March, but it did not come until 6 March and was directed towards the high ground north of the main road between Medenine and Mareth. The area round Medenine is mainly flat, the town itself being slightly elevated with a dip to the north and west. There were infantry and tank clashes, but all along the front as far as Eighth Army was concerned it was fundamentally an artillery battle, and once again the defensive power of an anti-tank gunline, supported by massed artillery, was demonstrated. By the end of the day the enemy had nothing to show for his costly offensive except many dead and wounded and over fifty knocked-out tanks counted on the battlefield. Rommel accepted the reverse, and during the night withdrew his battered forces to the Mareth defences. He is reported to have stated after the battle: 'This is the beginning of the end in Tunisia for the Axis Forces.'

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FUNCTIONING OF MEDICAL ARRANGEMENTS

Functioning of Medical Arrangements

Fortunately, although enemy forces reached the Medenine- Foum Tatahouine road south of Medenine, their armour in general was so seriously punished that no immediate threat to our forward medical area developed, and as casualties were so unexpectedly light there were no problems to deal with at all. Air evacuation was available only on a limited scale by air ambulance planes as no transport planes could be brought up because the landing grounds were under fire.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CASUALTIES

Casualties

As the enemy was unable to penetrate our defensive position battle casualties were extremely low, the total of wounded in Eighth Army for the period from 6 p.m. 5 March to 6 p.m. 7 March, being 10 officers and 177 other ranks. One interesting feature was that out of this comparatively small number the total of penetrating abdominal wounds appeared unusually high, being approximately ten.

New Zealand casualties for the day of battle, 6 March, were fewer than twenty wounded, and these were dealt with at 5 MDS before being sent to 1 NZ CCS. Casualties from enemy bombing and strafing on the evening of 6 March and subsequent days were more numerous. Although the unit was showing Red Cross signs, 4 Field Ambulance was strafed by ten planes on the evening of 6 March, and Captain Foote [1] and Private Holley [2] were killed and others wounded.

The forward Corps medical group proved most useful, and although the small number of casualties did not provide a real test, it was obvious that even this small group could have dealt satisfactorily with and provided major surgery for a considerable number of cases. It saved the badly wounded men a long ambulance trip to Ben Gardane, to which it was at first arranged that the whole CCS should be withdrawn.

The rear Corps medical arrangements also functioned well, and it was felt that had the casualties been as estimated (3000 over four to five days) the arrangements made would have ensured their being dealt with satisfactorily. Air evacuation by ambulance planes, though on a light scale, did average, over a period of four days, twenty-eight to thirty a day and proved a great help in evacuating the more serious cases.

[1] **Capt G. M. Foote; born Auckland, 23 Feb 1912; medical practitioner; killed in action 6 Mar 1943.**

[2] **Pte R. D. Holley; born NZ 13 Jun 1918; cabinet-maker; killed in action 6 Mar 1943.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TURNING THE MARETH LINE

Turning the Mareth Line

Eighth Army continued with its plans to take the Mareth line. A frontal assault was to be made on the line itself and an outflanking movement through the desert from an assembly area, 80 miles to the south. For this outflanking role the New Zealand Corps was formed, consisting of 2 NZ Division, 8 British Armoured Brigade, 1 Battalion Buffs, King's Dragoon Guards, British medium, field, and anti-tank regiments, and the Free French under General Leclerc, who had brought his force from Chad in Central Africa in a remarkable desert trek.

The new outflanking operation closely resembled the left hook around Agheila. It involved moves by night of 27,000 men and 6000 vehicles, tanks, and guns to an assembly area in the desert, and a race to an objective over 150 miles away across little-known and difficult country. Although the going was extremely bad and the country ill suited for a flanking movement, the enemy by this stage, well aware of our mobility, was clearly nervous about his flank. Enemy reconnaissance aircraft were over each day, and there was no doubt that another left hook was expected. There was little chance, therefore, of achieving strategic surprise, but it was considered that tactical surprise could be gained by dashing in quickly and delivering a sudden violent attack.

On 11 March the New Zealand Corps began a secret move to the assembly area in the desert. The force first moved back to Ben Gardane, which the New Zealanders had passed on their first advance to Medenine; thence it made a long sweep to the south to the assembly point 30 miles south-west of the hill village of Foum Tatahouine. The whole force was self-contained with eleven days' food, water, and

ammunition and with petrol for 350 miles. For six days the force continued to assemble in the desert, and by 18 March it was complete.

The New Zealand Corps was to move north as if directed against the Matmata Hills, which constituted the right flank of the main Mareth defences. Then it was to swing west again and race for the Tebaga defile. It was known that there was a defensive line covering this gateway to Gabes, and it was also known that two German panzer divisions were in mobile reserve ready to meet a thrust from the Americans in the rear, a breakthrough at Mareth, or any threat on the desert flank. Speed, therefore, was of the utmost importance.

There was a sandy track to Wilder's Gap, [1] and thence rolling sandy desert, covered by low scrub, bounding the dunes of the Grande Erg Orientale. The way led between this impassable waste on the west and mountains on the right, and when not soft sand became rough stone outcrop with very steep, narrow, rocky wadis. Past the Roman Wall the going improved. Passage of most of this country was made possible only by the prior reconnaissance of the LRDG, and by the efforts of New Zealand engineers who used bulldozers to overcome blocks. Tracks were well marked by the Provost Company and were a great help to ambulance drivers. Nevertheless, most of the desert routes were quite unsuitable for the evacuation of seriously wounded men.

On the night of 19 March the Corps moved in close desert formation up to the line reached by General Leclerc's Free French forces. It was intended to lie up dispersed next day and advance by night. This would have coincided with General Montgomery's frontal assault on the Mareth line. At 7 a.m. on 20 March, however, General Freyberg was informed of movements of panzer units and advised that the force had already been detected; and he ordered the Corps to advance by daylight to rob the enemy of some hours in preparation time. During 20 March the Corps advanced in a mighty array across the undulating desert, but was slowed up by bad going and minefields. Enemy reconnaissance units fell back without fighting. The advance, held up by darkness, was resumed on 21 March, contact being made with the enemy in the afternoon. The New

Zealand Corps then moved up and deployed, and by nightfall armour, artillery, and infantry were facing the enemy positions covering the gap. These positions, covered by a minefield, were astride the Kebili— Gabes road close to where it ran through the narrow valley between the precipitous Djebel Tebaga and the mountain country forming the right flank of the Mareth line. The strategic importance of this gap was recognised centuries ago, for the enemy defences were on the same line as an ancient wall built by the Romans to close the six-mile gap against the inroads of the barbarians.

At 10 p.m. on 21 March, in full moonlight, 6 Brigade attacked with 25 and 26 Battalions, engineers of 8 Field Company cleared gaps in the minefields, and Sherman tanks of 3 Royal Tank Regiment went through the gaps. The attack was brilliantly successful, the vital feature, Point 201, being taken—as well as 1500 Italian prisoners. The capture of Point 201 gave us an important wedge in the enemy's defences. Later it was learnt that infantry of *164 Division* arrived next morning to take over the defences of Point 201 from their Italian allies—twelve hours too late.

During the afternoon of the 22nd there was intermittent shelling, and a shell landed close to a British truck which happened to be in 26 Battalion's area. Captain Rutherford, the RMO, ran over to see if anyone was hurt. While he was dressing the driver's wounds a second shell landed in practically the same spot and wounded Rutherford, who was later invalided to New Zealand.

Meanwhile, on the night of 20 March Eighth Army had launched its frontal attack in the north between the road and the sea. It met with initial success, a bridgehead being established, but this was lost on 22 and 23 March after a heavy German counter-attack. At this stage General Montgomery decided to switch his main thrust to reinforce the success which NZ Corps had already achieved, and 10 Corps, including 1 Armoured Division, was sent on the three-day approach march to Tebaga Gap. A blitz attack was then to be made on the defile.

[1] **Named after Captain N. P. Wilder, a New Zealand officer of the LRDG.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS FOR 'LEFT HOOK' AT MARETH

Medical Arrangements for 'Left Hook' at Mareth

The divisional plan was to utilise the MDSs of the field ambulances as forward operating centres, and to retain the serious casualties at the MDS for evacuation either by air or later by road when the road communication to Medenine through the Matmata Hills had been opened up and cleared of the enemy. Two New Zealand surgical teams and the New Zealand field transfusion unit were attached for this purpose and adequate supplies of medical stores and also of blood and plasma were available. Three New Zealand field ambulances were available for the two brigades, with extra British light field ambulances to serve the attached troops. Adequate transport and ambulance cars were attached. A landing ground was to be cleared near the active MDSs.

On the move to the assembly area and during the lying-up period from 11 to 19 March, when all possible measures for concealment were taken, no Red Crosses could be displayed by medical units and no tentage erected. All sick at this time were evacuated to 4 Field Ambulance under Lieutenant-Colonel King, which had been established on the first day of the move on the Ben Gardane- Foum Tatahouine road. It was sited sufficiently far away not to draw attention to the main Corps concentration. The unit rejoined the Corps on the first day of the move from the assembly area, being relieved by Light Section 14 CCS, which set up just east of Wilder's Gap.

The medical dispositions for the outflanking move were an ADS with each infantry brigade, 168 Light Field Ambulance with 8 Armoured Brigade, 6 Field Ambulance, under Lieutenant-Colonel Fisher, with the Reserve Group immediately behind Main Corps Headquarters, and 4 and 5 Field Ambulances and 4 Field Hygiene Section following the ADMS,

Colonel Furkert, and Rear Corps some 25 miles behind. Some bomb casualties occurred at last light on 20 March and 6 MDS remained behind next day to deal with them. On the afternoon of 21 March DADMS 2 NZ Division, Major R. A. Elliott, found an area suitable for air evacuation, and 6 Field Ambulance was ordered to move up there near Oum Ech Chia and establish its dressing station before nightfall. Here it remained as the nucleus of a medical centre for the remainder of the operation. On this move forward 6 Field Ambulance was strafed by four enemy planes and a member of the attached 1 CCS surgical team (Lance-Corporal Pate) [1] was killed and five members of the unit wounded.

The 6th ADS was sited in front of most of the artillery positions, only 400 yards from the infantry start line. Shells landed close enough for fragments to pierce the ADS tarpaulins. The ADS was busy all night with casualties after the attack was launched at 10 p.m. on 21 March, but most of the patients were Italians, who came in by the score. During the night butterfly and heavy bombs were dropped on surrounding areas and the resultant casualties, together with wounded from the attack, kept the ADS occupied from 11.30 p.m. and all the next day, and well into the night of the 23rd. Late in the afternoon of the 22nd more artillery moved into the ADS area right in front of the dressing station. The guns could not move farther away from the Red Cross zone, so the ADS moved back a mile and a half to a better location.

The Light Section 14 CCS had been left as a staging unit at Wilder's Gap but the route of the advance, over a distance of 170 miles, was so rough that it was decided not to attempt rearward evacuation by surface transport for any save the very lightly wounded. For this reason the MDS was ordered to hold its cases until air evacuation was possible.

Admissions to 6 MDS began with a few at 3 a.m. on the 22nd, and then from 5 a.m. casualties came in steadily all day. The two operating teams from 6 MDS and the CCS surgical team, under Major S. L. Wilson, operated continuously all day and all night and part of the next day.

To assist 6 MDS, 4 Field Ambulance, with 1 General Hospital surgical

team under Major K. Bridge attached, was ordered forward on 22 March. It left its B Company with 6 MDS to take the overflow of patients, and moved 7 miles farther forward to a position about 10 miles south of the Roman Wall. The following morning it received here some patients from 168 British Light Field Ambulance MDS. Later, on the 23rd, it moved back 3 miles as 6 MDS was then full, and opened there. It was joined by

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[1] L-Cpl G. Pate, m.i.d.; born NZ 29 Jan 1917; commercial traveller; killed in action 21 Mar 1943.

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2 FTU, under Captain Powles. [1] There was a steady stream of patients, and the surgical team and two unit operating teams worked through to 3 a.m. on the 24th, and continued at high pressure for the next two days. It was important to get an efficient landing ground for air evacuation, and 6 Field Ambulance, with the assistance of a company of 5 Field Ambulance sent forward in error instead of a company of the field engineers for the purpose, cleared and levelled a very creditable strip which was ready for planes by 2 p.m. on 23 March. The company from 5 Field Ambulance then established an air evacuation centre, in which at all times thirty cases were held ready to load planes on their arrival and so minimise the time they had to remain on the ground. ('Dog fights' took place in that area frequently and the Bombay aircraft on the ground were a large target.) The first plane, a Lockheed Lodestar ambulance plane, landed at 11 a.m. on 24 March and made two trips during the day. On 25 March the Lodestar and two Bombay troop-carriers each made two trips and evacuated seventy patients. Thereafter, air evacuation was utilised for all serious cases, and 402 patients out of a total of 1190 sick and wounded were taken out by air from NZ Corps by the end of March to Senem airfield near Medenine. The RAF was very co-operative and its aircraft were delayed only by the high winds and desert storms which, unluckily, were almost constant at this time.

While plans were being made for the full-dress attack by NZ Corps in

combination with 1 Armoured Division, 6 MDS was holding over 200 patients. Accordingly, on 24 March ADMS 2 NZ Division despatched a convoy of ten ambulance cars, carrying very lightly wounded only, back along the axis to Light Section 14 CCS at Wilder's Gap. By now 4 MDS was receiving the fresh cases and had 1 General Hospital surgical team working with it, while the transfusion unit was moved from 6 to 4 MDS.

Air evacuation was proceeding but was hampered by adverse weather. Accordingly, to clear medical units as much as possible before the main attack, a convoy of 3-ton trucks left at dawn on 25 March carrying all lightly wounded cases fit to travel by this means. They had been intended for Light Section 14 CCS at Wilder's Gap, but DDMS 10 Corps had ordered that unit up to Bir Soltane, and the trucks had to continue and do the whole 170-mile trip to the CCS area at Ben Gardane. Fortunately, a cook's truck was sent with the party. The CCS had presumably been shifted up to be ready to evacuate patients by the Hallouf road to Medenine as soon as it had been freed from the enemy. This convoy enabled 4 Field

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[1] Capt C. P. Powles; Wanganui; born Palmerston North, 28 Jul 1913; assistant pathologist, Wellington Hospital; medical officer Maadi Camp Jan–Oct 1942; 1 Gen Hosp Oct 1942–Mar 1943; OC 2 FTU Mar–Aug 1943.

Ambulance to empty out completely (save for a few abdominal cases) to the air evacuation centre and to 6 Field Ambulance.

The attack was to start at 4 p.m. on 26 March, and ADMS and DADMS NZ Corps had a conference with DDMS 10 Corps early in the afternoon of that day. It was agreed that NZ Corps would collect and hold its own wounded and that 6 Field Ambulance would become a holding unit, leaving the acute work to 4 Field Ambulance. Wounded from 8 Armoured Brigade were to be collected by 168 Light Field Ambulance, serious cases being sent to 4 Field Ambulance and light cases being held until 27 March. In order to accompany the Corps when

a breakthrough was achieved, 5 Field Ambulance under Lieutenant-Colonel McQuilkin was kept on wheels. The company of 5 Field Ambulance which had been functioning as air evacuation centre was ordered to rejoin its parent unit, and 4 Field Hygiene Section under Major Kennedy took over its duties. This was a most satisfactory arrangement, the Hygiene Section having adequate cooking facilities and sufficient tents from its shower section to hold enough cases to avoid delay in loading planes. The MDS was only one and a half miles away and severe cases were sent direct from there and not held at the air evacuation centre overnight. Ambulance cars and extra stretcher-bearers were supplied by 6 Field Ambulance as required. The planes brought up ample blankets and stretchers to replace those sent back with patients, and the supply of blood by air was satisfactory.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE MAIN ASSAULT

The Main Assault

The plan to break through the enemy defences was in three phases: the capture of a hill feature, Point 184, on our right flank to deny the enemy observation of our concentration for the attack; an attack by NZ Corps to force a gap; and the passing through the gap of 1 Armoured Division to capture El Hamma.

The first phase was carried out in the early morning of 26 March when 21 Battalion in a moonlight attack took Point 184 with slight casualties. During the morning of 26 March the artillery of 1 Armoured Division arrived and went into position beside the New Zealand units already assembled. By midday all preparations were complete. A dust-storm was blowing into the faces of the enemy. At 3.30 p.m. squadrons of the RAF swept over enemy positions, giving the greatest close air support ever seen in the desert. Half an hour later 200 field and medium guns opened up a bombardment on a front of 5000 yards. In an instant the attack developed, and 150 tanks of 8 Armoured Brigade and three New Zealand infantry battalions advanced in the natural 'smoke' screen provided by the dust-storm. Behind the assault of 2 NZ Division came the tanks of 1 Armoured Division, followed by its motorised infantry in nine columns of trucks. As General Freyberg later described the action, 'it was a most awe-inspiring spectacle of modern warfare.'

Without a check the armour swept on in the centre to the final objective—a depth of 6000 yards. Furious hand-to-hand fighting took place to clear the objectives and the high ground on both flanks, but by dusk all enemy resistance had been overcome except for some posts on the left flank and important high ground on Point 209 to the right. Here the Maoris were fighting bitterly with a battalion of Panzer Grenadiers.

Throughout the night the deadly struggle continued in an action in which Second-Lieutenant Ngarimu [1] won the VC and lost his life. The foothold established and retained during the night enabled the Maoris finally to gain possession of Point 209 late next afternoon.

During the same night 24 Battalion cleared the left flank, and 1 Armoured Division carried out the third phase of the attack by moving through the gap made by 2 NZ Division even before the flanks were finally cleared. This thrust took the tanks through to the outskirts of El Hamma. On 27 and 28 March the capture of the Tebaga Gap was completed, and leading troops of the New Zealand Corps fanned out north-east and east towards the coast road north of Gabes behind the Mareth line. This line then became untenable, and during the night of 27–28 March the enemy evacuated the Mareth defences. The decisive defeat of the enemy at Tebaga Gap cost him many men and much material, and the turning of the Mareth line marked the beginning of the end for him in Tunisia.

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[1] 2 Lt M. N. Ngarimu, VC; born NZ 7 Apr 1918; shepherd; killed in action 27 Mar 1943.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FUNCTIONING OF MEDICAL UNITS

Functioning of Medical Units

This was a daylight attack and direct observation by the enemy resulted in an increase of the proportion of killed to wounded. For instance, RMO 24 Battalion handled 45 killed and 116 wounded, compared with 10 killed and 86 wounded in the initial advance at the Battle of Alamein. [2] The wounded were collected promptly in the wake of the advance, some by jeep, and evacuated to the ADS. The RMO of 24 Battalion, Captain Borrie, moved up into the battalion area just as it got dark, and worked in a blacked-out Austin ambulance car, concentrating on the seriously ill lying cases. Three ambulance cars were brought up and sent away full; then some anti-tank portées were used to carry the patients back. The arrival of two more ambulance cars enabled the RAP to be cleared by 2 a.m. on the 27th, after which time fewer wounded were brought in, but sufficient to keep the RMO busy until 1 p.m. The other RMOs were likewise busily engaged, particularly the RMO of 28 (Maori) Battalion, Captain D'Arcy. [2]

The 6th ADS was sited alongside the embankment which was the Roman wall. Some of the tanks moving up passed through the lines and drew some anti-tank fire to the vicinity after the attack started. Casualties reached the ADS very soon, and in a night of work the ADS dealt with American airmen, New Zealanders, Germans, and Italians.

The 5th ADS received only eight wounded from 21 Battalion's attack on the night of 25–26 March. For the main attack, the unit moved through the first minefield to a position about one and a half miles behind the start line, and not more than two miles from all RAPs. The first casualties reached 5 ADS at 6 p.m., and from then on a steady stream continued for the next thirty-six hours when a total of 224 was

reached, including 44 prisoners of war.

Between 4 p.m. on 26 March, when the attack started, and 8 a.m. on 27 March, 168 Light Field Ambulance and 4 Field Ambulance, reinforced by the 1 CCS surgical team under Captain A. W. Douglas, as well as by Major Bridge's team, handled 240 casualties. Everything worked smoothly and supplies were adequate. During the day 127 cases were evacuated by air ambulances and the holding situation thus eased. However, there were 400 patients in 4 MDS by evening. All reserve stretchers and blankets were in use but the situation was well in hand, especially as the enemy resistance had been broken and there were few further casualties.

The main New Zealand Corps, with 5 Field Ambulance, moved forward late in the evening of 27 March, and first light next day found them through the Roman wall and moving up the valley towards El Hamma. Slow progress was made on 28 March. Casualties resulting from bombing and patrol activity were dealt with by 5 Field Ambulance and sent back to 6 Field Ambulance for evacuation. On 29 March the Corps turned east and headed across rough country for the town of Gabes, which was reached that night. In the final phase 5 Field Ambulance carried along such casualties as occurred and set up on the Gabes–Hamma road, 5 miles from Gabes, on 1 April. From here the cases were evacuated to 1 NZ CCS, which had come up the coast road to a point 5 miles south of Gabes at Telboulbou.

Bad weather on 28 March restricted planes from landing on the airfield behind the Tebaga Gap, but that day the welcome news was received that the Medenine–Hallouf– Bir Soltane road was now open and that Brigadier Ardagh, DDMS 30 Corps, had sent thirty MAC cars, which he had held ready for this purpose. On 29 March five planes arrived and these, together with the thirty MAC cars and twelve cars from NZ Corps and eight 3-ton trucks from the field ambulances, cleared over 400 patients that day to the medical centre at Medenine. This left twenty-three abdominal cases that were not fit to move. When the other medical units moved forward a company of 4 Field Ambulance, equipped

with a wireless set, remained with these wounded, who were eventually flown out on 2 April. During the Mareth line actions between 5000 and 6000 prisoners were taken and a detachment of 4 Field Hygiene Section was attached to the prisoner-of-war cage, where it deloused prisoners and disinfected trucks and guards.

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[2] In this battalion 50 were killed and 62 wounded on 26 March and 8 killed and 72 wounded in the initial advance at Alamein on the night of 23–24 October 1942.

[2] [1]Maj C. N. D'Arcy, MC, m.i.d.; Morrinsville; born Carterton, 6 Jun 1912; house surgeon, Waikato Hospital; medical officer Maadi Camp Apr–Sep 1941; RMO NZASC Sep 1941–Aug 1942; 28 (Maori) Bn Aug 1942–Jun 1944; 2 Gen Hosp Oct 1944; 6 Fd Amb Nov 1944–Feb 1945.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF MEDICAL OPERATIONS

Review of Medical Operations

The total number of sick and wounded who were evacuated by NZ Corps was 1190, of whom no fewer than 402 were evacuated by air. The desert route back through Wilder's Gap was very rough indeed—possibly the worst that had been traversed in the long advance from Alamein—and the seriously wounded would not have stood the journey in an ambulance car. The landing ground, in roughish country, was sited and constructed by NZMC personnel, and part of 4 Field Hygiene Section was found to be a suitable unit to run the air evacuation centre when not required for special work in its own sphere. The RAF pilots co-operated very well and landed on the amateur airfield in bad weather without hesitation. On days when the weather was even worse, they came over and attempted to land until it was obviously too dangerous to continue. Only one of the planes was marked with a Red Cross, and it seemed a pity that more could not have been allotted for this essential service. The unmarked planes took a big risk in landing on such a forward area without Red Cross protection. Air evacuation served a most useful function in enabling the MDS to evacuate serious cases early. The nearest CCS was at first at Wilder's Gap, with the only access a very rough track over which the force had advanced. The medical centre where 1 NZ CCS was sited was at Medenine, on the other side of the Matmata Hills, the only road to which was in the hands of the enemy. Air evacuation was the only possible method of sending back the serious casualties, and it was invaluable in taking to the isolated medical units without delay supplies of blood, stretchers, blankets, and other medical stores. On 24 March 900 blankets, 50 pints of blood, and anaesthetic agents arrived at 6 MDS by plane.

The number of troops in NZ Corps was 27,000 and the number of

casualties was considered reasonably light in view of the difficult nature of the operations. The casualties were caused by small arms and artillery, with some mine injuries. There was a tendency for wounds to be severe, the death to wound ratio being approximately one to four.

As usual in the long desert journeys, the trucks of the field ambulances were grossly overloaded as they had to carry petrol for 350 miles in addition to seven days' rations and water. The provision of extra petrol trucks was considered desirable for such desert operations. The wireless links between ADMS 2 NZ Division, Colonel Furkert, and the field ambulances on the one hand and DDMS Army on the other proved of great value, and communications were satisfactory. Colonel Furkert thought it was not too much to say that efficient medical arrangements in a long column with extended and unprotected lines of communication would break down without the aid of wireless. Furthermore, in such conditions a full and early knowledge of the General Staff picture was essential—a fact often not fully realised by combatant staff officers.

The two New Zealand surgical teams attached to 2 NZ Division medical units from 1 General Hospital and 1 CCS did excellent work on the more serious cases and the New Zealand Field Transfusion Unit gave over 300 pints of blood and 200 pints of serum. The sick rate for the fortnight of active operations in the turning of the Mareth line reached the very low level of one in two thousand a day—surely a tribute to the morale and fitness of the troops engaged.

The 1st NZ CCS remained at Medenine and formed part of a Corps hospital centre there. The 150th Light Field Ambulance sorted the casualties, the Light Section 2 Indian CCS admitted Indian troops, Heavy Section 14 CCS admitted sick, and 3 CCS and 1 NZ CCS treated battle casualties, receiving alternately over eight-hour periods—a most satisfactory way of working. At Medenine during March 1 NZ CCS admitted 975 battle casualties and accidentally injured and 578 sick, a total of 1553.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE PURSUIT INTO TUNISIA

The Pursuit into Tunisia

Driven from the Mareth line, the enemy withdrew to a defensive position on the high ground overlooking the Wadi Akarit. It soon became clear that the enemy would fight on this line as a last effort to prevent the British Eighth Army from joining forces with 2 US Corps advancing from Gafsa in the west. The defences of the Akarit line could not be compared with those of Mareth and the enemy was short of reliable troops to hold them, having to rely on Italians. The position, however, was naturally strong, with the sea on one side and impassable salt marshes on the other, and a deep, steep-faced wadi traversing the approach, the bridge over which had been destroyed. Therefore, a full-scale frontal attack was necessary and three infantry divisions—50 (Northumbrian), 51 (Highland), and 4 Indian—were deployed for the assault. The role of exploiting success once the initial bridgehead was made was given to 2 NZ Division and 1 Armoured Division.

On 6 April the attack was launched. After heavy infantry fighting a bridgehead across the wadi was won and 2 NZ Division, with an armoured spearhead, followed through on 7 April. As soon as there was room to manoeuvre, the pursuit force opened out into desert formation advancing north, harassing and cutting off considerable numbers of the retreating enemy. British armoured cars on the left met American troops advancing on Maknassy, and the junction of Allied forces from east and west which the enemy had fought so long to prevent was effected.

Near Sfax, with more room to manoeuvre, another left hook was planned. The enemy, however, anticipated this danger and retreated fast, leaving valuable installations and stores in the Sfax area intact. Sfax was occupied on 10 April and Sousse on 12 April, the French

civilian population giving the troops a great welcome. The pursuit was now through cultivated country rich in olive groves and gay with spring flowers growing in profusion. The retreat took the enemy back to Enfidaville—nearly 200 miles in one week.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL UNITS IN PURSUIT

Medical Units in Pursuit

Prior to the attack on 6 April 5 MDS on the Gabes– El Hamma road in the divisional area was kept moderately busy with sick and mine and air-raid casualties. When 2 NZ Division moved through the enemy line at Akarit on 7 April, 5 MDS was left behind to deal with casualties in the early stages, with orders to follow on when clear of cases. Travelling with the Divisional Reserve Group immediately in rear of Main Headquarters, 6 Field Ambulance became the receiving MDS. A distance of 30 miles over low, flat, stony country was covered in the course of the day, and that night 6 MDS dealt with a few bombing casualties.

The Division moved on again on 8 April, but was delayed by an enemy gunline on the Sfax– Maknassy railway line. In the evening casualties started to arrive, and 6 Field Ambulance pulled off a little from the divisional axis and opened near the eastern edge of Sebkret en Noual. About fifty battle casualties were dealt with, and the MDS was able to move again on the morning of 9 April, leaving a company to evacuate to La Skhirra on the coast road, where DDMS 30 Corps had opened an MDS, which was replaced that day by half of 1 NZ Mobile CCS.

On 9 April the Division made good progress due north, 6 Field Ambulance setting up and operating about one mile north of Ksar Heirich. Enemy aerial activity had increased during the day as the Division was beyond RAF fighter cover. When the Division made an outflanking move on 10 April in an endeavour to cut off the enemy forces in Sfax, 6 Field Ambulance remained with the wounded and 4 Field Ambulance was ordered by wireless to join the Reserve Group with all possible speed. The Division cut the road north of Sfax at La Hencha in the late afternoon, but the enemy had already made a rapid

withdrawal from Sfax. A further advance across rolling grass country was made on 11 April, and on 12 April the main road was reached at El Djem and the advance on Sousse continued. The few casualties were handled by 4 Field Ambulance, still with the Reserve Group, while 6 Field Ambulance had moved up to La Hencha to stage cases back along the main road to Sfax. When the Division moved through Sousse on 13 April, 4 Field Ambulance left 1 CCS surgical team and one company to follow on when it had disposed of the patients. The advance was halted on 14 April, and next day 4 Field Ambulance set up on a very good, flat, grassy site just off the main tarsealed road half a mile north of the village of Sidi Bou Ali, and remained the open MDS for the attacks on Takrouna.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE SITUATION IN TUNISIA

The Situation in Tunisia

The enemy withdrew behind the formidable mountain chain protecting Tunis. This extended from Enfidaville in a north-westerly direction right across the peninsula to the coast west of Bizerta. The enemy was well placed, holding all the important positions which dominated every way of approach to Tunis. He had been heavily reinforced, and the world was told that 'the fortress of Tunis' would be held. In front of this natural stronghold Eighth Army deployed, linking up with the other armies under the command of General Alexander. The Allied forces were in four main groups: 2 US Corps, switched from the Gafsa front, was in the north; then the British First Army; then the French 19 Corps; and in the south the Eighth Army.

Opposite Eighth Army at Enfidaville were enemy positions in great depth. The forward line lay at the base of steep hills, with positions on spurs and hills rising behind it. These highlands rising out of a flat plain gave the enemy a commanding position with perfect observation over the country across which we had to attack. Surprise could be obtained only by assembling our attacking troops at night, which entailed bringing our artillery forward on to the plain on the night of the attack. Further difficulties for the attacking troops were two deep wadis, an old Roman viaduct, a minefield laid in barley fields, and giant cactus hedges, all of which had to be dealt with by our sappers and infantry before vehicles with supporting arms could be got forward.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS

Medical Arrangements

For some days from 14 April preparations were made for an attack by 2 NZ Division. In the medical arrangements the two surgical teams from 1 NZ CCS and 1 NZ General Hospital, and also 2 FTU, were placed at 4 MDS near Sidi Bou Ali. Evacuation was down a good tarsealed road to 1 NZ CCS, 8 miles north of El Djem. The two ADSs moved up with their brigades under cover of darkness on 19 April, 5 ADS occupying a site well hidden behind the cactus hedges and 6 ADS having perforce to remain in the open.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE ATTACK ON TAKROUNA

The Attack on Takrouna

At 11 p.m. on 19 April Eighth Army began the Allied general offensive, which for the next three weeks raged along the whole front. This attack was carried out by 2 NZ Division in the coastal sector and 4 Indian Division on the left. The New Zealanders attacked with 5 Infantry Brigade on the left and 6 Infantry Brigade on the right. Their objectives were the castle-like Takrouna feature and the long spur to the east of it. Good progress was made by 6 Brigade against only slight opposition, German troops of *90 Light Division* leaving Enfidaville village almost without fighting. Fierce resistance was met by 5 Brigade in its assault on Takrouna, a rocky crag surmounted by a village which, from the plain below, looked like some medieval castle. Takrouna was a steep, stony hill with large masses of rocky outcrops. Amidst these were several caves which had been utilised as strongpoints. At the top was the stone village, built out to the edge of the precipice over the greater part of the area. Mines had been laid on and around the hill. It was a truly formidable position, perhaps the most formidable position ever stormed by New Zealand troops.

Takrouna had been turned into a fortress bastion of the enemy's Enfidaville line, and, as was learnt later from prisoners, was considered to be impregnable. Fighting here was as hard as any of the whole campaign.

Acting with commendable initiative during the confused fighting on the night of 19–20 April, a small party from 28 (Maori) Battalion scaled the precipitous heights to the pennacle, the highest part of the village, where the enemy was holding out in a group of stone buildings. The Maoris charged the strongpoint and captured the pinnacle, and were

reinforced by a platoon of 21 Battalion in the morning. The remainder of the village of Takrouna on the lower slopes to the north was still held by the enemy, who counter-attacked fiercely throughout 21 April, but the New Zealanders held on. Meanwhile, the enemy positions in Takrouna were battered by our artillery all day on 21 April, and that evening parties of 21 and 28 Battalions stormed the village, taking the remnants of the garrison prisoner.

The capture of the Takrouna feature left the Division firmly established on a line which constituted an immediate threat to the rest of the enemy's Enfidaville line. In accordance with Eighth Army's task of keeping as many of the enemy as possible fully engaged on its sector, the New Zealanders maintained the pressure. The severely tried 5 Brigade was relieved by 152 Highland Brigade on the night of 22–23 April. On 24 and 25 April 6 Brigade, with tanks of 8 Armoured Brigade in support, carried out night advances, capturing several more features which increased still further the dent in the enemy's line. When 6 Brigade was relieved on the night of 26–27 April, only artillery units of 2 NZ Division remained engaged.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TREATMENT OF CASUALTIES

Treatment of Casualties

The RMOs of the various infantry battalions had a trying time during the battle at Takrouna as their RAPs were constantly under heavy shellfire and, in some cases, evacuation could be done only at night. However, the RMOs carried out their duties with skill and determination and their men were given all possible medical aid. A report by the RMO 25 Battalion, Captain Pearse, [1] indicated the nature of the difficulties that had to be surmounted:

There was a major difficulty in evacuation in the Takrouna area, where advance from the RAP to the battalion position was on foot and motor evacuation by ambulance car or jeep was possible only at night, and even then was slow and uncertain. Here stretcher-bearing teams were formed from the anti-aircraft section of the battalion and held as mobile teams at the RAP, whence they could, if necessary, be sent to any part of the battalion area.

As usual, the wounded man was first seen by his platoon medical orderly and evacuated to the RAP either by a party from the company or by the team held at the RAP. In this position the most that could possibly be done in the platoon or company area was the application of soft dressings, any attempt at splinting being impossible owing to very heavy enemy activity. Fortunately the battalion was concentrated in a small area and the timelag

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[1] **Lt-Col V. T. Pearse, MC, m.i.d.; Dunedin; born Auckland, 12 Nov 1913; medical practitioner; medical officer HMAS *Somersetshire*, Dec 1941–Mar 1942; 6 Fd Amb Mar–Oct 1942; RMO 25 Bn Feb 1943–Oct 1944; DADMS 2 NZ Div Nov 1944–Oct 1945; SMO 2 NZ Div Oct–Dec 1945.**

from company to the RAP was very short. In some cases it was found better for the medical officer to go to the wounded man over exposed ground and dress his wounds there, leaving the man in the area until conditions of evacuation were somewhat improved.

The RAP was situated in a shallow winding wadi, in slit trenches and subjected to the heavy shelling, mortaring and small arms fire that covered the whole battalion area. The difficulties of work were extreme in cramped conditions with numerous casualties and inadequate cover. With a collection of many cases it was necessary to hold some above ground until they could be evacuated, thus adding to the mental distress of the wounded men.

The line of evacuation from the RAP was by hand carry to the RAP of the battalion on the right flank, to which ambulance cars could be taken in daylight. The approach was along the wadi in which the RAP was established, with moderate cover for a distance and then across open ground and a small minefield covered by shellfire to the shelter of the neighbouring RAP—in all, a distance of about one and a quarter miles. Five men generally made up the stretcher-bearer team, prisoners being employed when possible.

In spite of the difficulties of the position and the exhausting work of the carrying, it was found possible to maintain a steady stream of cases to the ambulance cars throughout daylight. Many cases were serious, there being at least three cases of fractured femur, two with penetrating brain injuries, two abdominal cases and many compound fractures of arms. For some of these it was necessary to replace blood loss with plasma in order to enable them to stand the long and uncomfortable carry, and the use of a Thomas splint and plaster proved of great benefit during evacuation to the MDS for forward surgery.

The work of the forward battalion medical orderlies in this area under heavy and continuous enemy fire was beyond praise. No wounded man was left unattended for more than a matter of minutes, and

evacuation to the RAP was equally swift, the inevitable discomfort of the man with a fracture being brought to the RAP with soft dressings only being more than offset by the fact that no man suffered a further wound. The splendid work of the carrying parties from the RAP to the ambulances was such that when the RAP received a direct hit with a very heavy shell, the last casualties had been evacuated a short time before.

Casualties from the assault on Takrouna began to reach 6 ADS at 1.30 a.m. and 5 ADS at 2 a.m. on 20 April, and continued to arrive in a steady stream. With lighter casualties from its brigade, 6 ADS had its brigade clear by 8.30 a.m. and its ADS clear by 11 a.m., when 88 cases had been handled, but 5 ADS under Major MacCormac [1] was not so well placed. At 4 a.m. it received advice that the RAPs were flooded with casualties and sent forward all available transport—three ambulance cars and six 3-ton trucks. Six additional ambulance cars were sent forward from the MDS to the ADS at 6 a.m., enabling evacuation to proceed smoothly. By 8.30 a.m. 130 cases had been received by 5 ADS, and the steady flow of patients continued until 2.30 a.m. on 21 April, after which admissions were

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[1] Maj T. J. MacCormac, m.i.d.; Wellington; born Makotuku, Hawke's Bay, 7 Jan 1915; medical practitioner; Mob Surg Unit May 1941–Mar 1942; 1 NZ CCS Mar–Nov 1942; 5 Fd Amb Nov 1942–Jun 1944; PW Repat Hosp (UK) Jun 1944–Sep 1945.

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only occasional. The total number of admissions to 5 ADS on 20 April was 276.

As these casualties were all transferred to 4 MDS that unit was kept very busy, and on 20 April 334 battle casualties, mostly New Zealanders, were admitted and treated. Both surgical teams worked long hours but there was no hold-up or undue delay in attending to cases. Evacuations were made to 1 NZ CCS, 8 miles north of El Djem, in ample ambulance cars (21 AFS cars being attached to the unit and 10 cars lent by 5

British Light Field Ambulance) along a good bitumen road, and so at no time was there undue congestion at the MDS. The unit had another busy day on 29 April when 151 battle casualties were treated, almost all being from 56 British Division.

At El Djem 1 NZ CCS was the most forward casualty clearing station and acted more as a staging post. Special cases, such as ophthalmic and neurosurgical, were admitted without prior surgical treatment and dealt with by the attached 1 British Mobile Ophthalmic and 4 British Neurosurgical Units respectively. Also attached were a field surgical and a field transfusion unit, both British. Evacuations were by road to Sfax, thence to 3 NZ General Hospital at Tripoli, but later upwards of fifty patients daily were loaded in returning transport planes from a landing ground north of El Djem and sent to Tripoli. Arriving at Suani Ben Adem, 15 miles south of Tripoli, at the end of March, 3 NZ General Hospital under Colonel Gower admitted its first patients on 10 April and by 30 April had 520 beds occupied, chiefly by New Zealand battle casualties.

The month of April 1943 was an interesting one from the medical administrative point of view, as it started with an extremely rapid advance of nearly 200 miles in a week, with all the problems of distance to contend with, and ended with a set-piece battle of the 1914–18 type. The divisional medical units showed that they could cope with both types of warfare equally well, and at no time was there difficulty in dealing with casualties.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE END IN TUNISIA

The End in Tunisia

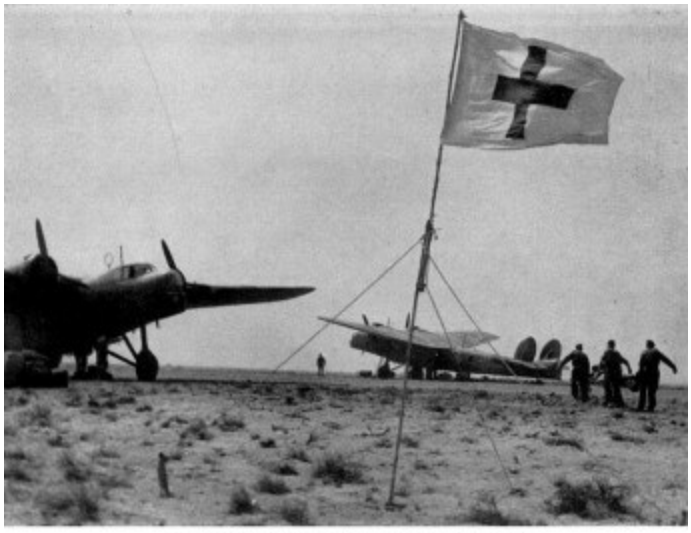
To the north of the Eighth Army the First Army launched a thrust on 23 April and, after extremely heavy fighting, the Axis line was pushed back slowly, and nowhere in the other sectors had the Allies captured the enemy's main line of resistance. On the Enfidaville front the nature of the country made it impossible to gain a penetration of more than a few miles in any single successful attack, but on First Army's front the country was more favourable. General Alexander therefore regrouped his forces, and during the first five days of May the Allies massed for an all-out attack on the First Army sector. The 7th Armoured Division, 4 Indian Division, and a Guards brigade were transferred from Eighth Army to First Army, the plan being to attack with two infantry divisions and two armoured divisions. This main assault was to be assisted by simultaneous attacks in the extreme north by the Americans and in the south by the French. The role of 2 NZ Division was to support the French advance in the direction of Pont du Fahs, no major attack by the Division being intended.

2 NZ FTU with 4 MDS – left hook, Mareth, March 1943

2 NZ FTU with 4 MDS – left hook, Mareth, March 1943

Inspection of 2 NZ Division, Tripoli, February 1943 – General Montgomery, Rt. Hon. Winston Churchill, General Freyberg

Inspection of 2 NZ Division, Tripoli, February 1943 – General Montgomery, Rt. Hon. Winston Churchill, General Freyberg



Air ambulance aircraft, Tunisia, April 1943

Air ambulance aircraft, Tunisia, April 1943

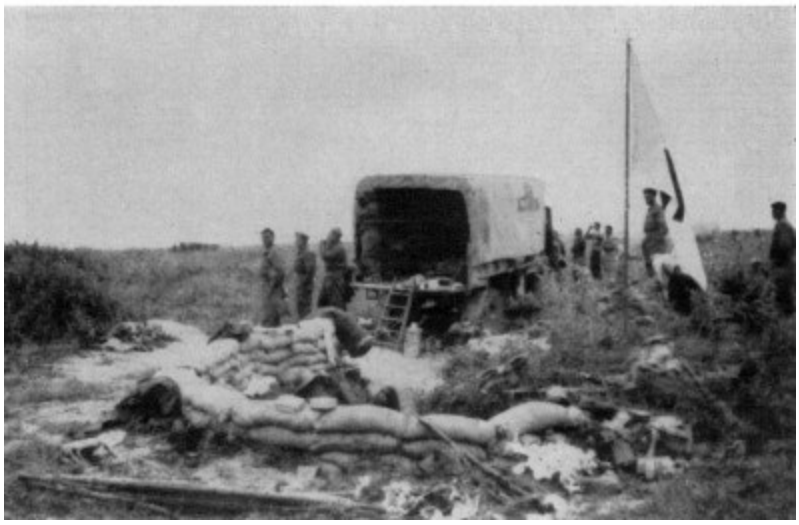
A group in Tunisia: Major R. A. Elliott, Brigadier H. S. Kenrick, Lieutenant-Colonel R. D. King, Hon. F. Jones, Colonel F. P. Furkert. All four officers filled the position of ADMS 2 NZ Division

A group in Tunisia: Major R. A. Elliott, Brigadier H. S. Kenrick, Lieutenant-Colonel R. D. King, Hon. F. Jones, Colonel F. P. Furkert. All four officers filled the position of ADMS 2 NZ Division

5 ADS, Takrouna, April 1943

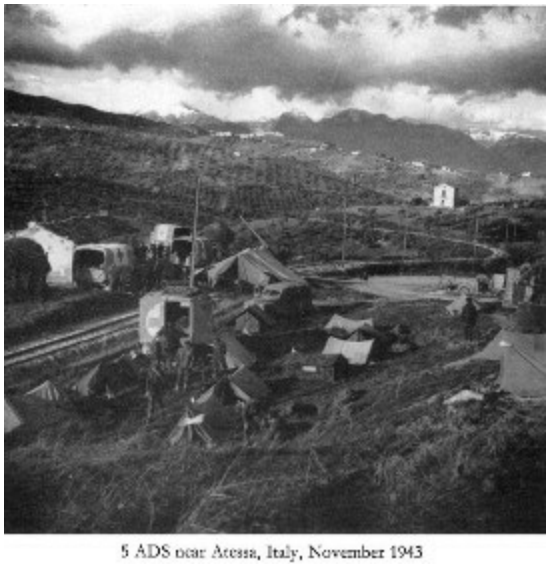
5 ADS, Takrouna, April 1943

28 Battalion RAP at Takrouna, 20 April 1943



28 Battalion RAP at Takrouna, 20 April 1943

Takrouna – showing the route down which wounded were carried from the Pinnacle

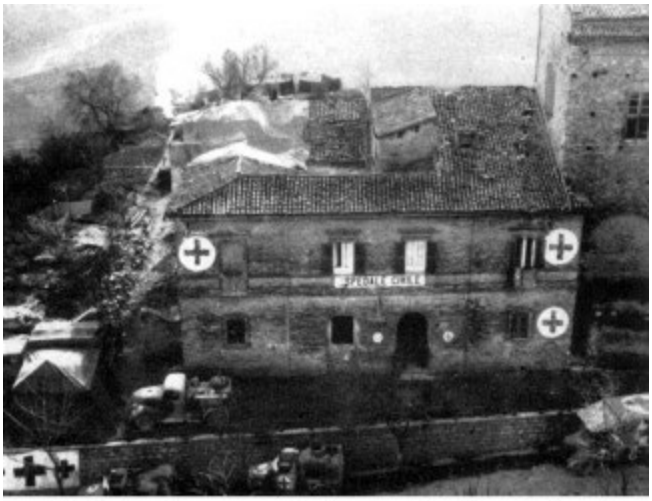


5 ADS near Atessa, Italy, November 1943

5 ADS near Atessa, Italy, November 1943

5 ADS at the Sangro, November 1943

5 ADS at the Sangro, November 1943



4 MDS at Atessa – surgical centre for the crossing of the Sangro

4 MDS at Atessa – surgical centre for the crossing of the Sangro

4 MDS, Atessa, November 1943. Major C. E. Watson, Sister I. Simpson, Major N. H. Wilson, Lieutenant-Colonel J. K. Elliott, Major J. M. Staveley, Sister G. Connell, Brigadier H. S. Kenrick, Colonel L. F. Rudd

4 MDS, Atessa, November 1943. Major C. E. Watson, Sister I. Simpson, Major N. H. Wilson, Lieutenant-Colonel J. K. Elliott, Major J. M. Staveley, Sister G. Connell, Brigadier H. S. Kenrick, Colonel L. F. Rudd

21 Battalion RAP, later 5 ADS, on the north bank of the Sangro, November 1943

21 Battalion RAP, later 5 ADS, on the north bank of the Sangro, November 1943

Stretcher jeep, Sangro, December 1943

Stretcher jeep, Sangro, December 1943

Looking towards Orsogna from Castelfrentano, January 1944

Looking towards Orsogna from Castelfrentano, January 1944

6 MDS, Castelfrentano, January 1944

6 MDS, Castelfrentano, January 1944

2 NZ General Hospital, Caserta, February 1944

2 NZ General Hospital, Caserta, February 1944

American Field Service ambulance near Cassino, March 1944

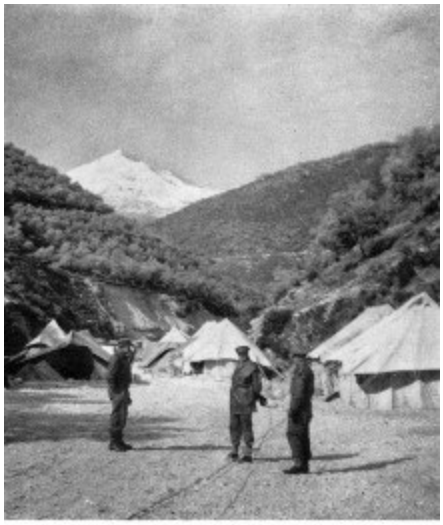
American Field Service ambulance near Cassino, March 1944

5 ADS, Cassino, March 1944

5 ADS, Cassino, March 1944

RAP at Cassino, showing the entrance to the crypt, March 1944

RAP at Cassino, showing the entrance to the crypt, March 1944

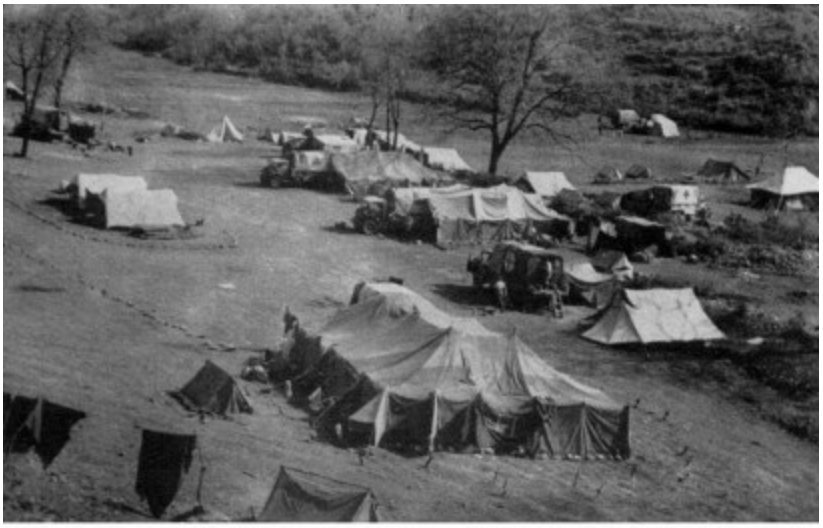


Inferno Track, Cassino, March 1944 – Brigadier H. S. Kenrick and Colonel R. D. King

Inferno Track, Cassino, March 1944 – Brigadier H. S. Kenrick and Colonel R. D. King

5 ADS, Sant' Elia, Cassino, April 1944

5 ADS, Sant' Elia, Cassino, April 1944



6 MDS, Pozzilli, April 1944 – mountain sector, Cassino

6 MDS, Pozzilli, April 1944 – mountain sector, Cassino

Using dust - gun at NZ Malaria School, Volturno Valley, April 1944

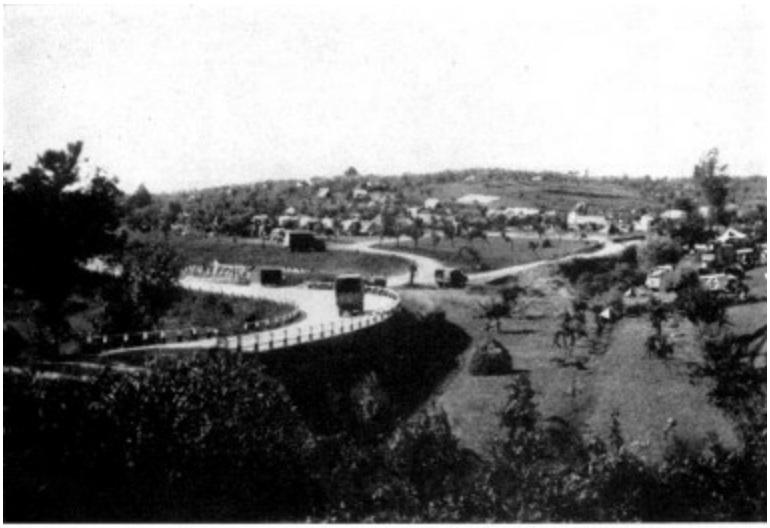
Using dust - gun at NZ Malaria School, Volturno Valley, April 1944

1 NZ General Hospital, Senigallia, January 1945

1 NZ General Hospital, Senigallia, January 1945

1 NZ Convalescent Depot, San Spirito, May 1944

1 NZ Convalescent Depot, San Spirito, May 1944



6 MDS, Tavarnelle, Florence, August 1944

6 MDS, Tavarnelle, Florence, August 1944

5 ADS, used during the attack on Faenza, December 1944

5 ADS, used during the attack on Faenza, December 1944

Taking medical supplies across the Lamone River, Faenza, December 1944

Taking medical supplies across the Lamone River, Faenza, December 1944

Stretcher jeeps of 1 NZ MAC at ADS, Gambettola, January 1945

Stretcher jeeps of 1 NZ MAC at ADS, Gambettola, January 1945

3 NZ General Hospital in the Polyclinic area at Bari. The key to the numbers is: 1. Medical Stores Depot. 2. Tripoli Block (Surgical). 3. Staff quarters (officers, NCOs, and men). 4. Beirut Block (Medical). 5. Helmieh House (Sisters and WAACs). 6. Entrance. 7. Indian General Hospital. 8. British Depot Medical Stores. 9. 98 British General Hospital.

The Division accordingly moved to the north-west and took up positions threatening the gap in the hills before Pont du Fahs on 4 May. On 5 May 5 Field Ambulance opened an MDS a few miles behind Djebibina. At Sidi Bou Ali 4 MDS remained open, and 1 NZ CCS had moved up adjacent to this unit on 30 April. This position was only 10 miles from the forward defended localities, and the eight NZANS sisters who had remained with the CCS throughout the long advance were, as before, the sisters nearest the front line.

At dawn on 6 May the main Allied attack was launched along the axis of the Medjez el Bab– Tunis road. Before it the enemy defences crumpled. Tunis and Bizerta fell on 7 May and British armour swept across the base of Cape Bon peninsula before the enemy could regroup. On the southern flank of the attack 5 Infantry Brigade and New Zealand artillery actively supported the French and sustained some casualties, fifty-two being admitted to 5 MDS in five days and being evacuated to 4 MDS and 1 NZ CCS at Sidi Bou Ali.

On 8 May 2 NZ Division was ordered back into reserve near Enfidaville, and 5 Brigade was left to hand over its positions and follow on, while 5 Field Ambulance remained for a few days until its serious

cases were fit to move and then rejoined the Division.

The Allied success in the north made the position of large forces of enemy infantry on the Enfidaville front precarious, as British armour was able to attack them in the rear. On 13 May Marshal Messe, who had succeeded Rommel and was commander of the Axis forces in Tunisia, surrendered unconditionally to General Freyberg. Resistance had now ceased and over 31,000 prisoners were taken on the southern front. For many days prisoners, both German and Italian, were marching back to prisoner-of-war cages in the rear. To the north the Royal Navy and Allied Air Forces prevented any large-scale evacuation from Cape Bon peninsula, and altogether over 200,000 prisoners and a vast amount of equipment were taken over by the Allies. By 13 May the battle for North Africa had ended with a disaster for the enemy comparable to that at Stalingrad.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DIVISION RETURNS TO MAADI CAMP

Division Returns to Maadi Camp

On 9 May it was decided that 4 Field Ambulance would proceed to Egypt to rejoin 4 NZ Armoured Brigade, and that 6 Field Ambulance, which had until this date been in reserve behind the divisional area on the main Sousse road, would open on the site vacated by 4 Field Ambulance. Following the enemy's surrender and the completion of the campaign on 13 May, 2 NZ Division was rapidly collected in an assembly area preparatory to returning to Egypt. For the journey of 2000 miles the Division was organised into five groups, and 5 and 6 Field Ambulances attached companies to each group to provide medical services.

The first half of the long divisional convoy started for Egypt on 15 May. The route was across country until Gabes was reached and then the main road was followed. There was a day's halt at Tripoli for maintenance and again at Benghazi, and the head of the convoy reached Maadi Camp on 31 May after an uneventful move. The second half of the Division arrived a day later. Upon arrival all the divisional medical units were concentrated in an area near 23 NZ Field Ambulance in Maadi Camp and arrangements made for leave for the force. The Division had been in the field for almost a year and had played a decisive part in the rapid advance of the Eighth Army.

As a Corps unit 1 NZ CCS under Lieutenant-Colonel Hunter did not accompany the Division back to Egypt but remained in Tunisia until 23 May, when it moved to Suani Ben Adem, Tripoli, near 3 General Hospital and 1 Convalescent Depot, and established a 200-bed hospital for the coming invasion of Sicily by the Allies.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FUNCTIONING OF 1 NZ MOBILE CCS DURING CAMPAIGN

Functioning of 1 NZ Mobile CCS during Campaign

The Consultant Surgeon 2 NZEF (Colonel Stout) went from Cairo to 1 NZ CCS before the main battles of the Mareth line began and remained with it until after the enemy surrender. He was therefore able to make observations on the problems and technique of frontline surgery and general medical arrangements. Throughout this period 1 NZ CCS served as a Corps CCS to 30 Corps, and at its location at Medenine for the Mareth battle and at Teboulbou, just south of Gabes, for the attack on Wadi Akarit, the CCS was grouped with British and Indian CCSs. In conjunction with these other units 1 NZ CCS primarily treated cases other than New Zealanders. In the outflanking attack on the Tebaga Gap the New Zealand casualties received most of their major surgery at NZ MDSs, with two New Zealand surgical teams attached, while at Wadi Akarit and in the subsequent advance the New Zealand casualties were not heavy. After the attack on Wadi Akarit the CCS was almost overwhelmed with casualties in spite of having four surgical teams—one British, one from 1 NZ General Hospital, one from 3 NZ General Hospital, and one of its own—and a British transfusion unit. In addition, the British neurosurgical and ophthalmic surgical units were attached. Patients admitted for specialist treatment by these attached units often had multiple wounds, the treatment of which fell to the lot of the New Zealand CCS. Two of the New Zealand surgical teams worked for twenty-four hours continuously.

From the Takrouna battles the greater number of the casualties were treated by 4 Field Ambulance and two attached New Zealand surgical teams. The CCS further back had a relatively easy time with few serious surgical cases. It was felt by the Consultant Surgeon that the CCS would have been more usefully employed if it had been placed alongside the

MDS. When 1 NZ CCS moved up adjacent to 4 Field Ambulance later and dealt with casualties from an attack by 56 British Division, the patients came direct to the CCS for surgery as there was no MDS carrying out forward surgery ahead.

The unit was mobile, having sufficient transport to shift in two stages. It had a regular plan for its layout which enabled the unit to set up quickly, each section knowing exactly its position in the plan. Ambulances were available for the transport of patients within the unit.

Lieutenant-Colonel Hunter, CO 1 NZ Mobile CCS, drew attention to the valuable work performed by British surgeons attached to the CCS. When 4 Field Surgical Unit (Major A. G. R. Lowdon and Captain C. Friedland) marched out on 11 May, it had been attached for nearly five months. The standard of work set by these officers was high and both showed undoubted professional ability. They were willing at all times to do everything for their patients, give advice to their colleagues and instruct orderlies, and it was a pleasure to have them under command.

The 1st Mobile Ophthalmic Unit was attached from 27 February to 11 April and from 20 to 30 April. It was most necessary that an ophthalmic surgeon should be available in the forward CCS to do eye cases. So many casualties suffered from severe multiple wounds, of which the eye injury was one, that it was impossible to evacuate them for eye treatment unless the soldier was to be subjected to a second operation, perhaps within a few hours. Major Moffatt, who had succeeded Major D. Browning on 13 March, worked so quietly and expertly that often the surgeons attending to other wounds did not note his presence.

The 4th Neurosurgical Unit was attached from 8 March to 11 April and from 19 to 30 April. Major K. Eden and Captain R. P. Harbord worked long hours in their effort to deal with all the neurosurgical casualties that arrived. The percentage of head and spine injuries received during the campaign was 3·67 per cent of all battle casualties. It was thought it would be advisable in future to have two teams using the same equipment, so that Major Eden's experience of operating

eighteen hours a day for several days would not be repeated. The attachment of the neurosurgical unit led to a marked improvement in the results of the operative treatment of head injuries. Major D. Waterston rendered invaluable service as transfusion officer, his surgical experience proving most useful.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

OPERATION AT THE MDS

Operation at the MDS

There was considerable argument as to the advisability of carrying out the major forward surgery in the field ambulances, especially when only a single surgical team was attached. It was held that the work could be more efficiently carried out at a CCS and that the extra teams should be attached to the CCS, concentrating the work in the one area and thus allowing of better utilisation of the specialists available. It was held that the lone operator was either overworked or wasted.

During the left hook at Mareth, however, it was essential that the forward surgery should be carried out by the field ambulances, and our units had two surgical teams and a field transfusion unit attached for that purpose.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GROUPING OF CCSS

Grouping of CCSs

This grouping of units had been done at Alamein and it was also arranged at Mareth and Akarit with great success. Sorting was done by a field ambulance—the sick were sent to one CCS and the seriously wounded to two others in rotation, the lightly wounded being attended to at the field ambulance and then sent on to the Army CCS centre further back. This plan was also adopted by First Army.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FIELD SURGICAL UNITS

Field Surgical Units

These had become a regular part of the medical service, attached either to a CCS or an MDS of a field ambulance. Their personnel and equipment had been standardised but was not entirely similar in the First and Eighth Armies. The operating theatres varied from specially constructed trucks to different types of tents. The most popular consisted of two EPIP tents joined end-ways. Lighting by separate units was obtained if at all possible, though in Eighth Army the unit of the parent field ambulance was generally used. Suction of some kind, usually improvised, was a necessary part of the equipment. Sterile guards were difficult to keep in regular supply and rubber or jaconette guards were substituted, except for special cases such as abdominals.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FIRST ARMY ARRANGEMENTS

First Army Arrangements

A visit by the Consultant Surgeon 2 NZEF to First Army enabled the techniques of its surgeons to be compared with those of Eighth Army. The routine work in First Army was based largely on information that had been received from Eighth Army. There was, however, less appreciation of the value of whole blood transfusions, a service which had been developed ideally in Eighth Army. The usual procedure adopted was that of giving plasma, on the basis that volume alone of the blood stream was of importance, whereas Eighth Army experience had proved the life-saving value of whole blood. The medical chain in First Army was shorter, patients being operated on in CCSs sometimes only three or four hours after wounding and general hospitals being only about 35 miles behind the CCSs on a good road. (The rapidity of Eighth Army's advances had resulted naturally in extended lines of communication.)

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CONSULTANT SURGEON

Consultant Surgeon

At the Alamein period a new appointment of Consultant Surgeon to Eighth Army was made by the RAMC, and Colonel C. Donald was appointed to the position. This enabled the army in the field to have a consultant available at all times, both to observe the work of the forward operating units and to help by advice and, at times, by spelling exhausted personnel. The appointment proved highly beneficial in all ways partly, no doubt, due to the experience and personality of Colonel Donald, who was especially fitted for the post.

Colonel Donald stated that he considered it of more importance to stay with field units during fighting than to spend time at base hospitals where there was more supervision. He pointed out that forward surgeons had to deal with the worst cases and that a consultant surgeon, in addition to clinical aid, could help not only by checking the natural over-enthusiasm of the relatively inexperienced, but also by heartening them at the inevitable occasional periods of depressing results.

The New Zealand consultant surgeon, Colonel Stout, was attached to the New Zealand CCS before the battle of Mareth and from then on till the campaign was over. He entirely agreed with Colonel Donald that the forward operating unit was the proper place for the New Zealand consultant surgeon during active operations. There he could undertake the responsible duty of examining and evaluating casualties in the pre-operation ward, could be available for advice and assistance to the surgeons, both in the operating theatre and in the wards, and was able to sort out cases for evacuation. He could also gain valuable knowledge of forward surgery and of the capacity of the surgical personnel, and could take back that knowledge to the base hospitals, thus acting as a

valuable liaison between the two sections of the medical services. The tendency to retain consultants at Base largely for administrative duties tended to negative their real value to the force.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE EVACUATION FROM THE OPERATING CENTRES

The Evacuation from the Operating Centres

Casualties from the battles of Medenine and Mareth were sent back from the forward medical centres by ambulances to the Army Medical Centre at Ben Gardane, 35 miles farther east, and then back to Tripoli, staging at Zuara, 65 miles back, with a further 80 miles of good road to Tripoli. The road to Zuara was in bad order, with pot-holes, mine craters roughly filled in, and road diversions to be negotiated.

Base hospitals were sited at Tripoli, with special orthopaedic and chest centres and also the base section of 4 Neurosurgical Unit. No. 3 NZ General Hospital was active at the latter part of the campaign. From Tripoli evacuation to Egypt was carried out at first by road and air and later largely by hospital ship to Alexandria and Beirut. For the Akarit battle the forward centre was at Teboulbou, near Gabes, and the patients staged back by road to Tripoli. After Akarit no special medical centre was formed, the CCSs acting independently. Evacuation was by road until Sousse was available for evacuation by sea. Air evacuation back to Tripoli, however, was utilised to an increasing extent as the campaign continued. Our CCS used air evacuation at both El Djem and Sidi Bou Ali.

In connection with the air evacuation from El Djem to Tripoli, the Consultant Surgeon noted that with one plane patients had to be changed from army stretchers to plane stretchers of a wire cradle type and back to army stretchers on arrival at their destination. The utilisation of the army stretcher on planes would have been a distinct advantage had it been possible, as the retention of the patients on the same stretcher was one of the secrets of comfortable and safe handling of the wounded during evacuation by the army medical services.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF THE MEDICAL ARRANGEMENTS

REVIEW OF THE MEDICAL ARRANGEMENTS

The Consultant Surgeon was impressed with the medical arrangements of 30 Corps under the DDMS, Brigadier Ardagh, whose knowledge of desert warfare and appreciation of the clinical aspects of medicine inspired the confidence of those under him. The method of grouping forward operating units (CCSs) in one area, as had been done since Alamein, was thought to be a very desirable feature.

Maximum use was made of surgical personnel, especially within the New Zealand medical units, by transfer and attachment. Fluidity of surgical personnel was essential for the efficient performance of forward surgery which, during the Western Desert campaigns, was a question of very concentrated periods of work requiring sudden boosting of surgical potential for the short active periods. Between 20 March and 18 April there were 695 wounded, mostly occurring in a few days at Tebaga Gap, and between 19 April and 13 May there were 590 casualties, likewise mostly within a few days. The necessity for spelling of surgical units during these active phases was not completely realised, and it had been common to place a single surgical unit by itself with an MDS in an isolated position. The result was that the unit was often flooded with cases requiring operation, an over-long operation list accumulated, and the unit exhausted itself in trying to do rapidly too great a volume of work. A grouping of surgical units would have provided a relief team. (In 2 NZ Division there were usually two attached surgical teams working with the open MDS in active phases.) The addition of an X-ray plant to an MDS when it was called upon to do forward surgery would have been of great value.

The organisation and work of the New Zealand field ambulances was

excellent and earned much praise and reflected great credit on the commanding officers and staffs. The work of the CCS was of the highest order and the unit had deservedly earned a proud reputation, ascribed by the Consultant Surgeon to the thoroughness and conscientiousness of Lieutenant-Colonel Hunter and staff, especially the orderlies.

The General Hospitals

During the Tunisian campaign our New Zealand general hospitals were operating on the Canal, at Helwan, and at Tripoli, and they all received battle casualties evacuated from the forward areas. The majority of the serious cases were dealt with at 2 NZ General Hospital, sited at El Ballah on the Suez Canal, 649 battle casualties being admitted during the second quarter of the year, whereas only 135 casualties were admitted to 1 NZ General Hospital at Helwan. No. 3 NZ General Hospital admitted 740 cases during the latter part of the campaign, the majority being transferred from the British hospitals in Tripoli.

Since the New Zealand Division had moved from Syria 3 General Hospital had remained under Ninth Army, handling patients other than New Zealanders, except for a small number evacuated from forward areas and sent from Alexandria to Beirut by hospital ship. At first it was considered inadvisable to press for another move by 3 General Hospital in case the Division should return to Syria.

In November 1942, as Eighth Army advanced, the GOC 2 NZEF favoured a move of the hospital to Alexandria. To suit the overall requirements of GHQ MEF it was agreed to leave the unit in Syria in the meantime.

On 31 January 1943 General Freyberg signalled GHQ MEF requesting that 3 General Hospital be transferred from Syria to the command of Eighth Army. This led to instructions being issued by Ninth Army on 6 February 1943 for the hospital to close and pack forthwith in readiness for a move. When it was relieved by 43 British General

Hospital, 3 General Hospital moved early in March to Qassassin, in the Suez Canal area, in accordance with GHQ MEF arrangements. However, 2 NZEF still desired the hospital to be located at Tripoli, and in spite of some opposition from GHQ MEF this further move was effected.

The location selected for the hospital was at Suani Ben Adem, south of Tripoli. It was 2 miles from NZ Advanced Base, near the Castel Benito–Suani road, and a short distance from Castel Benito airfield. The area had been used as a prisoner-of-war camp prior to the Allied occupation of Tripoli, and included a large stone Italian fort which later became the administrative block, with the wards in tents. It was well sheltered by gum and acacia trees, which also served to relieve the severity of the surroundings. The site was an excellent one for handling the casualties from the Division.

The main body of the unit reached the new site on 19 March after travelling from Alexandria to Tripoli in HS *Dorsetshire*. The equipment was unloaded from ship to lighter in Tripoli harbour, which was then subject to air raids, and all of it had reached the site safely by 5 April. On the roof of the hospital building Red Crosses were painted so as to be readily visible from the air. Much skill and ingenuity was displayed by the staff of the unit in setting up the hospital without the services of engineers. Although the hospital was not quite ready, 100 patients were admitted by urgent request on 10 April and by 14 April 300 beds were occupied. By 30 April 520 of the 900 equipped beds were occupied, chiefly by New Zealand battle casualties from the Division as it advanced in Tunisia. Serious cases were evacuated from 1 NZ CCS by air but the bulk of casualties came by road, which was by then in good repair. From Tripoli patients were evacuated by hospital ship to Alexandria, although selected cases went by air to Cairo.

The condition of the patients on arrival at the hospital at Tripoli is given in the following extract from its quarterly report to 30 June 1943:

Battle casualties generally have arrived in very good condition with wounds adequately excised and clean. Fractures have travelled well.

There have been no cases of gas gangrene requiring treatment in the hospital over the quarter. Of the abdominal cases with colonic wounds exteriorised only one case appears to have had adequate spur formation with a view to assist in early closure of the colostomy. Abdominal cases have convalesced well. Cases with penetrating wounds of the chest as a group have given rise to most problems in convalescence.

Though neither 1 nor 2 General Hospitals was called upon to follow up Eighth Army in its advance from Alamein to Tunis, each unit worked hard dealing with the casualties that came back to Base.

Battle Casualties Admitted NZ General Hospitals

	1 Gen Hosp	*2 Gen Hosp*	*3 Gen Hosp*
Oct–Dec 1942	522	581	147
Jan–Mar 1943	140	174	74
Apr–Jun 1943	135	596	740

No. 1 NZ General Hospital received air convoys of three to four serious cases every two or three days, and air transport to Heliopolis proved an absolute godsend to the badly wounded men, who also stood the road journey from there to Helwan very well.

No. 2 NZ General Hospital treated large numbers of serious cases, including compound fractures, joint and feet injuries, and many abdominal and thoracic cases.

There were remarkably few deaths at the base hospitals, only three following battle wounds, all these being due to severe infection. There were only three cases of secondary haemorrhage and two amputations, which shows a marked absence of severe infection. There was no death reported in the abdominal cases reaching the base hospitals.

In his report of June 1943 the Consultant Surgeon 2 NZEF stated that the Tunisian casualties had been very satisfactorily treated, both in the forward areas and at the Base. There had been very little serious sepsis and very few late deaths. Large numbers of abdominal cases had survived and had been evacuated to New Zealand. A number of these had

had preliminary treatment for closure of colostomy before evacuation. Late complications were uncommon. There was very little serious sepsis among the fracture cases, and little or no sepsis complicating wounds of the knee joint. Splinting of these cases in the forward areas had been very well done, as had the primary splinting of fractured arms and legs. In several cases, patients had been left in their primary splints throughout their treatment. Secondary haemorrhage and late amputations were both uncommon. As regards the head wounds, little operative treatment for late complications had been required at the base hospitals.

General Health of Troops during the Campaign

The sickness rate for the Division was very low, there being no incidence of infectious disease, except a short sharp outbreak of sandfly fever amongst a few isolated units late in April. During the whole campaign admissions to medical units averaged only 1 per 1000 per day. After the severe fighting around Takrouna there were some fifty cases of physical exhaustion. A few days' rest with provision of showers for all troops rapidly overcame the trouble. Experienced officers stated that for several days the shelling to which the infantry was subjected was the most severe the Division had ever encountered.

Diseases in Tunisia

The diseases reported to be prevalent in Tunisia were the same as those noted in Tripoli, with the addition particularly of malaria, and also of bilharzia and to a lesser extent plague, sandfly and dengue fevers, smallpox, and hookworm.

Malaria was of special importance as the local incidence was reported to be high. The season started in April but little malaria and few anopheline mosquitoes were in evidence before the Division left Tunisia in the middle of May, and only three primary cases were reported in the Division. Precautions, however, had been taken. Unit anti-malaria squads had been formed and trained and lectures had been given to all

troops. Mosquito-proof bivouacs or bush nets and a new anti-mosquito cream were issued as the old cream was found to be useless. Flysol was used. Paris green and malariol were available and draining and spraying were carried out. Dress regulations were enforced.

The 1st NZ Anti-Malaria Control Unit was attached to the Division on 23 April and carried out a survey of the divisional area and recruited civilian labour. A field malaria laboratory was available in the Corps area and the consultant malariologist was also in the area. The New Zealand malaria officer considered that the provision of protective nets or bivouacs and an efficient repellent cream were the best and only possible means of protection while the Division was in a mobile role.

Bilharzia was said to be very prevalent. To safeguard against infection strict instructions were given to hyperchlorinate all water used by the troops. This proved effective as only one case of haematuria suspected of possible infection was reported.

There were two cases of typhus in March with one death, but none in April or May. There was only one case of typhoid and, apart from a few cases of dysentery, no other serious disease.

In Eighth Army generally there was little sickness—only ·915 per thousand daily. Hepatitis was still present to some extent—in January 7·05, February 2·37, and March ·62 per thousand. Septic skin conditions were common, but desert sores were not seen so frequently. In spite of the prevalence of venereal disease in the civil population there had been no increase in the Army.

Showers and Disinfestation

Under Major D. P. Kennedy, 4 Field Hygiene Section with its captured Italian shower unit had been able to arrange hot showers at Tripoli for all troops of the Division. Owing to the continued movement and the difficulties of water supply, showers were not available again till after the battle of Takrouna. The troops engaged at Takrouna were

infested with fleas, and shortly after the battle they were all showered and their clothing and bedding disinfested. The other units in the Division were treated later. The troops were all carefully examined during the disinfestation and very few of them were found to be infested with lice, the percentage ranging from 0 to 2 or 3 per cent. When infestation did occur, it generally followed the enforced occupation of enemy positions during battle, and once occurred when blankets used by prisoners of war were carried in trucks. During the battle of the Tebaga Gap, when thousands of prisoners were taken, the Hygiene Section was attached to the cage and supervised the sanitation and disinfestation. All the prisoners were examined and disinfested. About 16 per cent of the Italians were found to be lousy but comparatively few of the Germans. Guards and drivers associated with prisoners of war were regularly disinfested and the trucks sprayed with cresol. Occupied enemy territory entered following the battle of Mareth was often filthy, and precautionary measures, especially against lice, were necessary. RMOs carried out routine inspections and disinfestation was carried out as required.

Sanitation

During March no inspections could be carried out by the Hygiene Section and no work done in the workshop. During April the normal routine was resumed and sullage and deep trench pits, latrine seats, and urinals were provided. Refuse and the manure at the Mule Pack Company were burnt in pits and buried three times a day. During May the workshop was busy making latrine seats, fly signs, and slogans. The general level of sanitary care throughout the Division during the period was very good.

Water

This was supplied mostly from wells, ample supplies being available, though sometimes brackish and generally saline. The wells were policed and the water superchlorinated before use. This was required because of

the high incidence of bilharzia in the area. Reservoirs were available at Sfax and Sousse, and chemical springs were used at El Hamma.

Rations

These were excellent and the supply of medical comforts always adequate. Extra New Zealand Red Cross supplies were always available for patients. Ascorbic acid tablets were issued regularly at this period.

Supplies

Expendable stores were in good supply throughout the period. Blood, plasma, both wet and dry, and intravenous fluids were always available in ample quantities. Extra stretchers, blankets, and pillows, etc., were kept loaded on a 3-ton truck and attached to the operating MDS, thus ensuring an adequate supply at all times.

Equipment

This was kept in excellent order in spite of the long period in the field and the distances travelled.

Clothing

Clothing was satisfactory. The changeover from battle dress to summer kit took place in Tunisia during the second week in May.

The troops were seasoned campaigners hardened to the climate of North Africa, with living habits adapted to the conditions, with established administrative systems of health care, and with a high morale as they at long last brought the North African campaigns to a victorious conclusion. In such circumstances, a good health record was almost natural despite the strain of a long campaign. Likewise, a wealth of experience had resulted in the perfection of a high standard of battle surgery, the established techniques of which will be reviewed in the following section.

[SECTION]

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE GENERAL HOSPITALS

The General Hospitals

During the Tunisian campaign our New Zealand general hospitals were operating on the Canal, at Helwan, and at Tripoli, and they all received battle casualties evacuated from the forward areas. The majority of the serious cases were dealt with at 2 NZ General Hospital, sited at El Ballah on the Suez Canal, 649 battle casualties being admitted during the second quarter of the year, whereas only 135 casualties were admitted to 1 NZ General Hospital at Helwan. No. 3 NZ General Hospital admitted 740 cases during the latter part of the campaign, the majority being transferred from the British hospitals in Tripoli.

Since the New Zealand Division had moved from Syria 3 General Hospital had remained under Ninth Army, handling patients other than New Zealanders, except for a small number evacuated from forward areas and sent from Alexandria to Beirut by hospital ship. At first it was considered inadvisable to press for another move by 3 General Hospital in case the Division should return to Syria.

In November 1942, as Eighth Army advanced, the GOC 2 NZEF favoured a move of the hospital to Alexandria. To suit the overall requirements of GHQ MEF it was agreed to leave the unit in Syria in the meantime.

On 31 January 1943 General Freyberg signalled GHQ MEF requesting that 3 General Hospital be transferred from Syria to the command of Eighth Army. This led to instructions being issued by Ninth Army on 6 February 1943 for the hospital to close and pack forthwith in readiness for a move. When it was relieved by 43 British General Hospital, 3 General Hospital moved early in March to Qassassin, in the

Suez Canal area, in accordance with GHQ MEF arrangements. However, 2 NZEF still desired the hospital to be located at Tripoli, and in spite of some opposition from GHQ MEF this further move was effected.

The location selected for the hospital was at Suani Ben Adem, south of Tripoli. It was 2 miles from NZ Advanced Base, near the Castel Benito–Suani road, and a short distance from Castel Benito airfield. The area had been used as a prisoner-of-war camp prior to the Allied occupation of Tripoli, and included a large stone Italian fort which later became the administrative block, with the wards in tents. It was well sheltered by gum and acacia trees, which also served to relieve the severity of the surroundings. The site was an excellent one for handling the casualties from the Division.

The main body of the unit reached the new site on 19 March after travelling from Alexandria to Tripoli in HS *Dorsetshire*. The equipment was unloaded from ship to lighter in Tripoli harbour, which was then subject to air raids, and all of it had reached the site safely by 5 April. On the roof of the hospital building Red Crosses were painted so as to be readily visible from the air. Much skill and ingenuity was displayed by the staff of the unit in setting up the hospital without the services of engineers. Although the hospital was not quite ready, 100 patients were admitted by urgent request on 10 April and by 14 April 300 beds were occupied. By 30 April 520 of the 900 equipped beds were occupied, chiefly by New Zealand battle casualties from the Division as it advanced in Tunisia. Serious cases were evacuated from 1 NZ CCS by air but the bulk of casualties came by road, which was by then in good repair. From Tripoli patients were evacuated by hospital ship to Alexandria, although selected cases went by air to Cairo.

The condition of the patients on arrival at the hospital at Tripoli is given in the following extract from its quarterly report to 30 June 1943:

Battle casualties generally have arrived in very good condition with wounds adequately excised and clean. Fractures have travelled well. There have been no cases of gas gangrene requiring treatment in the

hospital over the quarter. Of the abdominal cases with colonic wounds exteriorised only one case appears to have had adequate spur formation with a view to assist in early closure of the colostomy. Abdominal cases have convalesced well. Cases with penetrating wounds of the chest as a group have given rise to most problems in convalescence.

Though neither 1 nor 2 General Hospitals was called upon to follow up Eighth Army in its advance from Alamein to Tunis, each unit worked hard dealing with the casualties that came back to Base.

Battle Casualties Admitted NZ General Hospitals

	1 Gen Hosp	*2 Gen Hosp*	*3 Gen Hosp*
Oct–Dec 1942	522	581	147
Jan–Mar 1943	140	174	74
Apr–Jun 1943	135	596	740

No. 1 NZ General Hospital received air convoys of three to four serious cases every two or three days, and air transport to Heliopolis proved an absolute godsend to the badly wounded men, who also stood the road journey from there to Helwan very well.

No. 2 NZ General Hospital treated large numbers of serious cases, including compound fractures, joint and feet injuries, and many abdominal and thoracic cases.

There were remarkably few deaths at the base hospitals, only three following battle wounds, all these being due to severe infection. There were only three cases of secondary haemorrhage and two amputations, which shows a marked absence of severe infection. There was no death reported in the abdominal cases reaching the base hospitals.

In his report of June 1943 the Consultant Surgeon 2 NZEF stated that the Tunisian casualties had been very satisfactorily treated, both in the forward areas and at the Base. There had been very little serious sepsis and very few late deaths. Large numbers of abdominal cases had survived and had been evacuated to New Zealand. A number of these had had preliminary treatment for closure of colostomy before evacuation.

Late complications were uncommon. There was very little serious sepsis among the fracture cases, and little or no sepsis complicating wounds of the knee joint. Splinting of these cases in the forward areas had been very well done, as had the primary splinting of fractured arms and legs. In several cases, patients had been left in their primary splints throughout their treatment. Secondary haemorrhage and late amputations were both uncommon. As regards the head wounds, little operative treatment for late complications had been required at the base hospitals.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL HEALTH OF TROOPS DURING THE CAMPAIGN

General Health of Troops during the Campaign

The sickness rate for the Division was very low, there being no incidence of infectious disease, except a short sharp outbreak of sandfly fever amongst a few isolated units late in April. During the whole campaign admissions to medical units averaged only 1 per 1000 per day. After the severe fighting around Takrouna there were some fifty cases of physical exhaustion. A few days' rest with provision of showers for all troops rapidly overcame the trouble. Experienced officers stated that for several days the shelling to which the infantry was subjected was the most severe the Division had ever encountered.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DISEASES IN TUNISIA

Diseases in Tunisia

The diseases reported to be prevalent in Tunisia were the same as those noted in Tripoli, with the addition particularly of malaria, and also of bilharzia and to a lesser extent plague, sandfly and dengue fevers, smallpox, and hookworm.

Malaria was of special importance as the local incidence was reported to be high. The season started in April but little malaria and few anopheline mosquitoes were in evidence before the Division left Tunisia in the middle of May, and only three primary cases were reported in the Division. Precautions, however, had been taken. Unit anti-malaria squads had been formed and trained and lectures had been given to all troops. Mosquito-proof bivouacs or bush nets and a new anti-mosquito cream were issued as the old cream was found to be useless. Flysol was used. Paris green and malariol were available and draining and spraying were carried out. Dress regulations were enforced.

The 1st NZ Anti-Malaria Control Unit was attached to the Division on 23 April and carried out a survey of the divisional area and recruited civilian labour. A field malaria laboratory was available in the Corps area and the consultant malariologist was also in the area. The New Zealand malaria officer considered that the provision of protective nets or bivouacs and an efficient repellent cream were the best and only possible means of protection while the Division was in a mobile role.

Bilharzia was said to be very prevalent. To safeguard against infection strict instructions were given to hyperchlorinate all water used by the troops. This proved effective as only one case of haematuria suspected of possible infection was reported.

There were two cases of typhus in March with one death, but none in April or May. There was only one case of typhoid and, apart from a few cases of dysentery, no other serious disease.

In Eighth Army generally there was little sickness—only ·915 per thousand daily. Hepatitis was still present to some extent—in January 7·05, February 2·37, and March ·62 per thousand. Septic skin conditions were common, but desert sores were not seen so frequently. In spite of the prevalence of venereal disease in the civil population there had been no increase in the Army.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SHOWERS AND DISINFESTATION

Showers and Disinfestation

Under Major D. P. Kennedy, 4 Field Hygiene Section with its captured Italian shower unit had been able to arrange hot showers at Tripoli for all troops of the Division. Owing to the continued movement and the difficulties of water supply, showers were not available again till after the battle of Takrouna. The troops engaged at Takrouna were infested with fleas, and shortly after the battle they were all showered and their clothing and bedding disinfested. The other units in the Division were treated later. The troops were all carefully examined during the disinfestation and very few of them were found to be infested with lice, the percentage ranging from 0 to 2 or 3 per cent. When infestation did occur, it generally followed the enforced occupation of enemy positions during battle, and once occurred when blankets used by prisoners of war were carried in trucks. During the battle of the Tebaga Gap, when thousands of prisoners were taken, the Hygiene Section was attached to the cage and supervised the sanitation and disinfestation. All the prisoners were examined and disinfested. About 16 per cent of the Italians were found to be lousy but comparatively few of the Germans. Guards and drivers associated with prisoners of war were regularly disinfested and the trucks sprayed with cresol. Occupied enemy territory entered following the battle of Mareth was often filthy, and precautionary measures, especially against lice, were necessary. RMOs carried out routine inspections and disinfestation was carried out as required.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SANITATION

Sanitation

During March no inspections could be carried out by the Hygiene Section and no work done in the workshop. During April the normal routine was resumed and sullage and deep trench pits, latrine seats, and urinals were provided. Refuse and the manure at the Mule Pack Company were burnt in pits and buried three times a day. During May the workshop was busy making latrine seats, fly signs, and slogans. The general level of sanitary care throughout the Division during the period was very good.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WATER

Water

This was supplied mostly from wells, ample supplies being available, though sometimes brackish and generally saline. The wells were policed and the water superchlorinated before use. This was required because of the high incidence of bilharzia in the area. Reservoirs were available at Sfax and Sousse, and chemical springs were used at El Hamma.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RATIONS

Rations

These were excellent and the supply of medical comforts always adequate. Extra New Zealand Red Cross supplies were always available for patients. Ascorbic acid tablets were issued regularly at this period.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SUPPLIES

Supplies

Expendable stores were in good supply throughout the period. Blood, plasma, both wet and dry, and intravenous fluids were always available in ample quantities. Extra stretchers, blankets, and pillows, etc., were kept loaded on a 3-ton truck and attached to the operating MDS, thus ensuring an adequate supply at all times.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EQUIPMENT

Equipment

This was kept in excellent order in spite of the long period in the field and the distances travelled.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CLOTHING

Clothing

Clothing was satisfactory. The changeover from battle dress to summer kit took place in Tunisia during the second week in May.

The troops were seasoned campaigners hardened to the climate of North Africa, with living habits adapted to the conditions, with established administrative systems of health care, and with a high morale as they at long last brought the North African campaigns to a victorious conclusion. In such circumstances, a good health record was almost natural despite the strain of a long campaign. Likewise, a wealth of experience had resulted in the perfection of a high standard of battle surgery, the established techniques of which will be reviewed in the following section.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF FORWARD SURGERY AT THE END OF THE NORTH AFRICAN CAMPAIGNS

REVIEW OF FORWARD SURGERY AT THE END OF THE NORTH AFRICAN CAMPAIGNS

The priority of operation followed at that time was:

A. Abdomens, bleeders, sucking chests.
B. Amputations, fractures with swelling or bleeding, joint injuries, large flesh wounds, especially with swollen limbs and situated in the buttock, thigh, or calf.
C. Heads, eyes, jaws, spines.

The abdomens were treated as first priority and so were dealt with frequently at the MDS of the field ambulances.

The Work of a Forward Operating Centre

The medical units responsible for this work were the MDSs of the field ambulances and the CCS. By the time of the Tunisian campaign the work had become highly organised and the staffs of the units fully trained in the different aspects of the work, so that large numbers of patients could be handled swiftly and efficiently. At the reception tent the cases were sorted and particulars taken, kits attended to, exchange of stretchers and blankets arranged with the ambulances, and the patient sent on to the pre-operation tent, to the wards, or to the evacuation tent. This work was greatly facilitated by prior sorting and information supplied by the ADS or MDS.

The pre-operation ward carried out all resuscitatory and other preliminary treatment, including washing the patients, the provision of clean clothing, and the checking and control of personal belongings. The patients were examined and decision made as to the urgency of

operation and the resuscitation required. An FTU carried out the blood and plasma transfusions and a senior surgeon attended to the diagnosis, conferring with the transfusion officer concerning priority. At the CCS an X-ray plant was available, the types of cases normally X-rayed being:

(*a*) Doubtful abdominal injuries.
(*b*) Head and spinal cases.
(*c*) Injuries involving joints, especially the knee.
(*d*) Doubtful fractures.

Resuscitatory measures at that time were:

1. **Blood, the main and generally the sole measure of importance. Generally two or three pints were given.**
2. **Plasma was given to counter haemo-concentration in severe burn cases and also to supplement blood.**
3. **Warm fluids given, such as tea, cocoa, etc.**
4. **Morphia, when pain or restlessness was present.**
5. **Warmth: excessive warmth had been found to be deleterious. Simple warming by blankets in a warmed tent was carried out.**

Types of cases selected for early operation:

1. **Abdominals: The diagnosis depended on: (*a*) the site of the wound and probable course of the missile; (*b*) local signs of abdominal injury such as rigidity of the abdominal wall, lack of audible peristalsis, abdominal distension, dullness in the flanks or pelvis; (*c*) general signs—shock and distress, signs of internal bleeding (pallor and rapid thin pulse). X-ray was used in doubtful cases, especially when diaphragmatic and retro-peritoneal injuries were present. Bleeding was found to be responsible for the early and serious symptoms, and sometimes prevented full resuscitation and demanded urgent operation for its control. Peritonitis was a late development.**
2. **Chest cases: The only cases which demanded operation were those with large chest wounds, open sucking wounds, and occasionally with bleeding from an intercostal artery. Only a pint of blood was generally given to chest cases.**
3. **Head cases: All injuries involving the scalp, skull, or brain were operated on if the general condition was satisfactory. The severely shocked and sterterous cases were left till signs of recovery were**

present and operation was felt to be justified.

4. Fractures of the long bones: The extent of the wounds of the soft parts determined the necessity and extent of the operative treatment, and vascular injury was of special importance. Splinting in any case was required and X-rays, if time allowed, were of value in certain cases, especially if any joint involvement was suspected.
5. Vascular injuries: Injuries to large vessels as shown by a history of serious bleeding, a pale and shocked patient, dressings soaked in blood, limb swollen and tense, loss of pulsation in terminal vessels, demanded urgent operation to prevent further bleeding and also secondary haemorrhage later.
6. Joint injuries: Although operation was often unnecessary, splinting was essential.
7. Foot injuries: These were very common, largely due to mines, and amputation was often required.
8. Facio-maxillary injuries: As a rule these did not require urgent surgery, but eye injuries might demand enucleation or removal of foreign bodies by the electro-magnet and dental splinting might be required for fractures of the jaw.
9. Spine: Might require a suprapubic drainage.
10. Large flesh wounds: especially of the buttock, thigh and calf, owing to their liability to anaerobic infection and vascular injury.

The buttock wound was always suspect of associated intra-abdominal, rectal, or lower urinary tract injury.

Splinting of Fractures:

1. Humerus: The most satisfactory splint for transport was the adduction plaster with a cap plaster over the shoulders, slabs well moulded round the upper arm, liberal padding in the axilla between the arm and the chest, the whole bandaged to the chest by circular plaster bandage, the forearm being included in both the slabs and the circular bandage, leaving the hand free.
2. Forearm and wrist: Plaster slabs were used with circular turns but without restricting movement of the metacarpo-phalangeal joints.
3. Femur and knee joints: The New Zealand Tobruk method was the normal application of the Thomas splint—slightly bent at the knee with elastoplast extension, and flannel slings. Then a posterior plaster slab was applied outside the slings from the buttock to three inches above the ankle. Padding was then put between the limb and the splint and in front of the limb, a roll of coarse wool being used. A

circular plaster bandage was applied from the groin to just above the ankle, the foot being suspended in the foot-piece by strapping. Extension just to steady the limb was applied. The spare space usually present at the outer part of the ring was filled by padding or a moulded plaster pad. Extension to correct shortening was contra-indicated by the danger of the ring riding over the tuber ischii and the formation of pressure sores during transit.

4. Tibia, fibula, and feet: Plaster splints were applied from the upper thigh to beyond the toes, but allowing of toe movement. All plasters were well padded and were also cut up before evacuation to prevent interference with circulation.

Operative Technique

Two tables were used in the theatre. Improvised methods of concentration of electric light were used and standard lights were sometimes available. Arm boards were essential for the giving of blood and also pentothal injection. Suction apparatus, generally improvised, was also always used. Plain soap and water was used for skin cleansing and shaving was freely resorted to. Iodine was the usual skin application. The surgeons wore macintosh overalls, caps, and face masks. Gloves were generally worn but not always changed for each operation. Macintosh and rubber guards were commonly used, but for abdominals the full surgical technique with linen guards was used. There was great wear and tear on surgical instruments due to the constant boiling. Fine thread was generally used for ligatures.

As regards wound treatment, the removal of skin had been reduced to the minimum and only definitely damaged and devitalised tissue was removed. All avascular and badly traumatised muscle, however, was carefully excised as a precaution against anaerobic infection. Only definitely loose fragments of bone were ever removed. Free and, if possible, dependent drainage was provided in all large wounds associated with much muscle or bone damage. Relief of tension was of the greatest importance and incision, both longitudinal and sometimes transverse, of the fascia was regularly carried out. Foreign bodies, especially clothing, were removed if readily accessible. If deep muscular gangrene was

present whole muscle groups were removed, and if the whole limb was gangrenous amputation was carried out. Ligature of the vein in addition to that of the artery was being given up in the treatment of injuries of the main vessels. Injured nerves were dealt with only by approximating the severed nerve ends. The surgeon regularly wrote up notes after the operation, both in the operation book and on the field medical card.

Treatment of Different Injuries

Joints: **No operative treatment was carried out in small perforating and penetrating wounds. Large wounds were excised, large accessible foreign bodies were removed, and the patella, if seriously damaged, was completely excised. The synovial membrane was sutured but not the skin.**

Heads: **Careful excision of the wound down to the bone was performed. Loose bone was removed and the skull nibbled away to expose the dura and brain wound. A combination of syringing and suction removed the pulped brain and accessible bone fragments or foreign bodies. Sulphadiazine was applied to the wound and also given intravenously following operation. The wound was sutured in two layers with thread and a small stab drain inserted for a few days. A plaster cap was used to keep the dressings in place. Diathermy was used to control bleeding.**

Eyes: **Corneal spattering was very common, as were penetrating wounds by small foreign bodies. The removal of these by the electromagnet was very difficult, many fragments being non-magnetic.**

Jaws: **Fractures were dealt with by dentists skilled in the application of inter-dental splints, or extra-dental splints, and pins were used in combination with a head plaster.**

Chests: **Large and also sucking wounds were dealt with by excision. A vaseline gauze pack kept in place by sutures was used to close the sucking chest. Ligature of bleeding intercostal arteries was sometimes**

necessary. Aspiration was carried out when respiratory distress was present.

Abdomens: **These cases were given first priority. Diagnosis was often difficult, especially as wounds such as buttock and chest wounds were often associated with intra-abdominal injury. Catheterisation was always done before operation as a precautionary and diagnostic measure. Exploration was carried out either through the excised original gunshot wound or more normally through a separate incision. Lateral transverse incisions were sometimes used but vertical central incisions were generally employed. Exploration was not always carried out in liver or kidney injuries. Examination of the abdominal contents was carried out methodically, except when it was certain that the injury was strictly localised. The small intestine had to be particularly well looked at as multiple injuries were common. Suture of the perforations was always preferred to excision because of the lower mortality. Simple one-layer suture was carried out, even when excision had to be performed, with some extra stitching if time warranted it. Suture of the colon was done only, and that infrequently, in very small lesions of the caecum and right colon. In all other cases the injured gut was exteriorised and a colostomy with a spur formed. In lower sigmoid and rectal injuries a left side colostomy was made. Colostomy had been carried out in cases of severe buttock wounds to ensure cleanliness of the wound, but it had been realised that it was too heavy a price to pay and the practice had been discontinued, except when the rectum itself was involved. Liver wounds were found to require little treatment. Only very rarely was packing or suturing required to stop bleeding. Minor kidney injuries required no treatment. In severe cases exploration followed by nephrectomy or drainage was carried out. Association with a colon injury made nephrectomy advisable. Bladder injuries were sutured and suprapubic drainage was instituted, as it was for spinal cord injuries and urethral damage.**

Wound Treatment: **Primary skin suture was carried out for scrotal and penile injuries and also for wounds of the head and abdomen. In all**

other wounds there was no primary suture, and tulle gras or vaseline gauze dressings were applied following wound toilet. The ordinary wounds were dusted with sulphanilamide and then a vaseline gauze dressing applied. Sulphanilamide by mouth was then given regularly for six days, charts being utilised to ensure proper dosage.

Burns: Serious cases were treated with serum, morphia, and rest. Cleansing and dressing of the burns was left till resuscitation had taken place, and often only part of the burnt area was treated at a time and then only gently cleansed with saline dabs. Sulphanilamide powder or ointment was used, followed by tulle gras dressing. Tanning had been completely given up. The need of whole blood transfusion after the first few days was recognised, the haemoglobin often by that time having been reduced to 60 per cent or less.

Post-Operative Care

Beds were provided in the field ambulances at the time of Alamein, enabling serious cases to be nursed adequately in the field units. Copious fluids were given, if possible by the mouth. The abdominal cases were nursed in Fowler's position and chest cases also sat up as soon as possible. Close attention was given to the skin and also to seeing that plasters were not constricting the limbs. Sedatives such as paraldehyde were given to head cases.

Chests: If respiratory distress was marked, tapping was performed with air displacement in the first twenty-four hours. In First Army early, frequent, and thorough evacuation of the haemothorax was done with good results.

Abdomens: Treatment was stabilised in: (*a*) applying continuous gastric suction by means of a blood-taking set inverted and filled with water, so acting as a suction apparatus; (*b*) giving continuous intravenous fluid, glucose, and glucose saline, about 8–10 pints a day; (*c*) using Fowler's position; (*d*) holding the patient in the unit where operation had been performed for a period of ten to fourteen days before

evacuation; (*e*) nursing on beds; (*f*) giving of fluid by the mouth in small quantities; (*g*) continuing suction for about four days and then shutting it off gradually. (Suction was not required for so long in large bowel cases.)

General Cases: **Further resuscitation, especially transfusion of blood, was often required.**

Evacuation of Cases from the Forward Operating Centres

Patients were normally evacuated at the earliest possible moment as soon as they were fully recovered from the anaesthetic. Certain types of cases, however, were held:

1. **Cases unfit to travel, whatever the lesion. These were held for further resuscitation.**
2. **Abdominals: As already mentioned, these were held for ten to fourteen days.**
3. **Chests: Severe cases were often quite unfit for travel and were held for several days.**
4. **Burns: Severe cases were too shocked and toxaemic to travel for some days.**
5. **Anaerobic infection: These cases were held for urgent treatment and to prevent change of surgeon.**
6. **Haemorrhage: If any danger felt of further bleeding.**
7. **Gangrene: Impending gangrene cases were held for observation.**

On the other hand:

(*a*) Head cases travelled very well, the only difficulty being restlessness.

(*b*) Chest cases, if no distress in breathing, travelled comfortably.

(*c*) Spine cases also were satisfactory.

(*d*) All fractures, if adequately splinted, were no trouble.

The Type of Wounds

Wounds were caused by different missiles, varying greatly at times.

Throughout the campaign there was always a considerable number of mine wounds irrespective of any actual fighting. These wounds were caused either by the metallic mine exploding on the ground or by the new wooden Schu mine, which exploded about four feet above the ground and discharged numbers of shrapnel balls, causing severe multiple injuries. The damage to the feet by the ordinary metallic mines continued to be frequent and severe. In active fighting shell and mortar wounds became more common, and in certain phases bullet wounds produced the majority of the casualties. At one field surgical unit behind Mareth the casualties due to gunshot wounds were 23 per cent; to shell wounds 46 per cent; to mines 27 per cent; and to bombs 2 per cent.

Infection in Wounds

This was not very prevalent during the campaign, due undoubtedly to the early and efficient surgery. There was some increase when Tunisia was entered. An indication of the value of surgical treatment was given when considerable sepsis was found to be present in large numbers of slight wounds sustained by Italian prisoners of war admitted to our medical units some days after wounding.

Some increase in gas infection was noted in Tunisia, many infections being of the anaerobic cellulitis type. Few serious cases of gas gangrene were seen apart from injury to the main vessels. About 60 per cent of forty-four cases reported by Major J. D. MacLennan, RAMC, had serious vascular damage. Infection by an anaerobic streptococcus was noted in eight cases, of which five died.

Sulphonamides

Routine local application by dusting from improvised pepper pots was carried out in all forward units. Tablets were given by the mouth for six days following wounding, and special cards were fixed to the field medical card by which the dosage given was checked.

Amputation

The bad results that followed an attempt in the early days to carry out site-of-election amputations had led to the conservation of the maximum length of limb. Flaps were fashioned and small dressings of vaseline gauze held in place over the stump by two or three stitches. The badly damaged tissue in the traumatic amputations was thoroughly excised to prevent serious sepsis, which had been noticed so frequently in these cases. A great number of amputations of the feet were carried out as a result of mine injuries.

Summary

In surgery, many important advances had been made in the year since the pre- Alamein battles, and surgeons had achieved a high degree of efficiency in the conditions peculiar to war. The low death rate among wounded who reached a medical unit was adequate testimony to this.

Admissions to Field Ambulances, 1943

	Jan		*Feb*		*Mar*		*Apr*		*May*		*Total*	
	Sick	*BC*	*Sick*	*BC*	*Sick*	*BC*	*Sick*	*BC*	*Sick*	*BC*	*Sick*	*BC*
4 Fd Amb												
NZ	15	21	409	6	155	352	309	566	74	15	962	960
Others	17	87	40	1	46	177	101	312	10	7	214	584
PW		10				131		38				179
5 Fd Amb												
NZ	127	33	16		189	83	115	420	69	52	516	588
Others	73	71	1		42	51		72	3	17	119	211
PW						15		27				42
6 Fd Amb												
NZ	130	30			32	249	26	50	39	17	227	346
Others	247	212			20	172	9	30	5	5	281	419
PW		4				79	3	18		1	3	102
	609	468	466	7	484	1309	563	1533	200	114	2322	3431

The New Zealand Division's casualties in Tunisia, March–May 1943, were:

Sick	**1008**
Battle casualties	**1804**

Admissions, etc., 1 NZ CCS

Location	*Period*	*Sick*	*BC*	*Total*	*RTU*	*Deaths*	*Amputations*
Sirte	**4–12 Jan**	**331**	**154**	**485**	**26**	**4**	**4**
Tamet	**14–31 Jan**	**468**	**287**	**755**	**100**	**14**	**1**
Tamet	**1–8 Feb**	**60**	**12**	**72**	**89**	**1**	
Zuara	**11–26 Feb**	**305**	**142**	**447**	**75**		**1**
Medenine	**27–28 Feb**	**54**	**51**	**105**			
Medenine	**1–30 Mar**	**561**	**975**	**1536**	**122**	**19**	**16**
Teboulbou	**31 Mar**	**17**	**40**	**57**	**2**		
Teboulbou	**1–8 Apr**	**37**	**523**	**560**		**16**	**7**
El Djem	**13–30 Apr**	**666**	**1037**	**1703**	**92**	**10**	**4**
Sidi Bou Ali	**1–23 May**	**870**	**755**	**1625**	**41**	**13**	**12**
		3369	**3976**	**7345**	**547**	**77**	**45**

New Zealand Casualties, Tunisia, 20 March–13 May 1943

Killed in Action	**304**
Died of Wounds	**64**
Wounded	**1221**
Prisoners of War	**31**

[SECTION]

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B. Amputations, fractures with swelling or bleeding, joint injuries, large flesh wounds, especially with swollen limbs and situated in the buttock, thigh, or calf.

C. Heads, eyes, jaws, spines.

The abdomens were treated as first priority and so were dealt with frequently at the MDS of the field ambulances.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE WORK OF A FORWARD OPERATING CENTRE

The Work of a Forward Operating Centre

The medical units responsible for this work were the MDSs of the field ambulances and the CCS. By the time of the Tunisian campaign the work had become highly organised and the staffs of the units fully trained in the different aspects of the work, so that large numbers of patients could be handled swiftly and efficiently. At the reception tent the cases were sorted and particulars taken, kits attended to, exchange of stretchers and blankets arranged with the ambulances, and the patient sent on to the pre-operation tent, to the wards, or to the evacuation tent. This work was greatly facilitated by prior sorting and information supplied by the ADS or MDS.

The pre-operation ward carried out all resuscitatory and other preliminary treatment, including washing the patients, the provision of clean clothing, and the checking and control of personal belongings. The patients were examined and decision made as to the urgency of operation and the resuscitation required. An FTU carried out the blood and plasma transfusions and a senior surgeon attended to the diagnosis, conferring with the transfusion officer concerning priority. At the CCS an X-ray plant was available, the types of cases normally X-rayed being:

(*a*) Doubtful abdominal injuries.
(*b*) Head and spinal cases.
(*c*) Injuries involving joints, especially the knee.
(*d*) Doubtful fractures.

Resuscitatory measures at that time were:

1. **Blood, the main and generally the sole measure of importance. Generally two or three pints were given.**
2. **Plasma was given to counter haemo-concentration in severe burn**

cases and also to supplement blood.

3. **Warm fluids given, such as tea, cocoa, etc.**
4. **Morphia, when pain or restlessness was present.**
5. **Warmth: excessive warmth had been found to be deleterious. Simple warming by blankets in a warmed tent was carried out.**

Types of cases selected for early operation:

1. **Abdominals: The diagnosis depended on: (*a*) the site of the wound and probable course of the missile; (*b*) local signs of abdominal injury such as rigidity of the abdominal wall, lack of audible peristalsis, abdominal distension, dullness in the flanks or pelvis; (*c*) general signs—shock and distress, signs of internal bleeding (pallor and rapid thin pulse). X-ray was used in doubtful cases, especially when diaphragmatic and retro-peritoneal injuries were present. Bleeding was found to be responsible for the early and serious symptoms, and sometimes prevented full resuscitation and demanded urgent operation for its control. Peritonitis was a late development.**
2. **Chest cases: The only cases which demanded operation were those with large chest wounds, open sucking wounds, and occasionally with bleeding from an intercostal artery. Only a pint of blood was generally given to chest cases.**
3. **Head cases: All injuries involving the scalp, skull, or brain were operated on if the general condition was satisfactory. The severely shocked and sterterous cases were left till signs of recovery were present and operation was felt to be justified.**
4. **Fractures of the long bones: The extent of the wounds of the soft parts determined the necessity and extent of the operative treatment, and vascular injury was of special importance. Splinting in any case was required and X-rays, if time allowed, were of value in certain cases, especially if any joint involvement was suspected.**
5. **Vascular injuries: Injuries to large vessels as shown by a history of serious bleeding, a pale and shocked patient, dressings soaked in blood, limb swollen and tense, loss of pulsation in terminal vessels, demanded urgent operation to prevent further bleeding and also secondary haemorrhage later.**
6. **Joint injuries: Although operation was often unnecessary, splinting was essential.**
7. **Foot injuries: These were very common, largely due to mines, and amputation was often required.**
8. **Facio-maxillary injuries: As a rule these did not require urgent**

surgery, but eye injuries might demand enucleation or removal of foreign bodies by the electro-magnet and dental splinting might be required for fractures of the jaw.

9. **Spine: Might require a suprapubic drainage.**
10. **Large flesh wounds: especially of the buttock, thigh and calf, owing to their liability to anaerobic infection and vascular injury.**

The buttock wound was always suspect of associated intra-abdominal, rectal, or lower urinary tract injury.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SPLINTING OF FRACTURES:

Splinting of Fractures:

1. **Humerus: The most satisfactory splint for transport was the adduction plaster with a cap plaster over the shoulders, slabs well moulded round the upper arm, liberal padding in the axilla between the arm and the chest, the whole bandaged to the chest by circular plaster bandage, the forearm being included in both the slabs and the circular bandage, leaving the hand free.**
2. **Forearm and wrist: Plaster slabs were used with circular turns but without restricting movement of the metacarpo-phalangeal joints.**
3. **Femur and knee joints: The New Zealand Tobruk method was the normal application of the Thomas splint—slightly bent at the knee with elastoplast extension, and flannel slings. Then a posterior plaster slab was applied outside the slings from the buttock to three inches above the ankle. Padding was then put between the limb and the splint and in front of the limb, a roll of coarse wool being used. A circular plaster bandage was applied from the groin to just above the ankle, the foot being suspended in the foot-piece by strapping. Extension just to steady the limb was applied. The spare space usually present at the outer part of the ring was filled by padding or a moulded plaster pad. Extension to correct shortening was contra-indicated by the danger of the ring riding over the tuber ischii and the formation of pressure sores during transit.**
4. **Tibia, fibula, and feet: Plaster splints were applied from the upper thigh to beyond the toes, but allowing of toe movement. All plasters were well padded and were also cut up before evacuation to prevent interference with circulation.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

OPERATIVE TECHNIQUE

Operative Technique

Two tables were used in the theatre. Improvised methods of concentration of electric light were used and standard lights were sometimes available. Arm boards were essential for the giving of blood and also pentothal injection. Suction apparatus, generally improvised, was also always used. Plain soap and water was used for skin cleansing and shaving was freely resorted to. Iodine was the usual skin application. The surgeons wore macintosh overalls, caps, and face masks. Gloves were generally worn but not always changed for each operation. Macintosh and rubber guards were commonly used, but for abdominals the full surgical technique with linen guards was used. There was great wear and tear on surgical instruments due to the constant boiling. Fine thread was generally used for ligatures.

As regards wound treatment, the removal of skin had been reduced to the minimum and only definitely damaged and devitalised tissue was removed. All avascular and badly traumatised muscle, however, was carefully excised as a precaution against anaerobic infection. Only definitely loose fragments of bone were ever removed. Free and, if possible, dependent drainage was provided in all large wounds associated with much muscle or bone damage. Relief of tension was of the greatest importance and incision, both longitudinal and sometimes transverse, of the fascia was regularly carried out. Foreign bodies, especially clothing, were removed if readily accessible. If deep muscular gangrene was present whole muscle groups were removed, and if the whole limb was gangrenous amputation was carried out. Ligature of the vein in addition to that of the artery was being given up in the treatment of injuries of the main vessels. Injured nerves were dealt with only by approximating the severed nerve ends. The surgeon regularly wrote up notes after the

operation, both in the operation book and on the field medical card.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TREATMENT OF DIFFERENT INJURIES

Treatment of Different Injuries

Joints: **No operative treatment was carried out in small perforating and penetrating wounds. Large wounds were excised, large accessible foreign bodies were removed, and the patella, if seriously damaged, was completely excised. The synovial membrane was sutured but not the skin.**

Heads: **Careful excision of the wound down to the bone was performed. Loose bone was removed and the skull nibbled away to expose the dura and brain wound. A combination of syringing and suction removed the pulped brain and accessible bone fragments or foreign bodies. Sulphadiazine was applied to the wound and also given intravenously following operation. The wound was sutured in two layers with thread and a small stab drain inserted for a few days. A plaster cap was used to keep the dressings in place. Diathermy was used to control bleeding.**

Eyes: **Corneal spattering was very common, as were penetrating wounds by small foreign bodies. The removal of these by the electromagnet was very difficult, many fragments being non-magnetic.**

Jaws: **Fractures were dealt with by dentists skilled in the application of inter-dental splints, or extra-dental splints, and pins were used in combination with a head plaster.**

Chests: **Large and also sucking wounds were dealt with by excision. A vaseline gauze pack kept in place by sutures was used to close the sucking chest. Ligature of bleeding intercostal arteries was sometimes necessary. Aspiration was carried out when respiratory distress was present.**

Abdomens: **These cases were given first priority. Diagnosis was often difficult, especially as wounds such as buttock and chest wounds were often associated with intra-abdominal injury. Catheterisation was always done before operation as a precautionary and diagnostic measure. Exploration was carried out either through the excised original gunshot wound or more normally through a separate incision. Lateral transverse incisions were sometimes used but vertical central incisions were generally employed. Exploration was not always carried out in liver or kidney injuries. Examination of the abdominal contents was carried out methodically, except when it was certain that the injury was strictly localised. The small intestine had to be particularly well looked at as multiple injuries were common. Suture of the perforations was always preferred to excision because of the lower mortality. Simple one-layer suture was carried out, even when excision had to be performed, with some extra stitching if time warranted it. Suture of the colon was done only, and that infrequently, in very small lesions of the caecum and right colon. In all other cases the injured gut was exteriorised and a colostomy with a spur formed. In lower sigmoid and rectal injuries a left side colostomy was made. Colostomy had been carried out in cases of severe buttock wounds to ensure cleanliness of the wound, but it had been realised that it was too heavy a price to pay and the practice had been discontinued, except when the rectum itself was involved. Liver wounds were found to require little treatment. Only very rarely was packing or suturing required to stop bleeding. Minor kidney injuries required no treatment. In severe cases exploration followed by nephrectomy or drainage was carried out. Association with a colon injury made nephrectomy advisable. Bladder injuries were sutured and suprapubic drainage was instituted, as it was for spinal cord injuries and urethral damage.**

Wound Treatment: **Primary skin suture was carried out for scrotal and penile injuries and also for wounds of the head and abdomen. In all other wounds there was no primary suture, and tulle gras or vaseline gauze dressings were applied following wound toilet. The ordinary wounds were dusted with sulphanilamide and then a vaseline gauze**

dressing applied. Sulphanilamide by mouth was then given regularly for six days, charts being utilised to ensure proper dosage.

Burns: **Serious cases were treated with serum, morphia, and rest. Cleansing and dressing of the burns was left till resuscitation had taken place, and often only part of the burnt area was treated at a time and then only gently cleansed with saline dabs. Sulphanilamide powder or ointment was used, followed by tulle gras dressing. Tanning had been completely given up. The need of whole blood transfusion after the first few days was recognised, the haemoglobin often by that time having been reduced to 60 per cent or less.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

POST-OPERATIVE CARE

Post-Operative Care

Beds were provided in the field ambulances at the time of Alamein, enabling serious cases to be nursed adequately in the field units. Copious fluids were given, if possible by the mouth. The abdominal cases were nursed in Fowler's position and chest cases also sat up as soon as possible. Close attention was given to the skin and also to seeing that plasters were not constricting the limbs. Sedatives such as paraldehyde were given to head cases.

Chests: **If respiratory distress was marked, tapping was performed with air displacement in the first twenty-four hours. In First Army early, frequent, and thorough evacuation of the haemothorax was done with good results.**

Abdomens: **Treatment was stabilised in: (*a*) applying continuous gastric suction by means of a blood-taking set inverted and filled with water, so acting as a suction apparatus; (*b*) giving continuous intravenous fluid, glucose, and glucose saline, about 8–10 pints a day; (*c*) using Fowler's position; (*d*) holding the patient in the unit where operation had been performed for a period of ten to fourteen days before evacuation; (*e*) nursing on beds; (*f*) giving of fluid by the mouth in small quantities; (*g*) continuing suction for about four days and then shutting it off gradually. (Suction was not required for so long in large bowel cases.)**

General Cases: **Further resuscitation, especially transfusion of blood, was often required.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION OF CASES FROM THE FORWARD OPERATING CENTRES

Evacuation of Cases from the Forward Operating Centres

Patients were normally evacuated at the earliest possible moment as soon as they were fully recovered from the anaesthetic. Certain types of cases, however, were held:

1. **Cases unfit to travel, whatever the lesion. These were held for further resuscitation.**
2. **Abdominals: As already mentioned, these were held for ten to fourteen days.**
3. **Chests: Severe cases were often quite unfit for travel and were held for several days.**
4. **Burns: Severe cases were too shocked and toxaemic to travel for some days.**
5. **Anaerobic infection: These cases were held for urgent treatment and to prevent change of surgeon.**
6. **Haemorrhage: If any danger felt of further bleeding.**
7. **Gangrene: Impending gangrene cases were held for observation.**

On the other hand:

(*a*) Head cases travelled very well, the only difficulty being restlessness.

(*b*) Chest cases, if no distress in breathing, travelled comfortably.

(*c*) Spine cases also were satisfactory.

(*d*) All fractures, if adequately splinted, were no trouble.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE TYPE OF WOUNDS

The Type of Wounds

Wounds were caused by different missiles, varying greatly at times. Throughout the campaign there was always a considerable number of mine wounds irrespective of any actual fighting. These wounds were caused either by the metallic mine exploding on the ground or by the new wooden Schu mine, which exploded about four feet above the ground and discharged numbers of shrapnel balls, causing severe multiple injuries. The damage to the feet by the ordinary metallic mines continued to be frequent and severe. In active fighting shell and mortar wounds became more common, and in certain phases bullet wounds produced the majority of the casualties. At one field surgical unit behind Mareth the casualties due to gunshot wounds were 23 per cent; to shell wounds 46 per cent; to mines 27 per cent; and to bombs 2 per cent.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INFECTION IN WOUNDS

Infection in Wounds

This was not very prevalent during the campaign, due undoubtedly to the early and efficient surgery. There was some increase when Tunisia was entered. An indication of the value of surgical treatment was given when considerable sepsis was found to be present in large numbers of slight wounds sustained by Italian prisoners of war admitted to our medical units some days after wounding.

Some increase in gas infection was noted in Tunisia, many infections being of the anaerobic cellulitis type. Few serious cases of gas gangrene were seen apart from injury to the main vessels. About 60 per cent of forty-four cases reported by Major J. D. MacLennan, RAMC, had serious vascular damage. Infection by an anaerobic streptococcus was noted in eight cases, of which five died.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SULPHONAMIDES

Sulphonamides

Routine local application by dusting from improvised pepper pots was carried out in all forward units. Tablets were given by the mouth for six days following wounding, and special cards were fixed to the field medical card by which the dosage given was checked.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

AMPUTATION

Amputation

The bad results that followed an attempt in the early days to carry out site-of-election amputations had led to the conservation of the maximum length of limb. Flaps were fashioned and small dressings of vaseline gauze held in place over the stump by two or three stitches. The badly damaged tissue in the traumatic amputations was thoroughly excised to prevent serious sepsis, which had been noticed so frequently in these cases. A great number of amputations of the feet were carried out as a result of mine injuries.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SUMMARY

Summary

In surgery, many important advances had been made in the year since the pre- Alamein battles, and surgeons had achieved a high degree of efficiency in the conditions peculiar to war. The low death rate among wounded who reached a medical unit was adequate testimony to this.

Admissions to Field Ambulances, 1943

	Jan		*Feb*		*Mar*		*Apr*		*May*		*Total*	
	Sick	*BC*	*Sick*	*BC*	*Sick*	*BC*	*Sick*	*BC*	*Sick*	*BC*	*Sick*	*BC*
4 Fd Amb												
NZ	15	21	409	6	155	352	309	566	74	15	962	960
Others	17	87	40	1	46	177	101	312	10	7	214	584
PW		10				131		38				179
5 Fd Amb												
NZ	127	33	16		189	83	115	420	69	52	516	588
Others	73	71	1		42	51		72	3	17	119	211
PW						15		27				42
6 Fd Amb												
NZ	130	30			32	249	26	50	39	17	227	346
Others	247	212			20	172	9	30	5	5	281	419
PW		4				79	3	18		1	3	102
	609	468	466	7	484	1309	563	1533	200	114	2322	3431

The New Zealand Division's casualties in Tunisia, March–May 1943, were:

Sick	**1008**
Battle casualties	**1804**

Admissions, etc., 1 NZ CCS

Location	*Period*	*Sick*	*BC*	*Total*	*RTU*	*Deaths*	*Amputations*
Sirte	4–12 Jan	331	154	485	26	4	4
Tamet	14–31 Jan	468	287	755	100	14	1
Tamet	1–8 Feb	60	12	72	89	1	
Zuara	11–26 Feb	305	142	447	75		1
Medenine	27–28 Feb	54	51	105			
Medenine	1–30 Mar	561	975	1536	122	19	16
Teboulbou	31 Mar	17	40	57	2		
Teboulbou	1–8 Apr	37	523	560		16	7
El Djem	13–30 Apr	666	1037	1703	92	10	4
Sidi Bou Ali	1–23 May	870	755	1625	41	13	12
		3369	3976	7345	547	77	45

New Zealand Casualties, Tunisia, 20 March–13 May 1943

Killed in Action	304
Died of Wounds	64
Wounded	1221
Prisoners of War	31

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 12 — ADMINISTRATION AND BASE UNITS, OCTOBER 1942 - DECEMBER 1943

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

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HOSTILITIES had ceased in North Africa with the surrender of Marshal Messe, Commander of the Italian First Army, to Lieutenant-General Sir Bernard Freyberg on 13 May 1943. It was immediately decided that 2 NZ Division would return by road from Tunisia to Egypt and would rest and reorganise in Maadi Camp. The three field ambulances accompanied the divisional troops on their long trek. But after DMS 2 NZEF had conferred with the Medical Directorate, General Headquarters Middle East Force, it was decided that 3 General Hospital, 1 Convalescent Depot, 1 CCS, and NZ Section MAC would all remain in the Tripoli area in the meantime to cope with recent casualties, and also possibly to assist with casualties from the invasion of Sicily.

In order to make room for divisional troops in Maadi Camp it was necessary for the training depots, Reception Depot, and some other base units (numbering in all about 2500 men) to move to a camp at Mena near the Pyramids, a distance of about 20 miles from Maadi. Separate medical arrangements were made for this camp, but cases for admission to hospital were taken by motor ambulance car to 1 General Hospital, Helwan, or 23 Field Ambulance, Maadi, in accordance with previous practice.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FURLOUGH DRAFTS

Furlough Drafts

With the defeat of the enemy in North Africa the New Zealand Government agreed to the personnel of the first three echelons returning to New Zealand on furlough, most of them having served overseas for three years. The first draft of 6000 men under the Ruapehu scheme (the code name for the move) comprised all the married men of these echelons together with 60 per cent of the single men, chosen by ballot. From the Medical Corps the number of other ranks in the draft was 289. It was decided to return fifty members of the NZANS on an exchange basis, and for this total thirty-four volunteered and the remainder were made up by sending those with the longest service, plus a few for health reasons. Medical officers could not be released until replacements arrived and only six returned with the Ruapehu draft, some of them for urgent private reasons, while two were repatriated prisoners of war. Three non-medical officers of the NZMC were released also.

General Freyberg left for New Zealand by air at the beginning of June, conferred with the Government, toured the country reporting most favourably on the troops he commanded, and returned to Egypt on 31 July. On 15 June the Ruapehu draft left in the *Nieuw Amsterdam*.

The remainder of the men of the first three echelons came under the Wakatipu draft and were marched out of their units early in September preparatory to embarkation.

The departure of the furlough draft resulted in many promotions to NCO rank in the medical units and the posting of many reinforcements, but the units soon settled down with little or no loss of efficiency. It turned out that the great majority of the men never returned to the Middle East from furlough in New Zealand; as a result of unforeseen

psychological reactions in New Zealand most obtained their discharge on medical or other grounds.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DEATH OF COLONEL F. M. SPENCER

Death of Colonel F. M. Spencer

The New Zealand Medical Corps suffered a grievous loss on 12 June 1943, when Colonel Spencer, who had been a most capable and popular commander of 2 General Hospital since its formation, died from typhus fever while on a visit to 3 General Hospital at Tripoli. His enthusiasm and earnestness of endeavour were of inestimable value to the Corps. Colonel H. K. Christie was appointed CO 2 General Hospital in his stead.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHANGE OF DMS 2 NZEF

Change of DMS 2 NZEF

On 17 April 1943 Brigadier MacCormick had relinquished the appointment of DMS 2 NZEF, handing over to Brigadier Kenrick, who had returned from a tour of duty to New Zealand. On the eve of his departure Brigadier MacCormick paid tribute to the high technical attainments of the NZMC officers, the unremitting service and ideals of the New Zealand army nurses, the ready adaptability and devotion to duty of the NZMC other ranks, the cheerfulness and very great assistance rendered by the personnel of the NZWAAC Hospital Division, and the courage and endurance of the attached NZASC drivers.

The efficient working of the New Zealand Medical Service as a whole was a tribute to Brigadier MacCormick.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CCS SURGICAL TEAM IN SICILY

CCS Surgical Team in Sicily

The Allied landing on Sicily was made on 10 July. Both the Fifth and Eighth Armies were engaged in the conquest of the island, but the New Zealanders were not part of Eighth Army in this operation, it having been arranged between the United Kingdom and New Zealand Governments that no New Zealand troops would be used operationally before 1 October.

However, six members of 2 NZEF—three medical officers and three orderlies—were engaged on Sicily before being recalled by DMS 2 NZEF as soon as he was aware of their presence there. Early in July Brigadier Ardagh, who was DDMS of 30 Corps, approached CO 1 NZ CCS with a request for a surgical team to take part in the landing on Sicily and so increase the surgical potential of 30 Corps by relieving the surgeons and staffs of field surgical units. The team took no equipment when it embarked in HS *Dorsetshire* on 9 July, as it was to use the equipment of the British FSUs. Off the south-eastern cape of Sicily twenty-four hours later it saw 300 craft anchored or weaving about or up on the beach, but no air activity or audible gunfire. The team remained on the hospital ship 500 yards off shore during the night, during which there was much air activity and also shellfire on the beaches.

After landing the team worked with 3 and 21 CCSs and relieved the staffs of 21 and 22 FSUs in the Corps medical service under Brigadier Ardagh. On 17 July the team acquired some German surgical equipment dropped by parachute, and next day set up a separate theatre alongside 22 FSU in a cottage hospital at Ramacca. The team embarked on a hospital carrier on the 22nd for return to Tripoli, having spent 53 hours operating on 40 cases and rendering valuable assistance, besides gaining

useful experience in working in a densely populated country.

Altogether forty-eight cases came under the care of the surgeon and, in addition, a large number of other cases was dealt with by the resuscitation officer. Four cases died without operation, never reacting to resuscitation, and four were dressed and splinted prior to an immediate move. The type of wounds varied from simple perforating wounds caused by small-arms ammunition to extensive multiple fractures and large gaping wounds caused by mortars and grenades.

There were two cases of gas infection or gas cellulitis, gas bubbles in stinking wounds, but no case of gas gangrene; one case of definite gas gangrene of the leg was operated on by the surgeon of the British FSU.

It was noted that, acting on instructions, wounded of United States and Canadian forces were given 1 cc. of tetanus toxoid instead of 3000 units of anti-tetanic serum as given in the British Army.

The following comments were made by Major W. Mark Brown:

This has been a valuable experience to all of us. It is the first time we have worked in a densely populated country. The Field Ambulances we worked with always chose buildings if possible. This to my mind has very definite limitations as some form of adaptation is always necessary and considerable time and energy is necessary for the preparation. This fact was emphasised by the number of short moves we made, and always for a short period of time. Another disadvantage of short moves is leaving holding parties for serious and abdominal cases. These short moves may have been due to the exigencies of the situation or the reduction of the amount of transport available. I am sure they are to be avoided if possible.

With such limited time to observe, comment on the surgery may be objectionable, but the banking up of cases, as we found at the CCS, seemed to me to be due to all the surgery being done by the FSU. Many of the minor surgical conditions could be dealt with by the staff at the MDS or a minor theatre staff at the CCS. This would leave the surgeon

specialist free for the serious cases.

There is a decided advantage in a large pre-operative ward with all the serious cases under supervision and resuscitation. I had graphic evidence of the advantage of immediate blood transfusion in one case of a mangled thigh when 2 pints of blood pre-operatively and 3 immediately after undoubtedly saved a life. During long continued action the transfusion officer needs spelling.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

3 GENERAL HOSPITAL RECEIVES CASUALTIES FROM SICILY

3 General Hospital Receives Casualties from Sicily

At the request of DDMS Tripolitania, 3 General Hospital expanded for a short period to 1100 beds prior to the Allied invasion of Sicily. The first convoy of any size did not arrive at Tripoli until 20 July, but from then on until the end of the month the hospital admitted 384 patients who came by air from Sicily or Malta, and 254 who came by sea.

It was necessary for a certain number of British hospitals to close, pack, and hold themselves in readiness to move to Italy. In these circumstances the Medical Directorate, GHQ MEF, was grateful for the assistance given by 3 General Hospital in the Sicilian campaign. The heat in Tripoli in July was even more intense than in Egypt and temperatures of over 100 degrees were common, while on eighteen days the temperature in the shade was over 110 degrees.

In August it fell to the lot of 3 General Hospital to take the majority of cases coming from Sicily by air. Its admissions for the month totalled 1740, and of these 1279 arrived by air and 396 by sea, while 65 were from local units. The bulk of admissions were either battle casualties or malaria cases, there being 740 of the latter.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOVES OF 1 NZ CONVALESCENT DEPOT

Moves of 1 NZ Convalescent Depot

Early in March when Advanced Base was being organised at Tripoli, a request was made for a convalescent section, and some of the personnel of 1 NZ Convalescent Depot went to Tripoli, arriving there on 15 March and receiving patients on 18 March. At the beginning of April the depot at Kfar Vitkin was divided into main body and detachment. The main body packed and moved to Benha on 9 April, embarked at Alexandria on 28 April, and reached Tripoli on 3 May after being bombed on the voyage. It joined the advance party at its site one mile from 3 General Hospital. The site was on sandy soil amid acacia trees, and an old fort was used as an administrative block as at 3 General Hospital. The unit joined with 3 General Hospital to line part of the route along which King George VI passed on 21 June on a visit to the Tripoli area.

The detachment of the Convalescent Depot remained at Kfar Vitkin until 24 April, when it moved to Maadi Camp and occupied part of 23 Field Ambulance area and received convalescents from 1 and 2 General Hospitals as formerly.

After much prospecting for a suitable site for the Convalescent Depot, DMS 2 NZEF in July decided on El Arish on the Palestine coast, a site previously used by an RAMC convalescent depot and four hours' motor travel south of Jerusalem. This location again involved train travel, though it was a trip some hours shorter than to the previous site at Kfar Vitkin. The few suitable sites in the Suez Canal and Alexandria areas were wanted for other medical units.

On 16 August 1943, when the main body of 1 Convalescent Depot was packed and ready to move to El Arish, DMS GHQ MEF urgently requested that the depot be allowed to remain in the Tripoli area for a

further four weeks to take British convalescents. The shortage of hospital and convalescent beds in Tripolitania was due not so much to the battle casualties as to the unexpectedly large number of malaria cases admitted from Sicily. It was agreed that the unit should remain to assist in coping with a difficult situation, and the Convalescent Depot was moved by the local DDMS from Suani Ben Adem to Sabratha, on the coast 45 miles west of Tripoli, where a depot complete with patients was taken over from 11 British Convalescent Depot. The site was not altogether satisfactory.

Another shift, this time to Della Madia, 17 miles east of Tripoli, took place on 3 September. Taking with it 350 patients from Sabratha, 1 Convalescent Depot took over a site with concrete buildings from 11 British Convalescent Depot. Here the unit handled British, Canadian, South African, and Free French cases before packing up at the end of September preparatory to going to Italy.

Meanwhile, Detachment 1 Convalescent Depot had moved from Maadi Camp to El Arish on 6 September, taking with it 100 patients, and here received convalescent patients from 1 and 2 General Hospitals until the end of December 1943.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CCS RETURNS TO EGYPT

CCS Returns to Egypt

The CCS had set up a 210-bed, tented 'holding hospital' near Tripoli preparatory to the opening of the campaign in Sicily. It was 20 July before any casualties from Sicily were admitted, and by 25 July it was already apparent that casualties would not be as heavy as anticipated and that the services of the unit would no longer be required by the local DDMS. Accordingly, arrangements were set in motion for the return of the unit to Egypt as soon as sea transport was available, and the unit arrived in Maadi Camp on 12 August.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CONFERENCES

Conferences

Besides the routine administrative conferences, medical and surgical conferences were held in the Middle East Force during this period. A surgical conference was held in March 1943 during which the experiences of war surgery and other surgical problems were exchanged, and this resulted in the laying down of some general regulations for the future, for example, the operative procedure recommended for primary amputation of the limbs. Another surgical conference was held in July, coinciding with the visit of two consultants from South Africa, who gave valuable information as to the late results observed in hospitals in South Africa following surgical treatment in the Middle East Force. A medical conference was held in April at which it was stated that 550 out of every 1000 men were admitted to hospital at least once a year.

A special conference, at which our Corps was well represented, was held at Tripoli in August to discuss the results of the experimental treatment by penicillin of recent war wounds from the Sicilian campaign. The conference was presided over by Professor H. Florey, who had come from England with Brigadier H. Cairns to superintend the investigation. Resulting from the trials came the free and increasing use of penicillin during the Italian campaign.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EDUCATION OF MEDICAL OFFICERS

Education of Medical Officers

Provision was made, whenever there was opportunity, for clinical study, especially for younger medical officers. When the Division was resting, as many officers as possible from field units were attached temporarily to the staffs of base hospitals. Ward clinics, both medical and surgical, were held regularly and medical officers from the Division were welcomed, as they were to the out-patient clinics. Classes were instituted also for sixteen candidates sitting for the examination for membership of the Royal College of Physicians of England. As opportunity arose, a few 2 NZEF medical officers were posted to the Middle East Force courses in tropical diseases, gas warfare, malaria, and blood transfusion. A special course in medicine and pathology at Hadassah hospital, Jerusalem, was also attended by two of our officers.

Arrangements were made for the training of medical officers and technicians in X-ray work both in New Zealand and overseas, it being considered that training for six months for medical officers and twelve months for technicians would be satisfactory.

After the North African campaign had ended a series of discussions was held in Maadi Camp on the problems of medical and surgical work in the forward areas, and the extensive experience gained in the Division was very well debated and evaluated. (At this time orderlies also spent short refresher courses at the hospitals in nursing, operating theatre, laboratory, and venereal disease work, and cooks attended a cooking school at Maadi Camp.)

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

STANDING MEDICAL BOARD

Standing Medical Board

It was 15 March before DMS 2 NZEF was able to establish a Standing Medical Board, which had for some months been deemed advisable but for which no medical officers were available. A board comprising a president and a member, with two clerks, was set up and posted to the DMS's office. Their duties were to carry out the routine medical boards in Maadi Camp, and it was thought that having recommendations from one source only would assist in the problem of arranging suitable employment for graded men.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVISION OF MEDICAL BOARDING

Revision of Medical Boarding

In April after a good deal of discussion, approval was given by Headquarters 2 NZEF to a revision of medical categories for boarding purposes as recommended by DMS 2 NZEF. A terminology more suitable to 2 NZEF was drawn up.

It had become increasingly clear that the terms previously in use did not fit the conditions under which 2 NZEF was operating. The terminology in use had been devised in 1938 by a committee sitting in New Zealand, with the sole object of classifying members of the civil community for service in the armed forces. It had been found that there was an increasingly large number of men with small medical disabilities who were really fit enough to serve in the field, and, in fact, for whose return units asked, as they could be quite well employed on such duties as clerical work or vehicle driving. In recent months, owing to a comparative shortage of manpower, it had become increasingly necessary to ensure that where at all possible suitable personnel of lower medical category than Grade I should be utilised in the Division.

The new grades overcame some difficulties and apparent inconsistencies by a clear separation from the categories originally evolved in New Zealand and the use of the letters A to E for grades instead of numerals 1 to 4. [1] The categories particularly emphasised the venue of employment of the individual in 2 NZEF.

In conjunction with this change, which became effective from 1 June 1943, some revisions were made in the medical boarding form, NZEF Form 22. The system as thus amended remained unaltered until the end of the war.

In regard to medical boarding, DMS 2 NZEF at a conference with commanding officers of hospitals on 15 March said that on the whole the standard of medical boarding in 2 NZEF was very high, and that in not one single case had there been a complaint from New Zealand that reports were inadequate.

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[1] **Grade A—Fit for general service in 2 NZEF. Grade B—Fit for general service except for minor disabilities as specified. Grade C—Fit for service in medical or administrative units on L of C only. Grade D—Fit for service in base camp or base medical units only. Grade E—Unfit for any service with 2 NZEF.**

With reference to Grade B, the disability was to be specified in the man's paybook.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL REINFORCEMENTS FROM NEW ZEALAND

Medical Reinforcements from New Zealand

The dearth of reinforcements from New Zealand for the NZMC in the Middle East came to an end on 8 December 1942, when 59 NZMC other ranks and 10 members of the NZWAAC (Medical Division) arrived on HS *Maunganui*. The cessation of reinforcements throughout most of 1942 had necessitated medical units working with incomplete staffs, and by October medical units were over a hundred short of establishments. On 5 January 1943, when the 8th Reinforcements with 50 other ranks NZMC arrived, the position began to right itself again and 1 and 2 General Hospitals were able to release a number of their acclimatised staff for duty with field units, their places being taken by recent reinforcements.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NINTH AND TENTH REINFORCEMENTS

Ninth and Tenth Reinforcements

The 9th Reinforcements arrived in Egypt on 11 June 1943 on the *Dominion Monarch*, the medical section comprising 1 medical officer, 5 sisters NZANS, and 95 other ranks. These helped to fill some of the deficiencies caused by the withdrawal of 290 of the NZMC in the Ruapehu draft, but it was not until the arrival of the 10th Reinforcements on 18 August that medical units could be built up to full strength again. The new reinforcements went to Mena Camp on disembarkation, except for the medical section which was marched in to 23 Field Ambulance at Maadi and posted to units within a week.

The 10th Reinforcements included 6 medical officers, 20 sisters of NZANS, 2 commissioned dispensers, and 118 other ranks NZMC, including some with the rank of sergeant who had held commissions as 'stretcher-bearer officers' in New Zealand.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RANK OF EIGHTH REINFORCEMENTS

Rank of Eighth Reinforcements

The 8th Reinforcements, NZMC, had trained in New Zealand to form a field ambulance for attachment to an armoured brigade. They were not used for this purpose, but during their service in New Zealand the NCOs had been granted substantive rank. This gave rise to difficulties in administration in 2 NZEF and dissatisfaction among long-service men of the NZMC. After examination some of the NCOs were reduced in rank, but their posting to units, field units especially, naturally gave rise to grievances among men of equal calibre and much longer service who had been superseded in promotion. In respect of the posting of reinforcement NCOs there were explicit rules in 2 NZEF Regulations which had to be followed.

In October 1942 DMS 2 NZEF had asked for a qualified masseur to be sent from New Zealand to assist in the massage department at 1 Convalescent Depot, which was controlled by a qualified masseur of NCO rank. In New Zealand there was much more liberality generally as regards commissioned rank in the NZMC (stretcher-bearer officers being a notable example) and commissions were granted to masseurs. The qualified masseur arrived from New Zealand with commissioned rank and this created a dilemma, and there was no alternative but to grant the long-service NCO commissioned rank.

This matter did not affect the NZMC alone, and the immediate opinion of the Officer-in-Charge Administration and the Military Secretary, Headquarters 2 NZEF, was that the reinforcement officer should be returned to New Zealand as the promotion of the NCO was likely to lead to requests from other personnel with special qualifications, not only in the Medical Corps, for commissioned rank.

The fact that the officer had been sent from New Zealand specifically to meet a necessary medical requirement owing to lack of other qualified personnel in 2 NZEF led to his retention, although in all justice masseurs should not have been commissioned ahead of others such as dispensers.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

STAFFING OF NEW ZEALAND MEDICAL CORPS

Staffing of New Zealand Medical Corps

During this period there were difficulties in the staffing of medical units, in spite of the fact that the furlough scheme did not apply to medical officers because replacements could not be supplied from New Zealand. In June 1943 it was recorded that 73 medical officers had been lost to 2 NZEF up to that time; 42, mostly invalids, had returned to New Zealand; a few had been transferred to senior appointments with the Pacific force, 5 had been killed in action, 3 had died, and 23 were still prisoners of war. Only seven medical officers arrived with the reinforcements during the fifteen months to 31 December 1943.

With the shortage of doctors in New Zealand in 1942 and the demands of Home Defence and Pacific forces to be met as well as those in the Middle East, there had been some civilian criticism of the number of medical officers required for duty with troops overseas. In this connection DMS 2 NZEF prepared an interesting table setting out the position in 2 NZEF on 19 November 1942, whereby it was clearly shown that the ratio of medical staffs to patients in 2 NZEF medical units was much less than in comparable civil institutions in New Zealand.

	No. of Patients	*MOs*	*Sisters*	*WAAC*	*NZMC Orderlies*
1 Gen Hosp	1001	20	85	76	169
2 Gen Hosp	668	17	57	45	153
3 Gen Hosp	731	20	85	68	162
23 Fd Amb (Camp Hosp)	252	4			75
1 Conv Depot	944	4			15
1 Rest Home	11		1	1	
2 Rest Home	81	1	1	3	15

3 Rest Home	49		1		1
Totals	3737	66	230	193	590

The DMS 2 NZEF commented:

Thus it will be seen that for 3737 patients there are 66 medical officers. If we compare this with one of our metropolitan hospitals, say Auckland Hospital, we see there are at least 22 residents, 7 stipendiary medical officers and 56 part-time medical officers, a total of 85 for some (?) 800 patients. The rest of the table affords similar comparisons; 230 Sisters—trained nurses; 193 part-trained nurses; and 590 orderlies many of whom are employed as cooks, porters, etc.

Though the conditions were not strictly comparable, the comparison did show that the military hospitals were not overstaffed.

There was a constantly recurring complaint of shortness of medical officers in the hospitals, mainly on the surgical side, during the latter part of 1943. The Consultant Surgeon pointed this out in a special report in October, stating that the position was such that the treatment of serious casualties might become difficult. This position had been brought about by the return of senior medical officers to New Zealand, and also by the appointment of specialists to administrative posts in the Division. No orthopaedic surgeon was available in the force, two of the three active orthopaedic surgeons having been invalided to New Zealand, and the third promoted to command a field ambulance. At the same time the general surgeons were depleted, twelve senior men having been evacuated to New Zealand. At the end of 1943 there was also a shortage of eye, ear, nose and throat specialists as well as anaesthetists. Special efforts were made to train six young surgeons at the base hospitals and the CCS in an endeavour to relieve the situation.

Very few of the younger officers had had the previous surgical training to be capable of being rapidly and efficiently taught in base hospitals so as to bring them up to the standard required for surgical

teams with the field ambulances or casualty clearing station. In Italy, surgery in the medical units was maintained at its high standard only by the available surgeons exerting themselves to the utmost, especially in the forward areas.

Suggestions from the National Medical Committee in New Zealand that economy of medical officers be effected by disbanding one of the base hospitals were again stoutly rebutted by the DMS 2 NZEF in October 1943. It was pointed out that the New Zealand Force was very scattered (in Egypt and Italy) and the tactical situation was such that without three hospitals the medical service would lose the flexibility so necessary for efficiency.

During the time 2 NZEF had served overseas two hospitals had each moved on five occasions, while the other had been called upon to make four moves. In all, therefore, there had been fourteen 'hospital moves'. To pack up, move, and reopen a hospital took two months or longer. Thus for at least twenty-eight months (14 by 2), and probably longer, 2 NZEF had already worked on a two-hospital basis. It so happened that almost always there was one hospital on the move. This had been made necessary by the moves of New Zealand troops to England, Egypt, Greece, Crete, Western Desert, Syria, Tunisia, and Italy, and by the desire of all concerned that New Zealand sick and wounded, wherever possible, should be looked after in New Zealand hospitals.

It was also pointed out that we had been able to reciprocate in some measure by looking after British and other forces in our hospitals in return for the considerable amount of work done for our men in the British hospitals. It would have been wrong to have expected Britain, with her large number of civilian casualties caused by the bombing of her cities, to carry an extra burden by looking after our sick and wounded in the Middle East as well as carrying the whole of the administrative burden. Rather should our force have accepted some of the clinical burden by looking after British cases, and it is very gratifying to record that that happened, especially when 3 General Hospital was located at Beirut, and to a lesser extent at Tripoli, and

throughout the war at Helwan hospital.

In retrospect, it would have been difficult to look after all our 2 NZEF patients in two general hospitals, even though so many battle casualties were admitted in their acute stages to British hospitals, and the incidence of infectious disease was not generally high.

The admission of many of our Division's cases to British hospitals, however, especially in the Canal Zone, lessened the strain on our own hospitals, which were never overtaxed, even when the epidemic of hepatitis was at its height. Arrangements were made for the transfer of New Zealand cases to our own hospitals for administrative convenience, especially to enable the serious cases to be boarded and prepared for evacuation to New Zealand.

On 18 September 1943 Majors Caughey [1] and D. McKenzie returned to 2 NZEF after serving for some nine months with 1 British Neurosurgical Unit at 15 Scottish General Hospital. They had been specially asked for in February 1943, and the Consultant Surgeon MEF had expressed appreciation of the valuable and timely help they had given in specialised surgery when all formations were working at high pressure on the casualties in Tripolitania and Tunisia, and the provision of skilled care for the neurosurgical cases at the base became imperative.

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[1] **Col J. E. Caughey, m.i.d.; Dunedin; born Auckland, 8 Aug 1904; physician; physician 2 Gen Hosp May 1940–Feb 1943; 1 NZ HS *Maunganui* Nov 1943–Jun 1944; in charge medical division 2 Gen Hosp Jul 1944–May 1945; CO 3 Gen Hosp May–Oct 1945.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

APPOINTMENT OF SENIOR CLERKS AS REGISTRARS OF HOSPITALS

Appointment of Senior Clerks as Registrars of Hospitals

In order that the medical officer in each hospital performing the clerical duties of Registrar could be released for purely medical duties, it had been decided earlier to promote the senior clerks, who were staff-sergeants, to commissioned rank as Registrars. This change was effected at 3 General Hospital in November 1942, at 1 General Hospital in December, and at 2 General Hospital some months later. Similarly, at a later date, it was arranged for NCOs to receive commissions and take the place of company officers in hospitals, releasing more medical officers for professional duties. At first, graded officers from combatant units were appointed as company officers, but later a change was made in favour of purely NZMC personnel.

In these appointments it was found that there was no loss of efficiency and, as members of the Medical Corps, the new appointees had an adequate medical background for their positions. In the future staffing of military hospitals there is no reason why the appointments of Registrar and Company Officer, as well as the quartermasters of medical units, should not be filled by suitable 'non-medical' officers.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DISPENSERS APPOINTED TO COMMISSIONS

Dispensers Appointed to Commissions

Whereas in 2 NZEF in the Middle East senior qualified dispensers could hold only the rank of staff-sergeant or sergeant, in four units in New Zealand, on HS *Maunganui*, and at 4 General Hospital 2 NZEF (IP) the senior dispensers held commissions. To rectify this anomaly the war establishments of 1, 2, and 3 General Hospitals, 1 CCS, and 23 Field Ambulance were altered to permit the senior dispenser to hold the rank of second-lieutenant, and on 4 July 1943 these dispensers were commissioned.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INCREASE IN NUMBER OF CHARGE SISTERS IN GENERAL HOSPITALS

Increase in Number of Charge Sisters in General Hospitals

The Matron-in-Chief had raised the question of granting promotion and/or increases in pay to senior sisters who were in more responsible positions in hospitals. The matter gave rise to a good deal of discussion between medical administrators as it was not easy to select a small number of sisters for special treatment in this respect. Headquarters 2 NZEF ruled against pay increases, but eventually approved increases in establishment whereby there would be eight charge sisters in a 600-bed hospital and twelve in a 900-bed hospital, dating from 1 March 1943. In notifying the Matron-in-Chief and officers commanding general hospitals of the increase in establishment, DMS 2 NZEF stated that it was to be regarded as a generous appreciation of the work of the NZANS.

As at 28 February 1943, the strength of the NZANS in 2 NZEF stood at 245, of whom only eleven were charge sisters or above. The position was that a member of the NZANS received an increment of pay after two years' service in 2 NZEF, but the possibility of further increases was limited. Vacancies in the higher appointments of the nursing service did not occur very frequently, it being pointed out that, at that time, there had been no change in the Matron-in-Chief or in the matrons of the three general hospitals since the persons holding these appointments had gone overseas. It appeared reasonable, therefore, to increase the number of charge sisters.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

VOLUNTARY AIDS—NZWAAC (MEDICAL DIVISION)

Voluntary Aids—NZWAAC (Medical Division)

The voluntary aids (whose corps name had been changed from Women's War Service Auxiliary to Women's Army Auxiliary Corps in conformity with the change made in New Zealand) had also proved themselves valuable members of the hospital staffs, and Colonel Pottinger, CO 1 General Hospital, in a report of December 1943 made the following comment:

Most of the WAACs have been here for nearly two years, during which time they have done their work with great efficiency.... Lately quite a number have been transferred to other hospitals where we hope they will carry out their duties in an equally satisfactory manner. There is no doubt that the presence of the WAACs adds very greatly to the efficiency of a hospital of this kind, and in fact, I do not see how we could have carried on without them. Many VADs have been able to look after minor wards to the satisfaction of everybody.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

STRENGTH OF UNITS—OTHER RANKS

Strength of Units—Other Ranks

The strength of the medical units as regards other ranks at 21 August 1943 (before posting of the 10th Reinforcements) was:

	Establishment	*Posted Strength*
1 Gen Hosp	183	154
2 Gen Hosp	148	115
3 Gen Hosp	183	164
1 CCS	112	104
23 Fd Amb (Camp Hosp)	76	63
4 Fd Amb	177	140
5 Fd Amb	177	145
6 Fd Amb	177	157
4 Fd Hyg Sec	24	22
6 Div Hyg Sec (Base)	28	12
101 VDTC	10	9
102 Mob VDTC	10	9
DMS Office	14	13
ADMS Office	6	5
SMO Office (Maadi Camp)	3	3
Medical Stores Depot	7	6
1 Conv Depot	9	10
2 Rest Home	10	10
3 Rest Home	2	2
MAC	7	7
2 Transfusion Unit	2	2
Railway Group (attached)	3	1
Forces Club (attached)	2	1
	1370	1154

A number of the members of the different units were on the sick list,

but if they were added to the posted strength there was still a shortage of 70 men.

Staff changes during the year were considerable, partly because of furlough drafts, and partly because of the policy of giving sisters and voluntary aids a change by posting them to other New Zealand general hospitals. Staff changes at 1 General Hospital during 1943 are shown in this table:

	Marched in	*Marched out*
Medical Officers	35	41
NZANS	69	82
NZWAAC	46	64
Other Ranks (furlough only)		68

At the end of the year the hospital was considerably short of staff, and this entailed harder work and longer hours. Deficiencies in establishment were 9 medical officers, 11 voluntary aids, and 44 other ranks. Some twenty-six graded men had filled vacancies caused by the departure of other ranks, but Colonel Pottinger was not very satisfied with their ability, making the comment: 'Once a man is graded his mental outlook seems to alter and very few of the graded men compare favourably with the original members of the NZMC.'

Admissions to NZEF Base Medical Units, 1 October 1942–31 December 1943

	1 Oct–31 Dec	*1 Jan–31 Mar*	*1 Apr–30 Jun*	*1 Jul–30 Sep*	*1 Oct–31 Dec*
1 Gen Hosp	2094	2159	2615	4868	2581
2 Gen Hosp	1792	1128	1385	968	799
3 Gen Hosp	3050	630	2186	3216	2269
1 Conv Dep	3080	705	1590	1734	424
1 Camp Hosp	1273	643	852	1017	500
2 Rest Home	253	476	437	387	344
3 Rest Home	292	117	131	184	117

This table of admissions from the month of the Battle of Alamein to the beginning of the period in Italy gives an indication of the steady work base medical units were called upon to perform. Medical cases predominated in number over surgical cases. The number of cases received by each hospital depended largely on the situation of each individual hospital in relation to the line of evacuation from the Division, and also to the proximity of each to base camps. For the latter reason admissions to 1 General Hospital were consistently higher than those to 2 General Hospital (a smaller unit), especially for the quarter July to September 1943 when all 2 NZEF was at Base in Maadi and Mena camps. For much of the period 3 General Hospital admitted mostly other than 2 NZEF patients as it functioned at Beirut after the transfer of the Division from Syria, and at Tripoli after the return of the Division from Tunisia.

Admissions to the Convalescent Depot, 2 Rest Home, Alexandria (for other ranks), and 3 Rest Home, Cairo (for officers) were, of course, almost all transfers from the hospitals. The numbers admitted to Maadi Camp Hospital are rather striking and emphasise the importance of this unit in dealing with minor cases and relieving the general hospitals.

In the quarter October to December 1942 nearly half (950) of the admissions to 1 General Hospital were cases of infective hepatitis, mostly from the Division in the Alamein line. The incidence of both dysentery and malaria was subsiding at this season. (The accommodation at Helwan had been increased to a crisis expansion of 1250 beds; the sanitary services had been improved by the installation of water carriage and septic tanks; very adequate theatre facilities with steam sterilisers had been installed, as well as excellent radiological and bacteriological facilities and a splint shop. The standards of a first-class civilian hospital had been attained.)

In 1942 1 General Hospital admitted 10,881 patients at Helwan. At 2 General Hospital, with a smaller establishment, there were 6377 admissions in 1942, and at Beirut 3 General Hospital treated 11,306

patients in 256 days. Nor do statistics of the number of patients admitted give the full picture. For instance, at 1 General Hospital the number of out-patients in 1942 was 7310, and 2880 medical boards were completed. Incidentally, it is interesting to note that over 1,000,000 meals were supplied to patients and staff of 1 General Hospital in 1942, the quantity of food and fuel being over ten tons daily, while more than 3600 jobs on repairs and maintenance were completed, some taking only half an hour, others six weeks.

In the October to December 1942 quarter there were increased numbers of convalescents admitted to the Convalescent Depot who had been suffering from infective hepatitis and amoebic dysentery. A number of the hepatitis cases had to have a diet reduced in fats to avoid indigestion. These cases often required prolonged convalescence because of the marked debility following the infection, and relapses were common. The depot admitted 631 battle casualties during the quarter; those admitted in October and November were of moderate or slight severity; those admitted in December were of greater severity and required more dressings, as well as a longer convalescence because of muscle wasting. The majority of convalescents were discharged to the Reception Depot, Maadi Camp, only 5 per cent being transferred to general hospitals for further treatment of their original or for a supervening condition. The location of the Convalescent Depot in Palestine so far from the hospitals in Egypt meant that convalescents were subjected to fatigue and discomfort on the journey to the depot, and this led to consideration of the removal of the depot to a site nearer Egypt. Eventually the depot was moved to Tripoli to be near NZ Advanced Base at Suani Ben Adem, but by the time it was established enemy resistance had collapsed in Tunisia and, like 3 General Hospital, the depot treated British convalescents including malaria cases from Sicily. In the meantime a detachment of 1 NZ Convalescent Depot left at Kfar Vitkin had moved to Maadi Camp in April and to El Arish in September.

In the summer of 1943, with nearly all 2 NZEF in or near Maadi

Camp, the hospital at Helwan found that its medical admissions averaged 1000 for each of the months July, August, and September and that between 500 and 600 beds were constantly occupied by medical cases. During July the hospital worked to its fullest capacity, the total number of patients admitted during the month being 1762, a record for the unit. In spite of the transfer of three convoys each of fifty patients to 2 General Hospital and the departure of a further draft of sixty-six on HS *Maunganui* on 22 July, the average bed state was 871. There were also many out-patients, 2089 in June and 1110 in July. Medical officers and orderlies from field medical units were attached to the hospital during the month for clinical training and to augment the staff during this busy period.

Apart from the typhoid outbreak, there was an easing of medical work at Helwan in the last quarter of the year with the onset of autumn and the movement of the Division to Italy. A special mental block was opened at the hospital at this time and relieved the hospital staff of a great deal of worry, as well as providing very satisfactory facilities. Trained male nurses had complete control of the nursing of patients in this block.

While 2 General Hospital at El Ballah passed through a fairly quiet period after the end of the campaign in Tunisia, 3 General Hospital had a strenuous time in the heat of the summer at Tripoli. Patients were first admitted into its tented wards there on 10 April, and 740 battle casualties and 1446 other cases (865 medical) had been admitted by the end of June. The next quarter was a very busy one with 3216 admissions, of whom exactly half were surgical, including 679 battle casualties from Sicily after the invasion in July. In the medical cases there were 851 cases of malaria, mostly from British troops in Sicily.

In the year 1943 at Helwan 1 General Hospital admitted 12,642 patients to bring the admissions for its twenty-eight months at Helwan to 26,244, which was 937 per month or about 30 a day. Of the admissions for 1943, 2 NZEF patients comprised 71·07 per cent, British Army and RAF 24·95 per cent and others 3·97 per cent. Deaths in

hospital in 1943 were 39, or ·308 per cent of admissions. During the year 1999 medical boards were completed, an average of over 38 a week.

2 NZEF—Admissions to Medical Units, 1 October 1942–30 Septembe

Disability	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*
Dysentery	165	111	82	56	30	42	39	87	205	293	142
Diarrhoea	132	79	31	32	37	31	52	80	141	90	87
Infective hepatitis	941	793	450	95	42	20	16	19	27	40	34
Malaria	99	52	19	16	25	37	31	26	39	39	52
Respiratory disease	101	50	64	83	91	80	66	81	74	174	180
Venereal disease	64	75	66	34	40	35	34	41	45	70	55
E and ENT disease	171	74	120	87	105	60	81	69	89	253	311
Skin disease	98	94	120	97	130	97	81	82	80	125	123
Nervous disease	124	72	75	89	96	184	194	134	75	86	90
Influenza	32	13	15	13	37	29	19	13	14	58	59
Sandfly fever	64	34	13	1		2	15	24	55	78	62
Typhoid			3	2	2					2	10
Accidental injuries	248	225	232	174	318	242	243	213	279	305	288
Battle casualties	140	1,299	226	113	31	492	669	93			
Other	1,295	919	896	730	922	736	690	692	827	930	910
Total	3,674	3,890	2,412	1,622	1,906	2,087	2,230	1,654	1,950	2,543	2,40

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF TROOPS

Health of Troops

A study of the table for admissions to medical units during the year up to 30 September discloses that the health of 2 NZEF was uniformly good, both in the long campaign from Alamein to Tunis and also during the period of rest and refitting at Maadi Camp.

The epidemic of infective hepatitis in the autumn of 1942, already mentioned, produced the greatest increase of admissions. Bacillary dysentery remained a common infection and each fresh body of reinforcements temporarily increased the number of admissions to hospital. Amoebic dysentery was responsible at times for 8 per cent of the total dysentery cases, especially after the Division had been in Syria, where the incidence was higher than in Egypt. Most of the dysentery cases responded well to sulphaguanidine and the average stay in hospital was about eight days. In Shiga infections the benefit of sulphaguanidine was enhanced by the use of anti-dysenteric serum, but the benefit of sulphaguanidine in chronic bacillary dysentery was only transitory and such cases were evacuated to New Zealand.

Malaria cases were relatively few; the Division was never in a highly endemic area during the malaria season and only occasional cases arose in Egypt, especially during the Nile flood. Of the 505 malaria cases reported in 2 NZEF from July 1941 to the end of March 1943, some 261 had become infected in Syria, where the Division was located for only the first month or so of the 1942 malaria season. The types of infection in these 505 cases and their 124 relapses were:

	Primary	*Relapse*
BT	**438**	**113**
MT	**24**	**9**

Q	5	
Clinical	38	2
	505	124

An epidemic of typhoid fever beginning in September principally affected the recently arrived 10th Reinforcements accommodated at Mena Camp and it continued until December, by which time there had been 169 cases with three deaths. It was considered likely that there were a number of sub-clinical cases who either did not reach hospital or who were treated as PUO (pyrexia of unknown origin) without any certain evidence of typhoid infection. There were other outbreaks among British troops at the time, but nearly all the New Zealand cases were due to D strain typhoid bacilli, and it was almost certain that the epidemic was spread from a carrier who worked on fatigue duties in a cookhouse at Mena Camp. This man was admitted to hospital with an acute cholecystitis from which D strain typhoid bacilli were grown from the gall bladder post-operatively. It was thought that some of the TAB vaccine used for inoculation of the troops in New Zealand did not give adequate protection against this strain of infection. The 10th Reinforcements were all re-inoculated with RAMC vaccine, which was followed frequently by severe reactions. Although there were only three deaths during the epidemic, many cases were very severely affected and pyrexias were prolonged and relapses frequent. In the typhoid wards of 1 General Hospital there were between eighty and one hundred cases severely ill at the one time. As a precaution, following this epidemic, the interval between inoculations in 2 NZEF was reduced from a year to nine months.

Pneumonia was responsible for a significant number of hospital patients, with peak numbers in the winter months. From July 1941 to 31 March 1943 there was a total of 218 cases, of which 54 were diagnosed as broncho-pneumonia; of the lobar pneumonia cases six died, and only three developed empyema. The results were due to the almost specific effect of sulphapyridine, later displaced by the less toxic sulphadiazine.

Sandfly fever continued to provide small numbers of patients but there was no epidemic at this period, and under the classification of PUO there was always a variety of short-term pyrexial illnesses for which definite diagnosis was often impossible.

A few cases of smallpox arose, sufficient to render it advisable to revaccinate the force. For the nursing of diphtheria cases the sisters were immunised after Schick testing, and a recommendation was made that sisters in all future reinforcements be immunised in New Zealand. Special care had to be taken to guard against diphtheritic infection of wounds, as infected wounds were slow to heal and in some cases were associated with polyneuritis.

For military reasons little publicity was given to a typhus epidemic which occurred in Egypt in June 1943, principally among the civilian population. About 400 cases a week, with a 25 per cent death rate, were reported in the Cairo area. There was insufficient vaccine available to immunise the whole of 2 NZEF, but enough was obtained to give the necessary three injections to hospital staff and to medical units, such as field and base hygiene sections, whose work brought them into contact with lousy natives. When more vaccine came to hand the whole force was inoculated.

The epidemic did not affect 2 NZEF, which had suffered only four deaths from typhus to that date. Units continued to carry out regular inspections to detect any cases of lice infestation.

In this connection it should be mentioned that Base Hygiene Section had a most thorough system for the disinfestation of native labourers employed in Maadi Camp.

A considerable number of cases were diagnosed as PUO in the forward areas, as an immediate exact diagnosis of many short-term fevers was impossible. The less severe cases making a complete recovery from one to four days were retained in forward medical units and discharged to their units. The more severe cases and those with a more

prolonged fever were evacuated to the base hospitals, where a definite diagnosis was finally made in practically all the cases. The commonest conditions thus encountered were otitis media, sinusitis, prostatitis, pyelitis, rheumatic fever, catarrhal enteritis, bacillary dysentery and infective hepatitis.

Besides the infective fevers, the medical conditions of most importance to the force were the neuroses of many types, some surgical in nature. The battle neuroses cases, for which the diagnosis of physical exhaustion was introduced at this period, were dealt with (except for the severe cases) in the forward areas, where after a period of complete rest they were returned to their units. The cases evacuated to the base hospitals were given similar treatment and the mild cases were again sorted out and quickly sent to Reception Depot for return to their units. Unless this was done there was little prospect of these men ever being fit for the front line again.

The majority of the neurosis cases were of no further use except at Base, and over one-third were generally sent back to New Zealand. The non-battle neuroses arising from an inherent psychological weakness in the individual continued to be responsible for the downgrading of large numbers of men and considerable loss of manpower. The manifestations were many, but in particular were seen in dyspepsia, in headache following old concussion, in foot fatigue associated with minor degrees of foot abnormality, and in vague rheumatic disorders.

Dyspepsia remained a common condition and was investigated in hospital to exclude organic conditions such as ulcer. The majority of cases were found to be functional in origin and quite unsatisfac- tory as regards treatment and rehabilitation. Few who were hospitalised were ever fit for front-line service subsequently. There was a marked increase in cases of physical and nervous exhaustion among battle-weary troops as the North African campaign drew to a close.

Accidental injuries constituted a steady proportion of hospital admissions—in February 1943 one-sixth of the total. Traffic accidents

were common, as also were burns, and casualties arose in sports such as Rugby football.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

UNFIT AND WAR-WORN MEN

Unfit and War-worn Men

The employment of graded men raised many problems. During October 1942 it had become apparent that there had been considerable accumulation in base depots of men who, while not requiring hospital or convalescent depot treatment, were unfit to be sent to rejoin divisional units. For instance, in the Infantry Training Depot, out of some 700 men it was found that only twenty-three were fit to go forward when a demand for reinforcements was made. Similar conditions obtained in other depots. Conferences disclosed that in a measure this was due to the necessity for clearing accommodation in hospitals and the Convalescent Depot for casualties from the Alamein offensive, and also to the lack of accommodation at the Reception Depot, where men discharged from hospital were received on their return to Maadi Camp. After a preliminary survey by experienced RMOs it was decided to board all men considered unfit to rejoin their units. Three special boards were assembled for this purpose, and consideration was given to the forming of a Standing Medical Board when there were medical officers available. (This was formed in March 1943.) A survey showed that between May and November 1942 1013 men had been medically down-graded at 1 and 2 General Hospitals and 2376 at Base Camp.

A detailed survey of the position revealed many reasons for the large congregation of 'temporarily unfit' men in Base Camp. Some men were attending the out-patient department at 1 General Hospital for specialist out-patient treatment; others were awaiting operations at 1 General Hospital, but these had been postponed on account of the rush of battle casualties; others had returned from Convalescent Depot but still suffered from general debility; others were mild cases of anxiety neurosis who would have been a liability in the field unless fully recovered; others

with defective vision were awaiting new spectacles; some had painful scars from healed wounds, and there were some with foot complaints, including Maoris who, with their broad feet, found the ordinary army boot unsuitable.

It was realised that this congregation of unfit men in Base, some for indefinite periods, led to deterioration. The long periods of idleness and ennui spent in base camps by all soldiers were multiplied in the case of the unfit, and few of these could submit to them without feelings of exasperation and frustration.

Appropriate measures were taken to remedy the position. Men who were permanently unfit but had never been graded as such were medically boarded, some for return to New Zealand. With the return to more normal conditions after the rush of battle casualties and the infective hepatitis epidemic, it was made a rule that 1 Convalescent Depot and the Rest Homes should not discharge cases until they were fit for depot training, and a more rigorous system of battle training was introduced at the Convalescent Depot with success. In addition, it was stressed that the processes of passing through Reception Depot should be expedited, but that Reception Depot should not pass on unfit men to unit depots. There was also a reduction in the waiting time for routine operations. The mild cases of anxiety neurosis and physical exhaustion continued to constitute a problem, but for the minor cases an effort was made to get these men back to their units quickly.

Then, again, there was a good case for the better management of a case where the constitutional breakdown was likely to be permanent as far as front-line service was concerned. For instance, suitable employment at Base was a paramount factor.

This matter of employment was given emphasis by the Consultant Physician 2 NZEF, who devoted much time to these cases. Men graded for nervous disorders were still maladjusted after arrival in Base Camp, and still required help and encouragement. The greater the care and common-sense attention devoted to them at this stage, the lesser would

be the problem of final rehabilitation for civilian life. It had to be recognised that many of these men were disappointed in themselves, and very sensitive. It did no good to add insult to injury, and uncongenial employment, or an unbefitting occupation, was degrading and demoralising and aggravated the disability.

In this connection it was decided at a conference of senior administrative officers at Headquarters 2 NZEF on 13 January 1943 that a 'Super-Employment Officer' be appointed, with powers not only to settle graded men in jobs but also to act as an inspector and make sure that all men were as suitably employed as possible.

The Employment Officer no doubt provided some improvements in the employment of graded personnel in Maadi Camp, but it is just as certain that for many men with nervous disorders there was no adequate adjustment that could be effected in the circumstances, and their disorders remained in a semi-permanent state overseas.

To serve a double purpose—the useful employment of some of the graded men and the reinforcement of base medical units—it was approved in December 1942 that likely Grade II men in Maadi Camp should be attached as opportunity offered to general hospitals (including 23 Field Ambulance). If suitable, such men were transferred to the NZMC, and in the main were employed on 'general duties'. In subsequent months a number were absorbed into the NZMC in this way.

On the subject of unfit or war-worn men the OC Medical Division 1 General Hospital, in his report for the quarter ended 31 March 1943, made the following comment:

The most trying and certainly the greatest part of the work has consisted in trying to assess and dispose of the large numbers of men who are chronically ill with minor complaints, such as vague pains, backache and dyspepsia. In many it is the natural combination of prolonged field service, age in the late thirties, and a general weariness. To be fair to all is very difficult as many have not given really useful

service at any time and are very introspective and health-conscious. There is practically no malingering but many make the most of what are really minor complaints. There are those also who are really worn out and unfit for any further field service. Fibrositis is a common diagnosis which covers vague backaches, and pains in and around joints when there is no external evidence of disease. These men often fail to respond to any form of therapy and are frequent callers at RAPs wherever they are. Functional dyspepsias are more common than organic gastric diseases and often date from some unpleasant battle experience. They also fail to respond to any form of therapy. All these cases receive considerable care and attention and frequently have a prolonged stay in hospital before being placed in what is considered their correct grade. Men with three years' service are frequently not fit for further service overseas.

In an investigation the Consultant Physician, Colonel Boyd, found that from 1 September to 31 December 1942, 139 cases of functional neurosis had passed through the Reception Depot from medical units: of them 63 (44·6 per cent) were graded I and returned to their units, 61 (42·6 per cent) were graded II or III for base duties, and 14 (10·8 per cent) were graded for return to New Zealand. From May 1941 to December 1942, 920 cases of psychoneurosis had passed through hospital, and they necessitated 1204 medical boards, which resulted in the following gradings: I and IA 8·2 per cent; II and III 50·9 per cent; and NZ Roll 40·7 per cent. In his report Colonel Boyd said:

It is obvious that nothing can be done to diminish the precipitating causes which are the very essence of active service, though it is a well known fact that the better disciplined the troops the fewer cases of nervous upset. It is clear too that the more careful the selection of recruits, and the greater the prophylactic care shown in the case of the man who proves unstable, the less the incidence of neurosis will be. This latter duty is primarily the function of the unit medical officer and his diligence in this respect may be reflected in the relative incidence of neurotic breakdowns in different battalions exposed to equal stress and

strain.

In an investigation at 3 NZ General Hospital at Tripoli from 10 April to 31 May 1943, it was found that 72 NYD N [1] casualties and 478 organic battle casualties were admitted from units of the Division. The final diagnoses of the NYD N cases were: Anxiety neurosis, 55 cases; physical exhaustion, 11 cases; effects of concussion, 4 cases; hysteria, 1 case; and psychosis, 1 case. Their length of service in the Middle East was: Less than six months, 19 per cent; six to twenty-four months, 26 per cent; over two years, 51 per cent; not stated, 4 per cent. The 72 cases came from 19 units but there was no very marked difference between units, except for one group of 12 who had been subjected to continuous shelling for forty-eight hours. Long-service men suffered a gradual deterioration whereas recent reinforcements often broke down rapidly. Of the cases of physical exhaustion, 10 were returned to their units and 1 downgraded. Of the others 22 were returned to their units and the other 39 down-graded, including 3 for return to New Zealand.

After the conclusion of the Tunisian campaign it was found necessary to board medically for physical and/or mental exhaustion a number of men who had been through a succession of heavy battles. A number were returned to New Zealand, including some from the Maori Battalion who were exhausted and whose condition was not expected to improve on base duties. (In the Maori Battalion the incidence of psychoneurosis was low, just as among returned servicemen in New Zealand the number of Maoris claiming war pensions for neurosis was comparatively much lower than the European rate.)

All the hospitals had developed occupational therapy for cases of anxiety neurosis and found it of benefit for surgical patients as well.

At 31 July 1943 there were 53 officers and 2197 other ranks down-graded in 2 NZEF, the most common disabilities being: Functional nervous diseases 676; battle wounds 406; foot disabilities 217; accidental injuries 151; ear 104; cardio-vascular 76; eye 75; fibrositis 72; arthritis 72; gastro-intestinal 157.

[1] **Not yet diagnosed (nervous).**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

OUT-PATIENTS

Out-patients

Large numbers of out-patients from the base camps continued to be referred to Helwan hospital for consultation, especially the eye, ear, nose and throat, and orthopaedic cases. There was some criticism that this was overdone, but it did enable prompt decisions to be made as to treatment and any necessary grading, especially when the Division was at Base.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

OPHTHALMIC WORK

Ophthalmic Work

An interesting summary was made of the work done at the Ophthalmic Department at Helwan, covering both 1 and 2 General Hospitals, from 1940 to 31 December 1943. It covers out-patients as well as in-patients.

	NZ	*British and Others*	*Total*
Total new cases	**6800**	**1972**	**8772**
Spectacles ordered for	**2090**	**922**	**3012**
Superficial infections			**2521**
Battle casualties			**252**
Accidental injuries			**366**

In addition, 306 men were regraded, 198 for return to New Zealand and 108 for base duties. The number of men in whom the disabilities were present at enlistment was estimated at 200. Battle casualties were not included in these figures for medical boards. At this stage the number of men in 2 NZEF who had lost one eye was 51, while two had lost both eyes and ten had contracted sockets. The number of men requiring regrading soon after their arrival in the Middle East had dropped away considerably following the careful investigation of reinforcement drafts by the mobile optician units in New Zealand.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF NZANS AND NZWAAC

Health of NZANS and NZWAAC

Although the health of the women's services in 2 NZEF was satisfactory the climatic conditions and the strain of the work led to the decision to repatriate to New Zealand all nursing sisters with three years' service overseas, or who were over 40 years of age, except for a few in senior positions.

In August 1943 Colonel Boyd investigated the comparative sickness incidence in sisters and voluntary aids over the period January 1942 to May 1943. At this time there were in the Middle East 244 nursing sisters and 193 voluntary aids. Of the former, 118 (48 per cent) had had some form of illness occasioning 201 admissions to hospital and the loss of 3673 working days. Of the 193 voluntary aids, 170 (88 per cent) had had some form of illness, accounting for 337 hospital admissions and a loss of 7644 working days. The average loss of working days for each individual sick was 31·1 days in the case of sisters and 44·9 days in the case of voluntary aids. In other words, the recovery of the latter was slower. Infections were the most frequent cause of indisposition and accounted for 31 per cent of all admissions of sisters and 51·8 per cent of admissions of voluntary aids. Colonel Boyd concluded that, as the voluntary aids did not arrive in Egypt until January 1942, it was reasonable to expect that the high susceptibility of voluntary aids would diminish, as immunity developed following repeated exposure. The following table shows the conditions which were the most frequent cause of indisposition:

Disease	*NZANS*	*NZWAAC (Hosp Div)*
Dysentery, diarrhoea, and catarrhal enteritis	**34**	**93**
Influenza	**13**	**50**

Sinusitis, tonsillitis, and pharyngitis	**16**	**36**
Boils, carbuncles, and IAT	**17**	**20**
Traumatic injuries	**7**	**12**
Sandfly fever	**6**	**16**
Malaria	**5**	**7**
Fibrositis	**6**	**2**
Paronychia	**6**	**2**
Typhoid fever		**10**

Of the nursing sisters who were sick, ten were sufficiently ill to be medically boarded and returned to New Zealand, while 15 sick voluntary aids were returned to New Zealand. Among the nursing sisters the commonest causes of invaliding were cholecystitis (3) and functional nervous disorders (2), and among the voluntary aids typhoid (4) and pneumonia (2).

(In October 1942 there had been an outbreak of typhoid fever among the NZWAAC staff at 3 General Hospital which affected seven of the staff. All had been inoculated and the source of the infection was not discovered. As these patients had a severe form of the disease, it was decided that they should all be invalided back to New Zealand. Two other members of the NZWAAC who had contracted the disease in February 1942 had had to be invalided home when they were unable subsequently to stand up to nursing conditions.)

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REPATRIATION OF PRISONERS OF WAR

Repatriation of Prisoners of War

A small group of protected personnel and sick who had been prisoners of war in Italy were repatriated and reached Cairo on 22 April 1943. The sick comprised 4 officers (including one medical officer) and 15 other ranks, while the protected personnel included 2 quartermasters, 33 other ranks NZMC, 2 other ranks NZDC, 1 officer and 2 other ranks ASC attached, and 3 regimental medical orderlies.

A larger group reached Cairo on 13 May. There were 14 New Zealand invalids and 2 officers and 92 other ranks who were protected personnel, as well as 23 Australian invalids and 30 protected personnel. The Australians were under the control of 2 NZEF, there being no Australian units in the Middle East at that time.

On 3 November 1943, 388 New Zealanders—the first to be repatriated from Germany—arrived at Alexandria in the protected ship *Cuba* and the hospital ship *Tairea* after a six-day trip from Barcelona, the exchange port. They went by train to Cairo, and later 169 sick and wounded were admitted to 1 General Hospital, Helwan, while 219 protected personnel were accommodated at Camp Hospital, Maadi. Two medical officers were included in the party. There were Australians in the repatriation group and their 184 sick and wounded were admitted to 1 General Hospital.

Of the repatriated prisoners of war admitted to 1 General Hospital, it was found that most were in good condition. Few had clinical notes sent with them. Of the thirteen men with enucleation of one eye, six had well-fitting and well-matched eyes supplied in Germany. Many of the men who had lost a portion of a lower limb were fitted with a peg leg, often of their own construction, which served quite efficiently; but during their short stay in hospital the splint department did much to

improve the fitting of many of these artificial limbs, which had become less comfortable as a result of the change in nutrition and general condition of the wearers.

Three New Zealanders and one Australian were blind in both eyes. Sergeant Brown [1] of 1 NZ General Hospital had looked after them in Germany and taught them braille, having first taught himself from books of instruction obtained through the Red Cross from England.

After TAB inoculation, medical boarding, dental examination, pay adjustment, and security examinations were carried out, the protected personnel went on ten days' leave prior to their return to New Zealand in HS *Wanganella* in December. Most of the sick and wounded were taken to Australia and New Zealand in the *Oranje* on 24 November.

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[1] **Sgt R. S. Brown; Waimate; born Invercargill, 11 Apr 1917; chemist; p.w. Jun 1941; repatriated Nov 1943.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PREPARATIONS FOR MOVE TO ITALY

Preparations for Move to Italy

During September it was decided as a matter of policy that married NZANS and NZWAAC personnel should not proceed to Italy, and any on the staff of 3 General Hospital were transferred to the staff of the Helwan hospital; but this rule was relaxed later.

The Matron-in-Chief, Miss E. M. Nutsey, returned to New Zealand in the *Oranje* on 24 November, having been medically boarded as unfit for further service in the Middle East. The DMS 2 NZEF paid the highest possible tribute to Miss Nutsey's work in 2 NZEF. The good name of the NZANS stood very high in an expeditionary force where all standards were high, and this was in a large measure due to the leadership, untiring effort, and personal example of Miss Nutsey herself.

Sites of 1 NZ CCS and NZ General Hospitals during Campaign in Italy, October 1943 – December 1945

Miss E. C. Mackay, Matron of 1 General Hospital, was appointed in Miss Nutsey's place as Principal Matron 2 NZEF on 23 November. Miss

Chisholm, Matron 3 General Hospital, was transferred as Matron to 1 General Hospital, and Miss Jackson [1] was appointed Matron of 3 General Hospital. Miss Hodges [2] had become Matron of 2 General Hospital in June 1943.

On 22 November at a conference at Maadi Camp the decision was made for Headquarters 2 NZEF and some additional units to move to Italy about the middle of January 1944. The medical units concerned were the DMS Office, Principal Matron, 2 General Hospital, Detachment 1 Convalescent Depot, Medical Stores Depot and a detachment of 23 Field Ambulance (Camp Hospital). It was considered that administration, including the medical side, would be greatly simplified by these moves, although it was policy for a New Zealand foothold to remain in Egypt, especially as a place of disembarkation for reinforcements.

This policy necessitated the maintenance of certain medical units in Egypt—1 General Hospital, 23 Field Ambulance (Camp Hospital), 2 Rest Home, Alexandria (for other ranks), 1 and 3 Rest Homes, Cairo (for women and officers), 101 VDTC, and Base Hygiene Section. In turn, this splitting of the force was to give rise to certain difficulties in the loading of hospital ships, with the bulk of the patients being embarked at Taranto, Italy, and additional cases from Egypt being picked up at Suez.

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[1] Matron Miss M. E. Jackson, RRC; Auckland; born Auckland, 11 Jan 1900; Sister, Auckland Hospital; Sister 1 Gen Hosp May 1940–Apr 1942; Ch Str 3 Gen-Hosp Apr 1942–Nov 1943; Matron 3 Gen Hosp Nov 1943–Jul 1945.

[2] Matron Miss V. M. Hodges, ARRC; Wanganui; born Dunedin, 1 Sep 1902; Sister; Sister, 1st Echelon, 1940; Ch Str 1 Mob CCS Apr 1942–Mar 1943; Matron 2 Gen Hosp Jun 1943–Sep 1945.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

LIAISON OFFICER HS ORANJE

Liaison Officer HS Oranje

The *Oranje* continued to carry a staff comprised partly of New Zealanders, with a New Zealand army liaison officer in control of them. Lieutenant-Colonel Davidson [3] was appointed from 2 NZEF in June, and on 15 September Lieutenant-Colonel Anson [4] succeeded to this office, after previously serving in the joint capacity of SMO Maadi Camp and OC 23 Field Ambulance. The last two appointments were assumed by Lieutenant-Colonel Kronfeld, [1] who in 1944 became senior medical administrative officer in Egypt after Headquarters 2 NZEF, including DMS's office, moved to Italy.

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[3] Lt-Col J. K. Davidson; Christchurch; born Kaikoura, 20 Jul 1899; medical practitioner; surgical specialist 3 Gen Hosp, Oct 1940; liaison officer, NMHS *Oranje* Jun–Sep 1943.

[4] Lt-Col G. F. V. Anson, OBE; Auckland; born Wellington, 22 Nov 1892; anaesthetist; Royal Navy, 1914–19 (Lt, RNVR, and Surgeon Lt, RN); wounded May 1917; medical officer 2 Gen Hosp Aug 1940–Feb 1942; SMO Maadi Camp Feb 1942–Sep 1943; OC British Troops NMHS *Oranje* Sep 1943–Aug 1945.

[1] Lt-Col M. Kronfeld; Wellington; born Auckland, 25 Jan 1899; medical practitioner; MO Special Force, Fanning Island, Feb–Oct 1940; MO 3 Gen Hosp Apr 1941; RMO 28 (Maori) Bn Jun 1941–Jan 1942; MO NMHS *Oranje* Feb–Jul 1942; SMO Maadi Camp and CO 23 Fd Amb Sep 1943–Jul 1944; Senior Medical Administrative Officer, 2 NZEF, Middle East, Oct 1943–Aug 1944; Port Health Officer, Wellington.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 13 — THE MOVE TO ITALY—SANGRO AND ORSOGNA BATTLES

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

BY October the units of 2 NZ Division had been rested and reorganised and trained for operations under quite different conditions from those of the desert warfare they had waged for two years. After their strenuous desert campaigns, the troops had recuperated at leave camps on the seacoast near Alexandria and in Palestine. Back in Maadi Camp a generous section of each day's programme was devoted to sport. But the fitting of the Division for further operations went steadily on. The motor transport which had covered huge mileages in the previous two years had to be thoroughly overhauled, and much of it replaced. Equipment similarly had to be renovated. In the medical units the large tents had to be replaced. Fire power was increased by more and better weapons, while the force as a whole was immensely strengthened by the absorption of the newly trained and equipped 4 Armoured Brigade. This formation in itself represented no small achievement, for to bring it into being men who had already seen long service as infantry had tackled difficult technical courses and had undergone many months of hard work and constant effort while their comrades were taking part in the victorious but not easily won advance from Alamein to Tunis. For this brigade it was not necessary to train and equip a special light field ambulance. The field ambulances were mobile and the armoured brigade was not meant to function as part of a complete armoured division; and campaigns in Europe or the Pacific were not likely to include movements over great distances such as had characterised the operations in Africa. The light field ambulances had not proved very satisfactory during the desert campaigns and were not equipped to carry out any major treatment. (In New Zealand 21 Light Field Ambulance had been trained in 1942 for service with 1 NZ Army Tank Brigade, but it did not go overseas as a unit, and a number of its members had arrived in the Middle East with the 8th Reinforcements in January 1943.)

However, 4 Field Ambulance was given special instruction on subjects peculiar to the armoured brigade, such as methods of removing casualties from Sherman tanks, and it undertook special exercises with the brigade. Each tank and armoured car had a first-aid kit in its equipment. In addition, a change in war establishment, effective from 24 September 1943, gave 4 Field Ambulance four extra motor ambulance cars and three jeeps.

Colonel R. D. King had been appointed ADMS 2 NZ Division on 15 June and his place as CO 4 Field Ambulance had been filled by Lieutenant-Colonel J. K. Elliott of 1 General Hospital. Within the divisional medical units there had been a considerable change of personnel, opportunity being taken of the quiet period to effect exchanges between field ambulance and regimental medical officers. A number of medical officers had completed courses in gas warfare, tropical diseases, and anti-malaria work. Refresher clinics for RMOs had been held twice weekly at 1 General Hospital. In addition, weekly clinical discussions were held at Maadi Camp Hospital on subjects of general interest to medical officers. Among the subjects discussed were the treatment of battle casualties at RAPs, ADSs, and MDSs; modern treatment of burns; recording of cases in the field; the forward treatment of orthopaedic cases; special surgery- -head, chest, and abdominal injuries; sulphonamides; NYD neurosis; and the establishment of field ambulances. These meetings, being attended by members of all units in the medical chain, were extremely valuable for the review of techniques and results.

By July the field medical units were in a position to undertake general intensive training again (though the field exercises were restricted by the lack of serviceable vehicles) and this training continued throughout August and into September. Early in July Brigadier Kenrick in addressing all divisional medical officers emphasised the importance of training, with special attention to change of country and tactics, of bringing inoculations of troops up to date in view of epidemics in Europe (typhus injections were to be given as the

vaccine became available), and of adequate malaria control.

The culmination of the training was marked by a ceremonial parade of divisional medical units at Maadi on 10 September. General Freyberg, attended by the DMS, inspected the parade, presented awards and decorations to officers and other ranks, and took the salute at the march past. The high standard of efficiency resulted in Brigadier Kenrick expressing his opinion that the field ambulances had never been better trained or equipped.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PROPOSED NEW ESTABLISHMENTS FOR FIELD MEDICAL UNITS

Proposed New Establishments for Field Medical Units

In 1942 the War Office had issued proposed new war establishments for field medical units in the Imperial forces. Knowledge of them was delayed in reaching 2 NZEF, but consideration was given to the matter in July 1943. In addition to three field ambulances (whose size would remain almost the same) within a division, there were to be two field dressing stations and a field surgical unit. This would require an additional five medical officers and 177 other ranks, which the NZMC in 2 NZEF could not possibly produce. The DMS 2 NZEF and ADMS 2 NZ Division were agreed that it was doubtful whether the replacement of three field medical units by five units would give greater mobility, flexibility, or general efficiency. The existing organisation functioned quite satisfactorily.

It was recognised that if the British forces in the Middle East adopted the new medical organisation while 2 NZEF retained the old, certain difficulties might arise in Corps organisation and in the matter of equipment. It was therefore hoped that the existing organisation would be retained by all concerned as the RAMC in the Middle East was also short of personnel.

This, in fact, is what did happen, and no major reorganisation in the field medical units of 2 NZ Division occurred until November 1944, when the field ambulances were each reduced from three companies to two, with a consequent saving of manpower.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

102 VD TREATMENT CENTRE BECOMES MOBILE UNIT

102 VD Treatment Centre becomes Mobile Unit

After discussions during August it was decided to make 102 VD Treatment Centre a mobile unit so that it could accompany 2 NZ Division on future active operations. The Adviser in Venereology, GHQ MEF, was in favour of the procedure, which was a new development in the British forces. The change took effect from 31 August and the unit reported to ADMS 2 NZ Division on 25 September. A 3-ton truck was specially fitted up for the unit, and in Italy it worked attached to the main dressing station which admitted sickness cases, this enabling most venereal disease cases to be treated in the divisional area.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

1 CCS BECOMES FULLY MOBILE

1 CCS Becomes Fully Mobile

In September arrangements were made to draw extra vehicles and equipment to make the CCS fully mobile. The unit had been authorised to adopt the establishment of a mobile CCS on 18 July 1942, but only the light section was 'placed on wheels' at that time. In the advance to Tunisia the heavy section had to rely on RASC trucks. The advantages of self-contained mobility were very definite, especially as the New Zealand Division had become such a mobile force and was therefore liable to be called upon for rapid moves. The CCS had long since proved itself as a most valuable link in the chain of medical units, and its increased mobility was an important factor in the speedy set-up of a complete New Zealand chain of medical evacuation in the Italian campaigns. On 8 October there was a change of commanding officers when, prior to returning to New Zealand, Lieutenant-Colonel Hunter handed over to Lieutenant-Colonel E. L. Button.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOVE TO BURG EL ARAB

Move to Burg el Arab

Every effort was made to prepare the New Zealand force for a new theatre of war while at the same time keeping the actual destination a close secret. In preparation for a campaign in Italy, the higher authorities in Egypt had been engaged with the multiple problems and intricate planning necessary for the transfer of so large a body of men with all their arms, equipment, vehicles, and supplies from one theatre of war to another.

The move of the Division from Maadi to the concentration area at Burg el Arab, west of Alexandria, began on 13 September. An MDS was set up by 4 Field Ambulance during the move at Kilo 45 on the Mena–Alexandria road. Many of the units covered the distance of 85 miles between Mena and Burg el Arab in a route march extending over nearly a week. While the New Zealanders marched they heard that in Italy the Fifth Army was locked in bitter fighting at Salerno and that the Eighth was pushing steadily northwards from Taranto through Bari. The New Zealand Division was destined to join the famous Eighth Army once again.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ARRANGEMENTS IN ITALY

Arrangements in Italy

Operations in Italy were being carried out by the Central Mediterranean Force. In Egypt, 2 NZEF was part of the Middle East Forces. The liaison between these two forces left something to be desired and DMS 2 NZEF considered it advisable to send Colonel Stout to Italy to make a preliminary 'medical reconnaissance', and he left Maadi for this purpose on 24 September. He reported at Taranto to Brigadier Galloway, DMS Port Force, and made investigations as to the siting of 3 NZ General Hospital and 1 NZ Convalescent Depot. A very suitable location was arranged for the hospital in part of a large unfinished Polyclinic hospital at Bari on the east coast, but there were great difficulties in finding a site for the Convalescent Depot. Winter was approaching and buildings were thought essential, but they proved very difficult to find; finally, at a later date, a rather bare, comfortless school was procured at Casamassima, a small town on the Taranto– Bari road. Colonel Gower, CO 3 General Hospital, arrived at Taranto a few days later, and arrangements were immediately made to develop the hospital site, part of which was being used as barracks by Italian troops. Fortunately it was possible to take over part of the completed and functioning part of the buildings from a British CCS, so that the hospital could make an early start. Casualties from Italy at that time were all evacuated to North-West Africa and representations were made that any New Zealand cases should be held pending evacuation to Egypt.

Besides all the divisional medical units (including 102 Mobile VDTC, 2 FTU, and 1 Mobile Dental Unit), it was proposed that 1 Mobile CCS (including the surgical team), 3 General Hospital and 1 Convalescent Depot, and also NZ Section MAC, should be sent to Italy. As 3 General Hospital and 1 Convalescent Depot were still in Tripoli, they were to

move direct from there to southern Italy. Both these units closed at the end of September to pack in preparation for the move.

The DMS 2 NZEF went by air to Italy on 8 October to decide the location of the base medical units. The Advanced Base for 2 NZEF had been set up at San Basilio, inland half-way between Taranto and Bari, and with its development the establishment of an Advanced Base camp hospital and hygiene section had to be considered.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PREPARATION FOR MOVE TO ITALY

Preparation for Move to Italy

At Burg el Arab all ranks were inoculated against typhus, and the taking of mepacrine tablets, four tablets a week, as a precaution against malaria was begun. In a 'hardening' programme each unit had been required to march about 100 miles a week, and they also took part in exercises with their respective brigades. The troops were not all thoroughly trained for the long march involved and there were many cases of acute foot fatigue; some of the men had to be graded down subsequently for this reason. The issue of a first-aid kit for every armoured fighting vehicle and gun was completed during September. These kits were made up at New Zealand Medical Stores Depot. In addition, all armoured fighting vehicles were provided with chloroform craquettes and three morphia tubunics (½ gr.). By the end of September the vehicles of the medical units, except for some light vehicles, had been overhauled and made battle-worthy. In the first days of October they were loaded for shipment and each man made trial packs of the heavy load he had to carry individually. Sufficient medical equipment to establish a small dressing station had to be taken as baggage.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DIVISION MOVES TO ITALY

Division Moves to Italy

During October 2 NZ Division moved secretly from Egypt to southern Italy. From Burg el Arab the troops moved into the transit camp at Ikingi Maryut and thence to Alexandria, the embarkation port. There were two main convoys. The first flight of troops embarked on 5 October and the second on 17 October.

The medical units in the first flight were ADMS and staff, 6 Field Ambulance, 4 Field Hygiene Section, and 2 FTU; and in the second flight 4 Field Ambulance, 5 Field Ambulance, 1 Mobile CCS, 1 Mobile Dental Unit, 102 VDTC, and 1 Section MAC.

Not until the convoys were at sea was the destination announced. The voyages were short and on the whole comparatively uneventful, and the convoys reached Taranto on 9 and 22 October respectively. Disembarkation was by lighters, just as embarkation had been. A divisional assembly camp was established at Santa Teresa, about 5 miles to the north of Taranto, and here the troops remained throughout October. The camp area was on low-lying ground alongside the expansive inner harbour, and the whole Taranto area was malarious. Wet weather added to the difficulties of the establishment of the camp, and these were accentuated by the shortage of transport.

The vehicles and supplies were embarked in Egypt in several later flights and by the end of October only the first of these flights had been landed in Italy. Until transport was available the Division was delayed in its move forward and the combatant units gained experience in fieldcraft in a new country. The delay in arrival of vehicles meant that the RMOs began to run short of medical supplies. This caused a heavy drain on the field ambulances, but the supplies were made good by

indents on 7 British Advanced Depot Medical Stores at Taranto.
Although it was nearing the end of the malaria season, full anti-malaria precautions were taken with good results, though a few cases of malaria did occur.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS

Medical Arrangements

The field ambulances established ADSs for their respective brigade groups as they arrived in Italy, and 6 Field Ambulance at once set up an MDS in the museum building at Taranto. This enabled New Zealand patients to be held in Italy. Had any great number been admitted to British hospitals there was a danger that they would have been evacuated along the British medical chain to Sicily and North-West Africa. A small number of more seriously ill patients was evacuated to 70 British General Hospital near Taranto.

It was not long before there was a New Zealand general hospital established in Italy, for 3 General Hospital embarked at Tripoli on 28 October on HS *Dorsetshire*, disembarked at Bari on 31 October, and was open and receiving patients on 6 November. This was a remarkably speedy transfer and reopening.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

3 GENERAL HOSPITAL AT BARI

3 General Hospital at Bari

No. 3 General Hospital was established within the Bari Polyclinic, a project conceived during the Fascist régime, and still incomplete at the time when war brought Italian industry and constructional work to a standstill. Vast, judged by New Zealand standards, and comprising some twenty buildings within the area of its walls, the Polyclinic was structurally complete as a medical centre at the time of its occupation by the Allied forces. Much exterior finishing of buildings, however, still remained to be completed, while there were practically no interior fittings when the Italians ceased work on the scheme.

The main group of buildings was arranged in a shape similar to a horseshoe, from the outer sides of which wings extended at regular intervals all the way round. Within the curve stood a large two-storied building, apparently intended in the original plans as an administrative centre for the area. Connecting the open ends of the two sides of the horseshoe ran a verandah, from the centre of which rose a tall tower, planned as a solarium. In addition to this main compact group, there were several large detached buildings, the whole twenty buildings being contained within a high stone wall. The completed cost of the whole group, which had been intended to cover the civil needs of most of southern Italy and to function in all branches of medicine, was reputed to have been several million pounds.

No. 3 General Hospital occupied two blocks at one end of the horseshoe group for the hospital, as well as portion of the block at the opposite extremity for men's quarters. Sisters and nurses were accommodated in a separate detached building just inside the walls of the compound, near the main entrance. Neighbouring units operating in

the Polyclinic area during this period were 98 British General Hospital, 14 Indian Combined General Hospital, 30 Indian General Hospital, field hygiene, and MAC units. The 30th Indian General Hospital was later replaced by 102 South African General Hospital, while the field hygiene and MAC units moved to other locations, 4 Base Depot Medical Store occupying one of the buildings so vacated.

Of the two blocks occupied for the hospital, the smaller one, given the name of Tripoli block, was complete on the inside at the time of arrival, water and electricity having been installed and the floors tiled. This was utilised as a surgical block, and eventually contained theatres, X-ray, dental, and surgical division offices. In the first instance, however, all administrative offices were installed in this block. The larger building was a mere skeleton, there being no doors, no water or electricity, and very few glass windows, the majority of the window spaces having been bricked up. Given the name of Beirut block, this building was to accommodate the medical wards, laboratory, massage, occupational therapy, patients' recreation room, and administrative offices. Much work had to be carried out, however, before this block could be used, all patients being at first accommodated in Tripoli block while the labour of construction continued. The Beirut block had been used by Italian troops who had left it in a filthy state, and the cleaning-up process took several days, particularly as regards the basement. The Tripoli block had been used as a hospital by the Italian Army, and latterly by a British CCS.

In the first instance, officers, sisters, and WAACs occupied part of the Tripoli block as quarters, while other ranks were located in the top floor of the uncompleted Beirut block. By 21 November sisters and nurses had moved to their permanent quarters, the building being given the name of Helmieh House, the names thereby commemorating the three previous sites of the hospital. It was not until 17 November that the male members of the staff were properly established in their quarters, the ground floor of which was occupied by a ward of 98 British General Hospital and a portion later by South African personnel.

Situated a convenient distance from the docks area, and only a few minutes' walk from the railway station, the hospital was in a good position for receiving casualties by ambulance, ship, or train.

For the first two weeks of November 1943, sixty-four sisters and nurses were attached for duty to 98 British General Hospital, which had been functioning without sisters. This valuable service rendered by the New Zealanders served immediately to establish amicable relations between the two hospitals, and a close co-operation continued after the British sisters had arrived and NZANS and WAACs had returned to their own unit.

As 3 General Hospital was the first New Zealand hospital to operate in Italy, it was not long before an urgent demand was made for the accommodation of patients. The first patient was admitted on 5 November, to be followed by thirty-two from 6 MDS on the following day. The familiar story of the opening stages then followed, the number of occupied beds often becoming very near to the number equipped. Patients were in the first instance accommodated in the Tripoli block, but as the bed state increased, some, mostly in the convalescent stages, had to use the uncompleted Beirut block in which constructional work was still proceeding. The position was alleviated to some extent by the opening of 1 Convalescent Depot at Casamassima, 15 miles inland from Bari.

The 1st Convalescent Depot, which embarked at Tripoli on 5 November, disembarked in Italy on 9 November, occupied the school at Casamassima on 14 November, and reopened for the admission of convalescents on 27 November. The equipment had been sent over beforehand in a caique and had arrived safely after an adventurous trip, during which the captain had to be put under arrest.

On 22 November at a conference in Maadi Camp the decision was made for Headquarters 2 NZEF and additional units to move to Italy about the middle of January 1944. The medical units concerned were DMS Office, Principal Matron, 2 General Hospital, Detachment 1

Convalescent Depot, Medical Stores Depot, and a detachment of 23 Field Ambulance (Camp Hospital).

When these moves were accomplished 2 NZEF became essentially a CMF force rather than an MEF force. The story of the base medical units involved will be taken up more fully in

Chapter 15.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

START OF ITALIAN WINTER

Start of Italian Winter

Torrential rain which fell on the last nights of October gave the Division an initial experience of the conditions under which it would often have to live and fight in Italy. There was some flooding and mud was soon in evidence. About 10 per cent of the bivouac tents leaked. These could not be replaced, but a special issue of extra blankets enabled all wet blankets to be replaced. In spite of the changed and uncomfortable conditions the health of the Division remained good, although there was an increase in upper respiratory disorders.

The divisional transport began to arrive while the ground was sodden, giving all ranks their first experience in Italy of the effects of deep, clogging mud.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOVE TO THE FRONT AND ESTABLISHMENT OF CHAIN OF EVACUATION

Move to the Front and Establishment of Chain of Evacuation

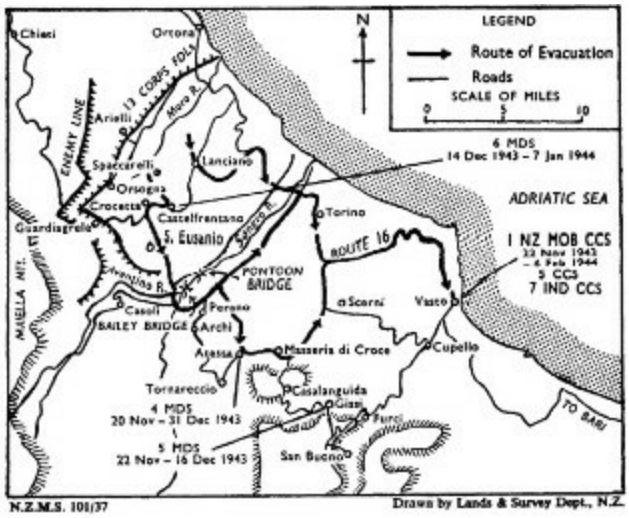
In early November the Division began to move forward by road to join Eighth Army, which by this time had reached and crossed the Trigno River and, having captured Vasto and Casalbordino, was approaching the river Sangro.

The vehicles of the medical units arrived between 29 October and 19 November, the first unit to receive all its vehicles being 4 Field Ambulance, and the last 1 Mobile CCS. In transit, mostly while unloading, a number of vehicles were damaged, two of 4 Field Ambulance's trucks, as well as the specially fitted truck of 102 Mobile VDTC, being rendered useless.

Although 4 Field Ambulance had not received all its vehicles by 3 November the unit moved north that day with 4 Armoured Brigade, reaching San Severo the following day and establishing an MDS in a two-storied derelict roadhouse. The troops had gone into battle dress before the move, and anti-malaria measures became unnecessary at San Severo. On 13 November 4 MDS moved up to Furci, established a small dressing station, received sick from all divisional units and evacuated them to 5 British CCS at Vasto. An ADS was set up by A Company 4 Field Ambulance at Casalanguida on 15 November, and the MDS again moved on 19 November to Gissi, taking over a building from 33 Indian Field Ambulance. Then on 20 November the MDS moved up to Atessa and, with the field surgical team and 2 FTU attached, set up in conjunction with 33 Indian Field Ambulance in the small civilian hospital in that town.

Meanwhile, companies of 5 Field Ambulance set up dressing stations at Lucera (on 10 November) and San Severo on 15 November, and then

moved to Gissi on 20 November to take over the sick MDS there from 4 Field Ambulance. Here 102 Mobile VDTC was attached.



Sangro and Orsogna battles: Medical Units and Lines of Evacuation

Sangro and Orsogna battles: Medical Units and Lines of Evacuation

At Taranto 6 Field Ambulance continued to run its MDS until 19 November, when it moved to Gissi, reaching there on 23 November and remaining in reserve. However, B Company had moved with 6 Infantry Brigade on 13 November, establishing successive ADSs until 20 November, when it was located 5 miles north of Atessa and close to the Sangro.

Movement of 1 NZ Mobile CCS was delayed by the late arrival of its vehicles, but on 18 November the staff was taken in ASC trucks to San Severo, where the large two-storied building previously used by 5 Field Ambulance was taken over for a CCS. The light section of the unit went ahead on its own trucks to Vasto on 22 November and established itself there in a large school in the centre of the town. By this time 2 NZ Division was in action at the Sangro River, less than 20 miles to the north-west in a direct line, and the first casualties reached Vasto the next day. Thus the medical chain of evacuation was functioning, and only just in time. The railhead was at San Severo, and there the heavy section of the CCS staged casualties on their journey to 3 General Hospital at Bari, some 150 miles from the front line.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL SITUATION

General Situation

The Allies were now nearing the strongest belt of prepared defences yet encountered in Italy, a belt which took full advantage of swift-flowing river barriers, steep and muddy ridges, and the precipitous crags of the Apennines. It varied in depth up to 20 miles and spanned the waist of Italy from the north bank of the Sangro River valley to the mouth of the Garigliano River in the Gulf of Gaeta. To break through this line Eighth Army concentrated its main effort along the front between the confluence of the Sangro and Aventino rivers and the Adriatic coast, simultaneously attempting to deceive the enemy into believing that an attack was about to be made on the mountain front. It was hoped that when bridgeheads across the Sangro had been established a swift breakthrough would follow, ending with the cutting of the important lateral road between Rome and Pescara, and perhaps with the fall of Rome itself. The New Zealand Division, having taken up positions secretly near the confluence of the rivers, was to cross the river and press on with all speed, cutting the enemy's prepared ' Winter Line' positions, capturing Castelfrentano, Guardiagrele, and Orsogna, and finally Chieti. The last was the key to the main road to Rome. The 8th Indian and 78 British Divisions had similarly ambitious tasks nearer the coast.

On 14 November 2 NZ Division assumed responsibility for its sector of the line. In order to keep the arrival of the New Zealanders a secret until the last possible moment, 19 Indian Infantry Brigade was placed under New Zealand command and given the task of driving the enemy off dominating ridges and across the Sangro. This operation was successfully begun by the Indians on the night of 14–15 November, and as the advance continued the Division moved up through the mud on

the narrow hill roads to support them. The artillery went into action on 15 November and the armour three days later. On the night of 18–19 November 6 Infantry Brigade started to move up to occupy front-line positions, and by the morning of 21 November was established on the southern edge of the Sangro river-flats without the enemy's being aware that a powerful assault force was assembling there. The attack was to have been launched on the night of 21–22 November, but appalling weather made it impossible to cross the flooded, fast-flowing river, and it was not until the night of 27–28 November, when 5 Infantry Brigade had also come into the line, that the concerted attack with 8 Indian and 78 British Divisions began.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INTO THE ATTACK

Into the Attack

The New Zealand infantrymen, helped by ropes, waded across the Sangro in an icy current which reached to their waists. On the enemy's side of the river the force formed up, and under artillery cover five battalions advanced along a front of 6000 yards. The enemy was taken by surprise and by daylight the infantry battalions were firmly established on the north bank. Meanwhile, the engineers had erected a Bailey bridge and partially completed a pontoon bridge, which was ready for use the following night.

The river, the bluffs, and the mud presented the most serious problems of the advance. Mules were used to supply the forward troops with food and ammunition, and supporting arms could be brought up only after a slow, hard struggle. Counter-attacks were repelled, and enemy fighter-bombers attacked the bridges. Strength was built up, and on 29 November the assault was resumed and continued slowly by day and night, with the infantry successively climbing and digging in, hampered at every step by mud and saturated clothing. Colle Barone was taken on 29 November and Castelfrentano on 2 December. The Division had gained the first of a series of ridges and now looked across the deep Moro valley to the next objective of Orsogna on the second ridge.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

STRUGGLES FOR ORSOGNA

Struggles for Orsogna

The Division began to advance on 2 December across the Moro River on to Orsogna, probing also towards Lanciano and Guardiagrele on the flanks. In the early morning of 3 December a company of 25 Battalion entered Orsogna, but mud and accurate shellfire prevented tanks and anti-tank guns from being brought up in support of the infantry, who were forced to withdraw in the face of enemy armour. The enemy had checked the advance and was able to reinforce threatened positions; he was aided too by the weather, which prevented any offensive pending considerable engineering work on the tracks and roads. At the same time the Sangro was again in flood. For two days no bridges along the whole front could be used and the already great difficulties of supply were considerably increased.

On 7 December the attack on Orsogna was resumed. This time 24 Battalion entered the town and 28 (Maori) Battalion cut the Orsogna–Ortona road, but once again counter-attacks forced withdrawals. An attack was made on the night of 14–15 December to seize a bridgehead astride the road to Ortona. Casualties were heavy but the objective was gained. Enemy counter-attacks were held but further progress could not be made against the enemy defences. As part of an operation by 13 Corps, another attempt at a breakthrough was made on the night of 23–24 December. But progress was limited, especially as tanks could not get through the mud. It was plain that in that sector at least there could be no decisive battle for months to come. The weather had taken charge. However, on the coast the Canadians drove the enemy from Ortona after desperate and costly fighting. For the next few weeks the New Zealanders' front became static.

Operations against Orsogna showing Battalion RAPs and 5 Field Ambulance ADSs

Operations against Orsogna showing Battalion RAPs and 5 Field Ambulance ADSs

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE MEDICAL SIDE

The Medical Side

From the middle of November onwards the medical units wrestled with problems totally different from those to which they had been accustomed in North Africa. The countryside was broken and hilly, with devious winding roads linking hilltop villages. Rain on the heavy soil formed thick impassable mud. The siting of units depended entirely upon the possibilities of getting vehicles off the road. In wet weather this became impossible. Fundamental rules that came to be observed were that vehicles must put on chains before leaving the road, must park above road level, and must always point downhill towards the road. The ancient hill villages had one-way streets easily blocked by transport. In the cold and wet it was necessary to use buildings wherever possible both for medical purposes and for the billeting of troops. The rather poor buildings in 2 NZ Division's area were not very suitable for ADSs, let alone MDSs. At Furci on 13 November, as no suitable building for an MDS existed, 4 Field Ambulance established a small MDS under canvas. This was moderately satisfactory as the tents were pitched when the ground was dry and straw was placed on the floor. Here sick were received from all divisional units and evacuated to 5 British CCS at Vasto.

On 19 November, when 6 Infantry Brigade moved up to the front line, 4 Field Ambulance proceeded to Gissi and there established an MDS to serve operations forward of Atessa. The country road between Gissi and Atessa had bridges and culverts demolished, was narrow and very twisty, and was unsuitable for dense and heavy traffic. It became apparent that the time involved in evacuation from Atessa to Gissi was far too long, so on 20 November 4 Field Ambulance moved up to Atessa, leaving at Gissi a detachment which took over a building vacated by 33

Indian Field Ambulance. The surgical team from 1 General Hospital and 2 FTU accompanied the MDS to Atessa, which was situated on a hilltop overlooking the valley of the Sangro.

Medical arrangements for both 6 Infantry Brigade and 19 Indian Infantry Brigade were undertaken jointly by 4 Field Ambulance and 33 Indian Field Ambulance at Atessa. In the damaged school-building the reception sections of the units were located. Here all light cases were dealt with and evacuated. All cases requiring surgery were sent on to the damaged civil hospital building, where two operating theatres were established by 4 Field Ambulance and the attached New Zealand surgical team. A section of the Indian field ambulance was attached for help in nursing Indian patients, who were all surgically treated by 4 Field Ambulance.

The segregation of the operating centre was primarily due to the limitation of buildings, but it was found to be of great advantage as the operative treatment and nursing of the serious cases proceeded unhampered by the turmoil of a busy MDS. The treatment and nursing of abdominal cases was particularly facilitated by being done under good conditions in the hospital beds. The transfusion unit was in a ward of the hospital. With salvaged telephones the attached ASC personnel improvised communication between the unit's three buildings, and this was a decided help.

Battle casualties were evacuated via Scerni and Cupello to Vasto, to Light Section 1 NZ Mobile CCS. This route for the most part was the supply route of 8 Indian Division, and special permission for its use by New Zealand ambulance cars was granted to ADMS 2 NZ Division. This was an immense advantage as the long, rough, and winding route via Casalanguida, Gissi, and Furci would have been an intolerable ordeal to badly wounded men. The ADMS on 15 November recorded that the roads were blocked with demolitions and slips and blown bridges. They were also very steep and tortuous, and thick mud was everywhere. It took three and a quarter hours to do 13 miles. Sick were evacuated through Casalanguida to 5 Field Ambulance MDS at Gissi, and thence direct to

Termoli.

On its arrival at Atessa 4 Field Ambulance took over three serious cases from B Company 6 Field Ambulance, which then moved down towards the Sangro River as an ADS for 6 Infantry Brigade. The operating theatres at the MDS began to work as soon as they were set up and worked steadily in the ensuing weeks at this location. At first there were sporadic casualties from shelling in 6 Brigade and 19 Indian Infantry Brigade. When, on the night of 22–23 November, the latter brigade attacked on the left flank across the Sangro towards Altino, the difficult task of getting wounded back across the swollen river fell to 33 Indian Field Ambulance. Most of the casualties did not reach the MDS for some twenty-four to forty-eight hours after they were wounded.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS FOR SANGRO CROSSING

Medical Arrangements for Sangro Crossing

For the initial main attack by 2 NZ Division in the Italian campaign special medical arrangements had to be made.

The operation envisaged was a type of warfare completely new to 2 NZ Division. In earlier campaigns the field ambulances had almost invariably been able to collect patients from the RAPs by ambulance car. In the Sangro crossing, however, the regimental medical officers with their staffs and equipment were to move forward on foot; and between the RAPs and 5 and 6 ADSs on the lateral road on the south bank of the Sangro, there would be a swiftly flowing ice-cold river, fordable only with considerable difficulty even in the most favourable places.

The general plan called for a crossing on foot in several places on a two-brigade front, the seizing of a fairly extensive bridgehead, up to several miles in depth, and when this was achieved, the building of two temporary bridges over which would pass the supporting arms and essential vehicles. Thus, even with complete success, several hours would elapse before ambulance cars could collect from the RAPs.

The regimental and ADS medical officers conferred to discuss the extreme difficulties expected. For one thing, it was certain that there would be casualties before bridges could be erected and ambulance cars could get through. It was decided that while the collection of casualties forward of the RAPs would follow the usual practice, using regimental stretcher-bearers augmented, when possible, by jeeps, evacuation from RAP to ADS would have to be by a combination of hand and mechanical carriage. The RMOs had to be prepared to hold their casualties at the RAPs for a rather longer time than was customary, and the ADSs had to be prepared to treat patients more shocked than usual owing to the

longer lapse of time and the cold, wet conditions.

It would not be practicable to run ambulance cars nearer to the Sangro during the infantry crossing, and the establishment of a bridgehead on the northern side, than to the Strada Sangritada, a road running parallel to and about a mile from the south bank of the river. Along this road, opposite the assault area, were the battalions of 5 and 6 Infantry Brigades, and on the evening of the operation a car post with two four-wheel-drive ambulance cars and one jeep fitted with a two-stretcher frame would be established at each battalion RAP. Two ADS stretcher squads and four squads recruited from battalion B Echelons were detailed to cross the river with each RMO to carry back men wounded prior to and during the actual river-crossing. The ADS bearers were also to be prepared to carry back across the river to the car posts, at any time, any casualty whose chances of survival would, in the opinion of the medical officer, be endangered by an enforced wait at the RAP for the completion of the bridges and the arrival of the ambulance cars.

The ADS area was in sight of the German positions and was frequently shelled. No Red Cross signs were displayed as it was thought that they would give away positions of troops and indicate the point selected for the river-crossing. At the ADS were large quantities of blood and plasma for the treatment of shock and a plentiful supply of ambulances for evacuation to 4 MDS, which was very suitably situated at Atessa, 5 miles away.

At 7.30 p.m. on 27 November the ADS stretcher-bearers went up to the battalion positions. Two and a half hours later they moved forward in pitch darkness with the files of infantrymen, squelching through the mud and wading across the icy streams of the Sangro riverbed. The main stream was waist-deep, with a swift, powerful current. Struggling with the stretchers and almost paralysed by the cold, the men managed to keep their feet only with difficulty.

The battalions reached the northern bank and waited in silence until

2.45 a.m. on 28 November, when the artillery barrage opened and the infantry advanced to the attack. The MOs and stretcher-bearers followed up and established the RAPs in suitable farm buildings. The teams attached to 25 Battalion RAP found themselves approaching the crest of the low hills that rose from the bank of the river. Coming under shell and machine-gun fire, they were compelled to move back down the slopes. The other RAPs also experienced shelling near their positions.

The men from the ADS worked with the RAP personnel, treating casualties brought in by the regimental stretcher-bearers, until about 4.30 a.m., when the battalions were nearing their final objectives. They then assisted in the search for casualties left lying in the wake of the advance, and collected a number of wounded reported to be lying in minefields to the rear of 26 Battalion RAP. It was nerve-racking work, each man treading with involuntary but futile caution in the darkness. Only one man of the Medical Corps was unfortunate enough to tread on a mine. He died in 1 NZ CCS a week later.

Throughout the night engineers had worked on the construction of two bridges, a Bailey bridge for 5 Brigade and a pontoon bridge on the 6 Brigade sector. At 8.10 a.m. on 28 November the pontoon bridge received a direct hit which destroyed one span, killed nine men and wounded several more. It was then subjected to continuous, accurate shellfire that made further progress impossible. The Bailey bridge was completed and had to suffice for both brigades, constituting a disheartening bottleneck. For the casualties accumulating at the RAPs the delay was serious. As the morning wore on it seemed that some of the more urgent cases would have to be carried back across the river, an operation that might have ended in disaster.

However, at 10.30 a.m., the first ambulance car appeared at the 26 Battalion RAP, and the mere sight of one load of casualties leaving for the ADS seemed to make the situation less desperate. After another long wait ambulance cars and jeeps began to arrive at all three RAPs. The stretcher-bearers carried on searching for wounded. A stretcher-bearer from 24 Battalion used a cart to bring back wounded along the road and

was not sniped at because he had a Red Cross flag up. Finally, their work finished, the bearers from the ADS made their way back to their company by twos and threes, helping walking wounded across the river en route.

At 4 MDS at Atessa 131 battle casualties were admitted on 28 November, and of these 110 were evacuated to the CCS. A surgical team from 6 Field Ambulance was temporarily attached to relieve in the operating theatres during rush periods. On the next two days, as 2 NZ Division exploited its bridgehead across the Sangro, the battle casualties admitted amounted to eighty.

On 1 December B Companies of 4 Field Ambulance, 5 Field Ambulance, and 6 Field Ambulance all crossed the Sangro to establish ADSs in their respective brigade areas, 4 Armoured Brigade having now joined in the attack. A car post was established by A Company 6 Field Ambulance on the south side of the Bailey bridge. Evacuation to the RAPs and ADSs was by Bren carrier and jeep and from the ADSs to the car post was by four-wheel-drive ambulance cars (including ten AFS cars). From there two-wheel-drive cars could be used on the road. Forward of the ADSs stretcher-carrying jeeps, with frames made in 2 NZ Division workshops to the direction of ADMS 2 NZ Division, were used. Colonel King had seen similar fittings at an Indian MDS. They were most successful, and arrangements were put in hand to issue them on the scale of two to each battalion and regiment and three to each field ambulance. Stretcher-jeeps were jeeps fitted with steel frames to enable them to carry two stretcher patients, thus solving the problem of bringing wounded out over difficult ground where an ambulance car could not manoeuvre. The stretcher frames were made to lie along the back of the jeep so that the heads of the stretchers were just behind the back seat, while the feet of the stretchers over-hung the rear of the jeep by about four feet. These jeeps gave one the impression that the ride for the patient would be rough, but, by careful driving and slow travel, it compared favourably with most types of ambulances, the only difference being that the patients were exposed to the weather. This was later

rectified by erecting a canvas canopy. Because it was fitted with four-wheel drive, was fast and manoeuvrable and capable of operating under all conditions in almost any type of country, the jeep was chosen for this work and proved itself on many occasions later in Italy.

It was decided to bring two NZANS sisters from 1 Mobile CCS forward to Atessa to assist in nursing the serious abdominal cases, whose condition was aggravated by the incidence of post-operative pneumonia in practically all cases and for whom the highest possible standard of nursing was necessary. The sisters took up their duties in 4 MDS in the civil hospital on 1 December. This was the first time nursing sisters had worked as far forward in a battle area. Their presence quickly transformed the work of the MDS and they were of especial value in the nursing of the abdominal cases.

On 2 December B Company 6 Field Ambulance moved into the three-storied building in Castelfrentano, not long after 24 Battalion had cleared the town. On 3 December the RMOs of 24 and 25 Battalions worked in adjoining rooms of the same RAP, after the RMO of 25 Battalion had been mortared out of his position farther up the road. For a while there was a large number of wounded, mostly from 25 Battalion, to deal with, but they were all speedily evacuated. There were fewer casualties next day but a notable incident was when a stretcher-bearer, Private Williams, [1] of 24 Battalion went out to a wounded man lying only 200 yards from the German lines and stayed with him all day, until he was carried back in the evening by a stretcher party. As ADS to 6 Infantry Brigade, B Company admitted sixty-one patients on 3 December and evacuated them to the staging post south of the Sangro. The staging post reduced to three to four hours the return trip of the ambulance cars to the ADS. There was enemy shelling on 4 December but few casualties resulted. The next day heavy rain flooded the approaches to the Bailey bridge across the river and washed away the pontoon bridge. Casualties were sent as far as 4 ADS on the north side of the river and held there until the following day when the river could be crossed, though a few of the serious cases were taken across by hand carry.

A daylight attack on Orsogna was planned for the afternoon of 7 December. During the day 5 ADS also moved into the school building. This unsuccessful attack across the valley from Castelfrentano resulted in more casualties than did the operation of

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[1] Sgt R. Williams, MM; born England, 10 Mar 1922; labourer; wounded 24 Feb 1944.

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crossing the Sangro. During 7 and 8 December 4 MDS at Atessa worked to full operative capacity. After twenty-four hours' work both theatres were relieved by the arrival of a surgical team from the British paratroop field ambulance under Captain McMurray and another team from 5 Field Ambulance. The rush of casualties was over by then, but they continued in a steady flow from 9 to 14 December.

When 6 Field Ambulance moved forward to Castelfrentano on 14 December and established an MDS in the schoolhouse, 1 General Hospital surgical team, 2 FTU, and 127 Paratroop Field Ambulance surgical team were transferred from 4 Field Ambulance to this unit. The nursing sisters did not proceed to Castelfrentano, but a special male nursing team of one NCO and two orderlies was sent forward from 1 Mobile CCS to the MDS to assist in the nursing of serious cases. For the attack across the Orsogna– Ortona road on 15 December, B Company 5 Field Ambulance left Castelfrentano on 14 December and established a resuscitation post on Sfasciata ridge. Here blood, wet and dry plasma, were available as well as surgical instruments and appliances sufficient for emergency operations. There was only a small staff, including two medical officers. There were no complete ADSs forward of the MDS and most casualties from the attack went direct from the RAPs to the MDS, although some passed through the resuscitation centre. In this action the evacuation of wounded from 21 and 23 Battalions was very slow and difficult and hand carriage was necessary. There was a blood bank at the resuscitation post and blood transfusions helped to save the lives of some of the more seriously wounded. Jeeps were used wherever possible

and the car post was changed to shorten the carry.

Casualties admitted to 6 MDS were, on 15 December, 172 and on 16 December, 115. Staff-Sergeant Burley [1] was senior NCO in the field ambulance company establishing the forward ADS in the operations towards the Orsogna– Ortona road between 14 and 25 December. Owing to the difficulties and close nature of the country and determined enemy resistance, only a small resuscitation post could be established for the attacks of 15 and 24 December and evacuation of RAPs was by hand carriage over steep, exposed, and very muddy routes under enemy fire. Burley was forward of the skeleton ADS assisting and directing the stretcher-bearing, and on all occasions his coolness, decision, and example were an inspiration to those working under him and to the wounded they were carrying. He was awarded the Military Medal.

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[1] WO 1 H. W. Burley, MM, m.i.d.; born Auckland, 9 Aug 1916; Methodist minister; NCO 5 Fd Amb 1941–44, RSM Apr 1944–Feb 1945.

Before dawn on 24 December an attack was made by 21, 26, and 28 Battalions on Fontegrande ridge, west of the Orsogna– Ortona road. The state of the ground precluded any help from the armoured regiments. The country was broken and contained several steep-sided gullies covered with brush and with which the attacking troops were unfamiliar. By dawn both 21 and 26 Battalions were firmly astride Fontegrande ridge and the Maori Battalion, after suffering heavy losses, had wrested the vital road junction from the enemy.

The evacuation of the wounded presented quite a problem owing to the nature of the country and the difficult ground conditions. Because no suitable place could be found nearer the line, 26 Battalion RAP, for instance, was set up in a house about a mile from the Ortona road. This meant a long and tiring carry for stretcher-bearers. Some platoons could ill afford the number of men required to evacuate their own and enemy wounded, and some platoons were under close enemy observation. In all

cases the medical orderlies and stretcher-bearers responded splendidly and, despite the heavy mortar fire, evacuated wounded as quickly as possible. They were assisted by a light fog which cloaked their movements.

Medical arrangements for the final attack on 24 December were the same as previously. There were 152 casualties admitted to 6 MDS that day. During these rush periods three surgical teams worked continuously at the MDS. Evacuations were made by road to 1 Mobile CCS at Vasto, 45 miles away. The road 2 miles from Castelfrentano was under direct observation from the enemy positions at Orsogna for about a mile and intermittent shelling caused frequent casualties in that area. The trip to Vasto took four to four and a half hours on 15 and 16 December but was later reduced to two and a half hours. The heavy section had joined the light section of the CCS at Vasto on 10 December.

The extremely wet weather and the difficult country covered in the Sangro operations necessitated a return to the use of large numbers of stretcher-bearing squads for whom there had not been much demand during the desert operations. It was found that at least six bearers were required for each stretcher. On Sfasciata ridge from 15 December onwards, 5 Field Ambulance resuscitation post called on large numbers of men, including bandsmen from the B Echelon formations of 5 Brigade, and later 4 Brigade, while 14 British Field Ambulance also gave assistance. Here all evacuations from the battalion RAPs were by hand carriage only. It was found that more blankets and stretchers were required than under normal conditions.

Stretcher-bearing jeeps took the casualties from the resuscitation post to the ambulance car post where four-wheel-drive ambulances waited. These included twelve cars of the AFS, whose work in Italy was up to the high standard which was customarily associated with this unit in the Western Desert. Without the service of the jeeps and four-wheel-drive ambulance cars, the time of evacuation to the MDS in many cases would have been increased threefold. The New Zealand Section MAC was posted to the Division for this campaign and provided a plentiful supply

of ambulance cars for frequent and rapid evacuation of cases. The ADMS 2 NZ Division paid a tribute to the work of the stretcher-bearer squads and jeep drivers, who often worked for long periods under the most trying conditions.

In the static warfare that continued into January 1944 the positions of the medical units remained much the same, except that on 25 December, when 6 Infantry Brigade relieved 5 Infantry Brigade on the sector east of Orsogna, part of 6 ADS moved forward to establish a car post within 1000 yards of the battalion RAPs, with the remainder of the ADS taking over from 5 ADS on Sfasciata ridge the following day. Rain and snow on New Year's Eve levelled much of the tentage of the ADS to the ground, but all patients were held overnight at the car post, which was in a building. When 5 Brigade relieved 6 Brigade in the line on 2 January, 5 ADS took over again from 6 ADS. At Castelfrentano 5 Field Ambulance relieved 6 Field Ambulance on 7 January in the running of the MDS.

There was a change of commanders of 5 Field Ambulance on 14 December when Lieutenant-Colonel R. A. Elliott assumed command from Lieutenant-Colonel J. P. McQuilkin prior to the latter's return to New Zealand.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK AT THE BATTLE MDS

Work at the Battle MDS

At Atessa from 20 November to 31 December (mostly prior to 14 December) 4 MDS admitted 751 patients, whose wounds totalled 1116. There were 198 major operations performed, including 43 by 1 General Hospital surgical team (Major A. W. Douglas), while 186 patients were given transfusions. At the MDS there were thirty deaths, principally among abdominal cases.

At Castelfrentano from 14 to 31 December 6 MDS admitted 591 battle casualties, of whom 449 were New Zealanders and the remainder mainly British or prisoners. There were 178 major operations performed, including 37 by 1 General Hospital surgical team and 46 by 127 Paratroop Field Ambulance surgical team. From 1 to 7 January 66 battle casualties were admitted, of whom 48 were New Zealanders.

From 7 to 20 January at Castelfrentano 5 MDS admitted 152 battle casualties, of whom 63 were New Zealanders. The New Zealand Division was withdrawn from the line before the end of this period. During the first two months of active operations in Italy the New Zealand casualties were: killed 399; wounded 1116; prisoners of war 100. There were also 1259 cases of sickness evacuated from the Division.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK OF 4 MDS AT ATESSA

Work of 4 MDS at Atessa

Wounds at that time were mainly caused by shells or bullets and there were fewer mine wounds, hence very few severe tarsal injuries. Figures are available giving the percentage of wounds caused by different missiles at that period as follows:

	Number	*Percentage*
Bomb wound (mortar)	**62**	**8·25**
Shell wound	**396**	**52·72**
Bomb wound (aerial)	**60**	**7·98**
Grenade	**9**	**1·19**
GSW (small arms)	**149**	**19·84**
Mine wounds	**68**	**9·05**
Weapon (unspecified)	**7**	**·93**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WOUND LESIONS

Wound Lesions

At the same time, out of 751 wounded casualties with 1116 wounds, there were the following lesions: fracture of femur, 18; total fractures, 168; penetrating heads, 22; penetrating chests, 33; thoraco-abdominals, 4; penetrating abdomens, 34; eye, 8; burns, 21.

There were also 98 cases of exhaustion, more than half from the last three reinforcements. Good use was made of the Corps Exhaustion Centre.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DEATHS

Deaths

There were 30 deaths in the MDS, a percentage of 4. Of these 13 were abdomens and abdomino-thoracics, 6 were severe multiple limb wounds, 5 were chest wounds, 4 were head wounds, and 2 were wounds of the spinal cord.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

OPERATIONS

Operations

Operations performed by 1 NZ General Hospital team totalled 43 (18 abdomens), and by unit teams, 155 (11 abdomens).

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK OF A FORWARD SURGICAL TEAM

Work of a Forward Surgical Team

The range of work undertaken by the forward surgical teams is illustrated by the records of 1 NZ General Hospital surgical team during December.

Operations performed: total operations 78; evacuated 55; still in MDS 6; died 17.

Type of case: abdomen 34; head 2 (both also abdomens); spine 1; chest 12; urethra 2; amputations 7; compound fractures 24; joints 7; facio-maxillary 3; flesh wounds 21.

Nearly all the abdominal cases were dealt with by this team and all were operated on. Three cases of gas gangrene were seen, and in two other cases infection appeared and caused death later, after evacuation. The necessity for more thorough excision of the wounds was realised, as infection of wounds was more prevalent than it was in the desert campaigns. Post-operative chest complications were common, probably due to the high incidence of upper respiratory infections at that time.

In January 33 operations were performed, 11 being abdomens. There were 6 deaths.

TRANSFUSION TEAM

Transfusion Team

Full provision of blood was available, with one exception when on 6 December at Atessa 23 pints of blood were taken from local unit donors. Forearm veins were utilised. Plaster-of-paris cuffs were placed round the forearm to fix the needle.

The practice at that time is illustrated by the figures showing the cases treated by the resuscitation officer and the number transfused.

Cases	*Transfused*	*Average Amount*
Heads 19	**4**	**2 pints blood.**
Chests 25	**7**	**1·4 pints blood.**
Abdomens 42	**42**	**2 pints blood.**
Burns 10	**8**	**3·6 pints plasma.**
Limb wounds 128	**56**	**2·1 pints blood.**
		1·2 pints plasma.
Gas gangrene	**3**	**1·6 pints blood.**
		3·0 pints plasma.

Altogether in this group, 219 pints of blood were given to 106 patients, and 210 pints of plasma were given to 135 patients. The need for a relieving transfusion officer was stressed. This relief was normally supplied by the resting field ambulance.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CIVILIAN CASUALTIES

Civilian Casualties

These were a constant problem as the peasants would not leave their homes and attempted to carry on their normal activities in the forward areas. At Atessa the nuns in the civil hospital held as many civilian cases as they could under conditions of gross overcrowding and shortage of supplies. The patients were treated by the ambulances and then evacuated to the civil hospital at Vasto. They naturally added to the work of the ambulances and used up the medical supplies.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION FROM MDS AND CCS

Evacuation from MDS and CCS

The wounded were evacuated from Atessa by motor ambulance to Vasto, at first, by the Casalanguida– Gissi road and later by Scerni and Cupello. Sick were evacuated from Gissi direct to Termoli. From Castelfrentano the route was along the road parallel to and south of the Sangro to join the Casalbordino and coast roads at the mouth of the river. At first the main road, Route 16, through Casalbordino, was used, but by 14 December the much shorter and level coast road came into operation and it was possible to cover the distance to Vasto in one and three-quarter hours. Before the NZ CCS was functioning at Vasto a British CCS admitted all our patients, and head, eye, and facio-maxillary cases continued to be sent to the special centres established there after our own CCS was open and able to take all other New Zealand casualties.

From Vasto evacuation was by motor ambulance at first to San Severo, where part of 1 NZ CCS was stationed for a short time, and thence by ambulance train to Bari, where 3 NZ General Hospital was open. Later, the railhead was shifted forward to Termoli and two British CCSs established there as staging posts. The road north of Termoli was soon in bad condition and remained so throughout the winter, causing some delay in the evacuation of casualties. Some congestion at Termoli was caused during December by the withdrawal of ambulance trains to the east coast. The train service to Bari was also interrupted from 2 to 16 January because of flood damage to the railway bridge over the Trigno, and the railhead had to shift back to San Severo. Most of our cases were staged at Termoli. This broke our New Zealand line of evacuation and upset our plans formed at the CCS for the disposal of our cases. Many patients were evacuated on the understanding that they would proceed straight through to Bari, and for some of the cases it was

especially desired that further surgical work should be carried out at 3 General Hospital soon after arrival. An unbroken line from the Division to Bari would have been a great advantage.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE WORK OF THE CCS

The Work of the CCS

The school taken over by the CCS at Vasto was a three-storied building in the centre of the town. The personnel were quartered in several buildings nearby. Accommodation in the school allowed for 120 beds, with a crisis expansion of sixty stretchers in corridors. There were spacious rooms and wide passages, but the need to carry stretchers up and down stairs was a serious drawback. There was a constant, large turnover of patients and, though the greater part of the major surgery had been already carried out at the MDS, 338 cases were operated on during December, 312 being battle casualties. The large majority of the cases were soft-tissue wounds and fractures. The total admissions during December were 1461. The majority of the patients were evacuated early to Termoli, but a small number of seriously ill patients, mainly chests and abdomens, were retained till they were fit for further transport.

A surgical team from 3 General Hospital was attached for a short time and then replaced by 8 British FSU, a British FTU being also added. Both units were of great assistance to us, but it was felt that we should have provided our own forward operating units, especially as the experience gained in this work was very valuable to those working normally at base hospitals. It was the type of work sought after by our own medical officers, who would possibly have felt more content in the inevitable lulls when surgical work was small in quantity and rather unimportant in character. The provision of an extra surgical team from the Base would have enabled us to carry on, except in times of great stress, without the help of British teams. An extra FTU was also required at the CCS.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGICAL POLICY

Surgical Policy

The surgical policy at the MDSs during the Sangro battles was dictated solely by the time factor for evacuation between the MDS and the CCS. From 4 MDS at Atessa the road to Vasto via Scerni and Cupello was poor and deteriorated rapidly in wet weather. The journey for ambulance cars usually took four to five hours. It became dark about 4.30 p.m. and the journey after dark became very much slower and not without hazard. Therefore, most of the surgery was done at the MDS, where conditions in the civil hospital building were good. Evacuation from forward areas was slower than occurred in the desert warfare. Wounded tended to arrive in a steady stream and not in large convoys, and there was never a large number of cases awaiting operation at one time. It was certain that few, if any, abdominal cases would have survived operation after the journey to Vasto, their condition being precarious enough on arrival at the MDS. The same consideration applied to more serious limb injuries at 4 MDS. There were two cases of gas gangrene whose onset preceded admission to the MDS—a course distinct from the usual insidious onset and benign nature of this infection occurring in the desert.

From Castelfrentano, where 6 MDS opened on 14 December, the evacuations could be carried out along a better road down the Sangro valley and more cases were sent to 1 Mobile CCS for their initial surgery, but a large proportion of surgery was still done at the MDS. On 18 December ADMS 2 NZ Division held a conference of all unit commanders at 6 MDS at Castelfrentano, and the question of treatment and evacuation of casualties was discussed. The main discussion was on the type of case to be dealt with at the MDS and CCS. The general feeling was that everything depended on the line of evacuation from the MDS to

the CCS. If this was short in time, the majority of cases, excluding chests, abdomens, and severe fractures, could be evacuated with minimal treatment at the MDS. If, however, conditions on the road were such that long delays were inevitable, considerably more surgery would have to be performed at the MDS. To meet this contingency extra surgical teams would have to be made available.

The opinion of the divisional units was not entirely supported by the British consultants, and there was a feeling that possibly too much stress was being laid on the urgency of operation and too little on the other factors determining the survival of the wounded man. The New Zealand consultant surgeon made the following comments at the time:

While the MDS was at Atessa and nursing sisters could be utilised, conditions were probably satisfactory, but later at Castelfrentano conditions deteriorated. It was rightly deemed unsuitable to employ sisters there and the surgical conditions were in no way comparable to those provided at the CCS. The distance by road between the MDS and the CCS was such that it could be covered under good conditions by ordinary car in two hours. Under such conditions one feels that the greater part of the operative work should be carried out in future at the CCS and the NZ surgical team be attached to the CCS especially for the treatment of abdominal cases.

The performance of the primary operation as early as possible is the surgical ideal, but I feel that does not mean the performance of surgery in the actual battle zone under relatively unsuitable surroundings and uncomfortable and disturbing conditions for the patients and the surgical staff. A slightly longer delay is more than worthwhile if the operations can be more efficiently done by a more rested staff and much better nursing facilities and comfort provided afterwards.

The really urgent conditions of haemorrhage, the removal of mangled limbs, and the tamponage of sucking chests must necessarily be done regardless of refinements, but the rest of the surgery should be carried out under as good conditions as possible. It would appear that

under European conditions the CCS will generally be able to be moved near enough to the battle area to carry out the primary surgery. If that is impossible, then the MDS that will be constituted a forward operating centre should be placed far enough back to enable the surgery to be performed under conditions comparable with those available at the CCS and under conditions which might render it possible to employ nursing sisters.

Elasticity of staff should be possible, to switch over personnel – medical officers, sisters and orderlies, to the place they are most needed, and that elasticity has been evident in the Division latterly.

Our main difficulty is the undoubted zeal of our medical personnel in the Division which urges them to carry more than their relative share of the treatment of the wounded men.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGERY

Surgery

The surgery performed had become by this time fairly standardised and similar to that carried out during the Tunisian campaign. More wound infection, however, was encountered in Italy and more radical cleansing of the wound was therefore undertaken. Antitetanus serum and sulphonamide tablets were given regularly to the wounded. The main development was in the use of penicillin.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PENICILLIN

Penicillin

Lieutenant-Colonel Jeffreys, RAMC, was in charge of penicillin distribution in Italy and he visited both the CCS and 3 General Hospital and made arrangements for its use by our staffs. Fortunately, both Lieutenant-Colonel Button, the officer commanding the CCS, and the staff of 3 General Hospital had had experience of the treatment at Tripoli. Only a limited supply of penicillin was available and it was restricted to special types of recent casualties. Penicillin was first used prophylactically in a forward dressing station in Eighth Army on 10 January 1944, a supply having been left by Lieutenant-Colonel Jeffreys at 5 NZ MDS.

***Use in Cases of Fracture and Flesh Wounds*: No. 3 General Hospital was chosen for trials in cases of fractured femur and tarsus as well as in chest cases. The method then adopted for ordinary wounds was:**

1. **Spray penicillin sulphathiazole powder on the primarily trimmed wound.**
2. **Evacuate the patient without disturbance of the dressing to the Base, and**
3. **Perform delayed primary suture on arrival at the base hospital by:**
   - **(*a*) Spraying penicillin sulphathiazole powder on the wound and suturing with or without small stab drains; or**
   - **(*b*) Putting in small rubber tubes through stab holes at the side of the sutured wound and instilling penicillin solution twice daily for five days.**

With regard to fractures the same primary treatment was adopted and suture carried out at the Base, but:

(The wound was not completely sutured, a defect being left for

a) drainage in the centre.

b) (Sodium penicillin was injected intramuscularly three-hourly, in doses of 15,000 units for five or more days.

c) (The limb was put up in plaster and left untouched for three weeks unless complications arose.

Penicillin powder was also sprayed on older wounds daily for several days before secondary suture.

In Chest Cases: Sodium penicillin was used intramuscularly for infected haemothorax with temporary success, but relapse followed. It was then introduced into the pleural cavity with much better results and the potency was found to remain for more than twenty-four hours. In cases of sealed drainage penicillin was then introduced through the tube, which was clamped for several hours. It had been suggested that penicillin fluid should be injected in small dosage in the forward areas after each tapping of the chest, so as to prevent the onset of infection. There had been a notable increase in the frequency and severity of infection in chest wounds in the early Italian campaigns.

*Drainage in Chest Cases:*If infection supervened drainage by inter-costal tube was instituted and penicillin introduced daily through the tube. If infection still persisted, rib resection was found to be necessary not more than ten days later.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RESULTS OF PENICILLIN TREATMENT

Results of Penicillin Treatment

The results obtained at 3 General Hospital were promising, especially in fracture cases. Instillation into the knee joint was also practised with success. A demonstration of cases treated with penicillin was held at 3 General Hospital and was attended by the staff of 2 General Hospital and other medical officers, all of whom showed enthusiasm for the treatment.

PENICILLIN IN GAS GANGRENE

Penicillin in Gas Gangrene

There had been some increase in the incidence of gas gangrene and penicillin had been utilised in several cases with marked success. One patient recovered in spite of gangrene of all the adductors and the quadriceps complicating a shattered fracture of the upper end of the femur. There was spread of the infection also into the abdominal wall. Amputation was performed through the hip joint and penicillin given intravenously in glucose saline drip for three days. Large doses of serum were also given. The patient recovered. Five cases of gas gangrene, with three deaths, were noted at the CCS during December. Major MacLennan, RAMC, had reported that there was an incidence of 1 per cent of anaerobic infection in Italy, and that this approached the incidence in Flanders in 1918. A total of six cases was notified in the Division in December.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

AT 3 GENERAL HOSPITAL

At 3 General Hospital

The month of December was particularly busy for 3 NZ General Hospital at Bari. The hospital was still being developed on its new site, having 480 beds equipped by the end of November, and was preparing to receive further battle casualties when there was a devastating air raid on Bari harbour on the evening of 2 December. Explosions of ammunition ships resulted in nearly all the hospital windows being shattered, fortunately without serious injury to any of the staff or patients. In the docks area civilians and service personnel were killed and injured. Of the latter, 177 were treated at 3 General Hospital, 77 of them being admitted and 14 dying later. The service personnel admitted were suffering from blast and shock. Almost all were covered with a deposit of fuel oil, some had ordinary burns of the face and hands, while others suffered from mustard gas burns, which caused blistering and a severe degree of conjunctivitis.

The battle casualties arrived in good condition by ambulance train from San Severo, but it was difficult to provide equipped beds for the increasing number of patients. At times stretchers were used in corridors and unfinished parts of Beirut block, but the efforts of British engineers and the staff of the unit resulted in 1020 beds being available by the end of the month. Large numbers of convalescent patients were sent to the Convalescent Depot, and this relieved the congestion in the wards.

The hospital was short-staffed at the time, particularly as regards surgical officers. A surgical team was lent to the CCS for a short period but returned to the hospital before the heaviest work there. Fortunately, an orthopaedic surgeon was attached on 18 December and was able to treat the serious fractures. In the large buildings numerous special

departments were set up and operating theatres constructed and elaborately equipped.

In the treatment of wounds penicillin was gradually introduced and secondary wound suture was performed in some cases. Dressing and the application of plaster splints was the common operative procedure.

During December 1611 patients were admitted, 926 being wounded; many of them required considerable attention, as is shown by the fact that the average number on the seriously ill list throughout the month was 38.

The evacuation of patients from Italy was at this time far from satisfactory. On one occasion 130 patients were sent at short notice to Taranto to be loaded on a hospital ship for 1 NZ General Hospital, Helwan, but it was found that the ship could not take Indian and British personnel together. Arrangements were eventually made for sixty-seven of the worst cases to be taken, but the remainder had to be left at 70 British General Hospital, Taranto, until another ship arrived two days later.

The following assessment was made of the results of treatment of battle casualties admitted to 3 NZ General Hospital from the Sangro battle:

The results in cases of penetrating abdominal and thoraco-abdominal wounds were satisfactory. Stomach and small intestine cases recovered well without complications, as did injuries to the spleen and diaphragm.

Wounds of the liver did not do so well and there were two deaths in four cases. Drainage of the abdomen in these cases was suggested.

A third of the penetrating wounds of the thorax were infected and five out of twenty-two had to have rib resection. It was advised that such cases be evacuated early from the forward areas and that intercostal drains should preferably be inserted at the base hospital where penicillin

could be given. The instillation of penicillin into the pleural cavity and early evacuation was advised.

A comment by the surgical divisional officer, Lieutenant-Colonel Bennett, [1] was:

The severity of the cases in many instances has been notable. Multiple serious injuries are common, a number of cases having several such lesions as compound fractures of one or more limbs, together with penetrating wounds of the thorax and abdomen and multiple soft tissue wounds. These patients have travelled well and arrived in good condition. A justifiable conclusion is that these cases, almost entirely treated in NZMC units, are now surviving because of the standards of resuscitation and surgery in forward areas.

A blood transfusion centre for the Italian campaign had been set up at Bari and was functioning satisfactorily, providing adequate supplies of blood for both forward areas and base hospitals.

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[1] Lt-Col L. A. Bennett; Christchurch; born Nelson, 16 Oct 1896; surgeon; surgeon HS *Maunganui* Apr-Nov 1942; 2 Gen Hosp Nov 1942–Jun 1943; 1 Mob CCS Jun–Oct 1943; in charge surgical division 3 Gen Hosp, Oct 1943–Sep 1945.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF THE TROOPS

Health of the Troops

The health of the troops in the first few months in Italy was maintained at a good standard. The incidence of sickness was low during November in spite of the change of climate, the only increase of note being in respiratory and functional nervous diseases. The daily admissions to hospital were 1·09 per 1000 for officers and 1·19 per 1000 for other ranks, as compared with 0·84 and 1·12 in October. The rate increased a little to 1·3 per 1000 in December and January.

Accidental injuries showed a marked increase in November and accounted for 434 admissions to medical units out of a total of 2000.

In December the prevalent conditions in Italy were skin diseases, upper respiratory infections, diarrhoea, and infective hepatitis, with a noticeable increase in hepatitis from sixty to ninety-eight cases. There was a widespread incidence of diarrhoea noted in the Division with an onset very akin to hepatitis, but with no development of jaundice. Relapses were common. Minor cases of sickness, including upper respiratory infections, tonsillitis, and gastro-enteritis, were retained in the MDS up to nine days for return to their units. All cases of hepatitis were evacuated to the Base.

In January the same diseases were encountered and there was no increased sickness in spite of the extreme cold and wet on the Sangro front. There was only a very slight increase in the number of hepatitis cases. Four cases of typhoid were recorded, two occurring in recent reinforcements who had not been re-inoculated in the Middle East.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MALARIA

Malaria

This was known to be prevalent in many places throughout Italy and malaria surveys had been carried out and the danger areas plotted on maps, so that army commanders could determine the most satisfactory areas in which to concentrate the troops. As a precautionary measure, the taking of mepacrine tablets was made compulsory throughout the force for six days in the week during the malaria season. The hygiene sections and special anti-malaria divisional and unit teams carried out a regular campaign against the mosquito. In doubtful areas mosquito nets and repellents were used, and care taken with regard to dress. The incidence in the New Zealand force was very low. Even though the Division arrived in Italy late in the malaria season it was at first camped in a malarious area, and the very few cases of malaria contracted was a tribute to the discipline of all ranks.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

VENEREAL DISEASE

Venereal Disease

This was very prevalent in Italy and the war conditions made it difficult to control, as clandestine prostitutes abounded in every large town. Brothels were licensed by the civil authorities, but accosting was not permitted and the women could be arrested and given treatment. Treatment by sulphonamide was at first unsatisfactory owing to the presence of sulphonamide-resistant strains of gonococci. This was thought to be due to the regular taking of sulphonamides by the prostitutes both for prophylaxis and treatment. Treatment of our cases was thereby prolonged, and local antiseptic measures had to be again resorted to and many cases were given treatment in hospital.

The number of fresh cases during the month of November was 42, of which 16 arose in Egypt and the remainder in Italy. Of these, 10 were gonorrhoea, 4 venereal sores, 2 syphilis, and 10 non-venereal.

In December 55 fresh cases were treated, 35 of them gonorrhoea, 17 venereal sores, and 3 cases of syphilis. Of the gonorrhoea cases 82 per cent returned to their units, the remainder being sulphonamide-resistant.

In January there were 38 new cases, of which there were only 8 fresh cases of gonorrhoea and 1 of syphilis. It will thus be seen that there was a low incidence of venereal disease at this period.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TYPHUS

Typhus

Before leaving Egypt the troops had all been given typhus inoculations and wide publicity was given to the precautions to be taken against the vector of the disease—the louse. The addition to the Division of a mobile laundry and bath unit, as well as the shower and disinfestation equipment of 4 Field Hygiene Section, enabled every man to obtain a hot shower and complete change of underclothing more frequently—the administrative aim was at least once a week.

This mobile laundry and bath unit was available in the divisional area and was set up at Atessa. It provided excellent facilities for washing blankets and towels as well as hot showers for the units operating in that area.

The Field Hygiene Section made full use of its shower unit during the campaign. The equipment was badly worn but over 450 men a day were dealt with. At Castelfrentano 10,500 were given showers and the unit was kept as near the forward troops as possible. Units also erected their own home-made patterns of shower. This undoubtedly contributed to the absence of typhus infection.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

IMMERSION OR TRENCH FOOT

Immersion or Trench Foot

This condition arose only in a very minor degree in the Division, although during the same period in Italy there were numerous cases in the American army. Our immunity can probably be ascribed to the recognition of the danger and to the provision of a pair of dry socks daily for the forward troops, thus ensuring that the feet were dry and clean, and to the encouragement given to the care of the feet. Cleanliness was also ensured by the provision of showers.

There were none of the factors present that made trench foot such a common and serious disability in France in the 1914–18 war. There was no constricting puttee; there was no prolonged occupation of wet, muddy trenches. The battle-dress trousers were loose and the feet were not constricted by wet, shrunken socks. The general health of the troops was also satisfactory and the rations excellent.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CLOTHING

Clothing

Full-scale winter clothing was worn during the winter months. Extra socks were available, and men of units in the forward areas were issued with a clean pair every night with the rations.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RED CROSS STORES

Red Cross Stores

A liberal supply of Red Cross comforts began to arrive in December for patients in medical units and these were most welcome. The most useful items were ditty bags, warm pyjamas, bed socks, bed jackets, hot-water bottles, and foodstuffs.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WATER

Water

Water supplies varied according to the nature of the country and the location of the units. Wells, rivers, streams, and town water supplies were all used. The large proportion of magnesia in the water had a laxative effect, and unless the water was boiled and allowed to settle before being again boiled for tea, it tended to retain the chlorine taste. With the amount of unburied excreta on the surface of the ground, units were advised to exercise great care in the use of wells, most of which depended upon surface drainage. The principle was laid down that all water in Italy should be regarded as contaminated and treated accordingly. Divisional water points were established when practicable, one being established by 4 Field Hygiene Section on the banks of the Sangro River, filtration being necessary.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RATIONS

Rations

Rations issued to all troops were adequate and varied. They were the best issued to the Division during four years of war. The issue of fresh meat and fresh vegetables particularly was frequent and gave a greater variety to the meals.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SANITATION

Sanitation

In the matter of sanitation it was found that the first troops to occupy a town were, by reason of operational urgency, unable to give any time to the construction of sanitary installations. Succeeding formations of different nationalities occupying the area tended to do nothing on the principle that they themselves would be moving on within a short interval. However, partly due to active inspectorial work by 4 Field Hygiene Section, of which Major Knights [1] was now OC, most New Zealand divisional units employed satisfactory measures for the disposal of excreta and refuse. Deep-trench latrines were established when civilian arrangements were unsatisfactory. Refuse was burnt and then buried.

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[1] **Maj H. T. Knights, m.i.d.; Christchurch; born Auckland, 23 Jan 1908; medical missionary, Belgian Congo; medical officer 3 Gen Hosp Mar 1941–Jun 1943; OC 4 Fd Hyg Sec Jul 1943–Dec 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

LESSONS FROM INITIAL OPERATIONS IN ITALY

LESSONS FROM INITIAL OPERATIONS IN ITALY

Operations in Italy presented to the medical services a number of problems not met with in the more open country of Egypt and North Africa. The two ruling factors in the Sangro and Orsogna operations were the roads and the weather. These were the main factors to be considered in deciding the extent of surgical treatment to be given in forward areas, the type of transport required, the locations of ADSs, MDSs and CCSs, and the accommodation required for each.

The outstanding lesson learned was the need for elasticity in all branches of the medical services, and an attempt was made to provide this by reinforcing one medical unit by another. As occasion demanded, companies and sections were split so as to have the minimum of personnel necessary for efficiency at resuscitation posts, car posts, and dressing stations.

Normal methods had to be adapted to meet local conditions. The ADS had to be located well forward and in a building. The lower rooms with a big fireplace found in most houses were ideal for the purpose. In most cases a section only of a field ambulance company was required as an ADS. The rest of the company was located further back to act as a car and resuscitation post and reinforce the forward section when necessary. This rear section also provided bearer squads for evacuation of patients from RAPs.

Equipment for the forward section was taken up by bearers, jeeps, ambulance cars or mule transport, and consisted of full resuscitation equipment with blood, wet and dry plasma, instruments, steriliser, dressings, splints, medical comforts, 40 stretchers, 100 blankets, and 20 hot-water bottles. Replenishment by the usual channels was adequate, 7

Advanced Depot Medical Stores being located at Vasto.

The companies of 4 Field Ambulance were organised in half-company sections for use with 4 Armoured Brigade, and this proved most successful.

The practice as regards MDSs was to have two field ambulances open in buildings: the forward one to sort all cases and treat battle casualties; the rear one to act as a reception station for sick and such casualties as occurred in rear areas. As the fighting moved ahead, the forward MDS took on the work of the reception station, and the reserve field ambulance opened further forward.

The forward MDS consisted of the usual two companies of the field ambulance, reinforced by 1 General Hospital surgical team, 2 NZ Field Transfusion Unit, two relief surgical teams from the reserve MDS (and, if necessary, from the field ambulance holding sick), a relief transfusion team from one of the other field ambulances, and one section from the Mobile Dental Unit. This forward medical centre was then capable of treating and, if necessary, holding all types of casualties. No limit was placed on the surgical work to be done at this MDS, the policy being to leave the decision to the OC of the unit, as the evacuation time to the CCS varied for each battle.

The primary function of the rear MDS was to sort out all cases of sickness, holding those who would be fit to return to their units within eight to ten days. However, there were always a few casualties from shelling, bombing, or mines in the rear areas and one competent surgical team had to be retained at this MDS. It was usual, too, for 102 Mobile VDTC to be attached to this MDS to treat venereal disease patients within the Division.

The reserve field ambulance provided relief surgical and resuscitation teams, medical officers, and drivers for jeeps, together with extra stretcher-bearers if required by the ADSs. The attachment of a transfusion team to 2 NZ FTU enabled extra transfusion orderlies to be

trained to provide a reserve within the Division.

During the campaign 1 NZ Mobile CCS was under command of 2 NZ Division. This resulted in all cases from the Division passing through a regular evacuation channel, and allowed for continuity of treatment with benefit to the patients. This unit at first had the assistance of a surgical team from 3 NZ General Hospital and later of another from 8 British FSU.

The mobile shower section of 4 Field Hygiene Section worked continuously throughout the campaign, an average of over 450 troops receiving showers each day. A small unit such as this could be carried on one truck, and if one was available for each brigade group every man would be able to have a shower at least once a week. The natural inclination of the Italian to ignore even the most elementary sanitary principles added greatly to the work of 4 Field Hygiene Section itself.

In the past 1 Mobile Dental Unit had worked only when the Division was in reserve. From the start of the Italian campaign dental sections were attached to brigades and divisional troops throughout the Division. All troops were within easy reach of one of these sections and, as a result, were able to receive attention with a minimum period of absence from their units. It was found that, when the mobility of the Division in a campaign was fairly restricted, the dental condition of the Division would be satisfactorily maintained by this method, with the co-operation of all unit commanders.

It was found to be essential to use buildings to accommodate medical units during the winter months in Italy. School buildings, usually found in each town, were suitable for both MDSs and CCS, but careful reconnaissance and planning were necessary to make the best use of the existing buildings. It was advisable for these units to have accommodation for 200 patients but this was not always possible. If less accommodation was available, good evacuation facilities were desirable as a compensating factor.

In the buildings an absence of glass was universal following heavy shelling. Window-proofing by blankets was found to be both inefficient and wasteful. When a small supply of window-lite (pliable transparent material on a netting base) became available, it was most valuable. Temporary repairs to roofs were effected by the use of canvas covers until Italian labour could be obtained through the local Allied Military Government office to repair damaged tiles. Unit vehicles were equipped with penthouses, and adaptations of these proved very useful as offices, workshops, cookhouses, and dispensaries.

Heating was a major problem, but plentiful supplies of wood were available in most places and drum heaters with chimneys were built by units. The late arrival of kerosene heaters relieved a difficult situation. Difficulty was experienced with the primus stoves which were relied on so much in the field ambulances. Constant wear and tear was experienced and repairs and supplies, especially of spare parts, were a difficulty.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 14 — CASSINO

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

WHILE the Eighth Army had been striving vainly for a breakthrough on the east coast, the Fifth Army on the western side of the Apennines had fought for a breakthrough to Rome, but its progress had been slow and costly. The American, British, and French troops had come up against the immensely strong enemy line based on Cassino. The coming of the winter had seen a virtual stalemate along the whole Allied front line. It had been impossible for tanks to manoeuvre in open country and for any motor transport to function away from the main roads. The country became a muddy morass in which heavy vehicles became bogged, and this hopelessly restricted the attacking force. Despite the unfavourable weather the Allies decided to make every effort to capture Rome and at the same time deny the enemy the leisure to strengthen his already powerful defences.

Plans were made for a major offensive on the Fifth Army front. Because of the complete mobility and hard-hitting power of 2 NZ Division, it was decided to switch this force from the Eighth Army to the Cassino front. When the way into the Liri valley behind Cassino was clear, the Division was to take swift advantage of the breakthrough by pursuing and harrying the retreating enemy.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DIVISION JOINS FIFTH ARMY

Division Joins Fifth Army

The move was carried out in the strictest secrecy. In mid-January in the Orsogna sector 4 Indian Division relieved the New Zealanders, who had been led to believe that they were being withdrawn for a long period of rest and training. Only a few senior officers knew the facts until the long convoys were well on their way across Italy. The move south and across the Apennines was made in three stages, finishing at the divisional assembly area near Alife, about 35 miles north of Naples.

Leaving the Sangro area with the first flight of vehicles on the night of 13–14 January, 6 Field Ambulance reached Alife on the 17th and established an MDS for holding divisional sick. The sites of the open ADSs and MDSs on the Sangro front were taken over by units of 4 Indian Division, 4 MDS closing on 17 January and 5 MDS, with attached units, on 20 January. At Vasto 1 Mobile CCS, with 8 British FSU attached, also closed on 18 January and moved with the Division to the Fifth Army front. The whole Division had assembled in the new area at Alife by 25 January. Here all medical units rested, with the exception of 6 Field Ambulance and 102 VDTC.

The opportunity was taken to check over all medical supplies and vehicles. Indents for medical supplies were well met by 10 British Advanced Depot Medical Stores. Training and lectures were instituted.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BATTLE SITUATION AT CASSINO

Battle Situation at Cassino

The enemy's Gustav line crossed the peninsula at its narrowest point where rugged hills formed a series of natural obstacles most favourable to the defenders. Rome was the Allies' objective, and the only possible route to it was along the valley of the Liri River, the entrance to which was dominated by Montecassino, or Monastery Hill. This was a rocky spur which rose steeply from the plain to a height of about 1700 feet. On top was the Benedictine Abbey. To the north-west was a mountain ridge along which the American forces had advanced, almost reaching the fortified hilltop, Point 593, and Monte Castellone. Beyond this again was majestic, snow-capped Monte Cairo.

During January Fifth Army was conducting an offensive whereby 2 US Corps, with flank support from 10 British Corps and the French Expeditionary Corps, attempted to cross the Rapido River to take Cassino and enter the Liri valley. Then, on 22 January, 6 US Corps landed at Anzio and secured a bridgehead, but its expansion was effectively prevented by the enemy.

The offensive at Cassino met with extremely fierce opposition and there was no quick breakthrough for the New Zealand Division to exploit as originally planned. In early February there was bitter fighting on all sectors of the Fifth Army front, where Cassino and Monastery Hill had become the principal objectives, but repeated attacks by 2 US Corps met with little success. At this stage 4 Indian Division came from the Orsogna sector to join 2 NZ Division and with it form a corps which was placed under the command of General Freyberg. A strong concentration of British, Indian, and American artillery units, and an American armoured force, were included in the corps, and 78 British Division was

added later.

The initial task of the New Zealand Corps, which officially came into being on 3 February, was to support the continuing American assault on Cassino, it being understood that if the fortress had not been captured by 12 February NZ Corps would assume responsibility for the sector. By that date the Allies held only a few houses on the northern outskirts of Cassino, but to the north 2 US Corps had reached Point 593 and had captured part of Monte Castellone. Command of the sector therefore passed to NZ Corps, of which 5 Brigade had on 5 February gone into the line along the Rapido and Gari rivers, while 4 and 6 Brigades remained in reserve.

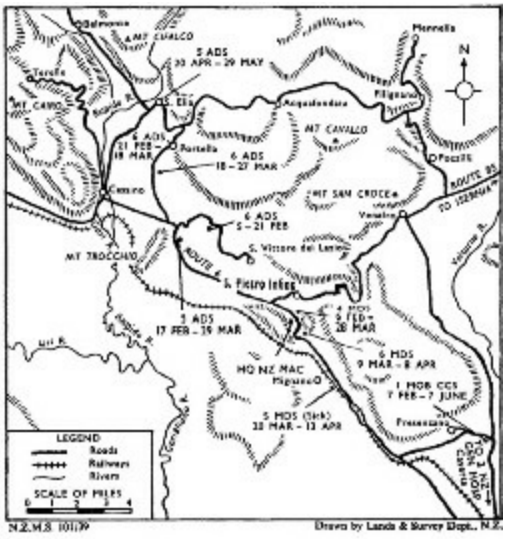
NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SITING OF 2 NZ GENERAL HOSPITAL

Siting of 2 NZ General Hospital

In the meantime the staff of 2 General Hospital had crossed the Mediterranean and reached Taranto on 8 January, just prior to the switch of 2 NZ Division to the Fifth Army front.

When it was decided that this unit should go to Italy, the Division was in action on the Sangro on the eastern side of the peninsula with the line of evacuation of casualties down the coast to Bari, where 3 General Hospital was established. A seminary for the training of young priests at Molfetta, a small town on the coast north of Bari, was first selected by Brigadier Kenrick in consultation with Brigadier Galloway, DDMS Italy, as the site for 2 General Hospital. Objections, however, were raised by the Vatican to this proposal, as the seminary was a papal institution. Urgent representations were then made by General Freyberg to Brigadier Galloway, and the Consultant Surgeon 2 NZEF, Colonel Stout, was sent to Naples to interview both Brigadier Galloway and Major-General Cowell, DMS Allied Force Headquarters. As a result, it was decided to pursue the matter at the highest levels as there seemed to be no other satisfactory building available at that time for the hospital. The transfer of the Division to the Cassino front had, however, been decided on by this time, and Brigadier Galloway suggested that a section of 2 General Hospital should take over 250 beds in the large barracks at Caserta occupied by 2 British General Hospital. General Freyberg immediately agreed to the proposal, and later Brigadier Kenrick arranged for 2 General Hospital to take over from the British hospital buildings and ground sufficient for the setting up of the whole hospital, which was to run a 600-bed independent unit.



Cassino and Mountain sector showing Medical Units

Cassino and Mountain sector showing Medical Units

An advance party consisting of Lieutenant-Colonel Clarke [1] was sent over by air to Italy and inspected possible sites on the east coast, but found none suitable except the Molfetta seminary. The rest of the unit on arrival was accommodated at 3 General Hospital and at Advanced Base till the equipment arrived from Egypt. Fortunately, by that time arrangements at Caserta had been completed and it was possible to transfer staff and equipment there and immediately set up the hospital.

The hospital was located in a healthy area in the midst of agricultural land, well planted with deciduous trees, fruit trees, and vines, and partly encircled by the foothills of the Apennines. The district was moderately malarious in summer.

By 31 January three of the five wards in the wing had been taken over by 2 General Hospital and 123 New Zealand patients were in the hospital. The remaining two wards in the wing were staffed by New Zealanders on 8 February, by which date the hospital equipment had arrived, and the unit set about extending its accommodation by erecting tents and making itself independent of certain services of 2 British General Hospital of which it had been glad to avail itself in the early stages. Thus a New Zealand base hospital was established in time for the opening New Zealand operations on the Fifth Army front, just as had happened on the Eighth Army front.

[1] **Lt-Col J. M. Clarke, m.i.d.; Auckland; born Wairuna, Otago, 13 May 1899; surgeon; medical officer 1 Gen Hosp Mar 1940–Dec 1941; 2 Gen Hosp Dec 1941–Dec 1944; in charge surgical division 2 Gen Hosp May 1941–Dec 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NZ CORPS MEDICAL ARRANGEMENTS

NZ Corps Medical Arrangements

The ADMS 2 NZ Division, Colonel R. D. King, also acted as DDMS NZ Corps. This involved extra work for the DADMS, Major Lomas, and the ADMS office staff, but no additional appointments were made other than the appointment on 17 February of Major D. P. Kennedy as DADH NZ Corps. In addition to 2 NZ Division medical units, Brigadier King had under his control twelve Corps medical units, making a total of twice the usual number of officers and men.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SITING OF DIVISIONAL UNITS

Siting of Divisional Units

On the Fifth Army front there was much greater destruction of buildings than on the eastern side of Italy, and all Corps medical units had to resort to the use of tents for all accommodation despite the atrocious winter weather with heavy rain and cold winds. When the Division moved into the line all well-drained areas were already occupied by United States units. Medical units moving to new sites found themselves faced with extensive draining and roadmaking before the areas were made habitable. In this connection valuable help was given by the Divisional Engineers. Available medical areas were so limited in extent that dispersal of tents was impossible. Protection against air attack, although this was unlikely in view of the Allied air superiority, was dependent on a very prominent display of Red Crosses.

In view of the impending operations by NZ Corps, Lieutenant-Colonel J. K. Elliott, CO 4 Field Ambulance, who had been deputed to establish a battle MDS, reconnoitred forward on 4 February along Route 6, the main road to Rome, for a suitable site. The available sites were strictly limited and an open, cultivated field was selected 6 miles south of Cassino, at the side of the main road near the shattered village of San Pietro Infine. This spot was within shelling range of enemy positions south-west of Cassino. In wet weather on 5 and 6 February, the unit moved to this area to erect an MDS. As first priority a semi-circular roadway was formed through the area. Rock was carted by unit transport and large quantities disappeared in the mud. The assistance of the engineers for two days was obtained later and tip-trucks fed by a mechanical shovel made real progress possible. As a preliminary foundation, fascined branches and logs were used. The area was satisfactorily roaded within a fortnight—this was fortunate in view of the extremely wet weather

which followed.

Five tarpaulin shelters were set up in suitable relation to the semi-circular roadway, dispersal not being attempted. Each shelter was provided with a base of a layer of gravel surmounted by a layer of hay. Over this was stretched the canvas floor, and the spreading of more hay on this ensured warm, dry conditions. To heat the shelters an excellent type of down-draught wood-burning stove largely superseded the oil stoves and charcoal braziers. The men of the unit were accommodated in bivouac tents.

When 5 Brigade moved into the line on 5 February, 5 ADS accompanied it and established a tented ADS near the railway line south of San Vittore and 6 miles from Cassino itself. The following day 6 ADS moved up with 6 Infantry Brigade to the San Vittore area east of 5 ADS and continued to function as an ADS to its brigade, which was in reserve with 4 Armoured Brigade; 4 ADS, also in reserve, moved on 6 February to the vicinity of Mignano.

The San Vittore area was well within enemy artillery range and, as troops concentrated in the forward areas, shelling casualties were inevitable, while mines produced further injuries. The first New Zealand casualties were admitted to 4 MDS on 6 February and the operating theatre was in use during the night. The cases were evacuated direct to 2 General Hospital at Caserta, some 35 miles away, until 8 February, when 1 NZ Mobile CCS opened at Presenzano, some 9 miles distant to the east of Route 6. Thenceforth in the Cassino operations, all New Zealand battle casualties were evacuated from 4 MDS to 1 Mobile CCS, all sickness cases to 5 MDS, which opened near Mignano on 8 February, and all cases from 4 Indian Division to 2 Indian CCS, which was adjacent to 1 Mobile CCS. The CCS was set up on a flat, low-lying area of ground which became very wet after rain. With the help of the engineers a semi-circular metal track was formed to lead from the road, through the CCS area, and back to the road again. Ambulance cars came in at one end and departed at the other. Departments of the CCS were set up in order along the track—the reception tent, resuscitation ward, and X-

ray, three operating theatres (for 1 General Hospital surgical team, 8 British FSU, and the CCS itself), wards formed by hospital extending tents, and the evacuation tent. Conveniently arranged about this group were the other departments—medical stores and dispensary, ordnance stores, cookhouses, and mobile lighting sets. This well-ordered layout enabled the work to be carried out expeditiously and efficiently.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ASSAULT ON CASSINO

Assault on Cassino

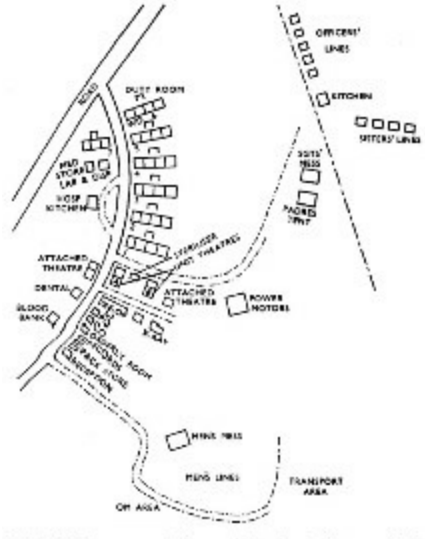
Bombing raids on Monastery Hill by the USAAF began on the morning of 15 February and continued until nearly 500 tons of bombs had been dropped. Then, on the night of 17–18 February 4 Indian Division launched an assault, while simultaneously 28 (Maori) Battalion attacked across the Rapido River along the line of the railway embankment. Hard fighting by both Indians and Maoris and a magnificent engineer effort to bridge gaps in the embankment ended in failure, and extensive operations which depended on the success of the attack had to be suspended.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TREATMENT OF CASUALTIES

Treatment of Casualties

The ground preparations for this attack met with increased shelling and on 16 February forty-five casualties were admitted to 4 MDS. The first Maori casualties arrived at 4 MDS at 2 a.m. on 18 February, which was estimated at three hours after they had been wounded. By 8 a.m. about seventy wounded had passed through the MDS after having been promptly cleared from 5 ADS by ambulance cars. For the attack 5 ADS had moved on 16 February to a house on Route 6. As had happened in the Sangro operations, the attack across the river had meant that most of the walking wounded were wet below the waist. As pyjamas were not suitable for these cases, they were supplied with battle-dress trousers, socks, and sandals from the reserve held by the MDS. There were about one hundred casualties among the Maoris and engineers from the attack.



1 NZ CCS, Presenzano, February 1944, showing layout of unit

1 NZ CCS, Presenzano, February 1944, showing layout of unit

In view of the good road and short trip of about one hour along Route 6 to 1 Mobile CCS, little surgery was done at the MDS, which

accordingly reverted to its basic function of recording, resuscitation, and the performance only of such surgical procedures as were of immediate necessity. Attached to 4 MDS was 2 NZ FTU, and it became customary to send patients on to the CCS with transfusions running throughout the journey in the ambulance car. The provision of transfusion attachments for stretchers was found to be most valuable. It enabled stands for blood bottles to be clipped on the side of the stretcher and prevented a cessation of blood transfusion due to the needle pulling out when the car was travelling over rough sections of the road.

A large number of Schu-mine casualties, from the heavily mined railway embankment and other areas, passed through the MDS at this time. The Schu mine was a small box anti-personnel mine not detectable by electrical methods, and it produced a characteristic wound in which the foot was completely disorganised. Amputation was necessary for all such injuries, and this was usually performed at the CCS. The Singer-type army tourniquet proved quite unsuitable for these cases, and circles of tire tube were applied just above the damaged area so as not to interfere with the circulation at the site of subsequent amputation.

AN INCIDENT BETWEEN ATTACKS

An Incident between Attacks

While preparations were being made for a second attack there were some casualties in the forward units. On the night of 7 March 1944 an ambulance car driven by Driver Furness, [1] with Private Gunn [2] as orderly, was called up to 25 Battalion RAP to get some minor wounded. They made the journey up safely in spite of the several crossroads which the enemy periodically shelled. However, when they were about to leave shells started falling around a nearby

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[1] **Dvr R. J. Furness; Feilding; born Christchurch, 13 Aug 1917; linotype operator.**

[2] **Pte I. Gunn; Wellington; born Roxburgh, 17 Aug 1916; school teacher; wounded 7 Mar 1944.**

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crossroads. From a mortar pit about 80 yards above on the hillside came cries for help. Taking a couple of stretchers, the driver and orderly scrambled up over the rubble and broken stone walls to the pit, which held a pile of boxes of mortar bombs. Material in the pit was burning dangerously. A man lying wounded and helpless against the side of the pit was carried to the shelter of a bank some distance away. He said there was another wounded man in the Italian oven in the pit. While Driver Furness went for help, Private Gunn cleared away rubble in the pit in order to get the oven door open. Padre Norris [1] arrived from the RAP to help carry the wounded man across the pit to a stretcher, but before they were able to get out of the pit one of the mortar bombs exploded. Both Padre Norris and Private Gunn were wounded, the latter seriously, but the padre was able to crawl to the RAP for further help.

Stretcher-bearers from the RAP carried Gunn and the other wounded man safely down. After a fortnight's brave fight for his life, Private Gunn spent three months in hospital in Italy and a further six months in a hospital in New Zealand.

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[1] **Rev H. G. Norris; Christchurch; born Temuka, 12 Nov 1911; Anglican minister; wounded 7 Mar 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE SECOND ATTACK

The Second Attack

When the first NZ Corps' attack did not succeed no time was wasted in preparing for a second offensive on a different plan. Its objectives were the capture by 2 NZ Division of Cassino town, Castle Hill, and the railway station. Monastery Hill was to be seized by the Indians, who were to take over from the New Zealanders on Castle Hill and then go on to take Hangman's Hill and finally the Abbey. This time Cassino town was to be approached from the north, taking advantage of the fact that American troops already held the northern outskirts. An air bombardment heavier than ever before used for such a target was to be directed against the town and the hillsides. Immediately after the bombing the infantry were to advance under cover of a creeping barrage fired by every available gun.

On the night of 21–22 February 6 Infantry Brigade relieved 133 US Infantry Regiment in the northern outskirts of Cassino without incident. With 6 Brigade was 6 ADS, which set up near Portella to the north of Cassino on a track which became difficult in wet weather. By 24 February all was ready for the offensive. Then came the rain, and not until the second week of March did the weather show any signs of improvement. Enemy pressure on the Anzio beach-head made it imperative that the attack should begin as soon as possible. It began at 8.30 a.m. on 15 March with an intense bombing, in which before noon the USAAF dropped from 500 bombers over 1000 tons of bombs on an area considerably less than one square mile. Then a mighty artillery barrage began with 610 guns firing 1200 tons of shells in four hours. Behind a creeping barrage 6 Brigade, with 25 Battalion leading, began the advance.

Difficulties were encountered immediately. Streets and roads had either vanished beneath masses of rubble or were gapped by giant bomb craters. Even men on foot found movement hard, while tanks of 19 Armoured Regiment were unable to get beyond the northern fringes. Despite unexpectedly strong opposition from the picked enemy garrison troops, 25 Battalion captured Point 165. By the end of the day it appeared that the action might yet succeed. Castle Hill had been taken and the New Zealanders had penetrated into most of the town. Only a few isolated strongholds remained to be cleared. And then the weather intervened. Clouds and heavy rain obscured the moon that night, communications were disrupted, and under the cloak of darkness the enemy with his intimate knowledge of the ground was able partially to re-establish himself. The only Allied progress was made by a company of Gurkhas who occupied Hangman's Hill, bypassing several strongly held enemy positions in the dark. During the night New Zealand and American sappers bridged the Rapido and several of the giant craters. Throughout 16 March infantry and a limited number of tanks fought in the town, and next day the railway station and an area beyond were attacked and captured. On the night of 17–18 March the New Zealand engineers built a second bridge over the Rapido near Route 6 and work on the railway embankment was completed so that the tanks could reach the station. That same night a company of 24 Battalion made contact with the Indians on Point 202, but daylight found them isolated, enemy groups having established themselves lower down the hill. These troops of 24 Battalion were in the same predicament as Indian troops isolated on Point 435. (Supplies, including medical supplies, were dropped by air, and the company withdrew successfully under cover of a barrage on the night of 24–25 March.) On the night of 19–20 March 5 Infantry Brigade became responsible for the sector of Cassino north of Route 6. On subsequent days a dogged struggle produced no clear-cut advantage on either side, and certainly not the hoped-for breakthrough to the Liri valley.

After the New Zealanders and Indians had been in the line for six weeks and had endured eight days of almost continuous fighting, orders

were given on the evening of 23 March for the offensive to be temporarily abandoned. The troops remained in the line to hold their gains, but the New Zealand Corps was disbanded on 26 March and all formations passed under command of 13 Corps.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CASUALTIES

Casualties

The approximate wastage from 2 NZ Division for the period of ten days following 15 March was as follows:

Killed in action	**220**
Wounded: Officers	**53**
Other Ranks	**698**
Sick: Officers	**20**
Other Ranks	**354**
	—
Total	**1,345**

The medical units were busy but arrangements for treatment and evacuation worked smoothly, and at no time did the situation get out of hand. Physical exhaustion cases among the troops were becoming numerous prior to the relief of the Division.

The total evacuations from NZ Corps from 4 February to 25 March 1944 were:

	Sick	*BCs*
NZ	**1,472**	**1,345**
4 Indian Division	**1,558**	**2,722**
British	**2,142**	**381**
Total	**5,172**	**4,448**

Grand total 9,620.

Total strength of corps 69,700, excluding American forces under command totalling 11,000 (approx.).

(*Note:* Medical arrangements were based on estimated casualties of 2400 within the first fifty-six hours of the second attack, but the total casualties from 2 NZ Division and 4 Indian Division for this period

amounted to only 725.)

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

STRETCHER-BEARERS OF COMBATANT UNITS

Stretcher-Bearers of Combatant Units

In the Cassino action the work of the stretcher-bearers was made most arduous because of the masses of rubble and deep shell craters that had to be negotiated in carrying patients out of the battle area, quite apart from the fact that the areas to be crossed were under constant mortar and artillery fire and were covered by snipers. It was the duty of the stretcher-bearers to leave sheltered positions to bring in the wounded from the exposed areas, a duty requiring a considerable degree of courage and physical endurance. By the nature of the action a wounded man might be lying out for some considerable time before reaching the RAP, where the unit medical officer was stationed, and this meant that a very great medical responsibility also fell on the stretcher-bearer in giving efficient first-aid attention under difficult conditions.

For instance, the RMO of 25 Battalion considered that the low proportion of killed (and died of wounds) to wounded in his unit, 37 to 160, could be partially accounted for by the efficiency of his stretcher-bearers. The stretcher-bearer was also subject to more than the normal combatant risk, as was also shown in 25 Battalion, where the casualty figures for the stretcher-bearer section were higher than for any other section in the battalion. Out of sixteen company stretcher-bearers, two were killed—one by mortaring, the other by a sniper. While the first stretcher-bearer was attending a wounded officer in an exposed position both were killed, their bodies being recovered side by side with the officer wearing a half-applied bandage. Five others were wounded and this, together with one taken ill, made a casualty return of 50 per cent. Reinforcement stretcher-bearers were not available and the remaining half of the section had to cope with the work.

Lance-Corporal Pritchard, [1] who was a medical orderly in A Company 25 Battalion, was awarded the MM for his work as a stretcher-bearer. During the whole afternoon of 15 March while he was with the forward assaulting company under heavy mortar and shell fire and in full view of enemy snipers, he attended to many wounded and got them all to a place of safety. On 19 March, during a dawn attack towards the Continental Hotel, he again performed the same task. When our attack had been beaten back, a wounded man was left some distance in front of our positions. In spite of heavy mortar and small-arms fire, Pritchard left our positions and waded up a stream four feet deep until he reached and carried out this severely wounded soldier. During the whole of his journey he was subjected to small-arms fire from a range of 100 yards.

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[1] L- Cpl G. E. Pritchard, MM; Stratford; born NZ 25 Mar 1918; farmhand.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ASC DRIVERS

ASC Drivers

In the same way, the stretcher-carrying jeep and the ambulance drivers, provided from the members of the ASC attached to medical units, played an important part in the chain of evacuation in forward areas. They drove over roads subjected to enemy artillery fire and, at night, driving alone in the pitch darkness was a severe trial.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RAP IN CASSINO

RAP in Cassino

The RMO of 28 (Maori) Battalion, Captain C. N. D'Arcy, set up his RAP in the church cellar in Cassino on Route 6 as his battalion moved ahead. Here casualties from all units were collected and held during daylight, and appropriate resuscitation, including blood transfusions, administered and splints applied as required. The entrance to the cellar was down a sort of rabbit hole and was covered by a sniper. After dark, when evacuation was reasonably safe, stretcher-bearer parties from the battalions, augmented by ADS stretcher-bearers, carried the wounded from the RAP to a jeep point, a distance of 300 yards. Jeeps then conveyed casualties to the RAP of 19 Armoured Regiment, half a mile from Cassino, where the RMOs of 19 Regiment and 21, 23 and 26 Battalions combined and worked a roster of duties. In effect, they and their orderlies acted as a forward ADS. They had under their control a pool of stretcher-carrying jeeps from the various battalions situated a further half-mile down Route 6. Motor ambulance cars were used to evacuate the cases to the ADSs. From these latter stations the patients were passed on to 4 MDS.

During the battle from 18 to 23 March Captain D'Arcy attended to all the wounded reaching his RAP. Conditions were most trying, but the skill with which the wounded were dressed was the subject of the highest praise from the dressing stations. For his outstanding work D'Arcy was awarded the Military Cross.

Another RMO, Captain A. W. H. Borrie of 24 Battalion, was also awarded the MC during the battle for Cassino. Captain Borrie courageously went forward and dressed wounded in the town of Cassino forward of the RAPs on 17 March. To reach the wounded, who had been

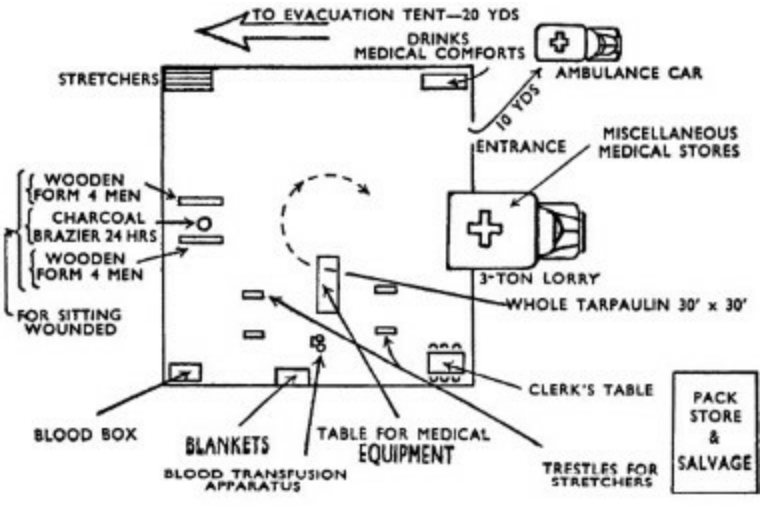
collected by Private Wilson, one of his stretcher-bearers, Borrie had to go forward within observation of German snipers on Monastery and Castle Hills, jumping from bomb crater to bomb crater, circling round small lakes in old bomb craters, and leaping over boulders that had once been the walls of houses. In the post office building there were sixteen casualties. Two were dead, and two had fractures of the femur, one of these men suffering severely from shock. Dressings were applied and morphia given. Whilst Borrie was attending to the wounded a direct hit on another building nearby caused more severe casualties, which he also treated. The wounded were brought back during the night. When the isolated company of 24 Battalion withdrew on the night 24–25 March, the wounded had to be left in a cave. On 25 March Borrie led a stretcher party forward to try to find the wounded and bring them out. The five wounded men were found to have started to make their own way out although they were really lying cases. There were only two stretchers, so three of the wounded were hand carried. As the party were carrying the wounded down the hill they were stopped by a German soldier. Two of the party were taken to see a German officer on the ruins of Point 165, and he gave approval for the evacuation to continue. After a steep, difficult descent from the Castle, the party reached an Indian aid post, whence the wounded were taken by jeep to 6 ADS. An examination of the wounds showed them to be in excellent condition, a tribute to the care the stretcher-bearers had taken of them in their seven days' isolation.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FUNCTIONING OF MEDICAL UNITS

Functioning of Medical Units

***The ADS*: The most forward of the New Zealand medical units in the battle for Cassino was 6 ADS, which had gone with 6 Infantry Brigade to the north of Cassino, near Portella, on 22 February. At this location both battle casualties and sick were received from 6 Brigade and evacuated to 4 MDS, still sited near San Pietro Infine. The exposed positions of the infantry battalions resulted in a number of casualties from shelling before the actual offensive. As a general rule, patients from 24 and 25 Battalions were received from the RAPs under cover of darkness. In view of the exposed nature of the RAPs, the ambulance cars usually attached to the battalion RAPs were retained at the ADS and sent forward as required. The ADS was reached by a complicated system of tracks off the main road. A daylight trip in an ambulance car from the ADS to 4 MDS took about one and a half hours, and although part of the route lay in an exposed position it was considered safe for individual ambulances. As the mud increased six AFS cars with four-wheel drive were used to supplement evacuation from the ADS.**



6 NZ Field Ambulance ADS Reception Tent, Cassino

6 NZ Field Ambulance ADS Reception Tent, Cassino

At 6 ADS the operating tents were dug into the ground as the position was well within range of enemy artillery and mortar fire, though the Red Cross was being respected. Only a few casualties came through during the afternoon of the opening of the second attack on 15 March, but there was a steady stream in the evening and large numbers during the night.

Owing to a strong possibility that tanks might have to be sent up the ambulance track to reach Cassino instead of along Route 6, two surgical teams, 8 British FSU and 6 Field Ambulance's team, were attached to 6 ADS on 15 March to operate on urgent casualties. Their services were not actually required for this purpose as the ambulance track remained open throughout.

From the time the infantry moved forward at midday on 15 March there was a steady stream of casualties, although not as numerous, however, as the medical units were prepared for.

The construction of the bridge across the Rapido on the night of 17–18 March enabled casualties from Cassino to be brought out across it in a fairly direct line, thus obviating a long ambulance journey along the tracks north-east of Cassino through 6 ADS. This ADS itself moved on 18 March some 2 miles to the south to bring it nearer to the centre of operations. This position was again exposed and well within range of enemy artillery and mortar fire, but Red Cross flags were prominently displayed and were respected by the enemy. Shelling adjacent to the area was consistent but only two shells fell in the ADS area, these causing three casualties.

The surgical policy adopted at the ADS was to do as little as possible compatible with comfortable and immediate evacuation to the MDS. The function of the ADS was, therefore, primarily that of an ambulance-car post and a resuscitation post for serious cases. In certain cases it was considered necessary to apply Thomas splints under pentothal to ensure comfortable evacuation to the CCS via the MDS. (Another important function of 5 ADS was as a first-aid post to the various British,

American, and New Zealand artillery units, of which there were many within a radius of 3 to 4 miles, and to casualties resulting from the numerous traffic accidents on Route 6.)

***The MDS*: The first casualties arrived at 4 MDS at 3 p.m. on 15 March from 6 ADS, and by midnight seventy-four casualties had been dealt with. Evacuation from the MDS was carried out by NZ Section MAC, which took New Zealand battle casualties to 1 Mobile CCS at Presenzano, all British troops to 7 British CCS (established 4 miles south of 1 Mobile CCS), and all Indian troops to 2 Indian CCS adjacent to 1 Mobile CCS. An arrangement was made whereby 6 Field Ambulance, which had opened an MDS 400 yards south of 4 Field Ambulance on Route 6, would deal with walking wounded cases when the flow of casualties commenced. For the relief of 1 Mobile CCS during periods of stress, these lightly wounded were to be evacuated direct to 2 NZ General Hospital at Caserta. The number of casualties was never such as to necessitate this and 6 MDS did not function at all.**

On 16 March casualties admitted to 4 MDS totalled 78 New Zealanders and 12 British, almost all of them being sent straight on to the respective CCSs. Some of these came through 5 ADS, which was sited nearer Cassino along Route 6. The casualties on 17 March were of similar numbers—78 New Zealanders and 6 British.

From 18 March onwards there was increased enemy shelling of the rear areas. A steady stream of wounded continued to arrive at 4 MDS and the figures for 18 March were 90 New Zealanders and 7 British, and for 19 March 89 New Zealanders and 5 British. As cases were banking up at the CCS it was necessary for more surgery to be done at the MDS. As casualties from Cassino could not be evacuated in daylight, the staff of the MDS was kept busy at night and the operating theatre was in use almost all the night of 19–20 March and again the following night.

Casualties used to arrive at 4 MDS about 11 p.m. after being held in Cassino during the day, and this was often twelve to sixteen hours after wounding. The few abdominal cases which occurred were affected by

this delay.

***Field Transfusion Unit*: This was attached to the active MDS and was invaluable in the resuscitation of the serious cases, both those operated on at the MDS and those sent on for operation at the CCS. For the worst cases transfusions were arranged to continue during the trip to the CCS, and special clamps had been made by the divisional workshops to fix the transfusion apparatus to the stretchers. During the four months December to March a total of 506 cases was dealt with. Of these, 239 were given an average of 2·2 pints of blood and 184 an average of 1·6 pints of plasma. There were only seven reactions, none of them severe. During March only 2·7 per cent of the blood was discarded. During the second quarter of 1944 the work diminished very much and only 74 patients were given an average of nearly 2 pints of blood, and 33 patients about an average of 2 ½ pints of plasma.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGICAL POLICY

Surgical Policy

The siting of the New Zealand divisional medical units during the battles at Cassino was in close relation to the main arterial road, Route 6. This enabled rapid and smooth evacuation of casualties to be carried out. The New Zealand CCS was very conveniently and safely sited at Presenzano, only about 15 miles from Cassino itself on a branch road between Route 6 and another main road (Route 85). Difficulties arose in evacuating casualties from the field to the RAPs and also from the RAPs themselves, but once these had been overcome rapid evacuation by motor ambulance was possible and the time to the CCS was only a little longer (30 minutes) than that to the MDS. There was, therefore, normally no need and no. excuse for the performance of major surgery at the MDS. The No. 1 General Hospital surgical team was attached to the CCS, which was at that time very well staffed, having in addition a British FSU and a British FTU as well as two bacteriological laboratories. The New Zealand FTU was attached to 4 MDS so as to be available for the resuscitation of serious cases before evacuation to the CCS. Casualties had to be held in the RAP to await evacuation by night and more resuscitation and splinting than usual had to be undertaken there. Fortunately, ample supplies of blood, as well as plasma, were available at the RAP as well as in the other medical posts. There was close liaison between the active MDS and the CCS, and at times the MDS undertook extra surgical work to relieve the pressure on the CCS and ensure early attention to the lighter cases. At that time it had been determined that early surgical attention was essential in wounds associated with serious muscle injury, and especially in traumatic amputation, and that satisfactory resuscitation was impossible by transfusion till the damaged tissue was removed. These cases were therefore dealt with at the MDS and transfusion given during and following operation. Schu-mine

injuries were relatively common and many amputations were carried out at the MDS in these cases.

The abdominal and chest cases, as well as the large majority of other wounded men, were sent as quickly as possible to the CCS and were there dealt with by a well-qualified and ample staff. Three theatres were in operation, and there was a bed capacity of 300. Nursing sisters were available for work both in the operating theatre and in the wards. The value of giving ample time for the resuscitation of the severe cases, especially the abdomens, was demonstrated. This led to a new outlook in the treatment of these cases. Early in the war the idea predominant was that operative treatment in abdominal cases had to be carried out at the earliest possible moment, and certainly within six to eight hours. Every effort had been made to carry this out and abdominal cases had been placed in the first priority. This led to the performance of abdominal operations in the field ambulances and to the attachment of surgical teams, and later FSUs, to forward MDSs so as to have competent abdominal surgery available there. Now that it had been shown that extreme urgency was unnecessary and that the cases did much better if a longer period was devoted to resuscitation, and that the man died of shock and not of infection, the necessity for operating at the MDS stage no longer existed. The essentials to ensure recovery of abdominal cases had now been shown to be, first, the fullest possible resuscitation by means of blood, plasma, and rest; then surgical operation by the best available surgeon and anaesthetist, operating under satisfactory conditions; and finally, competent nursing, further resuscitation, and the holding of the patient at the operating centre till established recovery had taken place. The results obtained at our CCS at Presenzano completely established this opinion.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGERY AT THE CCS

Surgery at the CCS

During the Cassino period 86 abdominal cases were operated on and there were 26 deaths—only 30 per cent of the total. Eighteen out of 26 died in the first forty-eight hours of shock. Some died later of anuria, which was in most cases a late complication of primary severe shock. None died of peritonitis. The patients who died had all been operated on within 5 ½ to 12 ½ hours of wounding.

Lieutenant-Colonel Button, commenting at the time, stated that the majority of the patients died because of hopeless multiple wounds, and that these cases showed little or no response to resuscitation and four cases out of fifty died on the operating table. None of the long-term cases (20 hours, 24 hours, 49 hours, etc.,) died in spite of advanced peritonitis. The impression was being confirmed that, although it was sound practice to operate as early as possible after wounding, the time factor of six to eight hours often used as a standard was not of primary importance. It was felt that adequate resuscitation was paramount, and that facilities for the giving of blood on the route of evacuation to the CCS were highly beneficial.

On admission to the CCS further resuscitation—-blood, warmth, and rest in a suitable environment—-was most essential. If a case failed to respond to resuscitation it usually meant either: (i) internal haemorrhage, or (ii) irreversible shock, the result of gross irrecoverable injury. Operation was undertaken when the blood pressure was 100/80 and rising and the pulse and colour correspondingly improved. This usually took three to four hours. The operation was done earlier only if there was no response to resuscitation and the clinical features pointed to internal haemorrhage.

At operation the principles followed were:

(i) arrest of haemorrhage;
(ii) suture of wounds of the small bowel;
(iii) exteriorisation of wounds of the large bowel. (Resections had been few.)

***Post-operative Treatment*: Adequate nursing supervision was essential for the patient and for the peace of mind of the surgeon. Tribute was paid to the great value of nursing sisters. Gastric suction was installed immediately the patient returned to the ward and, together with intravenous fluids, was carried on for about four days. Experience showed that, before operation, adequate resuscitation and, after operation, proper nursing to prevent the onset of ileus were the two biggest factors that made for success in the handling of these cases. The time factor and the presence of peritonitis seemed to be of less importance. They were largely controlled by nursing and chemotherapy. A CCS was usually the first unit on the line of evacuation which was adequately equipped to give these facilities. Thus it seemed that, given adequate resuscitation en route, abdominal cases were better handled in a CCS twelve to twenty-four hours after wounding than earlier at a forward operating centre with an MDS.**

Lieutenant-Colonel Button's evaluation gives a very clear idea of the problems of forward surgery and the experience gained at that time, and it gave a valuable lead for the future in the treatment of abdominal cases. The chest cases were also dealt with at the CCS and, in general, did well. They constituted 7 per cent of the battle casualties. Aspiration was carried out usually twenty-four to forty-eight hours after admission. Four out of thirty cases had become infected. Penicillin was not available in sufficient quantity to allow of its use except in a few cases, though its value was recognised at that time.

The treatment of flesh wounds was adequately carried out, as shown by the general cleanliness of the wounds noted on admission to 2 General Hospital at Caserta. Gas gangrene was infrequent, and in the three-monthly period April to June only two cases were seen at the CCS,

with one death. One case survived after treatment with serum and penicillin. Fascial split of the calf was introduced as a primary measure in the treatment of cases following ligature of the popliteal artery, with some success in the saving of amputation of the limb.

The neurosurgical cases were transferred to 16 American Evacuation Hospital sited near our CCS and treated with excellent results by Major Weinberger, a neurosurgeon attached to that unit. From there they were sent to 65 British Hospital at Naples to be under Major Ascroft's charge till fit to send to 2 General Hospital at Caserta and so rejoin our medical chain. The neurosurgeon at the American hospital commented on the number of cases with penetrating wounds of the skull from comparatively small pieces of metal, and suggested that the proportion was greater than amongst American troops who made a universal practice of wearing steel helmets. The greater proportion of head cases appeared to have been wounded when not wearing a steel helmet, and it was thought that the use of the helmet might have saved a proportion of these cases much disability.

Serious facio-maxillary cases were also sent from our CCS to 65 British General Hospital. The Medical Research Council's shock research unit was sited near our CCS, and two British laboratories were attached to the CCS. These units undoubtedly produced a healthy stimulus to scientific endeavour.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK OF 1 GENERAL HOSPITAL SURGICAL TEAM

Work of 1 General Hospital Surgical Team

This team was attached to 1 Mobile CCS for the Cassino battles, and the OC reported that 'the team is strongly aware of the great advantages of X-ray, a laboratory and a wealth of skilled nurses.' The team expressed a strong preference for working in tents rather than buildings.

In abdominal operation X-ray was considered to be of great assistance in planning the approach. Adequate nursing facilities at the CCS following operation were held to outweigh the advantages of operation two to three hours earlier at the MDS. This is a very significant commentary from a team with such long experience of work at the MDS.

In chest cases a more radical operative treatment was adopted and rib ends were trimmed and accessible foreign bodies removed. Inter-costal nerve block was utilised and thought to be effective.

During the period 1 December 1943 to 31 March 1944, 279 operations were performed with 31 deaths. There were 60 abdominal cases, with 24 deaths, and 6 gas-gangrene cases, with 2 deaths. The influence of cold and exposure was demonstrated by the death of 9 abdominal cases out of 12 operated on at Castelfrentano, on the Sangro front, after difficult evacuation after heavy snowfall.

An analysis of the deaths according to the period following operation is of considerable interest:

Within 24 hours:	**Shock 14**
	Shock and brain injury 2
	Shock and blast 1

	Pulmonary oedema 1
	Peritonitis (3 days wounded) 1
24–48 hours:	**Shock 2**
	Mesenteric thrombosis 1
	Haemothorax 1
3 days:	**Gas gangrene 2**
4 days:	**Peritonitis 1**
7 days:	**Cerebral embolus and thrombo-phlebitis 1**
	Secondary haemorrhage from sutured perforations of jejunum 1
8 days:	**Peritonitis 1**
12 days:	**Biliary obstruction from divided common bile duct 1**
30 days:	**Pericarditis 1**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK AT 2 GENERAL HOSPITAL

Work at 2 General Hospital

The hospital opened at Caserta at the beginning of February and during that month was busier than in any month since June 1941, 1286 cases being admitted. The patients were evacuated from 1 NZ CCS and from the field ambulances by motor ambulance in one and a half to two hours. The wounded arrived in good condition and the cleanliness of the wounds was commented upon. There was a striking difference in the state of the wounds of some who were forty hours or longer before being surgically treated as compared with those who were treated within a few hours. The former were invariably infected and the latter almost always very clean. Penicillin was being used locally and sulphonamides orally in the forward areas. In soft-tissue wounds delayed primary suture was undertaken at Caserta with success in a great number of the cases, at first without penicillin. The percentage of cases sutured steadily increased and compound fracture cases, especially of the arms, were also subjected to delayed suture, either sulphathiazole or penicillin being used locally. A case of tetanus was reported. The patient survived after large doses of antitoxin.

There was a general freedom from severe infection in the majority of the cases, including injuries to joints, and chest cases progressed well following aspiration and the instillation of penicillin into the pleural cavity. Burn cases were dealt with by saline bath treatment. An improvised unit of two baths was set up and personnel were trained specially for the work. Good results were obtained, and when penicillin became available it was freely given to these cases.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK AT 3 GENERAL HOSPITAL

Work at 3 General Hospital

No. 3 General Hospital at Bari was the last link in the chain of evacuation in Italy. Patients were evacuated from 2 General Hospital at Caserta by train, a few being transferred by ambulance, and some special cases by air. At first, the train took the patients only part of the way, the rest of the journey being by ambulance, and this generally involved thirty hours' travelling. Later, in March, the train took the patients all the way to Bari in fourteen hours.

Certain types of cases, notably fractures of the femur, were sent on to Bari at the earliest opportunity so that all secondary treatment could be undertaken there.

The outstanding feature of wound treatment at this period was the experimental investigations carried out with penicillin. Major Scott-Thomson, pathologist to the penicillin control unit, set up a laboratory in the hospital in January, and certain groups of cases were selected:

(*a*) For treatment with sodium penicillin parenterally:
- **(i) compound fractures of the femur and tarsus,**
- **(ii) cases of infected haemothorax.**

(*b*) For treatment with calcium penicillin locally to the wound:
- **(i) soft-tissue wounds for delayed primary and secondary suture,**
- **(ii) burns.**

The methods used were:

(*a*) *Compound Fractures of Femur and Tarsus.* The method originally adopted by Lieutenant-Colonel Jeffreys, RAMC, was to explore, cleanse, and suture loosely the wounds of the thigh on admission, and give 15,000 units intramuscularly three-hourly for five to six days. This method was altered later and penicillin was injected for

five to six days before suture. Dressings were left unchanged for two to three weeks.

(b) *Infected Haemothoraces*. Two methods were used:

(i) Intramuscular injection was given for five days and the chest aspirated.

(ii) Sodium penicillin solution was injected into the pleural cavity and the chest aspirated. After rib resection and drainage, penicillin was instilled daily into the chest, suction being interrupted for some hours.

(c) *Secondary Suture*. Two methods were used:

(i) Application of calcium penicillin locally for five or more days until a swab from the wound showed no growth of staphylococci or streptococci. Wound was then excised, powder applied, and suture performed. Small rubber tubes were inserted through stab wounds, and calcium penicillin fluid instilled twice daily.

(ii) Same as under (i) but suture without tubes.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RESULTS OF TREATMENT:

Results of Treatment:

(i) *Compound Fracture of the Femur*: Five cases were treated with penicillin and a control series of five cases not so treated was available for comparison. Four of the five cases reacted excellently, one only partially. There was early healing of the wound, less toxaemia, and almost complete absence of fever. A comparison between the temperature charts of the two series was impressive.

(ii) One case of *fracture of the tarsus* healed well.

(iii) *Infected Haemothorax*: It was considered that penicillin was effective to a high degree, but infection recurred after intramuscular injections were stopped.

(iv) *Secondary Suture of Wound*: The large majority were very successful, with little difference between those with and without instillation by tube following suture.

Skin grafts and burns also did very well. The general results of the experiments were very satisfactory and encouraged the continued and more universal use of penicillin. Supplies, however, were scarce and it was some time before the treatment could be extensively adopted.

The healing of wounds sutured at 2 General Hospital was observed to be very satisfactory after the patients had been evacuated to Bari. In March nine cases of fracture of the femur were admitted with splints and wounds untouched since primary treatment at the CCS. It was possible to proceed with suture of many of these on the fifth day after wounding and with penicillin treatment they did very well.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DENTAL WORK IN THE DIVISION

Dental Work in the Division

The organisation of the Dental Corps in the Division continued to function as it had done in the North African campaigns. Dentists were attached to each of the forward medical units, and a mobile dental unit was set up alongside the MDS carrying out for the time being the treatment of the sick. The corps worked smoothly and efficiently and maintained a very high standard of dental health in the Division.

An illustration of the amount of work performed is given by the record of the work of the mobile unit from December 1943 to March 1944. During that period 10,000 troops were examined, 6000 fillings and 550 extractions carried out, and no fewer than 5330 troops made dentally fit. The dentists attached to the field ambulances and the CCS carried out dental work in addition to the work performed by the dental unit. The dental officers did not restrict themselves to their own professional work but assisted generally in the work of the medical units. In active periods they commonly administered anaesthetics as well as lending their help in other professional and administrative activities, help much appreciated by the medical officers with whom they were so intimately associated.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BATTLE SITUATION AND REGROUPING

Battle Situation and Regrouping

When the attack by NZ Corps on Cassino ended, the road to Rome through the Liri valley was still barred. Nevertheless, there had been substantial gains. A firm bridgehead had been established over the Rapido River, nine-tenths of the town of Cassino captured, and a foothold gained on Monastery Hill, where Castle Hill was firmly held. Then, too, pressure on the Anzio beach-head had been relieved.

In preparation for a renewed offensive against the Gustav line the Allied armies in Italy began a major regrouping. Eighth Army, to which 2 NZ Division now reverted, and with which it was to remain during the rest of the Italian campaign, became responsible for some four-fifths of the front across the peninsula of Italy and began to concentrate its greatest strength on the sector from and including Cassino to the Liri River. The sector south-west of the Liri to the west coast, and the Anzio beach-head, were the responsibilities of Fifth Army.

During the first two weeks of April the sorely-tried infantry brigades of 2 NZ Division were withdrawn from Cassino, the holding of which had been no easy task, to take over from 2 Polish Corps the scarcely less arduous task of defending a part of the line across the Apennine Mountains. While 6 Infantry Brigade took over the Monte Croce sector, 5 Infantry Brigade rested at Isernia, but 4 Armoured Brigade remained in the Cassino sector in the meantime. Command of the new mountain sector was formally assumed by 2 NZ Division on 15 April. There were British, Canadian, South African, and Italian units under its command.

Reliefs and changes in disposition were numerous. Eventually 2 Independent Paratroop Brigade took over the northern sub-sector on 20 April from 6 Brigade, which went to a rest area, and 5 Brigade next day

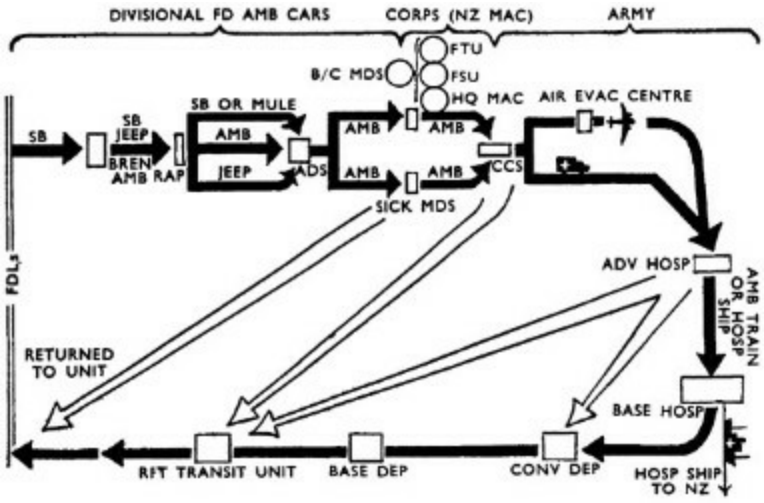
replaced 28 British Infantry Brigade in the Terelle, or southern, sub-sector. Later again 6 Brigade took over the Terelle area and was there on 11 May when the final attack on the Gustav line was begun. Fifth Brigade took over again before the advance began on 25 May.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION PROBLEMS

Evacuation Problems

The sector in the Apennines held by 2 NZ Division was extremely wide and mountainous and the evacuation of patients presented many problems. Stretcher-bearers from the field ambulances were attached to the RAPs, which were up to 800 yards from the road, and a car post with additional stretcher-bearer teams was established in dugouts well forward on the road. The car post was linked by telephone with all RAPs. When a bearer party left an RAP, the car post was advised by phone, and a bearer party from the car post met the others halfway. For evacuation to the ADS, two stretcher-carrying jeeps were attached to the car post. Evacuations were carried out only at night except in extreme emergency, for most of the road was in full view of the enemy and traffic was consistently shelled. Even at night German spandaus would put bursts over when they heard the jeeps going down. From the Terelle sector the patients were admitted to the ADS at Sant' Elia. This ADS was reinforced by the operating section from the MDS to deal with priority cases only. Patients were then evacuated direct from there to 1 Mobile CCS at Presenzano, via ambulance track and Route 6. The ADS also handled priority cases from the central Canadian sector. Both 5 and 6 MDSs and 24 Canadian MDS were used for treating sick only.



Chain and Methods of Evacuation, Italy 1944

Chain and Methods of Evacuation, Italy 1944

When the Condito sector on the right was held by 2 Independent Paratroop Brigade, that brigade had an entirely separate line of evacuation via its own MDS at Filignano.

The methods of evacuation used were hand carriage, mules with litters and cacholets, jeeps, and finally ambulance cars. As previously, jeeps fitted with stretcher-carrying frames were invaluable for forward evacuation. The country was so difficult that some units were two and three hours' travelling time from Divisional Headquarters or the most central unit. There were two principal roads serving the divisional line and both were closely observed by the enemy. One, the 'Inferno' track from Acquafondata to Portella, was capable of carrying only one-way traffic and strict traffic control was essential. In addition, it was exceedingly steep and full of sharp bends. The other, the ' Terelle terror ride', twisted and turned in corkscrew bends for 20 miles, dropping 2000 feet from Acquafondata into the valley of the Rapido, and then climbing again 2000 feet to Terelle. For this country jeeps were almost the only possible means of motor transport.

With the coming of spring the weather was mainly fine, with only occasional heavy showers and a consequent reduction in mud. The sickness rate was reasonably low. There was a steady trickle of battle casualties from enemy fire and patrol clashes.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BREAKTHROUGH TOWARDS ROME

Breakthrough towards Rome

During the first week of May Allied preparations for an all-out attack on the Gustav line neared completion. The Adriatic front was lightly held by 5 British Corps and the Apennines by 10 British Corps, which included 2 NZ Division. On the mountainous approaches to Monastery Hill and Cassino there was 2 Polish Corps, while 13 British Corps faced Cassino town and the Liri valley. South of the Liri River the American Fifth Army had the French Expeditionary Corps and 2 US Corps. Sixth US Corps was at Anzio.

When the attack began on 11 May, 6 Brigade was holding the Terelle sector, 5 Brigade was resting in the Volturno valley, and 4 Brigade was resting at Pietramelara. The Division's artillery went into action supporting the Poles in their attack on the Monastery. Little else was expected of 2 NZ Division until the enemy began to withdraw, when the Division would follow up, but on the night of 13–14 May there was an unexpected call for New Zealand armour to support 4 British Division in the Liri valley.

After a hurried night move from the rest area to the vicinity of Cassino, 19 Armoured Regiment had its tanks across the Gari River, and the following night supported a British infantry attack across the Pioppelo stream. During the next few days New Zealand armour led the infantry in a 'left hook' thrust which cut Route 6, the main route of withdrawal from Cassino. No advanced dressing station from 4 Field Ambulance was required for this action, but one officer, with two ambulance cars, was sent to assist the RMO 19 Armoured Regiment in the treatment and evacuation of casualties.

Cassino was attacked on the morning of 18 May, but it was found

that the enemy had withdrawn. The same day a Polish attack on Monastery Hill was successful as the enemy was in the process of withdrawing. On the night of 24–25 May the Germans withdrew from the positions in the Apennines; by 25 May the barrier that had stood across the road to Rome since October 1943 had been completely smashed and the pursuit of the enemy up the peninsula of Italy had begun.

Fourth Armoured Brigade moved across to join 2 NZ Division on 29 May, by which time New Zealand troops had cleared the mountain strongholds of Terelle and Belmonte and also the town of Atina. As fast as cratered roads were made fit for traffic and bridges were built, the New Zealanders pursued the enemy. Maori infantry and armour entered Sora on 31 May after clearing the hilltop village of Brocco.

From Sora a main highway, Route 82, ran in a northerly direction to Balsorano and Avezzano, closely following the banks of the upper Liri River and swinging away from the route to Rome. The New Zealanders pursued the enemy along this valley with battalions on each side of the river. Though exceedingly beautiful, the valley was narrow and flanked by high hills which, near Balsorano, formed an escarpment that could have been made a formidable defensive position. There the enemy held up the advance.

On the coastal sector Allied forces had cleared the approaches to Rome, and on 4 June the capital city fell. Then, two days later, came the event for which the fighting in Italy had been but a prelude—the invasion of France. Its success was to set the seal on the fate of Germany.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

2 NZ DIVISION BREAKS OFF PURSUIT

2 NZ Division Breaks off Pursuit

In the upper Liri valley the impact of these events was felt. The enemy accelerated the withdrawal he was carrying out behind his defences at Balsorano, which town he deserted, and 6 Brigade moved in on 6 June. Extensive demolitions and mines prevented the brigade from maintaining contact with the fleeing enemy forces. After the fall on 9 June of Avezzano, a town on the main lateral road between Pescara, on the east coast, and Rome, it became increasingly obvious that the line of advance on which the Division was operating had become a cul-de-sac, and by the middle of the month it had been decided to abandon operations in this sector. Bailey bridging was urgently required elsewhere, and the divisional concentration area had to be altered to avoid isolation by unbridged demolitions. A move was therefore made back to Arce on Route 6 between Cassino and Rome. Here, for the first time since they began fighting in Italy, all units of the Division were able to enjoy a complete rest.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOVES OF MEDICAL UNITS

Moves of Medical Units

Medical units did not move forward until 30 May, when 5 MDS became the open battle MDS at Atina and 4 MDS became the MDS for sickness cases at San Pasquale, between Sant' Elia and Cassino. The 1st General Hospital surgical team and 2 FTU were attached to 5 MDS at Atina. The evacuation route had by this time become very long over a rough road, and priority cases were all dealt with at the MDS, but abdominal cases were still evacuated to 1 Mobile CCS for operation. The journey of battle casualties from Atina to 1 Mobile CCS at Presenzano was sometimes interrupted at 4 MDS for resuscitation or urgent treatment.

On 3 June 5 MDS moved to half a mile south of Sora and remained there until 17 June, when it went to Arce. The 4th MDS also moved forward towards Sora on 4 June, while 6 Field Ambulance was in reserve at Atina, although 6 ADS, moving with 6 Brigade, went as far north as Civitella Roveto, near Avezzano, before returning to the divisional rest area. When 6 Field Ambulance moved to Arce on 14 June, it became the open MDS.

An advance was made by 1 Mobile CCS on 7 June from Presenzano to Frosinone, between Arce and Rome. From Frosinone air evacuation was organised to 2 General Hospital, thus avoiding the long journey by road.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RECEPTION OF ESCAPED ALLIED PRISONERS OF WAR

Reception of Escaped Allied Prisoners of War

From the hills in the neighbourhood of Avezzano hundreds of escaped prisoners of war filtered back through the New Zealand lines. They included men from the United Kingdom, New Zealand, Australia, South Africa, United States, India, and Russia. Most of them, excluding the Russians, had fallen into enemy hands in North Africa and were overjoyed to reach safety with the Allied forces again. For the adequate cleansing, clothing, and feeding of these men, many of whom had undergone great privation and overcome many obstacles to regain their freedom, it was decided to employ one of the closed MDSs to provide the necessary facilities. Fourth Field Ambulance was chosen, and the unit opened for the reception of prisoners of war on 17 June.

2 NZEF CASUALTIES

2 NZEF Casualties

The Division's casualties for the period February to June were as follows:

	Killed (incl. died of wounds)	*PW*	*Missing*	*Wounded*
1 Feb–10 Apr 1944 (Attack on Cassino)	**339**	**49**	**5**	**1,233**
11 Apr–16 Jun 1944 (Mountain sector)	**115**	**3**	**1**	**590**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CLIMATIC CONDITIONS

Climatic Conditions

In Alife the weather was fine, but at Cassino from early February to the end of March there was heavy rain, high winds that reached gale force at times, and hail and snow on the surrounding hills. The country was waterlogged until the second week in March, but with the strong winds it then became dry and hard. Large areas of ground were quite impassable because of the soft mud and miniature lakes caused by demolitions. In April there were spring rains and cool temperatures. Later, the winds became hot and dry with occasional thunderstorms.

On 22 March Mount Vesuvius erupted violently, covering the surrounding country with ash and also engulfing parts of small villages with lava. At Bari the sky became inky black and rain mixed with dust covered the streets, vehicles, and clothing with a thin layer of mud.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF THE TROOPS

Health of the Troops

The sickness rate remained low for the four months to the end of March, the daily evacuations beyond the RAP averaging 1·3 per 1000, the highest figure being 1·5 in March. This compared with a rate of 3·08 in February for the New Zealand Corps as a whole.

The commonest illnesses were infective hepatitis, septic infection of small cuts, upper respiratory infections, tonsillitis, pneumonia (including atypical pneumonia), and exhaustion cases. Cases of sickness totalled 3261, whilst battle casualties totalled 2755 for the four months.

In the following three-month period from April to June the sickness rate in the Division increased and the evacuation beyond the RAPs was 1·8 per 100 per day. The commonest disease at that period was fever (NYD), similar in type to sandfly fever, acute in onset and settling down in three to four days. This was very prevalent, 520 cases being recorded. Diarrhoea in mild form accounted for 176 cases; hepatitis for only 109 cases. Other diseases noted were malaria, only ten cases, and typhoid, three cases of the latter being reported from 2 General Hospital. Accidental injuries were responsible for no fewer than 637 casualties and many deaths, whereas battle casualties totalled 502 and the cases of sickness 3206.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RATIONS

Rations

Rations were adequate and varied, the best issued to the Division during four and a half years of war. The issue of fresh meat and vegetables was frequent and gave a greater variety to the meals. Medical comforts and Red Cross supplies were in ample and regular supply.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CLOTHING

Clothing

Full-scale winter clothing was worn during the period up to the middle of April, when summer clothing was issued. Extra socks were available and were issued in the forward areas during active periods every night with the rations. As a result very few cases of immersion foot, and those only of mild type, were seen.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HYGIENE

Hygiene

The hygiene unit continued to work efficiently. It had special difficulty in clearing up ground vacated by other troops and in the handling of the numerous civilians in the area. A number of these were evacuated when congestion was marked, and the sanitary arrangements of those remaining in the area were supervised and lidded box latrines were supplied for their use. A directive from the GOC led to the maintenance of markedly improved sanitary conditions in the divisional area.

Shower and disinfestor work was carried on, and during the quarter ended 31 March 43,400 men passed through the unit's four showers, and 2245 blankets and the effects of 263 men were disinfested. In the following three months 42,362 men were given showers and 1678 blankets and the effects of 27 men disinfested. A regular laundry service was available to all units.

Refuse was burnt in the back areas and buried in all areas. Dead mules were buried by means of bulldozers. Preventive fly-control measures were carried out assiduously and fly-traps and fly-papers used. Efficient down-draft stoves were constructed and were used by the medical units.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

VENEREAL DISEASE

Venereal Disease

In the divisional area during the first three months of 1944 the incidence of venereal disease in the New Zealand Division was relatively low: January, 21 cases; February, 47 cases; and March, 35 cases.

In April there was a marked increase in the number of cases to 100, followed by a very marked increase to 213 in May and 174 in June. These figures include cases of non-specific urethritis which were not included in Egypt. The divisional rate became the second highest in Eighth Army. This was ascribed at the time to the large numbers of amateur prostitutes. The OC 102 Mobile VDTC considered that the attitude to the disease was unsatisfactory and that the attitude of the officers and their control of their men was an important factor. He also considered that healthy recreation and suitable rest areas had not been afforded the men in many cases, and that in those units which had arranged healthy leave camps there was very little trouble.

The majority of the cases in May were due to infection contracted in Naples and Pompeii. This led to Naples being placed out of bounds to New Zealand troops when not on duty. It was found impossible for the mobile treatment centre attached to the Division to treat other than our own men; previously it had treated large numbers of other troops at times.

The relatively large numbers of sulphonamide-resistant cases of gonorrhoea as well as the chronic cases of non-specific urethritis had necessitated the setting up of a special contagious diseases ward of thirty beds at 3 General Hospital.

The majority of the cases seen in the Adriatic sector had cleared up readily following the routine administration of sulphathiazole, and 82

per cent of cases were treated and returned direct to their units by 102 Mobile VDTC. In the Cassino areas there was a much higher percentage of sulphonamide-resistant cases, especially in those cases infected at Naples. This necessitated an increased dosage of sulphathiazole and evacuation to the Base. The prophylactic use of small doses of sulphathiazole by other troops, especially the Americans, was deprecated by our force, as this was held to lead to resistance to treatment by sulphonamides later and so make cure more difficult.

In May a third of the cases in the divisional area proved resistant and had to be evacuated. Penicillin had been in use in other forces before this and supplies were obtained by us when the position was beginning to cause anxiety. Fortunately, the resistant cases rapidly cleared up when treated with penicillin. The dosage was 100,000 units given in ten injections at intervals of three hours, and this effected cure in 95 per cent of the cases.

Although there was a large number of cases of urethritis in which the gonococcus could not be demonstrated, the general opinion was that these cases were largely due to gonorrhoea. They gave rise to great difficulty in treatment as they did not clear up under treatment by the sulphonamides, and local treatment, often prolonged, was necessitated.

Prostatitis sometimes arose in cases in which the primary symptoms had been slight and early treatment neglected. Instillation of silver proteinate through Ultzman's syringe once a week gave extremely good results.

Balanitis often gave rise to difficulty in treatment and healing was slow, especially in Maoris.

Soft-sore cases were often slow to heal and bubos frequently occurred.

During the three months, April to June, twenty-three cases of syphilis were reported. The Laughlan rapid flocculation test proved accurate for diagnosis. Treatment given at this time was by mapharsen

and bismuth, sufficient penicillin not then being available for use in these cases.

Hepatitis had developed previously in half the cases of syphilis treated, the infection apparently being transferred from patient to patient. The boiling of the syringes after each anti-syphilitic injection, however, had resulted in hepatitis occurring in only one case during the previous six months.

A special venereal diseases ward was set up at 3 General Hospital, Bari, to deal with cases in the base areas, and also with resistant cases evacuated from the Division. At the beginning of February there were 22 cases in hospital and a further 30 cases were admitted, 27 remaining at the end of the month. The average stay in hospital was 35 days, with a maximum of 89 days. Sulphathiazole was normally used for gonorrhoea and up to 60 gms. given in four days. Sulphapyridine was given to cases not clearing up under sulphathiazole.

In resistant cases injections were given of 1 in 6000 oxycyanide of mercury and sounds were passed and the prostate massaged; if resistance continued, TAB vaccine was given intravenously to produce a hyperpyrexia of 104 to 105 degrees.

The 101st NZ VD Centre, which had just come over to Italy with 1 General Hospital, was attached to 3 General Hospital in April and took over the control of the ward. At this stage the number of patients was steadily increasing owing to the extreme difficulty in curing the resistant cases of gonorrhoea. The future was beginning to look bleak when, through the help of Brigadier R. Lees, Consultant Venereologist, AFHQ, penicillin was released for the treatment of these cases. Rapid cure was then possible in nearly all the cases.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ATYPICAL PNEUMONIA

Atypical Pneumonia

In February 1944 the ADMS 2 NZ Division drew attention to the considerable number of cases of atypical pneumonia in the Division. Some forty-eight cases had arisen in 7 Anti-Tank Regiment, while sporadic cases had occurred in other units. Early diagnosis had been difficult owing to the absence of clinical signs. The symptoms shown were high temperature, headache, and general malaise. Cough, sputum, cyanosis, and dyspnoea were not marked and the white blood count was low. At 2 General Hospital X-ray had revealed consolidation, generalised, at the apex, or at the interlobar fissure. A fan-shaped appearance of the consolidation was characteristic, as was increased bronchial marking. Marked toxicity was noted and few physical signs. The white count was about 5000. The temperature fell by gradual lysis over about six days.

The number of cases of pneumonia admitted to 2 General Hospital was 78 in February, 60 in March, 49 in April, 49 in May, and 28 in June. About half were found to be atypical in type.

Sulphonamides were not of any value in treatment and were also contra-indicated in the presence of leucopenia. No specific treatment was available. The condition was recognised later as Q fever, a virus disease which had been prevalent in the United States. It was followed by considerable debility and a long convalescence was necessary.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EXHAUSTION CASES

Exhaustion Cases

Arrangements were made during the Cassino operations for exhaustion cases to be sent to 5 MDS, which was open for the sick casualties of the Division. An endeavour was made to retain the lighter cases in the divisional area and save the serious loss of manpower resulting from evacuation to the Base. At that time, the physical exhaustion cases had been reclassified as 'sick' instead of as 'battle casualties'. During March 158 exhaustion cases, including two officers, were admitted to the sick MDS. Of these, 104 were evacuated, but more could have been retained at the MDS if more accommodation had been available. At first the men were returned to their units in twenty-four to forty-eight hours, but this proved unsatisfactory and they were held longer, some up to five days, and were much benefited by the rest.

Of fifty-two men returned to their units, eight and the two officers were re-admitted and evacuated. The majority of the cases were from the more recent reinforcements, particularly the 10th Reinforcements. Most of them were from three battalions, but there were men also from the artillery and engineers. Some concern was caused as the majority were very recent arrivals in the Division, and quite obviously in many cases had neither the wish nor the mental outlook to try to make themselves useful members of their units.

In drawing particular attention to this in March 1944, the Consultant Physician stated that men who manifested psychoneurotic tendencies in civil life still managed to find their way overseas, and their breakdown was seldom surprising. Apart from the exclusion of that type of case, the most important factor in prevention, or in reduction of incidence of these breakdowns, was the inculcation of sound discipline,

which could only derive from a proper military training. Medical officers often remarked upon the almost complete lack of training many of the men appeared to have had in New Zealand. Some of the 'breakdowns' asserted that they had attended practically no parades, had done no rifle drill, had never seen a machine gun and had not even done a route march. When such men joined a line battalion it was only natural that they should develop acute feelings of inadequacy and inferiority, especially in times of stress. These feelings bred various phobias, anxieties, insomnia, and depression, and the first step towards functional nervous disorder was well established before the man had any chance of adjusting himself to his completely new and strange environment.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

INFECTIVE HEPATITIS

Infective Hepatitis

This disease proved the commonest medical condition responsible for hospital admissions during the winter of 1943–44. Three hundred and ninety-five cases were evacuated from the Division from December 1943 to March 1944, inclusive, the incidence being much higher in 6 Infantry Brigade and much less in the Maori Battalion. Similar incidences in the reinforcements and in the long-service groups seemed to show that no immunity had been developed by troops during the previous epidemics. However, at 2 General Hospital no patient was found who had had a previous attack, this showing that immunity was present following a definite attack of the disease. The cases were not of such severity as in the previous year in Egypt and there were fewer relapses. The average case was lost to his unit for at least six to eight weeks.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MALARIA

Malaria

Some of the officers of the New Zealand Corps were called to a meeting at 1 Mobile CCS on 1 March 1944 to arrange for the establishment of a Corps Malaria Committee. Information was given that the country was not particularly malarious till the Garigliano River was reached, but west of Route 6 it was malarious, the marshy area north of Rome was highly malarious, and the flooded Pontine marshes particularly so. All hilly regions were moderately malarious. The general policy advised was:

1. **The enforcement of personal protection and use of mepacrine tablets.**
2. **The killing of adult mosquitoes.**
3. **Larvae control.**

Discussion emphasised the importance of unit discipline, besides protection by suitable clothing, mosquito-proof bivouacs, and bushnets. A high incidence of malaria was forecast, unless rigid discipline was enforced, if the troops remained during the season in the areas south of Rome. The taking of mepacrine was to be started on 1 May. The smoking out or spraying of cattle sheds, outhouses, and barns by the MCUs (Malaria Control Units) was arranged. The Corps Malaria Committee co-ordinated the activities of the divisional units and arranged for supplies of equipment and stores and the preparation and distribution of maps showing the local incidence of malaria. Malaria officers were appointed for each division, the OC Field Hygiene Section being appointed for 2 NZ Division. His duties were to educate the troops, to train personnel of the malaria control units and to direct their operations, and to supervise and report on the malaria control activities of the Division. Hand-sprayers were distributed to the control units as were supplies of anti-mosquito

fluid, flysol, malariol, and Paris green. A container for the fluid was supplied to every soldier. Anti-mosquito cream had been discarded as ineffective and di-methyl thyrlate fluid substituted.

A circular sent to all medical officers by Colonel King, DDMS Corps, on 8 March 1944 set out clearly the preventive measures to be adopted:

1. The whole of Italy is to be considered a malarious area. While the central and northern mountainous regions contain non-malarious areas the coastal plains on both sides are malarious and in certain known regions highly malarious, including the PONTINE MARSHES where demolitions have neutralised previous preventive work, and the area north of ROME to the APENNINES.
2. Unless precautions are taken during the malarial season from MAY to NOVEMBER casualties may be so high as to interfere with operations.
3. It is the responsibility of the medical services to teach Regimental Officers, NCOs and men the fundamental principles of protection. Each MO must be fully conversant with all methods in use, and with all orders relating to the control of malaria.
4. *Measures to be adopted:*
   (i) OsC and units must be made malaria minded, as the OC is responsible for anti-malarial measures within his own unit lines, and for the enforcement of all orders for the prevention of malaria.
   (ii) OsC Fd. Hyg. Secs. will act as Special Malaria Officer for Division.
   (iii) RMO is the advisor to OC Unit on all measures in respect of malaria control, the most important of which are outlined:
      (*a*) *Camp Sites:* Where possible 2000 yards from swamps and local inhabitants. High sloping ground always preferable.
      (*b*) *Personal Protection:* This includes long trousers and rolled down sleeves from sunset to sunrise; proper use and care of bushnets and mosquito-proof bivouacs etc., instruction in the use of mosquito repellent, use of head veils and gauntlets for sentries etc., where practicable.
      (*c*) *Unit Anti-mosquito Squads:* To be trained by RMO and Fd. Hyg. Sec. on a basis of 1 NCO and 3 ORs per Inf. Coy. or equivalent sub unit plus 100% reserve. These will carry out anti-mosquito measures such as spraying of huts, tents, etc., and anti-larval spraying with Malariol on casual water within the unit's area of responsibility, or of appropriate drainage. By the middle of April necessary personnel should be trained and

employed on Anti-Malarial work and the crucial period for larval destruction from May 1 to Aug. 31 fully exploited. Every effort to destroy temporarily the breeding place of A. Maculipennis must be made, and there must be no JULY and AUGUST peak in malaria in 1944. Unit B Echelons must not be lost sight of in this regard.

(iv) ***Protective Medication:*** **Mepacrine (ASC Supply) will be taken daily, during or after meals, 7 days a week, preferably after the evening meal.**

(v) ***Fever Cases:***

***a*)** **Officers and men to report sick at once. On no account to treat themselves if they have a fever.**

***b*)** **Cases evacuated to a Medical unit.**

5. The Sicilian campaign has shown that the reasons for the large outbreak of malaria were slackness in mepacrine administration in some instances, failure of MCUs to arrive early, and lack of appreciation by the troops of personal protection methods. Every individual officer and man must be taught to realise that the prevention of malaria is primarily the concern of the individual. Every officer and NCO must realise that it is their responsibility to see that the men under their charge adopt the measures of personal protection advised.

6. If all precautions are taken and medical advice followed the rate should not exceed 40 per 1000 per annum. NOT as in last war in MACEDONIA 100,000 cases in a force of 120,000 men; or in the brief Sicilian campaign where malaria cases (excluding those ALSO among many BCs) exceeded battle casualties by 4000 cases.

7. An instance is quoted of one AA Regt. of 1300 men, living in highly malarious sites during the malarial season, having only 23 men down in six months. This was due to a good CO, a careful RMO and loyal cooperation by all ranks.

CHIEF CAUSES OF MALARIA—

IGNORANCE—LAZINESS AND PLAIN STUPIDITY.

CHIEF PREVENTIVES ARE

DISCIPLINE—KEENNESS AND INTELLIGENCE.

It is up to Medical Officers to supply the facts, stimulate all ranks to

keenness, and if discipline is lacking to bring the matter to the notice of higher authority.

The OC 4 Field Hygiene Section and another medical officer had attended a course of instruction in malaria control at AFHQ, Algiers. The OC, Major Knights, had long experience of conditions in West Africa and he arranged short courses of lectures and practical work. One hundred NCOs and men attended the courses during March, and arrangements were made for all units with a strength of 150 men or more to have at least ten men trained in anti-malaria duties.

During April two New Zealand AMCUs were formed and were at work, one in the 2 NZ Division area and one attached to 4 Armoured Brigade, and full anti-malaria precautions became effective on 28 April. One hundred and fifty officers and four hundred and fifty other ranks had by then received courses of instruction at the New Zealand Malaria School which had been set up in the Division. A poster and newspaper campaign was inaugurated and the courses were continued. The control units had been working hard, the divisional unit having sprayed 76 square miles of country adjacent to the Volturno River. Larval breeding had been noted in the area and draining operations were carried out. The control unit attached to 4 Armoured Brigade experienced some difficulty in the vicinity of Cassino and the Rapido River where, under enemy observation by day and harassing fire at night, it could not carry out complete measures. Wherever possible houses were sprayed with flysol and fumigated with sulphur. Ditches and shell holes were treated with Paris green or malariol. A small lake was dusted with Paris green and streams were dammed and flushed out, cleared of overgrowing vegetation, and treated with anti-larval oil. Regular inspection was carried out by members of the MCU and reports submitted through the OC 4 Field Hygiene Section to commanding officers of units.

As a result of these measures the Division became malaria-minded, and the quality of the discipline was shown by the very small incidence of infection during the Italian campaign. In April only two cases of

malaria were reported and in May only seven.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL CASES AT 2 NZ GENERAL HOSPITAL

Medical Cases at 2 NZ General Hospital

Up to the end of March half of the patients admitted to the medical wards of the hospitals were suffering from acute infectious disease. Infective hepatitis and pneumonia each accounted for 232 cases, atypical pneumonia being responsible for the great proportion of the pneumonia cases. There were 164 cases of psychoneurosis and disorders of digestion and skin disease were common, with 184 and 123 cases respectively. Four cases of typhoid fever were admitted, two, both very ill, from recent reinforcements.

From April to June there were 1201 admissions to the medical wards, of which 553 were of infectious disease, 241 of digestive, 150 of nervous, and 123 of respiratory disorders, and 108 of skin diseases. Of the infectious diseases, hepatitis had diminished to 130 cases and there were 214 cases of pneumonia and 60 of bacillary dysentery, 10 of malaria, and 4 of typhoid. There was only one medical death during that period.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL CASES AT 3 GENERAL HOSPITAL

Medical Cases at 3 General Hospital

Many of 2 General Hospital's medical patients were transferred to 3 General Hospital so that admissions of hepatitis and pneumonia were common. The incidence of sickness in the base area was low throughout the period. It was noted that amoebic dysentery accounted for the majority of the relatively few cases of dysentery admitted. There were some cases of diphtheria and this infection was noted in some of the wounds. A high incidence of complications, especially polyneuritis, was observed.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK AT THE CONVALESCENT DEPOT

Work at the Convalescent Depot

The depot, which had been functioning at Casamassima, was transferred in April to San Spirito, on the coast near Bari, where a hutted and tented depot was erected in an almond and olive plantation around a large, solidly built house. The site and surroundings were a great improvement on the bleak and comfortless buildings formerly occupied. Construction work took some time to complete and there was difficulty with the supply of water till fresh piping was put in.

The unit then had a bed capacity of 750, with emergency expansion up to 1270 beds. Altogether, 2346 cases were admitted from April to June 1944. Of these, 1100 were medical, 725 surgical, 364 orthopaedic, and 157 were skin cases. It was noted that the wounds following secondary suture had done well and that this treatment had markedly shortened the convalescence of these cases compared with men wounded in the North African campaign. The medical cases admitted were convalescent from pneumonia, mainly the atypical form, hepatitis, and gastro-intestinal disorders. In June accidental injuries accounted for a large proportion of the surgical cases. Sprains of the ankle and knee were common and there were many cases of burns. The attachment of six members of the WAAC had proved a great success. Occupational therapy, consisting of useful work such as carpentry and gardening, was developed extensively.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FURLOUGH SCHEME

Furlough Scheme

At the end of April a furlough scheme for medical officers was commenced and four officers left for New Zealand or the United Kingdom; they included Lieutenant-Colonel J. K. Elliott, who was succeeded in the command of 4 Field Ambulance by Lieutenant-Colonel F. B. Edmundson. Medical officers had been excluded from the general 2 NZEF furlough scheme because of the shortage of medical officers in the force and the difficulty experienced in arranging for replacement from New Zealand. Officers of the First Echelon had not been granted leave to New Zealand up to this period, over four years since their departure overseas.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NEW ZEALAND FORCES CLUBS

New Zealand Forces Clubs

In Italy New Zealand Forces Clubs were successively established at Bari, Rome, Florence, and Venice as our Division moved up the peninsula. General Freyberg was always conscious of the value of such amenities for men on leave, and leading hotels were secured in the last three cities. The clubs were well run, providing beds, meals, baths, concerts, and guided tours. When it was possible to make large allocations of leave, the field ambulances set up transit camps to accommodate men for one or two nights near Rome and Venice. In the maintenance of morale and health these facilities were of great value to the force.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 15 — ADMINISTRATION IN ITALY, NOVEMBER 1943-DECEMBER 1944

CHAPTER 15
Administration in Italy, November 1943-December 1944

THE administrative units of 2 NZEF were primarily concerned with the organisation for the efficient functioning of 2 NZ Division. When the Division moved to Italy and it became apparent that it was committed to a long campaign, the separating expanse of the Mediterranean Sea made administration from Egypt difficult. Not the least important difficulty was the delay in reaching decisions, in spite of the use of the air service for mails and for liaison visits by senior officers. On 22 November, at a conference in Maadi Camp, the decision was made for HQ 2 NZEF and additional units to move to Italy about the middle of January 1944.

The medical units concerned were DMS Office, the Consultants, Principal Matron, 2 General Hospital, Detachment 1 Convalescent Depot, Medical Stores Depot, and detachments of Base Hygiene Section and 23 Field Ambulance (1 Camp Hospital). The last was to form a camp hospital at Advanced Base. At this time both 3 General Hospital and the main body of 1 Convalescent Depot had gone to Italy.

After the transfer of all these units to Italy only 1 General Hospital, 23 Field Ambulance, Base Hygiene Section, and 1, 2 and 3 Rest Homes remained in Egypt. It was not long before 1 General Hospital was subdivided into two, with the larger section proceeding to Italy and the smaller section remaining at Helwan as 5 General Hospital. The general base medical administration in Egypt then became the charge of the Senior Medical Officer, Maadi Camp, Lieutenant-Colonel Kronfeld, who was also OC 23 Field Ambulance and was responsible to DMS 2 NZEF.

Of the units involved in the transfer from Egypt to Italy at the end of 1943 and the beginning of 1944, the first to cross the Mediterranean was 2 General Hospital, the main body of whose staff sailed from Port Said on 3 January 1944. There were difficulties about shipping arrangements and the staff had to be split into two parties, while the equipment was loaded on yet another ship. It was planned by DMS 2

NZEF to locate the unit in the seminary buildings at Molfetta, a seaside town about 16 miles north along the Adriatic coast from Bari, to relieve the strain on 3 General Hospital. The switch of the New Zealand Division to the Fifth Army front at Cassino, and the inability to obtain possession of Molfetta, led to a sudden change of plans and, as was stated in the previous chapter, the hospital was established at Caserta, near Naples.

To establish a camp hospital at Advanced Base at San Basilio, between Taranto and Bari, fifty beds and other equipment were sent to Italy from 23 Field Ambulance at Maadi. The staff for the new unit, mostly posted from the staff of the parent unit, went to Italy early in January. The staff remaining at Maadi was able to cope with the fewer patients admitted.

The other units arrived at Taranto on 25 January 1944 and went to Advanced Base at San Basilio, except Detachment 1 Convalescent Depot, which rejoined its parent unit at Casamassima after a separation of ten months, and the Principal Matron, who stayed temporarily at 3 General Hospital. On 2 February HQ 2 NZEF, including DMS Office, the Consultants, and Principal Matron's Office, moved from Advanced Base to San Spirito on the Adriatic coast, some 6 miles north of Bari, and all were quartered in buildings. They remained in this location until September when they moved 300 miles up the coast to Senigallia, north of Ancona, at the time when the Division was switched back to the Adriatic coast after the capture of Florence. Arrangements were also finalised for the transfer of 1 Convalescent Depot from Casamassima to San Spirito. This latter move, however, did not take effect until 25 March.

Meanwhile, on 25 February Allied Force Headquarters made the request to DMS 2 NZEF that 1 General Hospital be brought to Italy in view of the coming malaria and dysentery season, when it was anticipated that every hospital bed that could be made available in Italy would be required. After discussion it was agreed that a 600-bed hospital should be despatched, but that a section sufficient to run a 300-bed hospital be left at Helwan to service troops still in Maadi Base Camp. The

retention of a base general hospital was essential, especially as reinforcements were still being landed in Egypt from New Zealand. Preliminary orders for the move of 1 General Hospital were given on 28 February, but the move did not take place until the beginning of April, when the unit (with 101 VDTC attached) was transferred from Alexandria to Taranto by hospital ship. The unit then moved into the seminary buildings at Molfetta, which had finally been made available by the Vatican after a good deal of negotiation at the highest levels. (Shortly afterwards 101 VDTC was attached to 3 General Hospital.) When established the hospital provided a measure of relief for 3 General Hospital which had been holding over 1000 patients.

Hospital Ship Policy

After the first divisional operations in Italy in November 1943, battle casualties were evacuated back to 3 General Hospital, Bari, as the base hospital in Italy. From here long-term cases, especially those likely to require invaliding to New Zealand, were transferred to Alexandria by hospital ship and thence by ambulance train to 1 General Hospital, Helwan. Special arrangements had to be made for a hospital ship service between Bari or Taranto and Alexandria, as the majority of British invalids went from Italy to Sicily, Algiers, and thence to England. After February 1944 all invalids, including battle casualties from the Cassino operations, were retained in Italy for embarkation direct to New Zealand on hospital ship at Taranto.

On 21 March 1944 HS *Maunganui* called at Taranto and filled about half her berths with invalids for New Zealand, and then called at Port Tewfik where she completed her load with invalids waiting in Egypt to return home. This was the practice adopted from then on. This policy avoided transhipment of seriously wounded from Italy, facilitated changes in the staffs of hospital ships, and enabled medical reinforcements and Red Cross comforts to be shipped to Italy without delay.

A measure of detailed liaison was necessary between DMS 2 NZEF and SMO Maadi Camp to ensure the best loading of hospital ships between the two sections of 2 NZEF. Evacuation of invalids by hospital ship was controlled by DMS 2 NZEF, and to provide for adequate liaison and the training of the staff of SMO Maadi Camp in the important details of evacuation an NCO was temporarily detached from DMS office to the SMO's office when the staff of DMS 2 NZEF first went to Italy. Liaison was most necessary to ensure that the right total of special classes of patients, e.g., women, mental cases, tuberculosis cases, lying patients and walking patients, were embarked from the two ports. Selection was necessary in both Italy and Egypt as the number of invalids awaiting evacuation almost invariably exceeded the capacity of one hospital ship. Sometimes two small hospital ships could have been filled when only one was available. A result of this was that many invalids had recovered sufficiently to be able to be returned by ordinary transport during the sometimes considerable wait of several months for hospital ship accommodation. A 'build-up' of invalids awaiting return to New Zealand had occurred following the breaking of a tailshaft by HS *Maunganui* when she called at Tripoli on 17 October 1943. This accident necessitated her travelling to England for repairs and she was not again available until March 1944. Thereafter, except for her period of attachment to the British Pacific Fleet in 1945, the *Maunganui* made regular trips between Italy and New Zealand, and occasional trips were also made by NMHS *Oranje* and HS *Wanganella*.

The accommodation of the three hospital ships serving 2 NZEF during late 1943 and 1944 was: *Maunganui*, 368 beds, *Wanganella*, 548 beds, and *Oranje*, 750 beds, later increased to 869. The *Wanganella* was lent by the Australian Government to fill the gap created by the breakdown of the *Maunganui* and she made three trips at this period. Numbers of the patients embarked at the end of 1943 were Australians, who along with many New Zealanders had been recently repatriated from Germany in an exchange of prisoners of war. The *Oranje*, staffed mainly by New Zealand personnel at this stage, made a trip to New Zealand at the end of 1943, but the next one was not made until July 1945. As part

of the Allied shipping pool she was mainly engaged in the transport of British invalids from Italy and the Middle East to South Africa or the United Kingdom. The *Maunganui* was back on her normal run by March 1944. All three ships had first-class accommodation and equipment, which ensured the greatest comfort for our casualties.

Medical Layout

With the transfer of three base hospitals and the Convalescent Depot to Italy in addition to the field medical units and casualty clearing station, the medical layout of 2 NZEF was similar to that adopted in Egypt and North Africa. The New Zealand units formed a complete chain, thus enabling most of the sick and wounded New Zealand soldiers to receive continuous treatment within their own units. As a matter of fact the percentage of New Zealand patients admitted to other than New Zealand hospitals during the campaign in Italy was much less than had been the case in some of the Western Desert operations. When lines of evacuation were long, as from the operations south of Florence and from the Trieste area, use was made of air transport from the Casualty Clearing Station to the nearest New Zealand base hospital. There were, however, small numbers of New Zealanders in British hospitals at Rome from time to time when their journey from northern to southern Italy was broken at that city. Many New Zealand patients were also admitted to British medical units during transit from the Division to the base hospitals, especially during the battle for Florence, and to a lesser extent at the Sangro. Moreover, the New Zealand medical services were glad to avail themselves of the special facilities offered in British and American hospitals for the treatment of head and faciomaxillary cases, a few chest cases, and a few mental patients.

The only medical units in Egypt not transferred to Italy were the rest homes, which had very small staffs and served a useful purpose in Egypt, particularly 2 Rest Home for other ranks at Alexandria. In Italy an arrangement was made for certain convalescent officers discharged from 3 General Hospital to stay at the New Zealand Forces Club, Bari,

without payment of fees during their convalescence. Later, use was made of the British Red Cross rest home for sisters, nurses, and officers established in February 1944 at Fasano, near Brindisi. Similar arrangements to utilise British Red Cross homes at Sorrento and Loreto were made by 2 General Hospital and 1 General Hospital at their locations of Caserta and Senigallia respectively.

Leave camps were organised in several areas and were freely utilised. Some were organised by divisional units, some by hospitals, and some by the YMCA. No. 3 General Hospital established one at Putignano, on the coast south of Bari; 2 General Hospital established one on the island of Ischia in the Bay of Naples and also rented some houses on the Sorrento peninsula at Positano. These camps did much to improve the health and preserve the morale of the troops.

Throughout the period in Italy 3 General Hospital remained the main base hospital, having the best accommodation and being capable of expansion up to 1200 beds. It was from this hospital that all evacuations of invalids from Italy to New Zealand were made.

Tour by Director-General of Medical Services

The transfers of medical units between Egypt and Italy had (except for the move of 1 General Hospital and 101 VDTC) been completed by the time of the tour in March of the Director-General of Medical Services (Army and Air) from New Zealand, and Major-General Bowerbank was able to see for himself the complete layout on each side of the Mediterranean and gauge the efficiency of individual units and the functioning of the system as a whole.

One of the purposes of the Director-General's visit to 2 NZEF was to examine the medical arrangements on the spot and, if possible, propose methods whereby there could be a reduction in the number of medical units and, more especially, of medical officers. It had apparently been the intention to recommend a reduction of medical units in Egypt, but the DGMS found that the medical units remaining in Egypt (allowing for

the projected move of 1 General Hospital to Italy) was the minimum number required for the servicing of New Zealanders as long as the reinforcement and training camp was retained in Maadi. He also found that the training base was unlikely to be transferred to Italy, firstly, because the restricted areas in Italy were unsatisfactory for advanced training; secondly, because it would be an advantage to have a base in Egypt when hostilities ceased; and thirdly, because of the expected high incidence of malaria and dysentery in Italy during the summer months.

The DGMS discussed with the DMS GHQ MEF, Major-General Hartgill, a New Zealander, the question of the transfer of 1 General Hospital to Italy. The latter agreed that the transfer was inevitable but insisted on the retention of a 300-bed hospital (5 General Hospital) for the treatment of sick New Zealand soldiers in Egypt. The DGMS was in full agreement with the arrangements made but, from the point of view of conservation of medical officers, regretted their necessity. (In point of fact, the splitting of 1 General Hospital into two hospitals did not involve extra medical officers.)

In Italy the DGMS inspected all New Zealand medical units and also spoke to all medical officers on the provisional rehabilitation plans for medical officers. In the forward area at Cassino he recognised that the principles underlying the medical arrangements of the New Zealand Division were mobility of the units combined with efficiency and the rapid transfer of patients from the forward areas to a unit where they could receive treatment for shock and, later, full surgical investigation. The siting of the MDS and CCS as far forward as possible had, he agreed, undoubtedly resulted in a marked fall in the death rate of battle casualties and a great reduction in pain and suffering.

After visiting the non-divisional medical units in Italy the DGMS was able to form his opinion of the necessity for three general hospitals, totalling 2400 beds, which had been questioned by the National Medical Committee. In his report to the Adjutant-General in New Zealand the DGMS stated:

It must be remembered that although 2 NZEF is, as far as possible, self-contained, medical arrangements and especially bed accommodation must be based on the requirements of an army of which 2 NZ Div. is only a part. It must also be remembered that medical officers are required for transport purposes, prisoner of war camps, hospital trains, etc., and 2 NZEF is not called on to supply any for these purposes. Although it is the policy to use NZ medical units for New Zealanders, evacuation during actual fighting must pass through certain channels, and it is by no means infrequent for New Zealanders to be admitted to British or American medical units. The same thing happens when men are on leave and are taken ill.

There are also special units attached to certain of the hospitals to which New Zealanders may be sent for special investigation. For instance, the special neuro-surgical unit at 16 US Evacuation Hospital to which New Zealanders are frequently transferred who are suffering from brain and spinal lesions.

During the recent fighting, in which Indian, New Zealand and British Divisions were engaged, all casualties were evacuated by the best and quickest route, irrespective of the medical unit.

The total strength of 2 NZEF in Italy is roughly 35,000 and hospital bed accommodation of 2100 (900, 600, 600) gives a percentage rate of 6 per cent. It is agreed that each of these hospitals may be expanded in an emergency to 1200 or 900 beds respectively, but only as a temporary measure. In a comparison of the total staffs of military hospitals and civilian hospitals in New Zealand of approximately the same size, it has been found that the civilian hospitals had a staff of medical officers, sisters, etc., nearly one-third more than that of the military hospitals.

Another argument against the reduction in the hospital bed accommodation is that an emergency is likely to arise in the near future when the malarial and dysentery season commences in a few weeks.

It has been recognised that the original estimate of 10 per cent for

the sick and casualty rate was too high but any reduction in the accommodation under the present 6 per cent rate would be dangerous and affect very considerably the efficiency of the medical services, and this, in turn would seriously react on the care of the sick and wounded New Zealand soldier. Under the circumstances, therefore, I cannot advise any reduction in the number of hospitals or medical officers.

As it was, in order to maintain an efficient medical service, it had been found impossible to allow medical officers to return to New Zealand on furlough as soon as combatant officers of similar length of service. Medical officers could not be released until replacements were available. As the DGMS found, this created a certain feeling of unrest, and he found it desirable to explain the reasons from the New Zealand viewpoint and to assure the medical officers concerned that every effort was being made to provide replacements so that they could proceed on furlough or obtain their release from the Army, and so help to maintain the civilian medical service in New Zealand.

The visit overseas of the DGMS was of great value to 2 NZEF medical services. There had been some conflict ever since the beginning of the war regarding the relative needs of the Army overseas and the civilian medical services, for which social security legislation had increased the demand. The Minister of Health and the National Medical Committee were inclined to the opinion that the Army was relatively overstaffed and its hospital provision excessive. The DMS 2 NZEF had to press with the DGMS the needs of his force, especially for medical officers and for more senior men and specialists. Some experienced medical officers had been returned to New Zealand for service with the Pacific force, and some had been lost as prisoners of war, and their places had never been adequately filled. On his tour of inspection the DGMS realised that the requests of 2 NZEF were not unreasonable and the hospital provision not excessive. It was a pity that a period of four years had elapsed without a visit by the DGMS to the Middle East to see for himself the requirements of the force. He, on his part, would have had the opportunity of urging the appointment of non-professional medical officers in the medical

units for routine administration, and also the earlier use of an optician unit overseas. The occasional differences with regard to the staffing of hospital ships would also have been more readily adjusted.

Closing of 1 NZ Rest Home

After having been open for two and a half years, 1 Rest Home for NZANS and NZWAAC was closed at the end of May 1944. Requests had been received from General Headquarters, Middle East, for the use of 1 and 3 Rest Homes as offices, the area in which the rest homes were situated having been declared a 'Military area reserved for HQ offices only'. The DMS 2 NZEF felt that it was reasonable that 1 Rest Home should be closed if 3 Rest Home remained open to serve sisters and nurses as well as officers.

Visit of Prime Minister of New Zealand

The Prime Minister of New Zealand, the Rt. Hon. Peter Fraser, accompanied by Lieutenant-General E. Puttick and others, arrived in Italy on 26 May 1944, and between then and 4 June visited New Zealand divisional troops in the forward areas and also the base units in the Bari district. He displayed particular interest in the medical units and spoke individually to nearly all the patients. Colonel King, ADMS 2 NZ Division, accompanied him on the tour of the field ambulances, while Brigadier Kenrick, DMS 2 NZEF, conducted him round 1 Mobile CCS, 1, 2 and 3 General Hospitals and 1 Convalescent Depot. At the conclusion of his tour and prior to leaving by air for Egypt to make further inspections there, the Prime Minister expressed himself as being very pleased with the adequate arrangements made for the care of New Zealand sick and wounded.

In a special Order of the Day General Freyberg quoted a fine tribute paid to the Medical Services in 2 NZEF by the Prime Minister, and added, 'The praise of our medical arrangements is, as we all know in the Division, well merited.'

More Prisoners of War Repatriated

At the end of May a further draft of sixty-two repatriated prisoners of war from Germany, including both sick and protected personnel, reached Egypt.

Arrival of Second Section, 11th Reinforcements

The second section of the 11th Reinforcements arrived in Egypt on 3 May and included 5 medical officers, 12 NZANS, and 118 other ranks NZMC. After completing a syllabus of three weeks intensive training, these medical reinforcements were either posted to medical units in Egypt or despatched to Advanced Base in Italy. From Advanced Base Camp Hospital they were posted to divisional and other units as required. At the end of May the Medical Corps was in the happy position of having 155 reinforcements available above establishment requirements, but the surplus was soon converted into a shortage when further furlough drafts departed. (The 4th Reinforcements began to move homewards in July.)

14 Optician Unit

This unit arrived in Italy on 1 June, having been sent on to Italy as soon as possible after its arrival from New Zealand with the second section of the 11th Reinforcements. It was attached to 1 Mobile CCS and was also for periods at Advanced Base, where it performed most useful work.

New Medical Units Formed

A unit known as 1 Field Surgical Unit was officially formed on 10 June 1944. In September 1942 a surgical team was first formed as a detachment from 1 General Hospital. It accompanied 2 NZ Division through the desert campaign until the fall of Tunisia in May 1943, when it returned to Base and was temporarily disbanded. On 8 October 1943 the team—called 1 General Hospital Surgical Team—was reformed and accompanied the Division to Italy. It was this 1 General Hospital

surgical team which was now formed into an official unit of 2 NZEF as 1 NZ FSU. In effect, the unit consisted of a surgeon (Major A. W. Douglas), an operating theatre corporal, three theatre orderlies, and two truck drivers, with provision for an anaesthetist, who was generally 'borrowed' from another unit when required. The name of the unit was changed to 3 NZ FSU in October 1944.

On 25 July a new establishment became effective for 4 Field Hygiene Section, whereby the unit was combined with 2 and 3 Anti-Malaria Control Units to become 4 Field Hygiene Company, and extra transport was also provided. The change simplified and improved administration and proved very advantageous. In the following winter one malaria-control section was disbanded and the other became a typhus-control section.

At the same time a new war establishment was issued for 102 Mobile VDTC, enabling it to have extra vehicles and to raise the number and rank of its NCOs.

Plans for Move Forward of Base Units

After the fall of Rome the enemy retreated to a line 150 miles to the north of that city, which meant that when 2 NZ Division was again operationally employed it would be about 400 miles from the base at Bari. Accordingly, on 19 June a decision was made to move HQ 2 NZEF and Advanced Base to Ancona, 100 miles up the Adriatic coast, when that town should fall into the hands of the Allied forces. The DMS 2 NZEF arranged for 1 General Hospital to participate in the move north. Admissions to 1 General Hospital were reduced accordingly, most cases being diverted to 3 General Hospital. The move north was delayed considerably, until August and September, because of firm enemy resistance, and the move of the Advanced Base was cancelled, this camp remaining in southern Italy.

Shortage of Medical Officers

The shortage of medical officers in 2 NZEF now became so acute that difficulty was experienced in maintaining a satisfactory service. The position was discussed by Brigadier Kenrick with General Freyberg on 5 July 1944 and the latter asked for a written report on the situation. The GOC then took up the matter with the Minister of Defence, stating that it was becoming increasingly difficult to maintain the high standard of treatment usual in 2 NZEF. Up till that time 2 NZEF had endeavoured to meet New Zealand requirements and had sent back experienced doctors to meet urgent demands in the Pacific and at home. Knowing the difficulties, 2 NZEF had carried on without replacements as best it could, but it was felt that numbers were now below the safety line.

Allowing for the arrival of four medical officers with the 12th Reinforcements, there was a deficiency of eighteen medical officers on the establishments of medical units. In addition, it was desirable to have a surplus of at least five to make provision for leave, sickness, and special detachments. Since 2 NZEF had been overseas seventy-eight medical officers had been returned to New Zealand or the United Kingdom, and the number then being returned was exceeding the number of replacements arriving.

In the operations near Florence in July and August the shortage of medical officers was such that the field ambulance in reserve had always to 'lend' all its medical officers but two to the two field ambulances admitting battle casualties and sick respectively.

(With the return of 3 NZ Division to New Zealand from the Pacific in the latter half of 1944 more medical officers were made available for service in 2 NZEF in Egypt and Italy, some being flown to the Middle East in August, others arriving in HS *Maunganui* in September, and eighteen arriving with the 13th Reinforcements on 5 November. These, however, could not make good the heavy loss of experienced surgeons and senior administrative officers with long experience in the force.)

At this period there arose a marked deficiency in the numbers of

medical specialists in 2 NZEF. This was partly due to the wastage of medical officers through sickness and invaliding to New Zealand, and partly to the employment of specialists in administrative posts in the divisional medical units. In January 1944 no orthopaedic surgeons were available. Of the original three attached to the base hospitals, two had been invalided to New Zealand, and the other, after he had gone home on furlough, had been retained in New Zealand to look after the amputees. It can be realised how serious a deficiency this was when so many serious fracture cases were being treated in the hospitals. In May there was an acute shortage of ophthalmologists, ear, nose and throat surgeons, and radiologists, and urgent representations were made to New Zealand to send replacements to the Middle East. There were at that time two ophthalmologists (one of them having been obtained from the RAMC from England), two ENT specialists, and no relieving radiologist for four hospitals. In Italy it became necessary to concentrate the specialist cases in the hospital where the particular medical specialist was available.

Promotion of Specialists in the NZMC

Throughout the war there had been difficulty with regard to the promotion of senior medical practitioners who were retained in hospitals because of their value as clinicians. The hospitals had rigid establishments with a minimal number of senior ranking officers, and only the commanding officer and officers in charge of the surgical and medical divisions had ranks above that of major. In the RAMC every medical officer graded as a specialist automatically was granted the rank of major, but this was not so in our Corps. In the early period of the war we had experienced senior surgeons ranking as captains. Later, it was impossible for any specialist to be promoted above the rank of major unless he became an officer in charge of a division in a hospital, for which position he might not be qualified, or unless he became CO of a field ambulance or of a hospital unit, when he was no longer available for his specialist work. Some recognition of the position was given by Headquarters 2 NZEF in September 1944 by the promotion of Majors

Coverdale and Russell to the rank of lieutenant-colonel as consultants in ophthalmology and psychiatry respectively. The promotions were both long overdue. In the future better provision should be made in the New Zealand Army for recognition of senior professional status.

Recruitment of New Zealand Doctors in the United Kingdom

Because of demands on the Emergency Medical Service in England during the war many New Zealand doctors could not be released from British civil hospitals to serve in any force. The question of service by New Zealand doctors generally was discussed by Major-General Bowerbank with the DGAMS, Lieutenant-General Hood, in London just before D Day in 1944. Realising the great shortage of medical officers and medical men in Great Britain, General Bowerbank directed the New Zealand Liaison Officer in London to cancel all applications for transfer and to refuse all applications for enlistment in the NZMC. In Italy in 1944 two specialist physicians and an ophthalmic surgeon were seconded from the RAMC to 2 NZEF to make up deficiencies and they gave valuable assistance in our hospitals.

Making references to the subject in letters to General Bowerbank in 1945 General Hood said:

As you know, there is a very great shortage of medical men in the United Kingdom, and the fighting services are in keen competition with the civilian medical authorities, including the EMS, for any doctors who are of recruitable age. If New Zealand medical men employed with the EMS are permitted to join the NZMC, their places would have to be filled by English or Scottish graduates who might otherwise have been available for the Army.... Fortunately for us and through your good offices, all transfers and applications for enlistment in the NZMC are resisted by your Government. From my point of view this decision has been of the greatest assistance....

New Zealand medical men, both in a service and civilian capacity, have played a valuable part in augmenting the all too few doctors at our

disposal.... indeed I do not know what we should have done if the Dominions had pressed for the return of their officers who have given us such great help in the last few difficult years.

Many of the New Zealand doctors concerned were specially suited by age and qualifications for service in 2 NZEF, but they rendered valuable service in Britain in the treatment of the severe casualties arising from the bombing of the civilian population.

Non-professional Officers

In Italy appointments of NCOs to non-professional commissions as quartermasters, hospital registrars, hospital company officers, and dispensers were continued, thus saving many professional medical officers, and those appointed proved satisfactory in every way.

Average Strength of 2 NZEF

The average strength of 2 NZEF in July 1944, from which time the resumption of replacement schemes involving the 4th, and later, Reinforcements began to take effect and result in a continuous ebb and flow, was:

	Offrs	*ORs*	*Total*
MEF	**395**	**6,202**	**6,597**
CMF	**1,704**	**25,480**	**27,184**
	—	**—**	**—**
	2,099	**31,682**	**33,781**

Furlough for Medical Officers

As has been said earlier, it had been found impossible to grant medical officers furlough to New Zealand in the same way as other officers of the force. This was due to the fact that there were no replacements available and the medical officers could not be spared without lowering the efficiency of the service. Medical officers of the First Echelon with four and a half years' service overseas had still not

been granted furlough. Some had had to be invalided back to New Zealand—not surprising when it was considered that many of the medical officers in the first medical units sent overseas were older married men.

When medical officers did go on furlough very few returned to serve in 2 NZEF. Officers were lost to 2 NZEF for a number of reasons. Among them were: (*a*) Those medically boarded as unfit for further overseas service; (*b*) Those asked for by Army Headquarters, Wellington, for service in the Pacific or for special service in New Zealand; (*c*) Those granted compassionate leave; (*d*) Direct exchanges with similarly qualified men in New Zealand; (*e*) Exchanges of young medical officers with long service for senior house surgeons. (Less than 50 per cent of those returning wished to take up house-surgeon appointments.)

NZANS

In November 1944 it was notified that all sisters with four years' service were to be given the opportunity of returning to New Zealand as replacements and shipping arrangements allowed. The health of the sisters had been very satisfactory, and only a few had been invalided. Promotion had been slow as a result, and a small increase in establishment was made at this time.

NZWAAC (Medical Division)

On a similar basis the voluntary aids were able to return to New Zealand after three years' service.

The status of the voluntary aids had recently been revised. The nursing sisters had always had the status of officers and wore badges of rank as such. Except for their few officers, the WAACs were rated as NCOs and privates. This debarred them from first-class rail travel in the Middle East and also from certain hotels and clubs. This handicap, especially undesirable in Egypt and Italy, was fully recognised by our administration. To improve the position all badges of rank were

abolished and all members of the NZWAAC (Medical Division), except the officers, were designated as nurse and their identity cards amended to state that the bearer was allowed the privileges of an officer as regards travel, accommodation, and club facilities. This was a satisfactory solution to a difficult problem.

Red Cross Organisation

The Red Cross Commissioner, Major Tweedy, at this period urged the adoption of an establishment of Red Cross personnel to carry out work in the hospitals and at the store. It had been possible in Egypt to enlist the help of civilian women as hospital visitors and in the occupational therapy department at the Helwan hospital, but such arrangements were not possible in Italy. Here the work was continued by Mrs Chapman, attached to the YMCA, and Mrs Blackford, attached to the Red Cross organisation. Where New Zealand clubs were established NZWAAC (Welfare Division)—the Tuis—distributed Red Cross comforts to hospitals in their area. Occupational therapy had become a responsibility of the NZWAAC (Medical Division) on the hospital staffs. The few men assisting the Red Cross Commissioner were supplied by the Army.

Major Tweedy suggested a Red Cross establishment of one woman in command and ten others to be attached to the different hospital units. They would take charge of the libraries, distribute Red Cross comforts, give help in correspondence and in the purchase of gifts for patients, and assist in occupational therapy. The personnel could have been provided by attaching women from the WAAC or by the despatch of a separate unit from New Zealand. These recommendations were not approved.

Hospital Staff for Repatriation Units in United Kingdom

On 5 August 1944 a group of two medical officers, six sisters, and twenty other ranks was selected as a camp hospital staff for duty in the United Kingdom with the New Zealand prisoner-of-war repatriation organisation then being formed. The group went to England on 2

September. The successful Allied advance across France from Normandy presaged that in due course the release of large numbers of Allied prisoners of war could be expected. New Zealanders would be included among them and special units were necessary to care for them as they reached England from the Continent. By 1945 the organisation had grown considerably, and when the rush of repatriation occurred towards the close of hostilities the augmented medical units were kept very busy.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

THE administrative units of 2 NZEF were primarily concerned with the organisation for the efficient functioning of 2 NZ Division. When the Division moved to Italy and it became apparent that it was committed to a long campaign, the separating expanse of the Mediterranean Sea made administration from Egypt difficult. Not the least important difficulty was the delay in reaching decisions, in spite of the use of the air service for mails and for liaison visits by senior officers. On 22 November, at a conference in Maadi Camp, the decision was made for HQ 2 NZEF and additional units to move to Italy about the middle of January 1944.

The medical units concerned were DMS Office, the Consultants, Principal Matron, 2 General Hospital, Detachment 1 Convalescent Depot, Medical Stores Depot, and detachments of Base Hygiene Section and 23 Field Ambulance (1 Camp Hospital). The last was to form a camp hospital at Advanced Base. At this time both 3 General Hospital and the main body of 1 Convalescent Depot had gone to Italy.

After the transfer of all these units to Italy only 1 General Hospital, 23 Field Ambulance, Base Hygiene Section, and 1, 2 and 3 Rest Homes remained in Egypt. It was not long before 1 General Hospital was subdivided into two, with the larger section proceeding to Italy and the smaller section remaining at Helwan as 5 General Hospital. The general base medical administration in Egypt then became the charge of the Senior Medical Officer, Maadi Camp, Lieutenant-Colonel Kronfeld, who was also OC 23 Field Ambulance and was responsible to DMS 2 NZEF.

Of the units involved in the transfer from Egypt to Italy at the end of 1943 and the beginning of 1944, the first to cross the Mediterranean was 2 General Hospital, the main body of whose staff sailed from Port Said on 3 January 1944. There were difficulties about shipping arrangements and the staff had to be split into two parties, while the

equipment was loaded on yet another ship. It was planned by DMS 2 NZEF to locate the unit in the seminary buildings at Molfetta, a seaside town about 16 miles north along the Adriatic coast from Bari, to relieve the strain on 3 General Hospital. The switch of the New Zealand Division to the Fifth Army front at Cassino, and the inability to obtain possession of Molfetta, led to a sudden change of plans and, as was stated in the previous chapter, the hospital was established at Caserta, near Naples.

To establish a camp hospital at Advanced Base at San Basilio, between Taranto and Bari, fifty beds and other equipment were sent to Italy from 23 Field Ambulance at Maadi. The staff for the new unit, mostly posted from the staff of the parent unit, went to Italy early in January. The staff remaining at Maadi was able to cope with the fewer patients admitted.

The other units arrived at Taranto on 25 January 1944 and went to Advanced Base at San Basilio, except Detachment 1 Convalescent Depot, which rejoined its parent unit at Casamassima after a separation of ten months, and the Principal Matron, who stayed temporarily at 3 General Hospital. On 2 February HQ 2 NZEF, including DMS Office, the Consultants, and Principal Matron's Office, moved from Advanced Base to San Spirito on the Adriatic coast, some 6 miles north of Bari, and all were quartered in buildings. They remained in this location until September when they moved 300 miles up the coast to Senigallia, north of Ancona, at the time when the Division was switched back to the Adriatic coast after the capture of Florence. Arrangements were also finalised for the transfer of 1 Convalescent Depot from Casamassima to San Spirito. This latter move, however, did not take effect until 25 March.

Meanwhile, on 25 February Allied Force Headquarters made the request to DMS 2 NZEF that 1 General Hospital be brought to Italy in view of the coming malaria and dysentery season, when it was anticipated that every hospital bed that could be made available in Italy would be required. After discussion it was agreed that a 600-bed hospital

should be despatched, but that a section sufficient to run a 300-bed hospital be left at Helwan to service troops still in Maadi Base Camp. The retention of a base general hospital was essential, especially as reinforcements were still being landed in Egypt from New Zealand. Preliminary orders for the move of 1 General Hospital were given on 28 February, but the move did not take place until the beginning of April, when the unit (with 101 VDTC attached) was transferred from Alexandria to Taranto by hospital ship. The unit then moved into the seminary buildings at Molfetta, which had finally been made available by the Vatican after a good deal of negotiation at the highest levels. (Shortly afterwards 101 VDTC was attached to 3 General Hospital.) When established the hospital provided a measure of relief for 3 General Hospital which had been holding over 1000 patients.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HOSPITAL SHIP POLICY

Hospital Ship Policy

After the first divisional operations in Italy in November 1943, battle casualties were evacuated back to 3 General Hospital, Bari, as the base hospital in Italy. From here long-term cases, especially those likely to require invaliding to New Zealand, were transferred to Alexandria by hospital ship and thence by ambulance train to 1 General Hospital, Helwan. Special arrangements had to be made for a hospital ship service between Bari or Taranto and Alexandria, as the majority of British invalids went from Italy to Sicily, Algiers, and thence to England. After February 1944 all invalids, including battle casualties from the Cassino operations, were retained in Italy for embarkation direct to New Zealand on hospital ship at Taranto.

On 21 March 1944 HS *Maunganui* called at Taranto and filled about half her berths with invalids for New Zealand, and then called at Port Tewfik where she completed her load with invalids waiting in Egypt to return home. This was the practice adopted from then on. This policy avoided transhipment of seriously wounded from Italy, facilitated changes in the staffs of hospital ships, and enabled medical reinforcements and Red Cross comforts to be shipped to Italy without delay.

A measure of detailed liaison was necessary between DMS 2 NZEF and SMO Maadi Camp to ensure the best loading of hospital ships between the two sections of 2 NZEF. Evacuation of invalids by hospital ship was controlled by DMS 2 NZEF, and to provide for adequate liaison and the training of the staff of SMO Maadi Camp in the important details of evacuation an NCO was temporarily detached from DMS office to the SMO's office when the staff of DMS 2 NZEF first went to Italy.

Liaison was most necessary to ensure that the right total of special classes of patients, e.g., women, mental cases, tuberculosis cases, lying patients and walking patients, were embarked from the two ports. Selection was necessary in both Italy and Egypt as the number of invalids awaiting evacuation almost invariably exceeded the capacity of one hospital ship. Sometimes two small hospital ships could have been filled when only one was available. A result of this was that many invalids had recovered sufficiently to be able to be returned by ordinary transport during the sometimes considerable wait of several months for hospital ship accommodation. A 'build-up' of invalids awaiting return to New Zealand had occurred following the breaking of a tailshaft by HS *Maunganui* when she called at Tripoli on 17 October 1943. This accident necessitated her travelling to England for repairs and she was not again available until March 1944. Thereafter, except for her period of attachment to the British Pacific Fleet in 1945, the *Maunganui* made regular trips between Italy and New Zealand, and occasional trips were also made by NMHS *Oranje* and HS *Wanganella*.

The accommodation of the three hospital ships serving 2 NZEF during late 1943 and 1944 was: *Maunganui*, 368 beds, *Wanganella*, 548 beds, and *Oranje*, 750 beds, later increased to 869. The *Wanganella* was lent by the Australian Government to fill the gap created by the breakdown of the *Maunganui* and she made three trips at this period. Numbers of the patients embarked at the end of 1943 were Australians, who along with many New Zealanders had been recently repatriated from Germany in an exchange of prisoners of war. The *Oranje*, staffed mainly by New Zealand personnel at this stage, made a trip to New Zealand at the end of 1943, but the next one was not made until July 1945. As part of the Allied shipping pool she was mainly engaged in the transport of British invalids from Italy and the Middle East to South Africa or the United Kingdom. The *Maunganui* was back on her normal run by March 1944. All three ships had first-class accommodation and equipment, which ensured the greatest comfort for our casualties.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL LAYOUT

Medical Layout

With the transfer of three base hospitals and the Convalescent Depot to Italy in addition to the field medical units and casualty clearing station, the medical layout of 2 NZEF was similar to that adopted in Egypt and North Africa. The New Zealand units formed a complete chain, thus enabling most of the sick and wounded New Zealand soldiers to receive continuous treatment within their own units. As a matter of fact the percentage of New Zealand patients admitted to other than New Zealand hospitals during the campaign in Italy was much less than had been the case in some of the Western Desert operations. When lines of evacuation were long, as from the operations south of Florence and from the Trieste area, use was made of air transport from the Casualty Clearing Station to the nearest New Zealand base hospital. There were, however, small numbers of New Zealanders in British hospitals at Rome from time to time when their journey from northern to southern Italy was broken at that city. Many New Zealand patients were also admitted to British medical units during transit from the Division to the base hospitals, especially during the battle for Florence, and to a lesser extent at the Sangro. Moreover, the New Zealand medical services were glad to avail themselves of the special facilities offered in British and American hospitals for the treatment of head and faciomaxillary cases, a few chest cases, and a few mental patients.

The only medical units in Egypt not transferred to Italy were the rest homes, which had very small staffs and served a useful purpose in Egypt, particularly 2 Rest Home for other ranks at Alexandria. In Italy an arrangement was made for certain convalescent officers discharged from 3 General Hospital to stay at the New Zealand Forces Club, Bari, without payment of fees during their convalescence. Later, use was

made of the British Red Cross rest home for sisters, nurses, and officers established in February 1944 at Fasano, near Brindisi. Similar arrangements to utilise British Red Cross homes at Sorrento and Loreto were made by 2 General Hospital and 1 General Hospital at their locations of Caserta and Senigallia respectively.

Leave camps were organised in several areas and were freely utilised. Some were organised by divisional units, some by hospitals, and some by the YMCA. No. 3 General Hospital established one at Putignano, on the coast south of Bari; 2 General Hospital established one on the island of Ischia in the Bay of Naples and also rented some houses on the Sorrento peninsula at Positano. These camps did much to improve the health and preserve the morale of the troops.

Throughout the period in Italy 3 General Hospital remained the main base hospital, having the best accommodation and being capable of expansion up to 1200 beds. It was from this hospital that all evacuations of invalids from Italy to New Zealand were made.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TOUR BY DIRECTOR-GENERAL OF MEDICAL SERVICES

Tour by Director-General of Medical Services

The transfers of medical units between Egypt and Italy had (except for the move of 1 General Hospital and 101 VDTC) been completed by the time of the tour in March of the Director-General of Medical Services (Army and Air) from New Zealand, and Major-General Bowerbank was able to see for himself the complete layout on each side of the Mediterranean and gauge the efficiency of individual units and the functioning of the system as a whole.

One of the purposes of the Director-General's visit to 2 NZEF was to examine the medical arrangements on the spot and, if possible, propose methods whereby there could be a reduction in the number of medical units and, more especially, of medical officers. It had apparently been the intention to recommend a reduction of medical units in Egypt, but the DGMS found that the medical units remaining in Egypt (allowing for the projected move of 1 General Hospital to Italy) was the minimum number required for the servicing of New Zealanders as long as the reinforcement and training camp was retained in Maadi. He also found that the training base was unlikely to be transferred to Italy, firstly, because the restricted areas in Italy were unsatisfactory for advanced training; secondly, because it would be an advantage to have a base in Egypt when hostilities ceased; and thirdly, because of the expected high incidence of malaria and dysentery in Italy during the summer months.

The DGMS discussed with the DMS GHQ MEF, Major-General Hartgill, a New Zealander, the question of the transfer of 1 General Hospital to Italy. The latter agreed that the transfer was inevitable but insisted on the retention of a 300-bed hospital (5 General Hospital) for the treatment of sick New Zealand soldiers in Egypt. The DGMS was in

full agreement with the arrangements made but, from the point of view of conservation of medical officers, regretted their necessity. (In point of fact, the splitting of 1 General Hospital into two hospitals did not involve extra medical officers.)

In Italy the DGMS inspected all New Zealand medical units and also spoke to all medical officers on the provisional rehabilitation plans for medical officers. In the forward area at Cassino he recognised that the principles underlying the medical arrangements of the New Zealand Division were mobility of the units combined with efficiency and the rapid transfer of patients from the forward areas to a unit where they could receive treatment for shock and, later, full surgical investigation. The siting of the MDS and CCS as far forward as possible had, he agreed, undoubtedly resulted in a marked fall in the death rate of battle casualties and a great reduction in pain and suffering.

After visiting the non-divisional medical units in Italy the DGMS was able to form his opinion of the necessity for three general hospitals, totalling 2400 beds, which had been questioned by the National Medical Committee. In his report to the Adjutant-General in New Zealand the DGMS stated:

It must be remembered that although 2 NZEF is, as far as possible, self-contained, medical arrangements and especially bed accommodation must be based on the requirements of an army of which 2 NZ Div. is only a part. It must also be remembered that medical officers are required for transport purposes, prisoner of war camps, hospital trains, etc., and 2 NZEF is not called on to supply any for these purposes. Although it is the policy to use NZ medical units for New Zealanders, evacuation during actual fighting must pass through certain channels, and it is by no means infrequent for New Zealanders to be admitted to British or American medical units. The same thing happens when men are on leave and are taken ill.

There are also special units attached to certain of the hospitals to which New Zealanders may be sent for special investigation. For

instance, the special neuro-surgical unit at 16 US Evacuation Hospital to which New Zealanders are frequently transferred who are suffering from brain and spinal lesions.

During the recent fighting, in which Indian, New Zealand and British Divisions were engaged, all casualties were evacuated by the best and quickest route, irrespective of the medical unit.

The total strength of 2 NZEF in Italy is roughly 35,000 and hospital bed accommodation of 2100 (900, 600, 600) gives a percentage rate of 6 per cent. It is agreed that each of these hospitals may be expanded in an emergency to 1200 or 900 beds respectively, but only as a temporary measure. In a comparison of the total staffs of military hospitals and civilian hospitals in New Zealand of approximately the same size, it has been found that the civilian hospitals had a staff of medical officers, sisters, etc., nearly one-third more than that of the military hospitals.

Another argument against the reduction in the hospital bed accommodation is that an emergency is likely to arise in the near future when the malarial and dysentery season commences in a few weeks.

It has been recognised that the original estimate of 10 per cent for the sick and casualty rate was too high but any reduction in the accommodation under the present 6 per cent rate would be dangerous and affect very considerably the efficiency of the medical services, and this, in turn would seriously react on the care of the sick and wounded New Zealand soldier. Under the circumstances, therefore, I cannot advise any reduction in the number of hospitals or medical officers.

As it was, in order to maintain an efficient medical service, it had been found impossible to allow medical officers to return to New Zealand on furlough as soon as combatant officers of similar length of service. Medical officers could not be released until replacements were available. As the DGMS found, this created a certain feeling of unrest, and he found it desirable to explain the reasons from the New Zealand viewpoint and to assure the medical officers concerned that every effort was being

made to provide replacements so that they could proceed on furlough or obtain their release from the Army, and so help to maintain the civilian medical service in New Zealand.

The visit overseas of the DGMS was of great value to 2 NZEF medical services. There had been some conflict ever since the beginning of the war regarding the relative needs of the Army overseas and the civilian medical services, for which social security legislation had increased the demand. The Minister of Health and the National Medical Committee were inclined to the opinion that the Army was relatively overstaffed and its hospital provision excessive. The DMS 2 NZEF had to press with the DGMS the needs of his force, especially for medical officers and for more senior men and specialists. Some experienced medical officers had been returned to New Zealand for service with the Pacific force, and some had been lost as prisoners of war, and their places had never been adequately filled. On his tour of inspection the DGMS realised that the requests of 2 NZEF were not unreasonable and the hospital provision not excessive. It was a pity that a period of four years had elapsed without a visit by the DGMS to the Middle East to see for himself the requirements of the force. He, on his part, would have had the opportunity of urging the appointment of non-professional medical officers in the medical units for routine administration, and also the earlier use of an optician unit overseas. The occasional differences with regard to the staffing of hospital ships would also have been more readily adjusted.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CLOSING OF 1 NZ REST HOME

Closing of 1 NZ Rest Home

After having been open for two and a half years, 1 Rest Home for NZANS and NZWAAC was closed at the end of May 1944. Requests had been received from General Headquarters, Middle East, for the use of 1 and 3 Rest Homes as offices, the area in which the rest homes were situated having been declared a 'Military area reserved for HQ offices only'. The DMS 2 NZEF felt that it was reasonable that 1 Rest Home should be closed if 3 Rest Home remained open to serve sisters and nurses as well as officers.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

VISIT OF PRIME MINISTER OF NEW ZEALAND

Visit of Prime Minister of New Zealand

The Prime Minister of New Zealand, the Rt. Hon. Peter Fraser, accompanied by Lieutenant-General E. Puttick and others, arrived in Italy on 26 May 1944, and between then and 4 June visited New Zealand divisional troops in the forward areas and also the base units in the Bari district. He displayed particular interest in the medical units and spoke individually to nearly all the patients. Colonel King, ADMS 2 NZ Division, accompanied him on the tour of the field ambulances, while Brigadier Kenrick, DMS 2 NZEF, conducted him round 1 Mobile CCS, 1, 2 and 3 General Hospitals and 1 Convalescent Depot. At the conclusion of his tour and prior to leaving by air for Egypt to make further inspections there, the Prime Minister expressed himself as being very pleased with the adequate arrangements made for the care of New Zealand sick and wounded.

In a special Order of the Day General Freyberg quoted a fine tribute paid to the Medical Services in 2 NZEF by the Prime Minister, and added, 'The praise of our medical arrangements is, as we all know in the Division, well merited.'

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MORE PRISONERS OF WAR REPATRIATED

More Prisoners of War Repatriated

At the end of May a further draft of sixty-two repatriated prisoners of war from Germany, including both sick and protected personnel, reached Egypt.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ARRIVAL OF SECOND SECTION, 11TH REINFORCEMENTS

Arrival of Second Section, 11th Reinforcements

The second section of the 11th Reinforcements arrived in Egypt on 3 May and included 5 medical officers, 12 NZANS, and 118 other ranks NZMC. After completing a syllabus of three weeks intensive training, these medical reinforcements were either posted to medical units in Egypt or despatched to Advanced Base in Italy. From Advanced Base Camp Hospital they were posted to divisional and other units as required. At the end of May the Medical Corps was in the happy position of having 155 reinforcements available above establishment requirements, but the surplus was soon converted into a shortage when further furlough drafts departed. (The 4th Reinforcements began to move homewards in July.)

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

14 OPTICIAN UNIT

14 Optician Unit

This unit arrived in Italy on 1 June, having been sent on to Italy as soon as possible after its arrival from New Zealand with the second section of the 11th Reinforcements. It was attached to 1 Mobile CCS and was also for periods at Advanced Base, where it performed most useful work.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NEW MEDICAL UNITS FORMED

New Medical Units Formed

A unit known as 1 Field Surgical Unit was officially formed on 10 June 1944. In September 1942 a surgical team was first formed as a detachment from 1 General Hospital. It accompanied 2 NZ Division through the desert campaign until the fall of Tunisia in May 1943, when it returned to Base and was temporarily disbanded. On 8 October 1943 the team—called 1 General Hospital Surgical Team—was reformed and accompanied the Division to Italy. It was this 1 General Hospital surgical team which was now formed into an official unit of 2 NZEF as 1 NZ FSU. In effect, the unit consisted of a surgeon (Major A. W. Douglas), an operating theatre corporal, three theatre orderlies, and two truck drivers, with provision for an anaesthetist, who was generally 'borrowed' from another unit when required. The name of the unit was changed to 3 NZ FSU in October 1944.

On 25 July a new establishment became effective for 4 Field Hygiene Section, whereby the unit was combined with 2 and 3 Anti-Malaria Control Units to become 4 Field Hygiene Company, and extra transport was also provided. The change simplified and improved administration and proved very advantageous. In the following winter one malaria-control section was disbanded and the other became a typhus-control section.

At the same time a new war establishment was issued for 102 Mobile VDTC, enabling it to have extra vehicles and to raise the number and rank of its NCOs.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PLANS FOR MOVE FORWARD OF BASE UNITS

Plans for Move Forward of Base Units

After the fall of Rome the enemy retreated to a line 150 miles to the north of that city, which meant that when 2 NZ Division was again operationally employed it would be about 400 miles from the base at Bari. Accordingly, on 19 June a decision was made to move HQ 2 NZEF and Advanced Base to Ancona, 100 miles up the Adriatic coast, when that town should fall into the hands of the Allied forces. The DMS 2 NZEF arranged for 1 General Hospital to participate in the move north. Admissions to 1 General Hospital were reduced accordingly, most cases being diverted to 3 General Hospital. The move north was delayed considerably, until August and September, because of firm enemy resistance, and the move of the Advanced Base was cancelled, this camp remaining in southern Italy.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SHORTAGE OF MEDICAL OFFICERS

Shortage of Medical Officers

The shortage of medical officers in 2 NZEF now became so acute that difficulty was experienced in maintaining a satisfactory service. The position was discussed by Brigadier Kenrick with General Freyberg on 5 July 1944 and the latter asked for a written report on the situation. The GOC then took up the matter with the Minister of Defence, stating that it was becoming increasingly difficult to maintain the high standard of treatment usual in 2 NZEF. Up till that time 2 NZEF had endeavoured to meet New Zealand requirements and had sent back experienced doctors to meet urgent demands in the Pacific and at home. Knowing the difficulties, 2 NZEF had carried on without replacements as best it could, but it was felt that numbers were now below the safety line.

Allowing for the arrival of four medical officers with the 12th Reinforcements, there was a deficiency of eighteen medical officers on the establishments of medical units. In addition, it was desirable to have a surplus of at least five to make provision for leave, sickness, and special detachments. Since 2 NZEF had been overseas seventy-eight medical officers had been returned to New Zealand or the United Kingdom, and the number then being returned was exceeding the number of replacements arriving.

In the operations near Florence in July and August the shortage of medical officers was such that the field ambulance in reserve had always to 'lend' all its medical officers but two to the two field ambulances admitting battle casualties and sick respectively.

(With the return of 3 NZ Division to New Zealand from the Pacific in the latter half of 1944 more medical officers were made available for

service in 2 NZEF in Egypt and Italy, some being flown to the Middle East in August, others arriving in HS *Maunganui* in September, and eighteen arriving with the 13th Reinforcements on 5 November. These, however, could not make good the heavy loss of experienced surgeons and senior administrative officers with long experience in the force.)

At this period there arose a marked deficiency in the numbers of medical specialists in 2 NZEF. This was partly due to the wastage of medical officers through sickness and invaliding to New Zealand, and partly to the employment of specialists in administrative posts in the divisional medical units. In January 1944 no orthopaedic surgeons were available. Of the original three attached to the base hospitals, two had been invalided to New Zealand, and the other, after he had gone home on furlough, had been retained in New Zealand to look after the amputees. It can be realised how serious a deficiency this was when so many serious fracture cases were being treated in the hospitals. In May there was an acute shortage of ophthalmologists, ear, nose and throat surgeons, and radiologists, and urgent representations were made to New Zealand to send replacements to the Middle East. There were at that time two ophthalmologists (one of them having been obtained from the RAMC from England), two ENT specialists, and no relieving radiologist for four hospitals. In Italy it became necessary to concentrate the specialist cases in the hospital where the particular medical specialist was available.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PROMOTION OF SPECIALISTS IN THE NZMC

Promotion of Specialists in the NZMC

Throughout the war there had been difficulty with regard to the promotion of senior medical practitioners who were retained in hospitals because of their value as clinicians. The hospitals had rigid establishments with a minimal number of senior ranking officers, and only the commanding officer and officers in charge of the surgical and medical divisions had ranks above that of major. In the RAMC every medical officer graded as a specialist automatically was granted the rank of major, but this was not so in our Corps. In the early period of the war we had experienced senior surgeons ranking as captains. Later, it was impossible for any specialist to be promoted above the rank of major unless he became an officer in charge of a division in a hospital, for which position he might not be qualified, or unless he became CO of a field ambulance or of a hospital unit, when he was no longer available for his specialist work. Some recognition of the position was given by Headquarters 2 NZEF in September 1944 by the promotion of Majors Coverdale and Russell to the rank of lieutenant-colonel as consultants in ophthalmology and psychiatry respectively. The promotions were both long overdue. In the future better provision should be made in the New Zealand Army for recognition of senior professional status.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RECRUITMENT OF NEW ZEALAND DOCTORS IN THE UNITED KINGDOM

Recruitment of New Zealand Doctors in the United Kingdom

Because of demands on the Emergency Medical Service in England during the war many New Zealand doctors could not be released from British civil hospitals to serve in any force. The question of service by New Zealand doctors generally was discussed by Major-General Bowerbank with the DGAMS, Lieutenant-General Hood, in London just before D Day in 1944. Realising the great shortage of medical officers and medical men in Great Britain, General Bowerbank directed the New Zealand Liaison Officer in London to cancel all applications for transfer and to refuse all applications for enlistment in the NZMC. In Italy in 1944 two specialist physicians and an ophthalmic surgeon were seconded from the RAMC to 2 NZEF to make up deficiencies and they gave valuable assistance in our hospitals.

Making references to the subject in letters to General Bowerbank in 1945 General Hood said:

As you know, there is a very great shortage of medical men in the United Kingdom, and the fighting services are in keen competition with the civilian medical authorities, including the EMS, for any doctors who are of recruitable age. If New Zealand medical men employed with the EMS are permitted to join the NZMC, their places would have to be filled by English or Scottish graduates who might otherwise have been available for the Army.... Fortunately for us and through your good offices, all transfers and applications for enlistment in the NZMC are resisted by your Government. From my point of view this decision has been of the greatest assistance....

New Zealand medical men, both in a service and civilian capacity, have played a valuable part in augmenting the all too few doctors at our

disposal.... indeed I do not know what we should have done if the Dominions had pressed for the return of their officers who have given us such great help in the last few difficult years.

Many of the New Zealand doctors concerned were specially suited by age and qualifications for service in 2 NZEF, but they rendered valuable service in Britain in the treatment of the severe casualties arising from the bombing of the civilian population.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NON-PROFESSIONAL OFFICERS

Non-professional Officers

In Italy appointments of NCOs to non-professional commissions as quartermasters, hospital registrars, hospital company officers, and dispensers were continued, thus saving many professional medical officers, and those appointed proved satisfactory in every way.

AVERAGE STRENGTH OF 2 NZEF

Average Strength of 2 NZEF

The average strength of 2 NZEF in July 1944, from which time the resumption of replacement schemes involving the 4th, and later, Reinforcements began to take effect and result in a continuous ebb and flow, was:

	Offrs	*ORs*	*Total*
MEF	**395**	**6,202**	**6,597**
CMF	**1,704**	**25,480**	**27,184**
	—	**—**	**—**
	2,099	**31,682**	**33,781**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FURLOUGH FOR MEDICAL OFFICERS

Furlough for Medical Officers

As has been said earlier, it had been found impossible to grant medical officers furlough to New Zealand in the same way as other officers of the force. This was due to the fact that there were no replacements available and the medical officers could not be spared without lowering the efficiency of the service. Medical officers of the First Echelon with four and a half years' service overseas had still not been granted furlough. Some had had to be invalided back to New Zealand—not surprising when it was considered that many of the medical officers in the first medical units sent overseas were older married men.

When medical officers did go on furlough very few returned to serve in 2 NZEF. Officers were lost to 2 NZEF for a number of reasons. Among them were: (*a*) Those medically boarded as unfit for further overseas service; (*b*) Those asked for by Army Headquarters, Wellington, for service in the Pacific or for special service in New Zealand; (*c*) Those granted compassionate leave; (*d*) Direct exchanges with similarly qualified men in New Zealand; (*e*) Exchanges of young medical officers with long service for senior house surgeons. (Less than 50 per cent of those returning wished to take up house-surgeon appointments.)

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NZANS

NZANS

In November 1944 it was notified that all sisters with four years' service were to be given the opportunity of returning to New Zealand as replacements and shipping arrangements allowed. The health of the sisters had been very satisfactory, and only a few had been invalided. Promotion had been slow as a result, and a small increase in establishment was made at this time.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NZWAAC (MEDICAL DIVISION)

NZWAAC (Medical Division)

On a similar basis the voluntary aids were able to return to New Zealand after three years' service.

The status of the voluntary aids had recently been revised. The nursing sisters had always had the status of officers and wore badges of rank as such. Except for their few officers, the WAACs were rated as NCOs and privates. This debarred them from first-class rail travel in the Middle East and also from certain hotels and clubs. This handicap, especially undesirable in Egypt and Italy, was fully recognised by our administration. To improve the position all badges of rank were abolished and all members of the NZWAAC (Medical Division), except the officers, were designated as nurse and their identity cards amended to state that the bearer was allowed the privileges of an officer as regards travel, accommodation, and club facilities. This was a satisfactory solution to a difficult problem.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RED CROSS ORGANISATION

Red Cross Organisation

The Red Cross Commissioner, Major Tweedy, at this period urged the adoption of an establishment of Red Cross personnel to carry out work in the hospitals and at the store. It had been possible in Egypt to enlist the help of civilian women as hospital visitors and in the occupational therapy department at the Helwan hospital, but such arrangements were not possible in Italy. Here the work was continued by Mrs Chapman, attached to the YMCA, and Mrs Blackford, attached to the Red Cross organisation. Where New Zealand clubs were established NZWAAC (Welfare Division)—the Tuis—distributed Red Cross comforts to hospitals in their area. Occupational therapy had become a responsibility of the NZWAAC (Medical Division) on the hospital staffs. The few men assisting the Red Cross Commissioner were supplied by the Army.

Major Tweedy suggested a Red Cross establishment of one woman in command and ten others to be attached to the different hospital units. They would take charge of the libraries, distribute Red Cross comforts, give help in correspondence and in the purchase of gifts for patients, and assist in occupational therapy. The personnel could have been provided by attaching women from the WAAC or by the despatch of a separate unit from New Zealand. These recommendations were not approved.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HOSPITAL STAFF FOR REPATRIATION UNITS IN UNITED KINGDOM

Hospital Staff for Repatriation Units in United Kingdom

On 5 August 1944 a group of two medical officers, six sisters, and twenty other ranks was selected as a camp hospital staff for duty in the United Kingdom with the New Zealand prisoner-of-war repatriation organisation then being formed. The group went to England on 2 September. The successful Allied advance across France from Normandy presaged that in due course the release of large numbers of Allied prisoners of war could be expected. New Zealanders would be included among them and special units were necessary to care for them as they reached England from the Continent. By 1945 the organisation had grown considerably, and when the rush of repatriation occurred towards the close of hostilities the augmented medical units were kept very busy.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 16 — FLORENCE

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

THE war in Italy did not stand still after the fall of Rome. The Germans had made a long withdrawal towards their next important barricade across the peninsula. This was known as the Gothic line and ran from Massa, on the Gulf of Genoa, passing north of Florence, to Pesaro on the Adriatic coast. It was the Allied intention to hasten the enemy's withdrawal as much as possible and to deliver an attack on the Gothic line before he had opportunity to complete its defences. A series of strongly defended intermediate positions south of Florence had first to be overcome.

To assist in attaining this objective 2 NZ Division was required by 13 Corps, and this brought to an end the pleasant respite from active operations. Moving secretly at night, the Division travelled 250 miles northwards through the outskirts of Rome and on to a concentration area just south of Lake Trasimene. On the night of 8–9 July the first convoys left Arce, and three nights later 6 Brigade was once more in the line, 15 miles north of the lake, ready to attack the mountain heights overlooking the approaches to Arezzo.

In daylight on 13 July the first advance was made by 6 Brigade against this heavily wooded arc of peaks and Monte Castiglion Maggio and Monte Cavadenti were captured, and on the nights of 14–15 July and 15–16 July stronger opposition was overcome to take Monte Lignano and Monte Camurcina. The enemy was cleared out of Arezzo, and the Division went into reserve for a few days. On a front of more than 40 miles Eighth Army then advanced across the wooded hills of Tuscany.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS FOR THE ATTACK ON AREZZO

Medical Arrangements for the Attack on Arezzo

At a conference between DDMS 13 Corps and Colonel R. D. King, ADMS 2 NZ Division, on 12 July it was arranged that 1 NZ Mobile CCS would not open in the meantime but that New Zealand battle casualties would be evacuated from 5 MDS near Cortona, some 6 miles north of Lake Trasimene, through 2 British CCS to 8 South African CCS near Chiusi, about 20 miles away to the south. Exhaustion cases were to go to the Corps Exhaustion Centre, while other New Zealand sick would be admitted to 6 MDS near Panicale. These arrangements were completed by 13 July, upon which date 4 Field Ambulance also set up a rest camp at Civita Castellana, 30 miles north of Rome, for parties proceeding from the Division to Rome on day leave. Attached to 5 MDS were 1 FSU and 2 FTU and HQ NZ Section MAC.

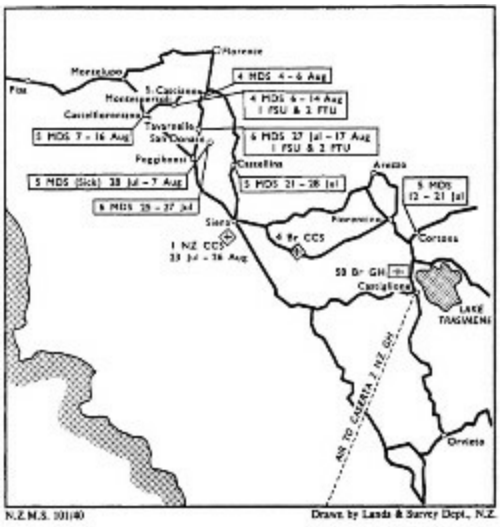
Battle casualties from this first phase of the Division's advance towards Florence were not particularly heavy, 70 being admitted to 5 MDS on the morning of 15 July. After 16 July casualties were confined mostly to mine injuries.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THRUST TOWARDS FLORENCE

Thrust Towards Florence

When 2 NZ Division returned to the line on 21 July, it was employed with 6 South African Armoured Division in driving a narrow wedge along the general line of Route 2 north of Siena through to the Arno south-west of Florence. The Division relieved French Moroccan troops in the San Donato area north of Siena, between the Indians and South Africans, on the night of 21–22 July, with 5 Brigade in the line.



Battle for Florence showing Medical Units and Lines of Evacuation

Battle for Florence showing Medical Units and Lines of Evacuation

The approaches to Florence from the south and south-west were through a ring of hills, so that the roads and valleys were dominated by the high ground on either side. Stubborn resistance was offered by the enemy, who retired only under heavy pressure from one to another of a series of excellent defensive positions. His best troops, including *4 Parachute Division* and *29 Panzer Grenadier Division*, faced the New Zealanders. They were well supported by artillery, mortars, and the Germans' best armoured weapons, 60-ton Tiger tanks.

From the time of its entry into the line, 5 Brigade made steady progress despite counter-attacks, while solid support was given by tanks of the armoured regiments and by the Divisional Cavalry.

The advance, across 10 miles of most difficult country, broke the Olga line and brought the Division into contact with the Paula line, which the enemy prepared to defend to the north of the Pesa River. At night men on the hilltops could clearly see the lights of Florence only 10 miles away.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL LAYOUT

Medical Layout

For this drive on a new sector to the west a new medical layout was necessary. The Division went into action in the San Donato area and 5 MDS, under Lieutenant-Colonel Coutts, [1] was established to receive battle casualties some 8 miles away just to the south of Castellina, which was 16 miles north of Siena. The battle casualties were at first evacuated from the MDS to 4 British CCS at Colonnada di Grillo, 15 miles south-east of Siena. However, 1 NZ Mobile CCS under Lieutenant-Colonel Clark [2] moved up from Panicale on 23 July to a site on the outskirts of Siena on the main road to Arezzo, and New Zealand patients were admitted there from 24 July onwards.

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[1] Lt-Col J. M. Coutts, OBE, ED, m.i.d.; Dunedin; born Scotland, 20 Aug 1903; medical practitioner; medical officer 7 Fd Amb (Fiji) Oct 1940–Aug 1941; 4 Fd Amb Feb 1942–Jun 1943; 1 Gen Hosp Jun 1943–Jun 1944; CO 5 Fd Amb Jul 1944–Jun 1945.

[2] Lt-Col A. G. Clark, OBE, MC; Napier; born Napier, 6 Nov 1891; surgeon; BEF 1915–18: medical officer RAMC, France; wounded and p.w. Apr 1918; repatriated Dec 1918; surgeon 1 Gen Hosp Sep 1941–Dec 1943; 1 Mob CCS Dec 1943; CO 1 Mob CCS Jun 1944–Aug 1945.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CCS AT SIENA

CCS at Siena

The site of the CCS at Siena was in the grounds of the agricultural stadium, and though slightly restricted in area was flat land, well drained and well shaded, with formed roads. A large building served as QM store, dispensary, and other offices. Hospital extension tents were used to accommodate the patients. Temporarily attached to the CCS were 2 NZ FTU (Captain Willoughby) [1] and 1 NZ FSU (Major O'Brien), [2] the latter having been relieved at 5 MDS by a surgical team from 6 Field Ambulance. The 1st FSU was attached to 6 MDS on 26 July and was replaced at the CCS by 8 British FSU.

The line of evacuation for New Zealand patients to 2 NZ General Hospital at Caserta was particularly long, nearly 300 miles. From our CCS at Siena patients were sent to 4 British CCS and from there to 58 British General Hospital near Borghetto, at the north-west corner of Lake Trasimene. This was a very hot and dusty 50-mile journey and particularly tiring for seriously ill cases. From the aerodrome at Castiglione del Lago on the west shore of Lake Trasimene, New Zealand patients went 200 miles by air to Naples and were soon transported thence to 2 General Hospital at Caserta. Later (on 10 August) air evacuation was instituted from an aerodrome at Malignano, near Siena. Patients were then sent to 2 British CCS, which controlled the air evacuation. The rush of battle casualties was, however, mainly over at that stage.

For the period from 22 July to 5 August, by which date the part of Florence south of the Arno had been captured, the battle casualties were relatively severe, 694 New Zealanders being admitted to MDSs. The treatment of battle casualties was shared by all the MDSs. The 6th MDS

which had been taking in sick moved forward to a site near San Donato, some 5 miles north of Castellina and about 25 miles south of Florence, on 25 July and there admitted battle casualties while 5 MDS catered for the sick. The 2nd FTU and 1 FSU were attached to 6 MDS on 26 July. The area had been shelled just prior to their arrival and four casualties had resulted. Some 161 patients, including sick, were admitted in two days. In order to provide better evacuation routes, 6 MDS moved 7 miles on to a site just north of Tavarnelle on 27 July, and the following day 5 MDS moved to within 3 miles of Tavarnelle, while at the same time 4 Field Ambulance left the rest camp at Civita Castellana and came up to Tavarnelle, remaining in readiness to move forward to become the operational MDS as the drive to Florence continued.

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[1] Maj E. E. Willoughby, m.i.d.; Huntly; born Ohakune, 23 Nov 1913; medical practitioner; RMO 14 Lt AA Regt Jun 1941–May 1943; 6 Fd Amb May 1943–Mar 1944; OC 1 FTU May–Dec 1944.

[2] Maj D. P. O'Brien; born NZ 23 Jul 1906; surgeon; SMO Norfolk Island, Oct 1942–Sep 1943; surgeon 1 Gen Hosp Feb–Aug 1944; OC 3 FSU Aug 1944–Mar 1945; surgeon 5 Gen Hosp Mar–Apr 1945; died Egypt, 29 Apr 1945.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE PAULA LINE

The Paula Line

The Paula line was based upon the semi-circle of hills surrounding Florence. In the New Zealand sector the line of summits curved north-west from the valley of the Greve River to the Arno and lay across the path of the advance. The Division now set out to clear the enemy from the dominating summits. Sixth Brigade, supported by 19 Armoured Regiment, established a bridgehead across the Pesa River at Cerbaia on 27 July. From Faltignano ridge, La Romola ridge, and the hilltop of San Michele the Germans made the most determined efforts to drive the New Zealanders back across the Pesa. With the support of artillery capable of firing 40,000 shells a day, the Division beat off a series of enemy counter-attacks during 28 July. Though communications were cut and the situation at times seemed precarious, 6 Brigade held on.

San Michele was a vital objective, and on the night of 28–29 July D Company, 24 Battalion, with strong support, managed to establish three strongpoints in the village despite fierce opposition. The Germans made desperate counter assaults with lorried infantry, self-propelled artillery and Tiger tanks, but with the help of fighter-bombers of the Desert Air Force, which made over one hundred attacks, and concentration of New Zealand artillery fire, the company held on in an epic battle. On the night of 29–30 July a crushing weight of shells compelled the enemy's withdrawal. One of the company's strongpoints had collapsed on top of its defenders, who had to be dug out; in the crypt of the church the men were shaken but secure; and from the third strongpoint the occupants had been safely withdrawn.

An account of events given by Private Kirk, [1] medical orderly in D Company, 24 Battalion, records reaction under stress:

At 3 o'clock in the morning D. Coy. 24 Bn. moved away from Bn. HQ, stationed at the bottom of the hill, towards their objective, a small village occupied by Germans, some distance up the hill. After the artillery had plastered our objective, we followed in, discovering afterwards that we had gone through a minefield in the process. The bursts of machine gun fire offered very little resistance. The attack was a great success, the German prisoners actually complimenting us. Quite a few prisoners were taken. This action was all over before daylight. At approximately 6 a.m. tanks came up to give us support, casualties at this stage being practically nil. Morale was extremely good. Coy. HQ were established in a church and cellar. Machine gunners were also attached to us; the other platoons were in buildings close by. During the morning we communicated with each other quite freely, and when the shelling became severe, wireless was used quite successfully. In the morning the tanks gave us confidence and kept morale high. During this time there were several light attacks by German artillery and infantry. In the afternoon the attacks became more frequent and heavier. At 2.30 p.m. approximately, after particularly heavy artillery fire well supported by enemy infantry our tank crews...left us.

The morale at once dropped especially when a German Panther tank appeared in our vicinity and came slowly towards the church with machine gun firing rapid bursts; small arms fire was frequent but to no avail.

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[1] **Pte G. S. Kirk; Mosgiel; born Dunedin, 9 Jan 1920; farm labourer; wounded 26 Mar 1943; p.w. 1 Jan 1945; repatriated Apr 1945.**

Enemy artillery fire increased in intensity and our own artillery were attacking fairly consistently. At 4 p.m. our Coy was pretty badly shaken; all windows were closely guarded, men were being knocked over right and left by shell blasts. Everyone very quiet and tense with no expectation of survival. Someone raised a white flag. But he was told immediately to withdraw it or be shot. We were still in touch with Bn.

HQ, although communication was very difficult, owing to the noise of the motor of German tanks, and unfortunately the wireless operator in one of the platoons suffered mental collapse and smashed his radio. Several of our chaps were captured by German infantry. Shortly before this Alan Swann [1] was standing on guard at an open window when a tremendous blast from shell burst sent him spinning backwards. Fortunately I managed to break his fall, which would otherwise have smashed his head on the concrete. Although he was badly concussed, I managed partly to revive him with luke warm tea; by this time the German tank had approached very close to the church and Coy. commander called for a volunteer to operate the Piat gun. Alan Swann in a very dazed and shocked condition volunteered and had to be guided to his position. The general morale by this time was very low, and everyone badly shell shocked, as the German gun was being manoeuvred into position, to fire point blank on the church. Alan Swann opened fire with the Piat gun, managing to jam the tank gun completely. The tank was forced to withdraw and German infantry advanced giving us all they had. Word was then radioed to our own artillery, for a murder stonk minus medium, on our own position. Shells rained incessantly on our own position for the next 3 hours. The cellar of the church sheltered a very anxious and strained Coy. of men. Although nerves were badly shattered, casualties were amazingly light, only 2 being killed, but not one man came through unscathed. The German Bn. were completely annihilated, enemy dead littered the scene of battle. The silence which reigned when firing had ceased was tense. At midnight we left the village, with nothing but what we stood up in. It was a bomb happy but relieved crowd which returned to Bn. HQ in the early hours of the morning. After several days' complete rest no one was any the worse for the intense shelling.

This account was confirmed by Captain Borrie, RMO 24 Battalion, who commented: 'Intensive artillery bombardment of buildings after a few hours can cause acute exhaustion among troops even in a basement but with the right environment, exhaustion soon turns to exhilaration.' After a few days' rest the men affected returned to the front line but

quickly tired in other actions under shellfire later. No case of shell wounds was recorded in spite of the successive bombardments.

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[1] **Pte A. G. Swann, MM; Te Aroha; born Frankton, 8 Aug 1914; wounded 30 Jul 1944.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE DECISIVE BATTLE FOR FLORENCE

The Decisive Battle for Florence

After very heavy fighting on the night of 30–31 July La Romola and Faltignano ridges were captured. Farther to the north, on the Pian dei Cerri and La Poggiona ridges, the summits that formed the spire of the barrier, the enemy continued to offer fierce resistance. On the night of 1–2 August the decisive battle for Florence began when 5 Brigade, 6 Brigade, and 4 Armoured Brigade all joined in the attack on the Pian dei Cerri and La Poggiona ridges. The opposition was tenacious. Throughout the day of 2 August fighter-bombers and artillery hammered at it, and during the night of 2–3 August the combined efforts eventually forced the enemy to withdraw. This ended the battle for the Paula line and decided the fate of Florence. New Zealand troops were firmly on top of the final line of hills and on the point of breaking through down the slopes leading to the Arno. Up to this time the South Africans had been unable to make more than slight headway along the valley of the Greve, through which ran the main road to Florence, but with the Paula line pierced by 2 NZ Division the enemy had no choice but to abandon his positions south of the Arno.

Along the greater part of the front the Germans withdrew precipitately and South African armour began to forge swiftly ahead along the main road to the city. The South Africans entered Florence early on the morning of 4 August. Some hours later, while 5 Brigade pressed on down the hill slopes towards the banks of the Arno, a column comprising tanks, infantry, and engineers entered the south-western outskirts. Florence lies on both banks of the Arno, the greater part of the city being on the north bank, and bridge demolitions now held up progress. All but one of the many bridges across the Arno had been destroyed, and this, the historic Ponte Vecchio, had been closed by great

masses of rubble from buildings which had been destroyed at both approaches. Despite the fact that Florence had been declared an open city, the enemy maintained many strongpoints on the north bank.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK OF MEDICAL UNITS

Work of Medical Units

The brigaded ADSs were kept busy attending to patients and changing locations frequently as the advance continued. Evacuation of patients from RAP to ADS was by Humber ambulance cars and jeeps, and from ADS to MDS by Austin ambulance cars. The drivers of the ambulances and jeeps with the battalions did excellent work under conditions which were very trying, and sometimes had to bring the wounded out through enemy mortar fire.

6 MDS

6 MDS

During the battle for the Paula line a steady stream of casualties was admitted to 6 MDS at Tavarnelle from 28 July. On 29 July two theatres were operating continuously. Again on the afternoon of the 30th, after a comparatively quiet morning, there was an inrush of patients which kept the theatre working through the afternoon and night until dawn next day. Next day there was still a steady stream, so that for several days the unit had been admitting wounded and sick at the rate of 120 to 130 a day. On the evening of 31 July Lieutenant-Colonel Hawksworth [1] arrived to take over command of the unit from Colonel Fisher, who had been promoted to the command of 1 General Hospital.

In July 6 MDS had admitted 1479 patients—1107 sick and 372 wounded. The unit was closed on only two days during the month and on those two days it travelled over 200 miles. It had moved six times in twenty-one days—from open MDS to open MDS over 18 miles of winding hill road on 25 July, reopening in two and a half hours, and from battle MDS to battle MDS over 7 miles of road on the 27th, reopening in two hours. For the unit it was one of the busiest months of the Italian campaign.

The final battle for Florence continued to cause 6 Field Ambulance to work at high pressure. On 1 August the admissions had dropped to 93, but next day the total leaped to 150, taxing the unit's capacity almost to the limit; and on 3 August there were 130 admissions, after which the pressure eased. However, the unit was on a site ample in area, with a good vehicle circuit through it and an uninterrupted evacuation route which enabled the stream of heavy casualties to be smoothly handled. There was a number of British patients as well as New Zealanders, and

also civilian casualties.

An account written by Sergeant Brennan [2] of 6 MDS gives us a vivid picture:

The men who had been responsible for the splendid defence of San Michele passed through the MDS here, including the very gallant soldier who had staggered from his stretcher in the RAP to engage with a Piat gun the...tank that had lumbered up to make the crypt of the church untenable for the defenders. Another ambulance brought in a head injury case with both feet lashed together. The ambulance orderly was almost exhausted and was calling for help to retain the patient on the stretcher. An ex-All Black footballer passed through with an abdominal wound; and a British officer, still deafened by the blast, had been caught by a booby trap while attending to signals wires and had had both hands blown off at the wrists. A young New Zealand signaller, of the last reinforcement, was brought in in a hard-driven signals jeep, his wound raw and undressed—he had stepped on a box mine while attending lines and one leg was hopelessly shattered. He was badly shaken and unstrung. We had a flood of men from an English battery; after some quite trouble-free days at a site one member had stepped on a Schu mine and attempts at rescue had trapped, progressively, seven men altogether. We removed five feet from this group.

We received the blackened swollen dead recovered from under the booby-trapped buildings at San Casciano—the burial party worked over them in respirators. One grave held 24 inches of vertebrae recovered from a brewed-up tank. The engineers helped to cut the graves in the hard-packed shingly soil beside the road, breaking it up with compressor drills.

Fourteen deaths took place at the MDS and the bodies were buried in the cemetery down by the roadside. Into it went the horribly-burnt and wounded trooper who had died in Reception. Quite logical and conscious when brought in, he had answered to a question as to whether he had any pain in the stomach: 'I ought to have; I've been eating green apples.'

Into it, too, went the Armoured captain who had fought to live with wonderful courage. And the Taranaki boy who had gone prowling and had been shot up by a jumpy-fingered American picquet.

There were 50 graves in it when we closed it down. A volunteer party worked on it, bringing in loads of tiles. They used these to make warm red paths among the graves and to enclose the mound of each as though the soil was flowering through them. The bounds of the plot were marked with planted tiles put in battlemented fashion, and the curves taken by the crosses followed faithfully the curve taken by the road. Two large stone flower pots of irises stood on each side of the entrance and a great stone pot with the same flowers stood in the very centre of the cemetery at the foot of a large cross. It was an exceedingly simple but very effective arrangement. Drivers of passing trucks used to crane out of their vehicles to watch it as they passed.

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[1] **Lt-Col W. Hawksworth, OBE, m.i.d.; born Nelson, 3 Mar 1911; medical practitioner; medical officer 5 Fd Amb Aug 1940–Jun 1941; 6 Fd Amb Jun 1941–Jun 1942; 1 Gen Hosp Jun 1942–Jul 1944; CO 6 Fd Amb Jul 1944–Jun 1945.**

[2] **Sgt H. Brennan; Tarurutangi; born Auckland, 27 Sep 1907; farmhand.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

4 MDS

4 MDS

To establish an MDS nearer to the forward elements of the Division than 6 MDS, which was functioning on Route 2 near Tavarnelle, 4 Field Ambulance under Lieutenant-Colonel Edmundson on 4 August occupied at Casa Vecchia a fine old-world mansion on the southern slopes of the hills overlooking Florence, and only 7 miles from the river Arno. The unit was joined by 1 FSU, 2 FTU, and NZ Section MAC, but only a small number of battle casualties was admitted.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOVES FOLLOWING REGROUPING

Moves Following Regrouping

As it became apparent that the enemy intended to fight in and about Florence, arrangements were made for a regrouping of forces. Canadians took over from the New Zealanders, who moved farther to the west to relieve 8 Indian Division and continued with the work of clearing any remaining pockets of enemy troops from the south bank of the Arno. These actions, though small, were quite fierce. At Montelupo on the night 8–9 August there was a number of casualties in a forward company of 26 Battalion, and the RMO, Captain Fletcher, [1] went forward and treated and evacuated the wounded under heavy fire, repeating the action on 11 August at Empoli Vecchio. Earlier, at Cerbaia on 30 July, he had worked in his RAP under almost continuous shellfire. He was awarded the MC for his part in these operations.

In accordance with the regrouping, 4 MDS moved on 6 August some 6 miles to the west to the vicinity of Montespertoli. Here shells from long-range enemy guns fell near the MDS. Battle casualties, however, continued to be light, although sickness cases were on the increase. The weather was hot, humid, and trying, with several severe thunderstorms.

On 7 August 5 MDS moved from the San Donato area to Castelfiorentino, 7 miles south-west of Montespertoli, and there opened to receive battle casualties from 5 Infantry Brigade on the wider front along the river, as well as divisional sick. At Tavarnelle 6 MDS also remained open for battle casualties and sick.

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[1] Maj I. H. Fletcher, MC; Waitara; born Auckland, 4 Jul 1916; medical practitioner; 6 Fd Amb Dec 1942; RMO 26 Bn Mar 1943–Oct 1944; 2 Gen Hosp Oct 1944–Apr 1945.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RELIEF OF DIVISION

Relief of Division

American troops of Fifth Army linked up with the left flank of 2 NZ Division on 14 August and that night began to relieve the Division, completing occupation of the sector by 16 August. All New Zealand units were then withdrawn from action and assembled in the vicinity of Castellina, some 30 miles south of Florence. All field ambulances closed, but 4 Field Ambulance reopened as soon as it reached Castellina for the admission of casualties and sick. A steady stream of infective hepatitis cases, on their way to 2 General Hospital at Caserta, was passed through the unit to 1 Mobile CCS in the quiet period until the end of the month, when 2 NZ Division was switched to the east coast again.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF CAMPAIGN

REVIEW OF CAMPAIGN

Evacuation in the Forward Areas

The evacuation of casualties was generally satisfactory. Jeeps were utilised to save hand carrying in the forward areas, especially in the mountainous areas and at Arezzo, and on many occasions in the Poggibonsi– Florence area. Otherwise, evacuation of casualties was satisfactory as main roads were available. At one period when the MDS was in the San Donato area, narrow roads and tracks with a large traffic volume of fighting vehicles and, later, supply vehicles caused the length of time taken for evacuation to 1 Mobile CCS at Siena to vary considerably. One-way traffic immediately relieved the situation.

ADSs

During this period of operations 6 ADS functioned with two medical officers only. This was adequate under normal circumstances, but on one occasion when a considerable number of patients, some of them seriously ill, arrived at the same time, some could not be attended to as promptly as the medical officers wished. It was considered that three medical officers were essential to an ADS in action.

As a brigaded ADS making quick moves, the ADS on several occasions had difficulty in finding any MDS or CCS to which it could evacuate casualties. Some evacuations were made direct to a British CCS which had been located first.

The frequent moves of the field ambulance units during this short campaign are well illustrated by the story of one of the ADSs. At first it operated in a palatial mansion at San Casciano for three days, then

shifted to a small school at Massandia for less than two days, dealing with twenty-three casualties. The next location was a large, modern Fascist school at Scandicci, where the unit remained two days. Evacuation was very difficult, necessitating jeep transport and a car post further back. Then a spacious storeroom of a building was used at Poppiano Nuovo and, later, part of a luxurious house belonging to a local doctor at Monterapolli. Casualties there were numerous. The company was then withdrawn and treated sick cases at Ligliano.

Altogether during this period over 200 battle casualties and nearly 200 sick were treated. Blood was drawn from five donors in the unit to supplement the supplies and eighteen patients were given blood or plasma. The personnel had been organised into three teams, each made up as follows: nursing NCO, evacuation NCO, resuscitation orderly, injections orderly, drinks orderly, two dressing orderlies, clerk, pack-store orderly, and three stretcher-bearers. Each team was able to operate independently.

MDS

Much more work was undertaken at the MDS than at the Cassino period. This was partly due to the late setting up of our CCS and partly to some temporary difficulty in evacuation. The New Zealand surgical team, which had its designation changed to 1 NZ FSU, at this period was attached to the active MDS, as was the NZ FTU. This weakened the surgical staff of the CCS, especially as Major A. W. Douglas was the most experienced New Zealand abdominal surgeon available at that time. There had been a change of commanding officers in all three field ambulances and their approach to the problem possibly was different from that of their predecessors.

An opinion written at the time by the CO of 4 Field Ambulance is of interest:

It would appear desirable to utilise the ambulances' surgical amenities to the full, for the additional experience is of great value to

both the surgeons and orderlies. It is only during actual battle conditions that the surgical departments of Field Ambulances have the opportunity of surgical work, and it is felt that the fullest opportunities should be given to the three Field Ambulance Surgical Teams before bringing surgical assistance from the CCS. Normally at the CCS the surgeons and orderlies have long and constant surgical opportunities, which naturally are denied to the ambulance teams.

Following the now accepted principle of excision and dressing of all wounds at the earliest possible opportunity, during this period as open MDS the greater proportion of cases have been dealt with surgically at the MDS. Over two thirds of all the battle casualties received complete surgical treatment and were fit to be sent on direct to a NZ Gen. Hosp.

As facilities for nursing are better at a CCS all non-urgent abdomens and chests were sent to a CCS for surgery.

This opinion, clearly enunciated, shows the ideas of the zealous young field ambulance officer. A more balanced outlook is shown by an older officer, a surgeon of a field ambulance surgical team, who gave an account of the work at the MDS as follows:

Type of surgery attempted during recent offensive of the Division:

1. *Severe Cases:*

(*a*) Badly mutilated limbs requiring amputation.

(*b*) Blown off limbs.

(*c*) Severed main arteries.

(*d*) Collapsed cases of compound femurs and compound leg fractures.

2. *Light Cases:* As many of these as possible were done but with only two surgical teams operating it was impossible to do them all. Everyone is agreed that the sooner after wounding a light case receives operative attention the better the wound will heal and the sooner will he be fit for duty again. With the very excellent surgical set-up that is now available

with the Field Ambulances I would recommend that the aim should be to operate on all light cases at the MDS and to then evacuate them direct to the forward NZ Gen. Hosp. Many of the lighter cases could then be passed on to Base where the next surgery could be done. This would help to relieve pressure on both the CCS and the forward hospital, as well as being an advantage to the patient.

At Tavarnelle we were unable to do all the light cases. There we had three surgeons but only two surgical teams so that it was impossible to keep two theatres going for the whole period of 24 hours. Therefore many light cases had to be passed on to the CCS. Also for part of the time resuscitation had to be done by the MDS. More recently when the 5 Fd. Amb. provided the open MDS, although there were three surgical teams available there were only two surgeons for the greater part of the time, so that it was impossible to maintain two theatres in operation simultaneously over a period of more than 4 hours during the 24 hour day. To achieve the ideal of operating upon all light cases at the MDS during any future similar Divisional offensive operations we would recommend the following set-up:

1. Three MOs for Reception. In the absence of the FTU one to supervise the resuscitation and pre-operation Tarpaulin.

2. Three surgical teams, each complete with surgeon, anaesthetist, NCO, orderlies and own operating equipment. Organised on a 12-hourly basis there would be always two teams working simultaneously throughout the 24 hour period. When the pressure is on, all three teams could work simultaneously over a short period of 4–6 hours. Such a set-up would I am sure be able to deal with even more light cases than the total passed through the MDS at Tavarnelle.

The 1st NZ FSU was attached to the MDS during the greater part of this period and performed 90 operations during July and 30 during August. The large majority of the cases were of severe limb wounds. There were sixteen deaths.

It was noted by the FSU at the time that:

(a) Abdomens: Generally operations on these are not done unless the condition is too serious to allow of transfer to the CCS, or if the CCS is sited too far away to be reached in a short time.

(b) Adequate nursing facilities now obtainable with the addition of a nursing section have been proved to be of great value.

(c) Chests: Are usually not done if the pleura is penetrated. Use of intercostal nerve block has been of definite value for relief of pain prior to transport back to the CCS for operation.

(d) Penicillin has been used locally as a powder in wounds until supply ran out a few days ago. Sodium penicillin is being used for the same purpose at present. The crystals are coarser and owing to greater solubility, probably are absorbed more quickly. Recently penicillin Na has been used with much greater frequency parenterally in large wounds. If possible cases are held until they have received dosage for at least 24 hours.

Undoubtedly, the FSU and ambulance surgeons had displayed the judgment to be expected of experienced surgeons in the selection of cases to be dealt with at the MDS level. More surgery was probably carried out at the MDS as the CCS was understaffed, being short of three medical officers while at Siena.

Evacuation to the CCS except for a short period before one-way traffic was instituted was very satisfactory. Major Douglas drew attention to the frequent moves of the field ambulance units. Between 19 and 27 July his 1 NZ FSU set up its theatre in six different locations. With moves as frequent as these it was obvious that abdominal cases could not be adequately nursed, and the same applied in lesser degree to all serious cases not fit for immediate evacuation. All such cases undoubtedly should have been dealt with in a more static unit in this campaign, which meant that the CCS and the staffing should have been adjusted accordingly.

Blood reactions were more common at this period, and reactions were also noted following intravenous glucose injections. A quantity of blood had to be discarded, and also infected bottles of plasma and glucose saline. It was noted at the CCS that the supply of blood was very

scanty, and because of the hot weather and the long distance it had to be transported was often stale, and undesirable reactions were too numerous. The position was somewhat eased when two refrigerators were installed at the CCS.

Shortage of Medical Officers

One of the main problems for the ADMS 2 NZ Division was the shortage of medical officers. At one period the Division was eleven medical officers under strength, including the CCS which was three officers short. As a result there was a constant changing of officers from one medical unit to another. Very often the officer staff of the closed MDS consisted only of the officer commanding, his second-in-command, the quartermaster, and dental officer. Regimental unit commanders were most co-operative in releasing where possible their RMO to ADSs and MDSs during busy periods.

Work at the CCS

During the Arezzo action and the early part of the campaign for Florence the CCS was not functioning and British CCSs were used in its place. At Siena it became the most forward CCS, within easy reach of the field ambulance over a first-class road. A British FSU was attached for most of the active period and both a Canadian and a British FTU were attached at different times.

The operational work largely consisted in treating the abdominal cases and the lighter wounded. Most of the large limb wounds had been treated at the MDS. Penicillin was used for chest cases and large limb wounds, and as a routine in gas gangrene. It was noted that gas infections were more common and, in consequence, the excision of all wounds was carried out.

While the CCS was operating in the Siena area it dealt with eight cases of gas gangrene. Two of these occurred towards the end of July and six during August. Of the six cases in August, four died. Four of the

eight cases were prisoners, and in these there had been a long interval between wounding and operation, but in the other cases the interval was not unduly long. Treatment consisted of excision of the affected area, penicillin both parenterally and locally, and gas-gangrene serum. Bacteriological investigations were carried out by the mobile laboratory attached to 4 British CCS.

Of the abdomens, there were fourteen cases with intestinal injury and seven deaths. There were four thoraco-abdominal cases, with three deaths. The abdominal cases were treated by intravenous sulphadiazine, rather than by emulsion into the peritoneal cavity, and the results were equally good.

Fasciotomy of the calf was carried out when the lower femoral or popliteal arteries were ligated, with definite success in at least two cases recorded.

Altogether, there were 964 battle casualties and 1970 sick cases admitted to the CCS, with 28 deaths. Among the deaths were German prisoners and Italian civilians as well as British, American, and New Zealand troops.

The conditions under which the forward surgery was undertaken were much superior at the CCS to those at the MDS, quite apart from the constant movement of the field ambulances. The urge to operate as near the line as possible, however, still persisted in the Division, even though with the evacuation over good roads little extra time would have been involved had the cases been dealt with at the CCS. The nursing facilities at the CCS were infinitely superior and the cases could be held as long as desired. The final results, however, were generally satisfactory and delayed primary suture could be carried out at the base hospital in the great majority of the cases.

Lieutenant-Colonel A. G. Clark, CO 1 Mobile CCS, stated that as far as the seriously sick and wounded were concerned this was the worst period of the Italian campaign. This was owing to the heat, shortage of

medical officers, and the great distance between the CCS and the base. Air transport mitigated this to some extent.

Evacuation, though over good roads, meant a long, dusty, hot journey and a severe trial for serious cases. Later, air evacuation was arranged from Siena and this proved a great boon, but was instituted too late.

For the advance to Florence the hospitals were long distances from the forward areas, as 2 General Hospital was still at Caserta and 3 General Hospital at Bari, while 1 General Hospital was also on the Adriatic coast at Molfetta, some 20 miles up from Bari, though in June it had been arranged that 1 General Hospital would move over 300 miles up the Adriatic coast to Ancona as soon as the enemy was driven from that area. By the use of air transport from Trasimene airfield to Naples, any difficulties that might otherwise have been involved by the long distance from the CCS to 2 General Hospital were avoided. Air transport for the wounded and sick was both quick and comfortable, and there was not the need for the staging of patients in hospitals in Rome, where it might have been difficult to treat large numbers of patients as the hospitals there were only in the process of getting established after the move from Naples. It had been expected that Florence would be occupied without any difficulty and that general hospitals could then be quickly set up there. This proved impossible, and medical arrangements had to be adjusted and the Naples hospitals had to continue to carry out the greater part of the work.

As it was, the process of change created extra difficulties for 2 General Hospital. Some of the hospital trains on the Naples– Bari run were transferred to the Rome– Naples run. This affected the evacuation of New Zealand and other patients from 2 General Hospital to the hospitals and convalescent depots on the Adriatic coast and led to a steep rise in the hospital bed state towards the end of July. No road transport was available, nor was air transport, even for cases unfit to travel by road or rail, as all air ambulances were being employed on the more foward evacuation routes. By sending selected walking cases on

ordinary passenger trains across Italy 2 General Hospital partly overcame this problem. This expedient was not used by neighbouring hospitals, and in consequence it was often possible for 2 General Hospital to send fifty patients a day by the passenger trains.

For a number of reasons all the hospitals in the Naples area became overcrowded and 2 General Hospital did its best to assist by accepting British, Canadian, and South African patients. The movement of hospitals to Rome from Naples led to general congestion in the hospitals remaining in the Naples area. The accommodation problem was aggravated by the arrival of the advanced parties from AFHQ, Algiers, as that headquarters was transferred to Caserta. Hospital buildings were requisitioned for the headquarters staff, an instance being the use of a Canadian hospital of 1200 beds for female personnel of AFHQ, and the closing of the hospital. Then, again, the invasion of Normandy meant for a time fewer hospital ships from the United Kingdom, and a resultant banking-up of the more serious bed cases and others who would normally have been evacuated early to the United Kingdom. The *Oranje* and other hospital ships arrived at Naples at the end of July and gave some relief.

All these factors resulted in 2 General Hospital, which was equipped as a 600-bed hospital, having 738 patients on 31 July; on 2 August, for a brief period after the admission of a convoy of battle casualties, there were 817 patients in the wards.

It was mid-summer, too, and the volume of work, plus the effects of heat, humidity and flies, resulted in a greater amount of sickness than had been recorded previously among members of the staff, between 10 and 15 per cent of them being sick in August.

Casualties from the Division were received at 2 General Hospital following air evacuation from Trasimene and they arrived in good order. The great majority were dealt with by delayed primary suture shortly after arrival. Altogether 1317 cases, including 383 battle casualties, were admitted during July and 1070 cases and 364 battle casualties during August. Several very severe cases with wounds of the spine and

hip were dealt with.

The opinion was expressed that in these cases and in fracture cases penicillin should be given intramuscularly from the earliest possible moment in order to prevent sepsis, as treatment of established sepsis was largely unsatisfactory.

The double bath unit had proved very successful in the treatment of burns and parenteral penicillin had also been of great value. The training of young surgeons for possible employment at the CCS was carried out at this time, as there seemed little prospect of obtaining surgeons from New Zealand.

This was a quiet period at 3 General Hospital and some patients were admitted from other forces. In July there were 917 admitted, including 162 battle casualties and 309 of other forces. In August 1113 cases were admitted, including 378 battle casualties. At the end of August 10,000 patients had been admitted in Italy and altogether 30,000 patients since the unit was founded. The treatment of fractured femurs by penicillin and delayed primary suture was still continued and results were very satisfactory.

Some of the Florence casualties were evacuated to New Zealand by the Australian hospital ship *Wanganella* on 14 August; that is, within a fortnight or so of wounding.

Very little professional work was done at 1 General Hospital during the period, during the latter part of which preparations were being made to shift the hospital to Senigallia. Altogether, 768 cases were admitted in the two months.

Admissions to Other Than New Zealand Hospitals

In July 1944, 44 officers and 536 other ranks were admitted temporarily to other than New Zealand hospitals. By the end of the month only 100 remained. In August the admissions were 46 officers and 574 other ranks, and 189 remained at the end of the month.

The large number recorded was due largely to the staging of cases at British units on the line of evacuation during this period; 2 General Hospital at Caserta was a long way from the front at Florence and many cases were admitted to hospitals sited in Rome. Special cases, mainly neurosurgical and maxillo-facial, were treated in British hospitals by arrangement, but their numbers were never large.

Special Surgical Work at this Period

1. *The Use of Acrylic Plates in Head Cases:* This was carried out by Major Shoreston at 58 General Hospital at Trasimene in cases of cranial defect deemed suitable and where infection was not likely to ensue. The moulded plastic was sutured to the pericranium and the wound sutured without drainage. It was said that the plastic gave no tissue reactions. The temporary results seemed satisfactory.

2. *The Use of Plates and Screws in the Treatment of Fractures:* This was done in two British base hospitals, both simple and compound fractures being dealt with. The technique used was that of Lane, with long six-inch screws and stainless steel plates. In addition, single screws were used across the actual fractured bone ends to prevent angulation. Most of the cases were of fracture of the femur, but fractures of the tibia and also of the radius and ulna were also plated.

In compound fractures wound suture was generally carried out and, if this was impossible, the muscles were sutured so as to shut off the bone from the open wound. Penicillin was employed both locally and parenterally. Early joint movements were carried out. The preliminary results were on the whole good, but great care in the selection of suitable cases was necessary and the approach became steadily more conservative. This experimental work was confined to two hospitals and was not attempted in our units. We felt that the results obtained by ordinary methods rendered plating unnecessary and undesirable except in specially difficult cases. The use of screws across the fractured bone ends, though efficient mechanically, appeared to be contrary to sound

surgical principles. One bad case in twenty-five would make the use of plates and screws inadvisable. The difficulty we foresaw was that the surgeon performing the original operation did not, and probably would not, see the failures.

Scarcity of Experienced Surgeons

This condition had been developing for some time and was accentuated by the return to New Zealand of some of the more senior officers who had served for a long period with the force. The scarcity was felt in both divisional and base units. The CCS in particular could not function without the help of specialist teams from the RAMC, both as regards surgery and transfusion. It was unfortunate that we did not have in our own corps young surgeons available for what was the most responsible surgical work in 2 NZEF.

The Consultant Surgeon made the following comments on this subject in his report of July 1944:

There is a scarcity of experienced surgeons in the 2 NZEF at present and this condition always tends to be aggravated by the appointment of surgeons to administrative positions. If war was not for us a temporary phase of relatively short duration it would be essential in my opinion to have two divisions in the Medical Corps, one Clinical and the other Administrative, with officers given senior ranks according to their capacity to fill the positions in either branch. The anomalous position would not then arise of officers with high clinical capacity having their only chance of promotion in an administrative post—and on the other hand an officer of high rank gained by long service in the Field being employed in a hospital in a junior clinical position. I, however, appreciate that all our conditions are purely temporary ones and that the interchange of medical officers between the hospitals and the Division is highly desirable.

Work of the Convalescent Depot

The site at San Spirito proved an excellent one during the summer months. Swimming and boating provided suitable recreation. The average bed state in July was 478 and in August 517. During July there were only 74 battle casualties, but in August 286 cases were admitted. In July the medical cases predominated, forming 47 per cent of the total, whereas the surgical provided 22 per cent, the orthopaedic 20 per cent, and skin cases 11 per cent.

In August the corresponding figures were medical 36 ½ per cent, surgical 42 per cent, orthopaedic 14 ½ per cent, and skin cases 7 per cent. The hepatitis cases increased from 39 to 103. They were generally held in the depot for eighteen days.

Work of the Optician Unit

Two-thirds of the time of this unit was spent at the CCS and the rest at Advanced Base. The unit was kept constantly employed. During the quarter ended 30 September, 458 cases were seen and 271 pairs of spectacles dispensed. Ten refractions could be carried out daily.

Reorganisation of Hygiene Company

Preventive measures for the maintenance of health were improved by the expansion of the Field Hygiene Section into a company incorporating the two malaria-control sections. The new establishment making this change official was effective from 25 July 1944. In operation the new amalgamated unit was found to have a number of advantages. The OC 4 Field Hygiene Company could delegate most of the company office work to the officer commanding the malaria-control section, and thus have more time free for his duties as Deputy Assistant Director of Hygiene to the Division. Previously, the malaria-control units had been under the disciplinary control, as well as the technical direction, of the OC 4 Field Hygiene Section without being amalgamated. In addition, the total amount of administrative work was reduced.

The Field Hygiene Section with one of the malaria-control units was attached to Rear Headquarters of the Division. The other malaria-control unit was attached to Main Divisional Headquarters. This resulted in a continuous and complete coverage of the Division, and was considered to be the only satisfactory way in which hygiene and malaria-control could be achieved in a Division constantly moving on active operations.

The new establishment set up in the form of a field hygiene company represented the consolidation of all the establishments at that time engaged in hygiene work, and in malaria or typhus control and disinfestation and shower provision. All these functions were now under the one command and the personnel could be adjusted as conditions changed.

Looking ahead, it was planned to convert one malaria-control section into a typhus-control section in the winter. The other malaria-control section was to be disbanded, but, if considered advisable, those of the section considered most suitable for hygiene duties were to be taken on for shower section duties.

The shower section provided a much-appreciated service and in the three months from July to September, inclusive, 44,000 men received hot showers at the Hygiene Company's plant, while the clothing and effects of 150 men were disinfested.

Malaria Control

The Florence campaign covered the period of maximum incidence of malaria, and the activities of the Hygiene Company were mainly concentrated on that aspect of its work. There were few cases in the Division. In July there were forty-one and in August twenty. It is interesting to note that headquarters of the Allied armies in Italy allowed an incidence of three per 1000 per week before special notification of an outbreak was necessary. This would have been about 240 cases a month for the Division, but its highest incidence was only one-sixth of this figure. This excellent result was achieved by:

1. **The interest of senior officers, which was communicated by them to all ranks.**
2. **Continued inspectorial work by the hygiene inspectors.**
3. **Close liaison between medical and administrative branches, with the wholehearted co-operation of the latter in ensuring that offending units reported by the Hygiene Company inspector were made fully aware of their responsibilities.**

By the aid of power and hand equipment flysol and DDT spraying had proceeded unremittingly. All breeding places were sprayed twice weekly and DDT was sprayed on vehicles, officers' tents, etc. Paris green and malariol were applied to water areas. The mobile role of the Division made larval destruction rarely possible. Repellants were used by the troops. Unit squads were instructed and assisted, their usefulness depending on the interest of the commanding officer and the efficiency of the RMO. Anti-malaria notices and posters were utilised freely.

The bath and laundry unit continued to function; and clothes were also washed by the individual soldier and by Italian washerwomen. Showers were made available by Ordnance to the brigades. The Hygiene Company made arrangements especially for the front-line troops. No lice were reported.

Water: **Patterson auto-motor trailer purifiers were used by 2 NZEF at all water points, the water being chlorinated and filtered mechanically.**

Sanitary arrangements gave rise to no new problems and the standard throughout the Division was maintained by all units. Otway pit covers with fly-traps were being used for the deep-hole refuse pits. This had reduced the flies in unit lines, particularly in the vicinity of cookhouses. Sullage water was also disposed of in the pit and helped to prevent fly-breeding in the lower deposits. The latrines were of the semi-deep pit type and were surmounted with fly-proof superstructures fitted with a fly-trap. Urinals were of the 'desert lily' type. The disposal of putrifying animal carcasses gave rise to some trouble.

Health of the Troops

This was, in general, very good during this fine summer period, but the admissions to hospital showed an increase from 1·73 per 1000 per day in June to 2·04 in July and 2·17 in August. The percentage of the force in hospital was 5·08 at the beginning of July, 5·98 at the end of the month, and 5·64 at the end of August.

Rations were excellent during the period. Fresh vegetables, cabbages and potatoes, in particular, were supplied.

The health and morale of the troops was benefited by leave arranged to Rome, Lake Albano, Ischia, and Sorrento. Some units arranged special leave camps.

Infectious disease was, as usual, responsible for the major part of the sick wastage of the Division during July and August.

1. ‘ *NYD fever*’ accounted for 543 patients in the Division. The large majority of these cases were retained in the divisional medical units and the CCS and not evacuated to the general hospitals. They were mainly cases of three- to five-day fever which occurred in an epidemic in early and mid-summer. Many of the cases subsequently developed jaundice. Others were thought to be cases of ‘swine fever'. Sandfly fever was also considered to account for some of the cases; the vectors bred in damp rubble in all coastal regions from July to September.

2. *Infective hepatitis* was the diagnosis in 801 cases and, as already mentioned, many of the NYD fever cases subsequently proved to be cases of hepatitis. There was an increase in numbers in July and a still more marked increase in August, corresponding to the autumnal incidence of the disease.

3. *Diarrhoea* accounted for 45 cases, some of them proving to be cases of amoebic dysentery. Cases of bacillary dysentery were treated with larger doses of sulphaguanidine, the average course ranging from 100-120 gms. over five days. More satisfactory results were obtained than previously.

4. *Malaria:* There were 36 cases, 29 being in July. The incidence was low, especially as this was the height of the malaria season. *Anopheles maculipennis* was the mosquito prevalent in Italy. It bred in brackish, stagnant water and was largely restricted to the coastal areas. In winter it lived in houses, cellars, and stables. The malaria season was from March to November, with July and August the peak months. The common infection was benign tertian, malignant tertian being very rare.

5. *Typhoid Fever:* This disease was widespread among the civilian population and appeared to be virulent in type. Four cases were treated in 2 General Hospital during the two months, with one death. The patient who died had had six inoculations of TAB, the last one eight months before the onset of the disease. He died following two perforations of an extensively ulcerated ileum.

6. *Pneumonia:* Thirty cases of pneumonia were admitted to 2 General Hospital, but only nine of these were in August, by which time the disease had ceased to be of any significance.

7. *Venereal Disease:* There were 205 new cases in Italy in July and 96 in August. There was some increase in the syphilitic cases. Penicillin was available for both gonorrhoea and syphilis and seemingly good results were obtained by its use. The difficulties due to sulphonamide-resistant cases had been solved by penicillin.

Physical Exhaustion

There were 114 cases of physical exhaustion evacuated from divisional units; some of these were returned to their units from the field ambulances, but 22 cases were admitted to 2 General Hospital in July and 62 in August.

Casualties of Florence Campaign

	Killed	*Wounded*	*Missing*	*Total*
13–17 July—Attack on Arezzo	26	91		117
21 July–1 August—Attack south of Florence	107	477	31	615

Total	**133**	**568**	**31**	**732**

Causes of Battle Casualties, July 1944

Shell wounds	**416**
Gunshot (rifle or machine gun)	**69**
Mortar	**111**
Grenade	**19**
Mine	**20**
Booby traps	**6**
Burns	**11**
Blast	**15**
Bayonet	**1**
Other causes, falling masonry, etc.	**26**
Total	**694**

Average Bed States	***July***	***August***
1 NZ Gen Hosp	**336**	**closed**
2 NZ Gen Hosp	**536**	**565**
3 NZ Gen Hosp	**605**	**626**
Conv Depot	**478**	**517**

Evacuations to New Zealand by Hospital Ship

Total from MEF and CMF to end of July 1944, 7245.

Numbers of Sisters and Nurses in 2 NZEF, August 1944

NZANS	**232**
NZWAAC (Medical)	**183**
Total	**415**

Strength of 2 NZEF, August 1944

	Officers	***ORs***	***Total***
MEF (in Egypt)	**395**	**6,202**	**6,597**
CMF	**1,704**	**25,480**	**27,184**

Total	**2,099**	**31,682**	**33,781**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION IN THE FORWARD AREAS

Evacuation in the Forward Areas

The evacuation of casualties was generally satisfactory. Jeeps were utilised to save hand carrying in the forward areas, especially in the mountainous areas and at Arezzo, and on many occasions in the Poggibonsi– Florence area. Otherwise, evacuation of casualties was satisfactory as main roads were available. At one period when the MDS was in the San Donato area, narrow roads and tracks with a large traffic volume of fighting vehicles and, later, supply vehicles caused the length of time taken for evacuation to 1 Mobile CCS at Siena to vary considerably. One-way traffic immediately relieved the situation.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ADSS

ADSs

During this period of operations 6 ADS functioned with two medical officers only. This was adequate under normal circumstances, but on one occasion when a considerable number of patients, some of them seriously ill, arrived at the same time, some could not be attended to as promptly as the medical officers wished. It was considered that three medical officers were essential to an ADS in action.

As a brigaded ADS making quick moves, the ADS on several occasions had difficulty in finding any MDS or CCS to which it could evacuate casualties. Some evacuations were made direct to a British CCS which had been located first.

The frequent moves of the field ambulance units during this short campaign are well illustrated by the story of one of the ADSs. At first it operated in a palatial mansion at San Casciano for three days, then shifted to a small school at Massandia for less than two days, dealing with twenty-three casualties. The next location was a large, modern Fascist school at Scandicci, where the unit remained two days. Evacuation was very difficult, necessitating jeep transport and a car post further back. Then a spacious storeroom of a building was used at Poppiano Nuovo and, later, part of a luxurious house belonging to a local doctor at Monterapolli. Casualties there were numerous. The company was then withdrawn and treated sick cases at Ligliano.

Altogether during this period over 200 battle casualties and nearly 200 sick were treated. Blood was drawn from five donors in the unit to supplement the supplies and eighteen patients were given blood or plasma. The personnel had been organised into three teams, each made up as follows: nursing NCO, evacuation NCO, resuscitation orderly,

injections orderly, drinks orderly, two dressing orderlies, clerk, pack-store orderly, and three stretcher-bearers. Each team was able to operate independently.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MDS

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Much more work was undertaken at the MDS than at the Cassino period. This was partly due to the late setting up of our CCS and partly to some temporary difficulty in evacuation. The New Zealand surgical team, which had its designation changed to 1 NZ FSU, at this period was attached to the active MDS, as was the NZ FTU. This weakened the surgical staff of the CCS, especially as Major A. W. Douglas was the most experienced New Zealand abdominal surgeon available at that time. There had been a change of commanding officers in all three field ambulances and their approach to the problem possibly was different from that of their predecessors.

An opinion written at the time by the CO of 4 Field Ambulance is of interest:

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This opinion, clearly enunciated, shows the ideas of the zealous young field ambulance officer. A more balanced outlook is shown by an older officer, a surgeon of a field ambulance surgical team, who gave an account of the work at the MDS as follows:

Type of surgery attempted during recent offensive of the Division:

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(*b*) Blown off limbs.

(*c*) Severed main arteries.

(*d*) Collapsed cases of compound femurs and compound leg fractures.

2. *Light Cases:* As many of these as possible were done but with only two surgical teams operating it was impossible to do them all. Everyone is agreed that the sooner after wounding a light case receives operative attention the better the wound will heal and the sooner will he be fit for duty again. With the very excellent surgical set-up that is now available with the Field Ambulances I would recommend that the aim should be to operate on all light cases at the MDS and to then evacuate them direct to the forward NZ Gen. Hosp. Many of the lighter cases could then be passed on to Base where the next surgery could be done. This would help to relieve pressure on both the CCS and the forward hospital, as well as being an advantage to the patient.

At Tavarnelle we were unable to do all the light cases. There we had three surgeons but only two surgical teams so that it was impossible to keep two theatres going for the whole period of 24 hours. Therefore many light cases had to be passed on to the CCS. Also for part of the time resuscitation had to be done by the MDS. More recently when the 5 Fd. Amb. provided the open MDS, although there were three surgical teams available there were only two surgeons for the greater part of the

time, so that it was impossible to maintain two theatres in operation simultaneously over a period of more than 4 hours during the 24 hour day. To achieve the ideal of operating upon all light cases at the MDS during any future similar Divisional offensive operations we would recommend the following set-up:

1. Three MOs for Reception. In the absence of the FTU one to supervise the resuscitation and pre-operation Tarpaulin.

2. Three surgical teams, each complete with surgeon, anaesthetist, NCO, orderlies and own operating equipment. Organised on a 12-hourly basis there would be always two teams working simultaneously throughout the 24 hour period. When the pressure is on, all three teams could work simultaneously over a short period of 4–6 hours. Such a set-up would I am sure be able to deal with even more light cases than the total passed through the MDS at Tavarnelle.

The 1st NZ FSU was attached to the MDS during the greater part of this period and performed 90 operations during July and 30 during August. The large majority of the cases were of severe limb wounds. There were sixteen deaths.

It was noted by the FSU at the time that:

(*a*) Abdomens: Generally operations on these are not done unless the condition is too serious to allow of transfer to the CCS, or if the CCS is sited too far away to be reached in a short time.

(*b*) Adequate nursing facilities now obtainable with the addition of a nursing section have been proved to be of great value.

(*c*) Chests: Are usually not done if the pleura is penetrated. Use of intercostal nerve block has been of definite value for relief of pain prior to transport back to the CCS for operation.

(*d*) Penicillin has been used locally as a powder in wounds until supply ran out a few days ago. Sodium penicillin is being used for the same purpose at present. The crystals are coarser and owing to greater solubility, probably are absorbed more quickly. Recently penicillin Na has been used with much greater frequency parenterally in large wounds. If possible cases are held until they have received dosage for at least 24 hours.

Undoubtedly, the FSU and ambulance surgeons had displayed the judgment to be expected of experienced surgeons in the selection of cases to be dealt with at the MDS level. More surgery was probably carried out at the MDS as the CCS was understaffed, being short of three medical officers while at Siena.

Evacuation to the CCS except for a short period before one-way traffic was instituted was very satisfactory. Major Douglas drew attention to the frequent moves of the field ambulance units. Between 19 and 27 July his 1 NZ FSU set up its theatre in six different locations. With moves as frequent as these it was obvious that abdominal cases could not be adequately nursed, and the same applied in lesser degree to all serious cases not fit for immediate evacuation. All such cases undoubtedly should have been dealt with in a more static unit in this campaign, which meant that the CCS and the staffing should have been adjusted accordingly.

Blood reactions were more common at this period, and reactions were also noted following intravenous glucose injections. A quantity of blood had to be discarded, and also infected bottles of plasma and glucose saline. It was noted at the CCS that the supply of blood was very scanty, and because of the hot weather and the long distance it had to be transported was often stale, and undesirable reactions were too numerous. The position was somewhat eased when two refrigerators were installed at the CCS.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SHORTAGE OF MEDICAL OFFICERS

Shortage of Medical Officers

One of the main problems for the ADMS 2 NZ Division was the shortage of medical officers. At one period the Division was eleven medical officers under strength, including the CCS which was three officers short. As a result there was a constant changing of officers from one medical unit to another. Very often the officer staff of the closed MDS consisted only of the officer commanding, his second-in-command, the quartermaster, and dental officer. Regimental unit commanders were most co-operative in releasing where possible their RMO to ADSs and MDSs during busy periods.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK AT THE CCS

Work at the CCS

During the Arezzo action and the early part of the campaign for Florence the CCS was not functioning and British CCSs were used in its place. At Siena it became the most forward CCS, within easy reach of the field ambulance over a first-class road. A British FSU was attached for most of the active period and both a Canadian and a British FTU were attached at different times.

The operational work largely consisted in treating the abdominal cases and the lighter wounded. Most of the large limb wounds had been treated at the MDS. Penicillin was used for chest cases and large limb wounds, and as a routine in gas gangrene. It was noted that gas infections were more common and, in consequence, the excision of all wounds was carried out.

While the CCS was operating in the Siena area it dealt with eight cases of gas gangrene. Two of these occurred towards the end of July and six during August. Of the six cases in August, four died. Four of the eight cases were prisoners, and in these there had been a long interval between wounding and operation, but in the other cases the interval was not unduly long. Treatment consisted of excision of the affected area, penicillin both parenterally and locally, and gas-gangrene serum. Bacteriological investigations were carried out by the mobile laboratory attached to 4 British CCS.

Of the abdomens, there were fourteen cases with intestinal injury and seven deaths. There were four thoraco-abdominal cases, with three deaths. The abdominal cases were treated by intravenous sulphadiazine, rather than by emulsion into the peritoneal cavity, and the results were equally good.

Fasciotomy of the calf was carried out when the lower femoral or popliteal arteries were ligated, with definite success in at least two cases recorded.

Altogether, there were 964 battle casualties and 1970 sick cases admitted to the CCS, with 28 deaths. Among the deaths were German prisoners and Italian civilians as well as British, American, and New Zealand troops.

The conditions under which the forward surgery was undertaken were much superior at the CCS to those at the MDS, quite apart from the constant movement of the field ambulances. The urge to operate as near the line as possible, however, still persisted in the Division, even though with the evacuation over good roads little extra time would have been involved had the cases been dealt with at the CCS. The nursing facilities at the CCS were infinitely superior and the cases could be held as long as desired. The final results, however, were generally satisfactory and delayed primary suture could be carried out at the base hospital in the great majority of the cases.

Lieutenant-Colonel A. G. Clark, CO 1 Mobile CCS, stated that as far as the seriously sick and wounded were concerned this was the worst period of the Italian campaign. This was owing to the heat, shortage of medical officers, and the great distance between the CCS and the base. Air transport mitigated this to some extent.

Evacuation, though over good roads, meant a long, dusty, hot journey and a severe trial for serious cases. Later, air evacuation was arranged from Siena and this proved a great boon, but was instituted too late.

For the advance to Florence the hospitals were long distances from the forward areas, as 2 General Hospital was still at Caserta and 3 General Hospital at Bari, while 1 General Hospital was also on the Adriatic coast at Molfetta, some 20 miles up from Bari, though in June it had been arranged that 1 General Hospital would move over 300 miles

up the Adriatic coast to Ancona as soon as the enemy was driven from that area. By the use of air transport from Trasimene airfield to Naples, any difficulties that might otherwise have been involved by the long distance from the CCS to 2 General Hospital were avoided. Air transport for the wounded and sick was both quick and comfortable, and there was not the need for the staging of patients in hospitals in Rome, where it might have been difficult to treat large numbers of patients as the hospitals there were only in the process of getting established after the move from Naples. It had been expected that Florence would be occupied without any difficulty and that general hospitals could then be quickly set up there. This proved impossible, and medical arrangements had to be adjusted and the Naples hospitals had to continue to carry out the greater part of the work.

As it was, the process of change created extra difficulties for 2 General Hospital. Some of the hospital trains on the Naples– Bari run were transferred to the Rome– Naples run. This affected the evacuation of New Zealand and other patients from 2 General Hospital to the hospitals and convalescent depots on the Adriatic coast and led to a steep rise in the hospital bed state towards the end of July. No road transport was available, nor was air transport, even for cases unfit to travel by road or rail, as all air ambulances were being employed on the more foward evacuation routes. By sending selected walking cases on ordinary passenger trains across Italy 2 General Hospital partly overcame this problem. This expedient was not used by neighbouring hospitals, and in consequence it was often possible for 2 General Hospital to send fifty patients a day by the passenger trains.

For a number of reasons all the hospitals in the Naples area became overcrowded and 2 General Hospital did its best to assist by accepting British, Canadian, and South African patients. The movement of hospitals to Rome from Naples led to general congestion in the hospitals remaining in the Naples area. The accommodation problem was aggravated by the arrival of the advanced parties from AFHQ, Algiers, as that headquarters was transferred to Caserta. Hospital buildings were

requisitioned for the headquarters staff, an instance being the use of a Canadian hospital of 1200 beds for female personnel of AFHQ, and the closing of the hospital. Then, again, the invasion of Normandy meant for a time fewer hospital ships from the United Kingdom, and a resultant banking-up of the more serious bed cases and others who would normally have been evacuated early to the United Kingdom. The *Oranje* and other hospital ships arrived at Naples at the end of July and gave some relief.

All these factors resulted in 2 General Hospital, which was equipped as a 600-bed hospital, having 738 patients on 31 July; on 2 August, for a brief period after the admission of a convoy of battle casualties, there were 817 patients in the wards.

It was mid-summer, too, and the volume of work, plus the effects of heat, humidity and flies, resulted in a greater amount of sickness than had been recorded previously among members of the staff, between 10 and 15 per cent of them being sick in August.

Casualties from the Division were received at 2 General Hospital following air evacuation from Trasimene and they arrived in good order. The great majority were dealt with by delayed primary suture shortly after arrival. Altogether 1317 cases, including 383 battle casualties, were admitted during July and 1070 cases and 364 battle casualties during August. Several very severe cases with wounds of the spine and hip were dealt with.

The opinion was expressed that in these cases and in fracture cases penicillin should be given intramuscularly from the earliest possible moment in order to prevent sepsis, as treatment of established sepsis was largely unsatisfactory.

The double bath unit had proved very successful in the treatment of burns and parenteral penicillin had also been of great value. The training of young surgeons for possible employment at the CCS was carried out at this time, as there seemed little prospect of obtaining surgeons from New Zealand.

This was a quiet period at 3 General Hospital and some patients were admitted from other forces. In July there were 917 admitted, including 162 battle casualties and 309 of other forces. In August 1113 cases were admitted, including 378 battle casualties. At the end of August 10,000 patients had been admitted in Italy and altogether 30,000 patients since the unit was founded. The treatment of fractured femurs by penicillin and delayed primary suture was still continued and results were very satisfactory.

Some of the Florence casualties were evacuated to New Zealand by the Australian hospital ship *Wanganella* on 14 August; that is, within a fortnight or so of wounding.

Very little professional work was done at 1 General Hospital during the period, during the latter part of which preparations were being made to shift the hospital to Senigallia. Altogether, 768 cases were admitted in the two months.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ADMISSIONS TO OTHER THAN NEW ZEALAND HOSPITALS

Admissions to Other Than New Zealand Hospitals

In July 1944, 44 officers and 536 other ranks were admitted temporarily to other than New Zealand hospitals. By the end of the month only 100 remained. In August the admissions were 46 officers and 574 other ranks, and 189 remained at the end of the month.

The large number recorded was due largely to the staging of cases at British units on the line of evacuation during this period; 2 General Hospital at Caserta was a long way from the front at Florence and many cases were admitted to hospitals sited in Rome. Special cases, mainly neurosurgical and maxillo-facial, were treated in British hospitals by arrangement, but their numbers were never large.

SPECIAL SURGICAL WORK AT THIS PERIOD

Special Surgical Work at this Period

1. *The Use of Acrylic Plates in Head Cases:* This was carried out by Major Shoreston at 58 General Hospital at Trasimene in cases of cranial defect deemed suitable and where infection was not likely to ensue. The moulded plastic was sutured to the pericranium and the wound sutured without drainage. It was said that the plastic gave no tissue reactions. The temporary results seemed satisfactory.

2. *The Use of Plates and Screws in the Treatment of Fractures:* This was done in two British base hospitals, both simple and compound fractures being dealt with. The technique used was that of Lane, with long six-inch screws and stainless steel plates. In addition, single screws were used across the actual fractured bone ends to prevent angulation. Most of the cases were of fracture of the femur, but fractures of the tibia and also of the radius and ulna were also plated.

In compound fractures wound suture was generally carried out and, if this was impossible, the muscles were sutured so as to shut off the bone from the open wound. Penicillin was employed both locally and parenterally. Early joint movements were carried out. The preliminary results were on the whole good, but great care in the selection of suitable cases was necessary and the approach became steadily more conservative. This experimental work was confined to two hospitals and was not attempted in our units. We felt that the results obtained by ordinary methods rendered plating unnecessary and undesirable except in specially difficult cases. The use of screws across the fractured bone ends, though efficient mechanically, appeared to be contrary to sound surgical principles. One bad case in twenty-five would make the use of plates and screws inadvisable. The difficulty we foresaw was that the

surgeon performing the original operation did not, and probably would not, see the failures.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SCARCITY OF EXPERIENCED SURGEONS

Scarcity of Experienced Surgeons

This condition had been developing for some time and was accentuated by the return to New Zealand of some of the more senior officers who had served for a long period with the force. The scarcity was felt in both divisional and base units. The CCS in particular could not function without the help of specialist teams from the RAMC, both as regards surgery and transfusion. It was unfortunate that we did not have in our own corps young surgeons available for what was the most responsible surgical work in 2 NZEF.

The Consultant Surgeon made the following comments on this subject in his report of July 1944:

There is a scarcity of experienced surgeons in the 2 NZEF at present and this condition always tends to be aggravated by the appointment of surgeons to administrative positions. If war was not for us a temporary phase of relatively short duration it would be essential in my opinion to have two divisions in the Medical Corps, one Clinical and the other Administrative, with officers given senior ranks according to their capacity to fill the positions in either branch. The anomalous position would not then arise of officers with high clinical capacity having their only chance of promotion in an administrative post—and on the other hand an officer of high rank gained by long service in the Field being employed in a hospital in a junior clinical position. I, however, appreciate that all our conditions are purely temporary ones and that the interchange of medical officers between the hospitals and the Division is highly desirable.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK OF THE CONVALESCENT DEPOT

Work of the Convalescent Depot

The site at San Spirito proved an excellent one during the summer months. Swimming and boating provided suitable recreation. The average bed state in July was 478 and in August 517. During July there were only 74 battle casualties, but in August 286 cases were admitted. In July the medical cases predominated, forming 47 per cent of the total, whereas the surgical provided 22 per cent, the orthopaedic 20 per cent, and skin cases 11 per cent.

In August the corresponding figures were medical 36 ½ per cent, surgical 42 per cent, orthopaedic 14 ½ per cent, and skin cases 7 per cent. The hepatitis cases increased from 39 to 103. They were generally held in the depot for eighteen days.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK OF THE OPTICIAN UNIT

Work of the Optician Unit

Two-thirds of the time of this unit was spent at the CCS and the rest at Advanced Base. The unit was kept constantly employed. During the quarter ended 30 September, 458 cases were seen and 271 pairs of spectacles dispensed. Ten refractions could be carried out daily.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REORGANISATION OF HYGIENE COMPANY

Reorganisation of Hygiene Company

Preventive measures for the maintenance of health were improved by the expansion of the Field Hygiene Section into a company incorporating the two malaria-control sections. The new establishment making this change official was effective from 25 July 1944. In operation the new amalgamated unit was found to have a number of advantages. The OC 4 Field Hygiene Company could delegate most of the company office work to the officer commanding the malaria-control section, and thus have more time free for his duties as Deputy Assistant Director of Hygiene to the Division. Previously, the malaria-control units had been under the disciplinary control, as well as the technical direction, of the OC 4 Field Hygiene Section without being amalgamated. In addition, the total amount of administrative work was reduced.

The Field Hygiene Section with one of the malaria-control units was attached to Rear Headquarters of the Division. The other malaria-control unit was attached to Main Divisional Headquarters. This resulted in a continuous and complete coverage of the Division, and was considered to be the only satisfactory way in which hygiene and malaria-control could be achieved in a Division constantly moving on active operations.

The new establishment set up in the form of a field hygiene company represented the consolidation of all the establishments at that time engaged in hygiene work, and in malaria or typhus control and disinfestation and shower provision. All these functions were now under the one command and the personnel could be adjusted as conditions changed.

Looking ahead, it was planned to convert one malaria-control

section into a typhus-control section in the winter. The other malaria-control section was to be disbanded, but, if considered advisable, those of the section considered most suitable for hygiene duties were to be taken on for shower section duties.

The shower section provided a much-appreciated service and in the three months from July to September, inclusive, 44,000 men received hot showers at the Hygiene Company's plant, while the clothing and effects of 150 men were disinfested.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MALARIA CONTROL

Malaria Control

The Florence campaign covered the period of maximum incidence of malaria, and the activities of the Hygiene Company were mainly concentrated on that aspect of its work. There were few cases in the Division. In July there were forty-one and in August twenty. It is interesting to note that headquarters of the Allied armies in Italy allowed an incidence of three per 1000 per week before special notification of an outbreak was necessary. This would have been about 240 cases a month for the Division, but its highest incidence was only one-sixth of this figure. This excellent result was achieved by:

1. **The interest of senior officers, which was communicated by them to all ranks.**
2. **Continued inspectorial work by the hygiene inspectors.**
3. **Close liaison between medical and administrative branches, with the wholehearted co-operation of the latter in ensuring that offending units reported by the Hygiene Company inspector were made fully aware of their responsibilities.**

By the aid of power and hand equipment flysol and DDT spraying had proceeded unremittingly. All breeding places were sprayed twice weekly and DDT was sprayed on vehicles, officers' tents, etc. Paris green and malariol were applied to water areas. The mobile role of the Division made larval destruction rarely possible. Repellants were used by the troops. Unit squads were instructed and assisted, their usefulness depending on the interest of the commanding officer and the efficiency of the RMO. Anti-malaria notices and posters were utilised freely.

The bath and laundry unit continued to function; and clothes were also washed by the individual soldier and by Italian washerwomen. Showers were made available by Ordnance to the brigades. The Hygiene

Company made arrangements especially for the front-line troops. No lice were reported.

Water: **Patterson auto-motor trailer purifiers were used by 2 NZEF at all water points, the water being chlorinated and filtered mechanically.**

Sanitary arrangements gave rise to no new problems and the standard throughout the Division was maintained by all units. Otway pit covers with fly-traps were being used for the deep-hole refuse pits. This had reduced the flies in unit lines, particularly in the vicinity of cookhouses. Sullage water was also disposed of in the pit and helped to prevent fly-breeding in the lower deposits. The latrines were of the semi-deep pit type and were surmounted with fly-proof superstructures fitted with a fly-trap. Urinals were of the 'desert lily' type. The disposal of putrifying animal carcasses gave rise to some trouble.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF THE TROOPS

Health of the Troops

This was, in general, very good during this fine summer period, but the admissions to hospital showed an increase from 1·73 per 1000 per day in June to 2·04 in July and 2·17 in August. The percentage of the force in hospital was 5·08 at the beginning of July, 5·98 at the end of the month, and 5·64 at the end of August.

Rations were excellent during the period. Fresh vegetables, cabbages and potatoes, in particular, were supplied.

The health and morale of the troops was benefited by leave arranged to Rome, Lake Albano, Ischia, and Sorrento. Some units arranged special leave camps.

Infectious disease was, as usual, responsible for the major part of the sick wastage of the Division during July and August.

1. ' *NYD fever*' accounted for 543 patients in the Division. The large majority of these cases were retained in the divisional medical units and the CCS and not evacuated to the general hospitals. They were mainly cases of three- to five-day fever which occurred in an epidemic in early and mid-summer. Many of the cases subsequently developed jaundice. Others were thought to be cases of 'swine fever'. Sandfly fever was also considered to account for some of the cases; the vectors bred in damp rubble in all coastal regions from July to September.

2. *Infective hepatitis* was the diagnosis in 801 cases and, as already mentioned, many of the NYD fever cases subsequently proved to be cases of hepatitis. There was an increase in numbers in July and a still more marked increase in August, corresponding to the autumnal incidence of

the disease.

3. *Diarrhoea* accounted for 45 cases, some of them proving to be cases of amoebic dysentery. Cases of bacillary dysentery were treated with larger doses of sulphaguanidine, the average course ranging from 100-120 gms. over five days. More satisfactory results were obtained than previously.

4. *Malaria:* There were 36 cases, 29 being in July. The incidence was low, especially as this was the height of the malaria season. *Anopheles maculipennis* was the mosquito prevalent in Italy. It bred in brackish, stagnant water and was largely restricted to the coastal areas. In winter it lived in houses, cellars, and stables. The malaria season was from March to November, with July and August the peak months. The common infection was benign tertian, malignant tertian being very rare.

5. *Typhoid Fever:* This disease was widespread among the civilian population and appeared to be virulent in type. Four cases were treated in 2 General Hospital during the two months, with one death. The patient who died had had six inoculations of TAB, the last one eight months before the onset of the disease. He died following two perforations of an extensively ulcerated ileum.

6. *Pneumonia:* Thirty cases of pneumonia were admitted to 2 General Hospital, but only nine of these were in August, by which time the disease had ceased to be of any significance.

7. *Venereal Disease:* There were 205 new cases in Italy in July and 96 in August. There was some increase in the syphilitic cases. Penicillin was available for both gonorrhoea and syphilis and seemingly good results were obtained by its use. The difficulties due to sulphonamide-resistant cases had been solved by penicillin.

PHYSICAL EXHAUSTION

Physical Exhaustion

There were 114 cases of physical exhaustion evacuated from divisional units; some of these were returned to their units from the field ambulances, but 22 cases were admitted to 2 General Hospital in July and 62 in August.

Casualties of Florence Campaign

	Killed	*Wounded*	*Missing*	*Total*
13–17 July—Attack on Arezzo	26	91		117
21 July–1 August—Attack south of Florence	107	477	31	615
Total	133	568	31	732

Causes of Battle Casualties, July 1944

Shell wounds	416
Gunshot (rifle or machine gun)	69
Mortar	111
Grenade	19
Mine	20
Booby traps	6
Burns	11
Blast	15
Bayonet	1
Other causes, falling masonry, etc.	26
Total	694

Average Bed States	*July*	*August*
1 NZ Gen Hosp	336	closed
2 NZ Gen Hosp	536	565
3 NZ Gen Hosp	605	626

Conv Depot	**478**	**517**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATIONS TO NEW ZEALAND BY HOSPITAL SHIP

Evacuations to New Zealand by Hospital Ship

Total from MEF and CMF to end of July 1944, 7245.

Numbers of Sisters and Nurses in 2 NZEF, August 1944	
NZANS	232
NZWAAC (Medical)	183
Total	415

Strength of 2 NZEF, August 1944

	Officers	*ORs*	*Total*
MEF (in Egypt)	395	6,202	6,597
CMF	1,704	25,480	27,184
Total	2,099	31,682	33,781

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 17 — RIMINI AND FAENZA

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

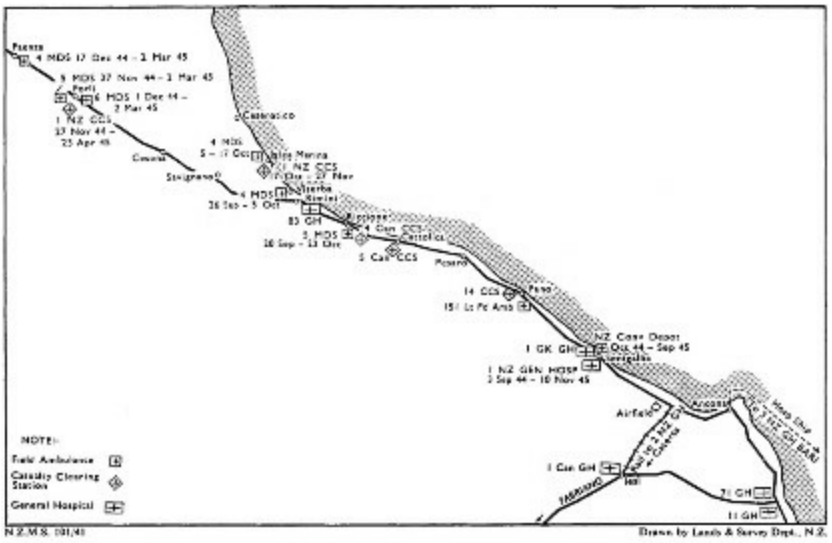
AT a commanders' conference at Headquarters 2 NZ Division in the Siena area on 18 August instructions were received to lighten loads on transport to the greatest possible extent in order to achieve a high standard of mobility for future roles, and the ensuing days saw medical units rigidly cutting down their medical and personal gear.

The demand for extreme mobility was not an idle one as the Adriatic sector was again to be the destination of the Division in a secret move across Italy. The first convoys started their long journey on the night of 26 August. The route followed was through Siena, down Highway 2 to San Quirico, then to Torrita di Siena, Nottola, Castiglione del Lago, then along Highway 75 through Perugia to the staging area at Foligno. The day was spent in the staging area and the move resumed at 10 p.m. on 27 August, without lights and over appalling roads, with dust adding to the difficulty of driving over the coastal mountains and through Macerata to Iesi. The Division was now concentrated in a very hot, dusty valley, where the presence of swarms of mosquitoes necessitated great vigilance in anti-malaria precautions. As the area was only a short distance from the sea, swimming parties were soon arranged.

No. 1 NZ General Hospital under Colonel Fisher was establishing itself at Senigallia, on the coast a few miles to the north, after a move from Molfetta, and men from the field ambulances helped to erect the hospital tents on the last day of August and on the ensuing three days. It was autumn again, and the Italian peasants were busy in the fields gathering in the harvest of grain.

All the New Zealand medical units were concentrated in the one area with 5 MDS, under Lieutenant-Colonel Coutts, open to receive sick and evacuate to 1 Canadian General Hospital at Iesi and 11 and 71 British General Hospitals in the Loreto area, while 6 MDS under Lieutenant-

Colonel Hawksworth operated a divisional rest camp on the beach near the junction of the road from Iesi with the coast road.



Rimini to Faenza: Medical Units and Lines of Evacuation, September – December 1944

Rimini to Faenza: Medical Units and Lines of Evacuation, September – December 1944

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

BATTLE SITUATION

Battle Situation

Eighth Army's objective at that time was to break the Gothic line which the Germans were stubbornly defending. The line was a formidable defensive system in considerable depth, embracing the entire breadth of the belt of interlocking ranges of the Apennines across Italy. Its eastern end was anchored at Pesaro. While the main mountain ranges stopped short of the coast, high foothills running almost to the sea provided excellent defensive positions, but once an attacking army won past Rimini, 20 miles up the coast from Pesaro, it was thought that the Gothic line would be turned.

When 2 NZ Division ended its long trek across Italy, it came under the command of 1 Canadian Corps for an operation which it was hoped, in spite of the imminence of winter, to make a mobile one of breakthrough and exploitation. It had been expected that once Eighth Army entered the Po valley it would be able to exploit rapidly across the plain. Optimism as to the ability to force the pace was to be sadly disappointed. Rivers and extensive canalisation continually hampered progress. Instead of making the expected rapid advance, Eighth Army entered upon a long and discouraging period of nearly four months' fighting, crossing numerous river obstacles in winter weather in operations that can best be described as the 'battles of the rivers'. The operations did, however, tie down German forces that might otherwise have been used to help oppose the Allied advance in Western Europe.

Though the New Zealand Division still remained in reserve, it was decided to move further forward to be nearer the main road along the coast, and on 5 September the move began. The Division travelled to the coast about 10 miles away and then north along the coast road for 15

miles to the vicinity of Fano, the new divisional concentration area. Here 4 Field Ambulance, under Lieutenant-Colonel Edmundson, with 1 FSU, 2 FTU, 102 Mobile VDTC and 14 Optician Unit attached, set up a complete MDS on 6 September for the reception of sick.

For the first time in Italy the Division was on the sea coast. Full advantage was taken of this and swimming was a most popular pastime, and it lead to a very evident improvement in the general welfare of the troops. This came at an opportune time as the sickness rate was comparatively high. Infective hepatitis had reached mild epidemic proportions, over 1200 cases being reported in the three months September to November, and the medical service was feeling frustrated by its inability to reduce the high incidence as the method of infection was unknown. On the other hand, the malaria figures continued to remain low, being the lowest in Eighth Army. The general fitness of the Division was below the high level maintained in the past. More men became prone to infection of quite minor skin lesions, and to colds and fibrositis even before the really cold weather had set in.

From this area 4 MDS evacuated the sickness cases to 1 NZ General Hospital at Senigallia. In nine days 432 sick were admitted to the MDS. The unit itself remained remarkably free of infective hepatitis.

From 13 September portions of the Division moved towards the front line. On 18 September 4 MDS travelled 20 miles forward to a new location in the sand dunes right on the sea front at Cattolica, and then stood by ready to accompany the divisional reserve group upon its proposed drive along Route 16 past Rimini.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL FREYBERG IN HOSPITAL

General Freyberg in Hospital

On 3 September Lieutenant-General Freyberg was involved in an aeroplane accident in the forward area, sustaining a wound in the right flank but without abdominal injury. He was conveyed to 1 General Hospital, which had just arrived at Senigallia and had not then opened to receive cases, and was there operated on. The wound was excised and treated with penicillin and the GOC made an uneventful recovery.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MOVES TO SENIGALLIA OF HQ 2 NZEF AND MEDICAL UNITS

Moves to Senigallia of HQ 2 NZEF and Medical Units

On 28 August 1 General Hospital moved from Molfetta to a site near Senigallia, some 18 miles north of Ancona, and opened there on 9 September, being only 20 miles behind the Division. Its site at Molfetta was handed over to 95 British General Hospital. Then on 11 September HQ 2 NZEF, including DMS office, moved to Senigallia, leaving sections of 1 Convalescent Depot and Medical Stores Depot to follow later.

The move took HQ 2 NZEF much nearer to the Division, especially when the Division was again switched to the Adriatic coast south of Rimini, but it was nearly 400 miles away from Taranto, which continued to be used as the port of embarkation for patients returning to New Zealand by hospital ship. It was hoped that at a later date New Zealand hospital ships would be able to use the port of Ancona. However, Ancona did not prove as satisfactory a port as anticipated, due partly to enemy demolitions and also to the presence of mines in the Adriatic Sea, and hospital ships never embarked patients there for New Zealand. A coastal hospital ship service, however, was organised between Ancona and Bari for the transfer of patients from 1 General Hospital to 3 General Hospital.

As Ancona was not a satisfactory port, reinforcements from Egypt continued to be sent to Taranto. The move of NZ Advanced Base was therefore cancelled, and Advanced Base Camp Hospital and Advanced Base Hygiene Section, along with 3 General Hospital and Detachment 1 Convalescent Depot, remained in southern Italy.

When 1 General Hospital opened at its new site on 9 September on the coast near Senigallia, the staff and patients were accommodated partly in buildings, partly in huts, and partly in tents. The hospital, a

former children's holiday centre, was situated on the coast about 100 yards from the water on a sandy site about 700 yards long and 100 yards wide close to Route 16. There were three large buildings (the best of which became the surgical block) and two smaller buildings, but four tented wards with concrete floors were also required, and the staff was accommodated in tents until Nissen huts could be erected. Huts were necessary for the winter conditions, and they were early erected for kitchens, dining halls, and stores. On the opening day 100 patients were admitted, and by 26 September the unit was holding 839 cases. (The Division had gone into action at Rimini on 22 September.) In the initial stages all water had to be carried and lighting arrangements were inadequate, while torrential rain fell as winter approached. That the unit was able to function at all reflected great credit on the staff. Gradually conditions were improved and many more huts erected before the very cold weather set in. Evacuations of patients were made by hospital ship from Ancona to Bari for 3 General Hospital, and by ambulance train from Iesi to Caserta for 2 General Hospital.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

2 GENERAL HOSPITAL

2 General Hospital

The move of 2 NZ Division to the eastern sector again and the forward move of 1 General Hospital left 2 General Hospital rather in a backwater. It was planned that when Eighth Army advanced beyond the Rimini- Bologna line, 2 General Hospital would be moved north and would again become the most forward hospital. However, this did not happen as Eighth Army was held up for the winter by bitter enemy resistance and the weather before it reached Bologna. Colonel I. S. Wilson succeeded Colonel H. K. Christie as commanding officer of the unit on 10 October 1944 prior to the latter's return to New Zealand.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ATTACK ON RIMINI

Attack on Rimini

Eighth Army began its attack towards the Gothic line on the night of 25 August, and by the end of the month it was breaking into the defence system along the Foglia River. Pesaro fell to the Poles on 2 September and Canadian and British troops continued the advance on the narrow coastal strip and further inland until they were brought to a halt by stubborn resistance at the Coriano ridge.

After capturing Coriano, Eighth Army pushed on until it was held up once again at the San Fortunato ridge which dominated Rimini and commanded the eastern entrance to the Po valley. After heavy fighting the ridge fell to the Canadian Corps on 20 September, and the next day Greek and supporting New Zealand troops entered Rimini and the Canadians crossed the Marecchia River to enter the Po valley. At this stage 5 Brigade came up to pass through the Canadian bridgehead and continue the advance towards Ravenna, while 4 Armoured Brigade was also committed on the narrow coastal strip between Route 16 and the sea.

On 22 September 5 Infantry Brigade, together with 22 (Motor) Battalion and 19 Armoured Regiment, took over from 1 Canadian Infantry Division and advanced through and north of Rimini. By the next day 22 Battalion, 21 Battalion and 28 (Maori) Battalion had reached a line 7 miles north of the town. For this attack 5 ADS under Major G. H. Levien serviced its brigade.

Sixth Brigade passed through 5 Brigade's positions early on 23 September, and at 8 a.m. forward elements were 5 miles beyond Rimini and pushing ahead against heavy mortar and small-arms fire. The 6th ADS under Major H. S. Douglas moved forward from a mile and a half

south of Rimini to a mile or so north of the town and set up the full ADS there in the local cemetery. During the afternoon and evening the ADS admitted fifty-five wounded from the battalions. Many of them were frankly startled when they realised they had been taken in the ambulance to a moonlit cemetery. At 7.45 p.m. on the 24th 6 Brigade delivered a heavy attack that carried it on to the crossroads at Bordonchio, 7 miles to the north. More than 200 patients, most of them wounded, were carried back to the ADS during the 24th and 25th. By midday on the 26th troops of 6 Brigade were crossing the Uso, and the ADS moved forward to establish itself a mile south of Bordonchio. Here it was in the vicinity of the RAPs, and casualties were frequently carried in direct from the field without any preliminary treatment.

Major Pearse, RMO 25 Battalion, was awarded the MC for his work in this action. On the night of 24–25 September he established his RAP on the infantry start line and, in spite of enemy shelling and with total disregard for his own safety, attended to the wounded immediately, repeating this performance on 26 September when his battalion had crossed the Uso River.

Between 23 and 29 September Major Pearse dealt with 105 battle casualties, 86 from his own unit and 19 from other units. He analysed the casualties according to the missile causing the wound. The analysis showed: shell wounds 48 per cent; mortar bomb wounds 22 per cent; gunshot wounds 18 per cent; grenade wounds 19 per cent; booby-trap and mine wounds 9 per cent; and unknown cause 1 per cent. The percentage of gunshot wounds was stated to be much higher than was usually seen. Most of the wounds were light, and superficial chest wounds were markedly prominent, only one definite abdominal wound, three severe chest wounds, and two compound fractures of the femur making up the severe injuries.

For the collection of casualties the RAP jeep was used in the main, especially on the night of 24–25 September during the attack. This was the only method available, and served well in spite of adverse conditions. The stretcher-carrying Bren carrier of 20 Armoured Regiment was also

employed as much as possible, usually forward of a collecting post to the companies, from which post the wounded were taken to the RAP by jeep. Cases rode very much better in the carrier. In the few cases that came back to 25 Battalion RAP in the carrier the patients were extremely warm and in good condition—the engine heat, reasonably comfortable ride, and sense of security in the carrier all contributed to the well-being of the patient. Major Pearse stated that the sense of security was to his mind an extremely important factor. There were times when the jeep had to unload and patients shelter for a short time from heavy enemy fire which could have been passed through in the carrier. The mental effect on wounded men was noted to be distressing. Major Pearse, a very experienced RMO, was firmly of the opinion that the ideal system of evacuation of wounded across the tracked fields and open country then encountered was by stretcher-carrying Bren carrier flying the Red Cross, especially from the forward exposed areas to a collecting post whence they could be relayed to the RAP.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS

MEDICAL ARRANGEMENTS

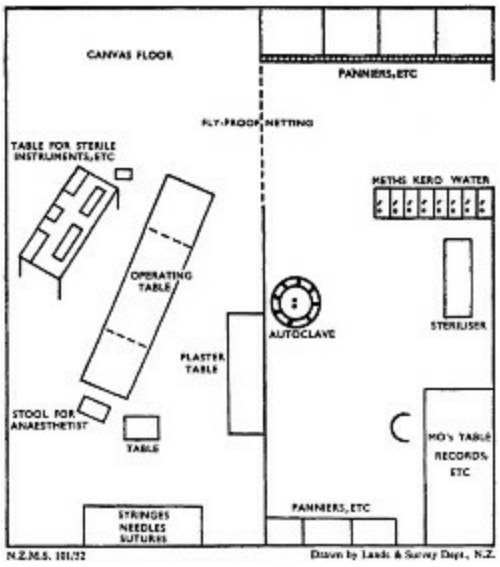
MDS at Riccione

The 5th MDS, with 1 FSU, 2 FTU, and 6 Field Ambulance surgical team attached, was established on 20 September as the open MDS in the municipal buildings at Riccione, 8 miles north-west of Cattolica.

During the period 20 to 25 September when 5 MDS was open for battle casualties from this action, the operating theatre was working continuously, 144 operations being carried out. Evacuation took place to 4 Canadian CCS near Riccione, 5 Canadian CCS at Cattolica, and 1 General Hospital at Senigallia. The more serious cases, such as abdominal, thoracic and head, were evacuated as soon as possible to 4 and 5 Canadian CCSs, and the less urgent cases to 1 General Hospital. An effort was made to distribute cases so that patients would receive surgical treatment in the shortest possible time.

MDS at Viserba

As it was necessary towards the end of September to have an MDS further forward than Riccione, 4 MDS moved on 26 September to the vicinity of Viserba, 2 miles north of Rimini, where it was joined by 1 FSU, 2 FTU, and NZ Section MAC. It occupied an area of hard level ground on which the tents were erected and on which was sited a large factory. Heavy and medium artillery was posted nearby and was responsible for considerable noise and also prompted enemy retaliation.



5 NZ Field Ambulance MDS Operating Theatre (2 IPP tents) For the operating theatre in Italy in a modified form either two IPP tents or two rooms were used. The staff consisted of: 1 sergeant alternated as assistant to surgeon and in supervising the sterilisation and preparation of trays. 1 corporal alternated as assistant to surgeon and in supervising the sterilisation and preparation of trays. 2 orderlies who alternated as theatre assistant and steriliser orderly.

There was a fairly steady stream of casualties—in the five days to the end of the month they totalled 140 battle casualties and 209 sickness cases. The greater proportion of battle casualties (120) was dealt with adequately by the MDS and FSU surgical teams, and after due rest many were evacuated direct to 1 General Hospital at Senigallia. In the heavy rain from 28 September onwards the MDS area with its hard roads and good drainage proved very satisfactory, but the whole divisional area became bogged. This held up operations and slowed down the tempo of the battle, with a resultant diminution in the numbers of casualties.

Forward Evacuation

With the onset of winter, experience of forward evacuation in the low-lying areas proved that stretcher-carrying jeeps, even when fitted with chains, were liable to become bogged in the mud. The answer to this problem was found in Bren stretcher-carriers, which had previously been used by the armoured regiments and whose mobility and usefulness was welcomed by RMOs. A number of battalions immediately arranged for extra Bren carriers to be fitted to carry stretchers. Stretcher-carrying

jeeps, however, still continued to be most useful and arrangements were made to provide them with all-weather hoods.

Surgical Policy

During the operations in September a high proportion of abdominal wounds was observed as well as many chest wounds. The percentage of bullet wounds was noted to be unusually high. The Division was under command of the Canadian Corps, which had its own medical chain; in view of the expected breakthrough beyond Rimini, and also because of the proximity of 1 General Hospital to the forward areas, 1 Mobile CCS under Lieutenant-Colonel Clark did not set up on its arrival with the Division. This resulted in the loss of the services of a valuable unit with experienced personnel at a time when there was a definite shortage of such staff in our force. There had never been throughout the war any period of active warfare when there was not ample forward surgical work for all available units and personnel. The control of our CCS at this period was under the ADMS 2 NZ Division, whose more immediate interest was naturally in the functioning of the field ambulances. A CCS is normally under Corps or Army command but in the New Zealand force our CCS, like all our New Zealand units, was retained as a rule under the command of the DMS 2 NZEF. The 1st Mobile CCS surgical team was, however, attached to 4 Canadian CCS and then to 5 Canadian CCS, which in turn dealt with many of the more serious New Zealand casualties. The surgical arrangements at the Canadian CCSs were found to be somewhat different and, in our opinion, not as satisfactory as our own, but the work of the Canadian surgeons was of a high standard. The supervision of the patients in the pre-operative room was in the hands of the transfusion officer or the general duty officer acting as his relief. There was no surgeon available for diagnosis and sorting, though the operating surgeon often had a look at the patients. This threw a very great responsibility on the transfusion officer and, in our opinion, was not as safe and sound as our custom of having an experienced surgeon in attendance in the pre-operation room. This particularly applied to the abdominal cases, where diagnosis was often difficult and always of great

importance and where the use of X-rays was often of value. An experienced surgeon could often take the responsibility of deciding against abdominal exploration. This was of more than theoretical importance as abdominal exploration carried a very definite mortality as well as morbidity.

After operation the cases were looked after by ward medical officers who carried out the treatment without reference to the operating surgeon. This had certain administrative advantages in rush periods but could not compare in surgical efficiency with the system where the operating surgeon supervised the after-treatment himself. The ideal in our opinion was for the operating surgeon to retain his control but to share it with a ward officer who could watch the case and report complications to him. If a senior surgeon was acting in the pre-operative room, he could make interim rounds of the post-operative cases while the operating surgeon was in the theatre.

The utilisation to the full of the surgical abilities of 4 Field Ambulance was a feature of the unit's activity at Viserba. The commanding officer made the following comments on this phase:

Following the now accepted principle of excision and dressing of all wounds at the earliest possible opportunity, during this period as open MDS the greater proportion of cases have been dealt with surgically at the MDS. Over two-thirds of all battle casualties received complete surgical treatment and were fit to be sent on direct to 1 NZ Gen. Hosp.

As facilities for nursing are better at a CCS, all non-urgent cases of abdomens and chests were sent to a CCS for surgery.

The principle adopted was to hold cases awaiting operation only up to the time involved in evacuating to a CCS, and there awaiting treatment. In other words, holding cases at the MDS awaiting operation, if by so doing the patient will receive earlier surgical treatment, than if he is sent on to a CCS immediately.

In conclusion, the equipment of the ambulance remains at the high

standard previously attained. With the advent of winter it becomes obvious that an open MDS can function satisfactorily only in buildings; as the canvas, which is excellent under summer conditions, does not provide the necessary shelter and warmth.

On the other hand, the Consultant Surgeon 2 NZEF expressed the hope that the tendency to operate at the MDS instead of the CCS would not become more prevalent. His view was that, whenever circumstances permitted, forward surgery should be performed at the CCS, which was the unit specially equipped and staffed to do the work. The cases formerly thought to be of importance as regards early operation, for example, abdominal cases, were rightly sent back to the CCS and there was no reason why the CCS should not carry the main load of other heavy cases.

General Situation

In spite of the bad weather gradual progress was made in the divisional sector and the enemy was forced to withdraw completely across the Uso River. The coastal towns which anchored the sea end of the Gothic line were in the hands of Eighth Army, but the line could not be outflanked while the enemy clung to the mountains and made every river a defence line. Fifth Army, after a promising start, was blocked by a determined defence and incredibly difficult country in the mountains south of Bologna.

The country beyond Rimini was completely flat but was crisscrossed with small waterways, each of which was an adequate tank obstacle. The degree of canalisation in the area south of Ravenna was unequalled anywhere in Europe, with the exception of Holland. It was impossible to move more than a mile in any direction without encountering an obstacle requiring the building of bridges and approaches. An abundance of trees provided cover for a defending force, even in the face of a superior air power, and there were many substantial stone houses.

The weather became unsettled with frequent light rains, and the web

of watercourses ahead of the New Zealand battalions as they strove to push forward held out no prospect of a swift advance. It was the German policy to fight at every ditch, using spandaus and mortars with a stiffening of tanks and self-propelled guns. His plan was to force a full-scale 'set-piece' attack at every possible point, and then, as the assault was made, to withdraw his main forces to the next line, perhaps only 1000 yards back, leaving small heavily-armed holding parties behind. By a counter-policy of repeating thrusts at short intervals to shorten the time for manning defences, 5 and 6 Brigades had hopes of getting the Germans on the run; but just at the end of September after they had crossed the Uso, and preparatory to their attack on the Fiumicino, the weather broke and violent gales from the Adriatic, with torrential rain, soon brought the greatest discomfort to troops in the exposed positions of the front line and prevented the movement of supporting arms for the infantry.

MDS at Igiea Marina

During the morning of 4 October 4 MDS, with 1 FSU and 2 FTU, moved to a new building, formerly an Italian children's hospital and sanatorium on the coast road at Igiea Marina, just south of Bellaria, which is at the mouth of the Uso River. This building consisted of three stories, with a central block of small rooms and two wings forming large dormitories very suitable for holding patients. It had previously been occupied by a Canadian FDS, a Greek ADS, and 5 NZ ADS.

The reduced length of the Allied salient and the general dispositions of units allowed the MDS to receive patients direct from the RAPs, with 6 ADS functioning only as a transfer and emergency aid point. On 5 October the MDS was reinforced by a surgical team from 1 Mobile CCS with equipment for a 50-bed ward, an X-ray truck, and six nursing orderlies. The unit was considerably nearer the actual battle zone than was usual, and consequently in a very noisy position from nearby guns, but it provided a fully equipped surgical and medical centre. This arrangement was commented on very favourably by visiting senior

combatant officers, who expressed the view that such a set-up contributed greatly to the morale of the troops in the actual fighting zone. With the help of the engineers windows were replaced with windolite, the water supply on the ground floor was put into working order, and a portable lighting set was used to provide a lighting circuit in the building.

By 8 October the unit had three completely equipped and staffed operating theatres as well as the Field Transfusion Unit and an X-ray plant, an impressive collection of surgical facilities. Fortunately these arrangements proved over-adequate as a very limited number of casualties occurred in the divisional sector. The total admissions for the first week at Igiea Marina were 238 sickness cases and 84 battle casualties. The latter were mainly victims of sporadic shelling, as persistently wet weather forced the postponement of the actual crossing of the Fiumicino.

On 10 October 2 NZ Division moved to the adjacent western sector, which had previously been held by Canadians. No great increase in distances of evacuation resulted and 4 MDS remained at the same site receiving cases from 5 ADS, some three to four miles due west.

The weather started to improve on 11 October. An increase in the number of guns in the vicinity incited the enemy to some artillery retaliation. During the afternoon several airbursts were observed over the building, and later accurate enemy counter-battery fire on neighbouring gun sites produced a sudden influx of battle casualties. No damage to MDS property resulted but odd fragments made open-air conditions unpleasant for a while.

Crossing the Rivers

The rain which made the crossing of the Fiumicino impossible had failed entirely to pin down the infantry or to silence the artillery. Night after night, over the soft sound of drizzle and the howl of the wind in the trees, the roll of gunfire echoed from the Apennines to the sea. On

11 October 5 Brigade found the Fiumicino almost undefended and moved across to take the town of Gatteo, badly battered by shelling and bombing. Sant' Angelo, a heavily defended enemy strongpoint, then caused a hold-up with many casualties before it was cleared by Maoris on the night of 14–15 October, when the use of searchlights playing into the night sky created an unearthly blue luminescence which covered the battlefield. This eerie artificial moonlight was a feature of the campaign from then on. The towns of Gambettola, Bulgarno, and Ruffio then fell into our hands only to bring us up against another river, the Pisciatello. This was crossed by 6 Brigade on the night of 18–19 October after a full barrage, and the getting of tanks across the river changed the aspect of the advance as the country for some thousands of yards provided a chance of better going. Discounting the risks involved because of the soft nature of the ground, it was decided to thrust with the tanks right through to the Savio, a broad river running almost north. Such a manoeuvre, involving as it did a right hook of well over 5 miles, would cut all the coastal roads leading from Cesena to the coast up to a point well above Cervia, and in conjunction with a Canadian attack up Route 9 would almost certainly bring about the fall of Cesena itself. The manoeuvre was successful. By 21 October 4 Brigade had its tanks right up to the Savio and Cesena had fallen to the Canadians. The all-important Route 9 was cleared to a point only 46 miles from Bologna.

This concluded a month of hard but unspectacular fighting by 2 NZ Division—a long-continued slogging match in the mud of the river basin against an enemy who could be forced back but not overwhelmed. The optimism of a month previously had not been fulfilled, because to fulfil it had been humanly impossible. What could be done by the Division had been done well. Our troops had advanced nearly 20 miles, in conditions which were ideally suited for defence. Here, if anywhere, was country which could well have been the scene of a vast static battlefield on the lines of those of the 1914–18 war in France.

The moving west of the battle zone in the Savio River drive necessitated the opening of 6 MDS at San Mauro, as the lateral road to

the coast had become very congested. On 18 October 4 MDS vacated the building at Igiea Marina, which was taken over by 1 Mobile CCS, and then moved to remain in reserve at Viserba. The admissions for the second week at Igiea Marina had amounted to 277 sickness cases and 121 battle casualties. The sick were evacuated to 5 MDS, still sited in the large municipal building at Riccione. On 13 October four nursing sisters from 1 Mobile CCS, then closed, had been attached to 4 MDS, and proved invaluable in the nursing of serious cases and as theatre sisters. The sisters rejoined their unit when 1 Mobile CCS took over at Igiea Marina. New Zealand head, facio-maxillary, and eye cases were sent to 83 British General Hospital at Riccione, while 59 British General Hospital at Fano was used as a staging post for patients on their way to 1 General Hospital.

Withdrawal of 2 NZ Division to Fabriano

It was decided to withdraw the Division on 22 October for reorganisation and training to the Fabriano region, some 20 miles south-west of the former assembly area at Iesi. The Division, in the last days of autumn, found itself dispersed among the buildings in the villages of Matelica, Fabriano, Castelraimondo, and San Severino in the Apennines. For the remainder of the month and until 27 November, 4 MDS functioned in the agricultural school buildings in Fabriano, holding up to one hundred sickness cases, the more serious cases being evacuated to 1 General Hospital on the coast at Senigallia.

The widespread dispersal of the Division and the congestion of traffic necessitated the opening of 6 MDS at Castelraimondo, in the 6 Brigade area 10 miles to the south. Previously it had taken as long as three hours to come from 5 ADS, farther south at Camerino in 5 Brigade's area. The weather at this time continued to be most inclement, but all units were accommodated in houses, factories, or castles and were able to keep dry.

For the greater part of November the Division remained in the rest and training area from Fabriano to Camerino, accommodated in very

satisfactory billets, particularly 4 Armoured Brigade which had made itself comfortable in Fabriano, which was on a main road. Some of the roads to Castelraimondo and Camerino were barely passable, and early in the month bridges and diversions were washed out by floods after heavy rain.

Reorganisation of the Field Ambulances

In 2 NZ Division discussions and schemes for reorganisation of units were a feature of this period. Reductions in unit establishments had been under consideration since early in the campaign in Italy, as the divisional organisation was designed for desert conditions. It had been hoped that the Division could be used in a mobile role in Italy, but this had proved impossible. Manpower difficulties in the supply of reinforcements from New Zealand, and the planned replacement of long-service personnel, made reductions desirable, besides which it was concluded that the superior equipment of the Allies, especially in aircraft and tanks, made reductions possible.

In the medical services the changes were confined to the field ambulances. At a conference of senior medical officers convened by ADMS 2 NZ Division, Colonel King, it was decided that Headquarters Company be increased by 34 other ranks to make a complete MDS, that A Company be reduced to 3 officers and 42 other ranks and be a permanent ADS, and that B Company be eliminated. This would result in a total saving of 35 other ranks in each field ambulance. [1] There was also to be a saving of two 3-ton trucks, although two bantams were to be added. It was proposed that the ASC personnel should become members of the Medical Corps, but this change was opposed successfully by the Commander NZASC.

New Establishment of Field Ambulances

	Offrs	*WOI*	*WOII*	*S-Sgt*	*Sgts*	*L-Sgt*	*Cpl*	*ORs*	*Total*
HQ Coy NZMC	7	1	1	1	8	1	9	79	107
ASC att HQ Coy	1		1		1		4	40	47
A Coy NZMC	3			1	2		4	35	45

ASC att A Coy							1	11	12
Dental att HQ Coy	1						2		3
	12	1	2	2	11	1	20	165	214

Reorganisation to this amended establishment was carried out during November, and the reorganised units were found to work well during the difficult battle conditions in December.

The New Zealand medical units followed a pattern of adaptation and progress. As the commanding officer of 4 Field Ambulance, Colonel Edmundson, recorded in December 1944:

The past twelve months has been a period in which we have witnessed striking changes in our environment. Except for the short Balkan campaign, 2 NZ Div. was trained on, and fought over, the North African deserts for more than three years. Many modifications and improvements were evolved in all arms of the Division, and these were by no means least evident in the Medical Services.

....Just as our medical services were adapted to meet the changing desert conditions, so the evolution continues with the variations of European warfare. We now have a reorganised ADS and MDS, each with their particular job to do on the line of medical evacuation.

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[1] **Total savings of all units in the whole Division were 104 officers and 2528 other ranks.**

The Move to the Front Line

From 22 November onwards the Division moved forward again to the fighting zone, assembling in an area west of Cesena. First to return to operations was the Divisional Artillery, followed by the two infantry brigades and lastly the armoured brigade.

Although there had been some advance during November, the general position at the front was very similar to that prevailing

previously. Forli, 10 miles above Cesena on Route 9, had been cleared, and Eighth Army had established itself nearly 9 miles beyond it facing Faenza on the line of the Lamone River. The Lamone was a perfect example of the type of stream across which the bitterest fighting of 1945 was to take place. Its width was only 60 to 70 feet, but on either side were massive terraced stopbanks of soft earth reaching to a height of more than 20 feet. With steeply pitched slopes into which it was easy to tunnel, and parapets about seven feet wide, these stopbanks formed a splendid defensive line. Bologna was now only 30 miles away, but seemed as unapproachable as ever.

Change of ADMS 2 NZ Division

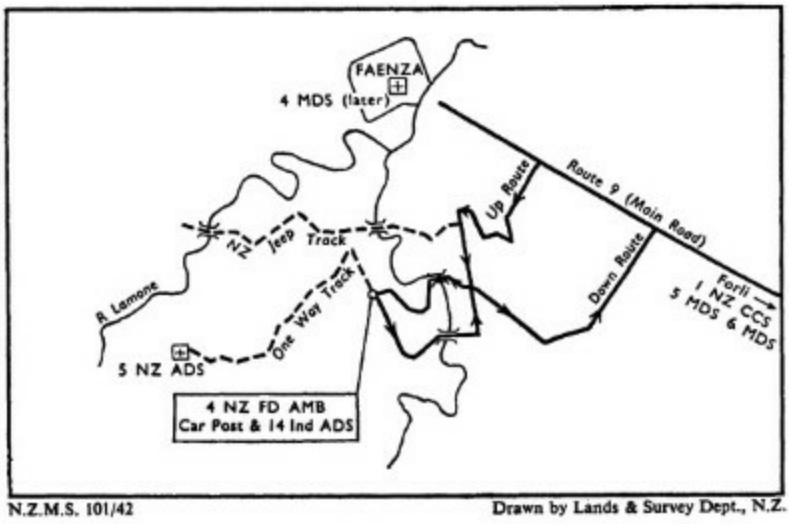
On 3 December 1944 Colonel R. A. Elliott, who had returned from furlough, took over duty as ADMS 2 NZ Division from Colonel King, who had gone overseas with the Second Echelon and had served continuously since. For eighteen months he had held the appointment of ADMS and his work was outstanding in every respect.

Medical Units in Forli

At the beginning of December 2 NZ Division faced up to the Lamone River astride Route 9 with 5 Infantry Brigade on the left and 6 Infantry Brigade on the right, each with its respective ADS open near the main road. In Forli 5 MDS was open for battle casualties and 6 MDS for sickness cases. Both the MDS and ADS of 4 Field Ambulance were closed and in reserve. The 1st Mobile CCS was in an excellent school building in Forli, well placed to treat battle casualties and evacuate direct to 1 General Hospital by NZ Section MAC.

On the night of 10–11 December 5 Infantry Brigade passed through 46 Division, which had established a bridgehead across the Lamone River to the south-west of Faenza, and was poised to attack towards Faenza. The attack opened on the night of 14–15 December and was brilliantly successful, leading to the capture of Faenza on the evening of 16 December. The attack presented a formidable problem for the medical

services as all routes up and down were very poor indeed, and only one-way traffic was possible for considerable stretches in many places.



Attack on Faenza: Medical Units and Lines of Evacuation

Attack on Faenza: Medical Units and Lines of Evacuation

Medical Operations

Under Major R. H. Dawson, 5 ADS across the Lamone River was strengthened and extra jeeps and American Field Service cars provided. The building which 5 ADS had occupied was in direct view of the enemy in Faenza and came in for some shelling prior to the launching of 5 Brigade's attack on 14 December. This led to the unit hanging a Red Cross sign 40 ft. by 40 ft. on the north side of the building. The shelling damaged some of the AFS ambulance cars. An ambulance-car post from 4 Field Ambulance comprising Captain Begg, [1] one corporal, one medical orderly, a cook, and the drivers of the two vehicles (a jeep and an 8-cwt truck) was established at the farthest point forward that could be reached by two-wheel-drive ambulance cars, some 6 miles from 5 ADS. Here all patients were checked over, classified for CCS or MDS, and then sent on to Forli by Austin cars of NZ Section MAC. This kept all four-wheel-drive

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[1] Maj N. C. Begg, m.i.d.; Dunedin; born Dunedin, 13 Apr 1916; medical practitioner; medical officer 2 Gen Hosp Jan–Oct

1943; OC 102 Mob VD Treatment Centre Oct 1943–Jul 1944; RMO 25 and 21 Bns 1944; 5 Fd Amb Mar–May 1945; Repatriation Hospital (UK) Jun–Dec 1945.

AFS vehicles forward, where they were most needed. A cart track deep in mud, with a bottleneck at the Bailey bridge across the river, was open for one-way down and up traffic alternately. This called for very careful medical planning. Casualties from three divisions, 46 British Division, 10 Indian Division, and 2 NZ Division, all came down this route, and only jeeps or four-wheel-drive vehicles could be used. The method adopted was to collect a convoy at 5 ADS at the start of the down route and then, after close liaison with the provost, bring it through to a car post at the head of the two-way traffic route. Here the patients were resuscitated as necessary and taken onward in two-wheel-drive ambulance cars, the four-wheel-drive vehicles being retained forward. The evacuation from all three divisions was controlled by ADMS 2 NZ Division, Colonel R. A. Elliott.

This method of evacuation with the use of the ambulance-car post worked well in the very difficult circumstances, and no case was over twelve hours in reaching the CCS, which Colonel Elliott considered a creditable performance when the state of the down routes was taken into account.

The first casualties from the attack reached 5 ADS from the RAPs at 1 a.m. on 15 December. The evacuation route was open at 1.30 a.m. so an evacuation of three AFS car loads was made, followed by another carload at 3 a.m. and five at 7.30 a.m. The ADS was then informed that no further evacuations would be possible that day as Corps had closed the road for Polish up-traffic. However, ADMS 10 Indian Division contacted Corps regarding the closing of the road and was informed that ten ambulance cars could pass down at 2 p.m. Five carloads of Indian and five carloads of New Zealand patients, all priority cases, were then evacuated. The road was again open at 4.15 p.m., when the ADS was holding seventy patients. These were loaded into the ambulances and

one 3-ton truck and taken back.

Casualties were fairly heavy during the day and it was necessary to give them more treatment than usual at an ADS, as it was taking four to eight hours for the wounded to reach the MDS and CCS. Plaster was used for most fractures and thirty bottles of blood and plasma were used in resuscitation. At one time there were eight transfusions running simultaneously. Lieutenant-Colonel Coutts, CO 5 Field Ambulance, worked at the ADS and his assistance was invaluable, as Captain Miller [1] was sent forward to replace Lieutenant Moore [2] as RMO of 28 (Maori) Battalion when the latter and three of his RAP staff were wounded.

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[1] Capt E. T. G. Miller; Levin; born England, 1 May 1902; medical practitioner; 3 Gen Hosp Aug–Dec 1944; 5 Fd Amb Dec 1944–Oct 1945.

[2] Capt P. W. E. Moore; Auckland; born England, 17 Mar 1918; medical student; RMO 28 (Maori) Bn Aug 1944–Jan 1946; wounded 14 Dec 1944.

New Zealand casualties passing through 4 Field Ambulance car post from 11 to 17 December totalled 191 wounded and 24 sick, the biggest day being 15 December, when there were 116 battle casualties. More ambulances were obtained for this day from 4 and 5 Field Ambulances to bring up the strength to fourteen ambulances, thus ensuring that no wounded were held back for lack of transport.

The MDS and CCS were both in Forli. The CCS had taken over the school building, and the MDS had shifted to another building which had been a working men's club, but most of the casualties went direct to the CCS.

On 16 December 5 ADS moved into a building nearer to Faenza and there experienced two busy days, being assisted by 6 ADS car post. By 17 December the enemy had been cleared out of Faenza and the evacuation route was shortened. Notable work was performed at the ADS during this

difficult period by the jeep and ambulance-car drivers and the medical orderlies and officers. A fine contribution was made by the AFS car drivers under the capable supervision of Lieutenant Perkins and Sergeant Fitter, whose untiring energy did much to smooth out the extremely difficult evacuation problems. An infantryman while moving up had a foot blown off by a Schu mine. An AFS car driver unhesitatingly went to his assistance and also lost a foot on a Schu mine. Stretcher-bearers brought them out of the minefield together.

MDS Opens in Faenza

After the capture of Faenza by 2 NZ Division on the evening of 16 December, 4 MDS under Lieutenant-Colonel Owen-Johnston [1] left Forli at midday on 17 December and opened that afternoon in Faenza. From the time of opening there was a steady stream of patients, and as for the first few days this MDS was the only one in Faenza it handled not only New Zealand but also British, Indian, and Italian troops and a certain number of Italian civilians. Evacuation was by Route 9 to 1 Mobile CCS for New Zealand and attached troops, while seriously wounded British and Indian troops went to 57 FDS, less serious British cases to 5 British CCS, and similar Indian cases to 9 Indian CCS in Forli. Priority was given to ambulance cars on the road, with the result that patients arrived at the CCS usually within half an hour of leaving the MDS. A Bailey bridge was a big help in this sector.

The bank building used by the MDS was solidly constructed and offered fair protection from the heavy shelling of the town by the enemy, who during the night of 17–18 December had reached the outskirts of the town in a counter-attack. The reception and evacuation departments were both set up in one large room divided by a low partition, and both were within easy access of a large theatre beside which was a combined resuscitation and pre-operative ward. During busy periods two tables were conveniently accommodated in the theatre. Separated from these departments by a small courtyard was the hospital cookhouse, near enough to serve meals still hot to the patients. The

members of the unit were billeted either in the bank building or in nearby houses, which they managed to heat by one means or another.

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[1] Lt-Col A. W. Owen-Johnston, ED; born Christchurch, 30 May 1892; surgeon; 1 NZEF, 1916–19, France and England; surgeon 2 Gen Hosp Aug 1943–May 1944; 6 Fd Amb May–Dec 1944; CO 4 Fd Amb Dec 1944–Aug 1945; CO 1 Mob CCS Aug–Oct 1945; CO 2 Gen Hosp Nov 1945; killed in accident 7 Dec 1955.

Attack Towards the Senio River

On the night of 19 December at nine o'clock, 6 Infantry Brigade and 43 Gurkha Lorried Infantry Brigade launched an attack under a heavy barrage and threw the enemy back to the line of the Senio River. Much ground was taken after heavy fighting and over 200 prisoners were captured.

The wounded included some twenty men of 25 Battalion who came from a platoon which was caught on the start line by the enemy's fire and by some ‘shorts’ fired by the artillery. Seven of them were painfully burned by a phosphorus bomb set off by a shell splinter. They found refuge in a building occupied by Tactical Headquarters 26 Battalion, taking the bodies of two dead with them. Some German wounded were also brought to this building from the forward areas. First aid was administered pending the arrival of ambulance jeeps and RAP staff to take them back to the ADS. Enemy shelling and mortaring was fairly severe and, after abating for a time, became heavy towards dawn, making the task of stretcher-bearers and ambulance drivers all the more dangerous as they moved to and from the company sectors.

Acting as ADS to 6 Brigade, the reorganised A Company of 6 Field Ambulance, now under Major Hall, [1] had its first real test of strenuous action. On 20 December it received over one hundred battle casualties in ten hours. It was reported at the time that the reorganisation appeared to have strengthened the company and increased its efficiency.

There was a rush period for 4 MDS on 20 December. Between midnight and eight o'clock in the morning 102 battle casualties were admitted. These were all cleared by midday and took from thirty to forty-five minutes to reach the CCS. The total admissions for the day were 142 battle casualties and 26 sick. No chest or abdominal wounds had surgical treatment at the MDS, but where necessary these cases received resuscitation before being evacuated to the CCS. The chief types of cases treated in the theatre were those requiring urgent operation for reasons such as haemorrhage or smaller wounds, and those, such as incomplete traumatic amputations, which could not conveniently be evacuated in that condition.

On succeeding days there was a steady flow of admissions, the highest totals being reached on Christmas Eve with 40 battle casualties and 30 sickness cases. A shell hit one of the MDS buildings on 24 December causing twelve casualties in the street, but no MDS personnel were wounded.

At dawn on 24 December A Company 26 Battalion made an attack on the eastern stopbank of the Senio as a preparation for a general advance on to the stopbank, which was 15 feet high and gave the enemy observation of the battalion areas. Although the artillery fired over 2000 shells into the target area within a short time, its fire was not sufficient to drive the Germans from their deep defences and fierce fighting took place at close quarters. The company gained possession of part of the stopbank, only to be forced off it again with a number of casualties. On the morning of 25 December stretcher-bearers returned to the foot of the stop-bank, where several wounded had been left, and found that German stretcher-bearers had already bound up the New Zealanders' wounds and moved them to a safer place, although the area had been under fire from both sides. A short truce was declared when the two parties met. Cigarettes were exchanged and, after some discussion, the enemy offered every facility for the removal of the wounded to 26 Battalion's lines.

The month's admissions to 4 MDS reached the totals of 343 sick and 371 battle casualties. It was felt that casualties had definitely benefited by the MDS being located well forward in good buildings, especially as the number of serious multiple wounds appeared to have been higher than usual.

The end of 1944 found the Division along the line of the Senio River in a holding role, which resulted in a diminution of casualties and a respite for the surgical staffs of medical units.

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[1] **Maj G. F. Hall, m.i.d.; Wellington; born Dunedin, 19 Jan 1914; house surgeon, Dunedin Hospital; medical officer Maadi Camp Feb–Apr 1942, Dec 1942–Jun 1943; 4 Fd Amb Jun–Dec 1943; RMO 5 Fd Regt Dec 1943–Nov 1944; 6 Fd Amb Dec 1944–Oct 1945.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MDS AT RICCIONE

MDS at Riccione

The 5th MDS, with 1 FSU, 2 FTU, and 6 Field Ambulance surgical team attached, was established on 20 September as the open MDS in the municipal buildings at Riccione, 8 miles north-west of Cattolica.

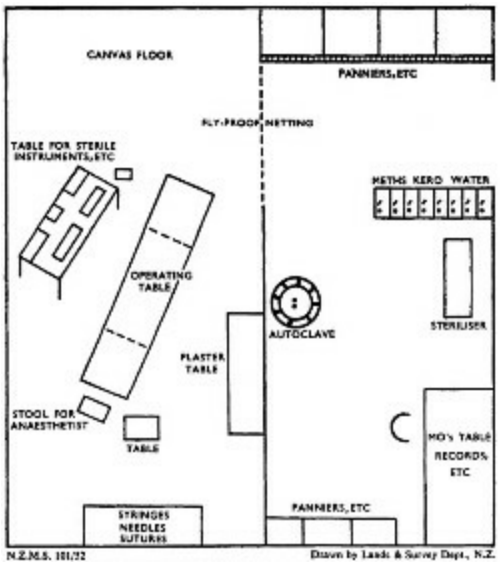
During the period 20 to 25 September when 5 MDS was open for battle casualties from this action, the operating theatre was working continuously, 144 operations being carried out. Evacuation took place to 4 Canadian CCS near Riccione, 5 Canadian CCS at Cattolica, and 1 General Hospital at Senigallia. The more serious cases, such as abdominal, thoracic and head, were evacuated as soon as possible to 4 and 5 Canadian CCSs, and the less urgent cases to 1 General Hospital. An effort was made to distribute cases so that patients would receive surgical treatment in the shortest possible time.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MDS AT VISERBA

MDS at Viserba

As it was necessary towards the end of September to have an MDS further forward than Riccione, 4 MDS moved on 26 September to the vicinity of Viserba, 2 miles north of Rimini, where it was joined by 1 FSU, 2 FTU, and NZ Section MAC. It occupied an area of hard level ground on which the tents were erected and on which was sited a large factory. Heavy and medium artillery was posted nearby and was responsible for considerable noise and also prompted enemy retaliation.



5 NZ Field Ambulance MDS Operating Theatre (2 IPP tents) For the operating theatre in Italy in a modified form either two IPP tents or two rooms were used. The staff consisted of: 1 sergeant alternated as assistant to surgeon and in supervising the sterilisation and preparation of trays. 1 corporal alternated as assistant to surgeon and in supervising the sterilisation and preparation of trays. 2 orderlies who alternated as theatre assistant and steriliser orderly.

There was a fairly steady stream of casualties—in the five days to the end of the month they totalled 140 battle casualties and 209 sickness cases. The greater proportion of battle casualties (120) was dealt with adequately by the MDS and FSU surgical teams, and after due rest many were evacuated direct to 1 General Hospital at Senigallia. In

the heavy rain from 28 September onwards the MDS area with its hard roads and good drainage proved very satisfactory, but the whole divisional area became bogged. This held up operations and slowed down the tempo of the battle, with a resultant diminution in the numbers of casualties.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FORWARD EVACUATION

Forward Evacuation

With the onset of winter, experience of forward evacuation in the low-lying areas proved that stretcher-carrying jeeps, even when fitted with chains, were liable to become bogged in the mud. The answer to this problem was found in Bren stretcher-carriers, which had previously been used by the armoured regiments and whose mobility and usefulness was welcomed by RMOs. A number of battalions immediately arranged for extra Bren carriers to be fitted to carry stretchers. Stretcher-carrying jeeps, however, still continued to be most useful and arrangements were made to provide them with all-weather hoods.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGICAL POLICY

Surgical Policy

During the operations in September a high proportion of abdominal wounds was observed as well as many chest wounds. The percentage of bullet wounds was noted to be unusually high. The Division was under command of the Canadian Corps, which had its own medical chain; in view of the expected breakthrough beyond Rimini, and also because of the proximity of 1 General Hospital to the forward areas, 1 Mobile CCS under Lieutenant-Colonel Clark did not set up on its arrival with the Division. This resulted in the loss of the services of a valuable unit with experienced personnel at a time when there was a definite shortage of such staff in our force. There had never been throughout the war any period of active warfare when there was not ample forward surgical work for all available units and personnel. The control of our CCS at this period was under the ADMS 2 NZ Division, whose more immediate interest was naturally in the functioning of the field ambulances. A CCS is normally under Corps or Army command but in the New Zealand force our CCS, like all our New Zealand units, was retained as a rule under the command of the DMS 2 NZEF. The 1st Mobile CCS surgical team was, however, attached to 4 Canadian CCS and then to 5 Canadian CCS, which in turn dealt with many of the more serious New Zealand casualties. The surgical arrangements at the Canadian CCSs were found to be somewhat different and, in our opinion, not as satisfactory as our own, but the work of the Canadian surgeons was of a high standard. The supervision of the patients in the pre-operative room was in the hands of the transfusion officer or the general duty officer acting as his relief. There was no surgeon available for diagnosis and sorting, though the operating surgeon often had a look at the patients. This threw a very great responsibility on the transfusion officer and, in our opinion, was not as safe and sound as our custom of having an experienced surgeon

in attendance in the pre-operation room. This particularly applied to the abdominal cases, where diagnosis was often difficult and always of great importance and where the use of X-rays was often of value. An experienced surgeon could often take the responsibility of deciding against abdominal exploration. This was of more than theoretical importance as abdominal exploration carried a very definite mortality as well as morbidity.

After operation the cases were looked after by ward medical officers who carried out the treatment without reference to the operating surgeon. This had certain administrative advantages in rush periods but could not compare in surgical efficiency with the system where the operating surgeon supervised the after-treatment himself. The ideal in our opinion was for the operating surgeon to retain his control but to share it with a ward officer who could watch the case and report complications to him. If a senior surgeon was acting in the pre-operative room, he could make interim rounds of the post-operative cases while the operating surgeon was in the theatre.

The utilisation to the full of the surgical abilities of 4 Field Ambulance was a feature of the unit's activity at Viserba. The commanding officer made the following comments on this phase:

Following the now accepted principle of excision and dressing of all wounds at the earliest possible opportunity, during this period as open MDS the greater proportion of cases have been dealt with surgically at the MDS. Over two-thirds of all battle casualties received complete surgical treatment and were fit to be sent on direct to 1 NZ Gen. Hosp.

As facilities for nursing are better at a CCS, all non-urgent cases of abdomens and chests were sent to a CCS for surgery.

The principle adopted was to hold cases awaiting operation only up to the time involved in evacuating to a CCS, and there awaiting treatment. In other words, holding cases at the MDS awaiting operation, if by so doing the patient will receive earlier surgical treatment, than if

he is sent on to a CCS immediately.

In conclusion, the equipment of the ambulance remains at the high standard previously attained. With the advent of winter it becomes obvious that an open MDS can function satisfactorily only in buildings; as the canvas, which is excellent under summer conditions, does not provide the necessary shelter and warmth.

On the other hand, the Consultant Surgeon 2 NZEF expressed the hope that the tendency to operate at the MDS instead of the CCS would not become more prevalent. His view was that, whenever circumstances permitted, forward surgery should be performed at the CCS, which was the unit specially equipped and staffed to do the work. The cases formerly thought to be of importance as regards early operation, for example, abdominal cases, were rightly sent back to the CCS and there was no reason why the CCS should not carry the main load of other heavy cases.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL SITUATION

General Situation

In spite of the bad weather gradual progress was made in the divisional sector and the enemy was forced to withdraw completely across the Uso River. The coastal towns which anchored the sea end of the Gothic line were in the hands of Eighth Army, but the line could not be outflanked while the enemy clung to the mountains and made every river a defence line. Fifth Army, after a promising start, was blocked by a determined defence and incredibly difficult country in the mountains south of Bologna.

The country beyond Rimini was completely flat but was crisscrossed with small waterways, each of which was an adequate tank obstacle. The degree of canalisation in the area south of Ravenna was unequalled anywhere in Europe, with the exception of Holland. It was impossible to move more than a mile in any direction without encountering an obstacle requiring the building of bridges and approaches. An abundance of trees provided cover for a defending force, even in the face of a superior air power, and there were many substantial stone houses.

The weather became unsettled with frequent light rains, and the web of watercourses ahead of the New Zealand battalions as they strove to push forward held out no prospect of a swift advance. It was the German policy to fight at every ditch, using spandaus and mortars with a stiffening of tanks and self-propelled guns. His plan was to force a full-scale 'set-piece' attack at every possible point, and then, as the assault was made, to withdraw his main forces to the next line, perhaps only 1000 yards back, leaving small heavily-armed holding parties behind. By a counter-policy of repeating thrusts at short intervals to shorten the time for manning defences, 5 and 6 Brigades had hopes of getting the

Germans on the run; but just at the end of September after they had crossed the Uso, and preparatory to their attack on the Fiumicino, the weather broke and violent gales from the Adriatic, with torrential rain, soon brought the greatest discomfort to troops in the exposed positions of the front line and prevented the movement of supporting arms for the infantry.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MDS AT IGIEA MARINA

MDS at Igiea Marina

During the morning of 4 October 4 MDS, with 1 FSU and 2 FTU, moved to a new building, formerly an Italian children's hospital and sanatorium on the coast road at Igiea Marina, just south of Bellaria, which is at the mouth of the Uso River. This building consisted of three stories, with a central block of small rooms and two wings forming large dormitories very suitable for holding patients. It had previously been occupied by a Canadian FDS, a Greek ADS, and 5 NZ ADS.

The reduced length of the Allied salient and the general dispositions of units allowed the MDS to receive patients direct from the RAPs, with 6 ADS functioning only as a transfer and emergency aid point. On 5 October the MDS was reinforced by a surgical team from 1 Mobile CCS with equipment for a 50-bed ward, an X-ray truck, and six nursing orderlies. The unit was considerably nearer the actual battle zone than was usual, and consequently in a very noisy position from nearby guns, but it provided a fully equipped surgical and medical centre. This arrangement was commented on very favourably by visiting senior combatant officers, who expressed the view that such a set-up contributed greatly to the morale of the troops in the actual fighting zone. With the help of the engineers windows were replaced with windolite, the water supply on the ground floor was put into working order, and a portable lighting set was used to provide a lighting circuit in the building.

By 8 October the unit had three completely equipped and staffed operating theatres as well as the Field Transfusion Unit and an X-ray plant, an impressive collection of surgical facilities. Fortunately these arrangements proved over-adequate as a very limited number of

casualties occurred in the divisional sector. The total admissions for the first week at Igiea Marina were 238 sickness cases and 84 battle casualties. The latter were mainly victims of sporadic shelling, as persistently wet weather forced the postponement of the actual crossing of the Fiumicino.

On 10 October 2 NZ Division moved to the adjacent western sector, which had previously been held by Canadians. No great increase in distances of evacuation resulted and 4 MDS remained at the same site receiving cases from 5 ADS, some three to four miles due west.

The weather started to improve on 11 October. An increase in the number of guns in the vicinity incited the enemy to some artillery retaliation. During the afternoon several airbursts were observed over the building, and later accurate enemy counter-battery fire on neighbouring gun sites produced a sudden influx of battle casualties. No damage to MDS property resulted but odd fragments made open-air conditions unpleasant for a while.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CROSSING THE RIVERS

Crossing the Rivers

The rain which made the crossing of the Fiumicino impossible had failed entirely to pin down the infantry or to silence the artillery. Night after night, over the soft sound of drizzle and the howl of the wind in the trees, the roll of gunfire echoed from the Apennines to the sea. On 11 October 5 Brigade found the Fiumicino almost undefended and moved across to take the town of Gatteo, badly battered by shelling and bombing. Sant' Angelo, a heavily defended enemy strongpoint, then caused a hold-up with many casualties before it was cleared by Maoris on the night of 14–15 October, when the use of searchlights playing into the night sky created an unearthly blue luminescence which covered the battlefield. This eerie artificial moonlight was a feature of the campaign from then on. The towns of Gambettola, Bulgarno, and Ruffio then fell into our hands only to bring us up against another river, the Pisciatello. This was crossed by 6 Brigade on the night of 18–19 October after a full barrage, and the getting of tanks across the river changed the aspect of the advance as the country for some thousands of yards provided a chance of better going. Discounting the risks involved because of the soft nature of the ground, it was decided to thrust with the tanks right through to the Savio, a broad river running almost north. Such a manoeuvre, involving as it did a right hook of well over 5 miles, would cut all the coastal roads leading from Cesena to the coast up to a point well above Cervia, and in conjunction with a Canadian attack up Route 9 would almost certainly bring about the fall of Cesena itself. The manoeuvre was successful. By 21 October 4 Brigade had its tanks right up to the Savio and Cesena had fallen to the Canadians. The all-important Route 9 was cleared to a point only 46 miles from Bologna.

This concluded a month of hard but unspectacular fighting by 2 NZ

Division—a long-continued slogging match in the mud of the river basin against an enemy who could be forced back but not overwhelmed. The optimism of a month previously had not been fulfilled, because to fulfil it had been humanly impossible. What could be done by the Division had been done well. Our troops had advanced nearly 20 miles, in conditions which were ideally suited for defence. Here, if anywhere, was country which could well have been the scene of a vast static battlefield on the lines of those of the 1914–18 war in France.

The moving west of the battle zone in the Savio River drive necessitated the opening of 6 MDS at San Mauro, as the lateral road to the coast had become very congested. On 18 October 4 MDS vacated the building at Igiea Marina, which was taken over by 1 Mobile CCS, and then moved to remain in reserve at Viserba. The admissions for the second week at Igiea Marina had amounted to 277 sickness cases and 121 battle casualties. The sick were evacuated to 5 MDS, still sited in the large municipal building at Riccione. On 13 October four nursing sisters from 1 Mobile CCS, then closed, had been attached to 4 MDS, and proved invaluable in the nursing of serious cases and as theatre sisters. The sisters rejoined their unit when 1 Mobile CCS took over at Igiea Marina. New Zealand head, facio-maxillary, and eye cases were sent to 83 British General Hospital at Riccione, while 59 British General Hospital at Fano was used as a staging post for patients on their way to 1 General Hospital.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WITHDRAWAL OF 2 NZ DIVISION TO FABRIANO

Withdrawal of 2 NZ Division to Fabriano

It was decided to withdraw the Division on 22 October for reorganisation and training to the Fabriano region, some 20 miles south-west of the former assembly area at Iesi. The Division, in the last days of autumn, found itself dispersed among the buildings in the villages of Matelica, Fabriano, Castelraimondo, and San Severino in the Apennines. For the remainder of the month and until 27 November, 4 MDS functioned in the agricultural school buildings in Fabriano, holding up to one hundred sickness cases, the more serious cases being evacuated to 1 General Hospital on the coast at Senigallia.

The widespread dispersal of the Division and the congestion of traffic necessitated the opening of 6 MDS at Castelraimondo, in the 6 Brigade area 10 miles to the south. Previously it had taken as long as three hours to come from 5 ADS, farther south at Camerino in 5 Brigade's area. The weather at this time continued to be most inclement, but all units were accommodated in houses, factories, or castles and were able to keep dry.

For the greater part of November the Division remained in the rest and training area from Fabriano to Camerino, accommodated in very satisfactory billets, particularly 4 Armoured Brigade which had made itself comfortable in Fabriano, which was on a main road. Some of the roads to Castelraimondo and Camerino were barely passable, and early in the month bridges and diversions were washed out by floods after heavy rain.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REORGANISATION OF THE FIELD AMBULANCES

Reorganisation of the Field Ambulances

In 2 NZ Division discussions and schemes for reorganisation of units were a feature of this period. Reductions in unit establishments had been under consideration since early in the campaign in Italy, as the divisional organisation was designed for desert conditions. It had been hoped that the Division could be used in a mobile role in Italy, but this had proved impossible. Manpower difficulties in the supply of reinforcements from New Zealand, and the planned replacement of long-service personnel, made reductions desirable, besides which it was concluded that the superior equipment of the Allies, especially in aircraft and tanks, made reductions possible.

In the medical services the changes were confined to the field ambulances. At a conference of senior medical officers convened by ADMS 2 NZ Division, Colonel King, it was decided that Headquarters Company be increased by 34 other ranks to make a complete MDS, that A Company be reduced to 3 officers and 42 other ranks and be a permanent ADS, and that B Company be eliminated. This would result in a total saving of 35 other ranks in each field ambulance. [1] There was also to be a saving of two 3-ton trucks, although two bantams were to be added. It was proposed that the ASC personnel should become members of the Medical Corps, but this change was opposed successfully by the Commander NZASC.

New Establishment of Field Ambulances

	Offrs	*WOI*	*WOII*	*S-Sgt*	*Sgts*	*L-Sgt*	*Cpl*	*ORs*	*Total*
HQ Coy NZMC	**7**	**1**	**1**	**1**	**8**	**1**	**9**	**79**	**107**
ASC att HQ Coy	**1**		**1**		**1**		**4**	**40**	**47**
A Coy NZMC	**3**			**1**	**2**		**4**	**35**	**45**
ASC att A Coy							**1**	**11**	**12**

Dental att HQ Coy	1						2		3
	12	1	2	2	11	1	20	165	214

Reorganisation to this amended establishment was carried out during November, and the reorganised units were found to work well during the difficult battle conditions in December.

The New Zealand medical units followed a pattern of adaptation and progress. As the commanding officer of 4 Field Ambulance, Colonel Edmundson, recorded in December 1944:

The past twelve months has been a period in which we have witnessed striking changes in our environment. Except for the short Balkan campaign, 2 NZ Div. was trained on, and fought over, the North African deserts for more than three years. Many modifications and improvements were evolved in all arms of the Division, and these were by no means least evident in the Medical Services.

....Just as our medical services were adapted to meet the changing desert conditions, so the evolution continues with the variations of European warfare. We now have a reorganised ADS and MDS, each with their particular job to do on the line of medical evacuation.

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[1] Total savings of all units in the whole Division were 104 officers and 2528 other ranks.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE MOVE TO THE FRONT LINE

The Move to the Front Line

From 22 November onwards the Division moved forward again to the fighting zone, assembling in an area west of Cesena. First to return to operations was the Divisional Artillery, followed by the two infantry brigades and lastly the armoured brigade.

Although there had been some advance during November, the general position at the front was very similar to that prevailing previously. Forli, 10 miles above Cesena on Route 9, had been cleared, and Eighth Army had established itself nearly 9 miles beyond it facing Faenza on the line of the Lamone River. The Lamone was a perfect example of the type of stream across which the bitterest fighting of 1945 was to take place. Its width was only 60 to 70 feet, but on either side were massive terraced stopbanks of soft earth reaching to a height of more than 20 feet. With steeply pitched slopes into which it was easy to tunnel, and parapets about seven feet wide, these stopbanks formed a splendid defensive line. Bologna was now only 30 miles away, but seemed as unapproachable as ever.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHANGE OF ADMS 2 NZ DIVISION

Change of ADMS 2 NZ Division

On 3 December 1944 Colonel R. A. Elliott, who had returned from furlough, took over duty as ADMS 2 NZ Division from Colonel King, who had gone overseas with the Second Echelon and had served continuously since. For eighteen months he had held the appointment of ADMS and his work was outstanding in every respect.

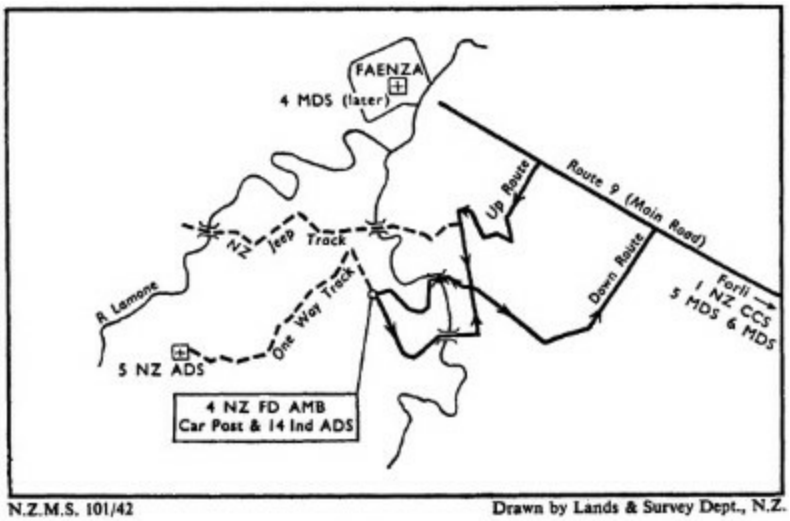
NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL UNITS IN FORLI

Medical Units in Forli

At the beginning of December 2 NZ Division faced up to the Lamone River astride Route 9 with 5 Infantry Brigade on the left and 6 Infantry Brigade on the right, each with its respective ADS open near the main road. In Forli 5 MDS was open for battle casualties and 6 MDS for sickness cases. Both the MDS and ADS of 4 Field Ambulance were closed and in reserve. The 1st Mobile CCS was in an excellent school building in Forli, well placed to treat battle casualties and evacuate direct to 1 General Hospital by NZ Section MAC.

On the night of 10–11 December 5 Infantry Brigade passed through 46 Division, which had established a bridgehead across the Lamone River to the south-west of Faenza, and was poised to attack towards Faenza. The attack opened on the night of 14–15 December and was brilliantly successful, leading to the capture of Faenza on the evening of 16 December. The attack presented a formidable problem for the medical services as all routes up and down were very poor indeed, and only one-way traffic was possible for considerable stretches in many places.



Attack on Faenza: Medical Units and Lines of Evacuation

Attack on Faenza: Medical Units and Lines of Evacuation

MEDICAL OPERATIONS

Medical Operations

Under Major R. H. Dawson, 5 ADS across the Lamone River was strengthened and extra jeeps and American Field Service cars provided. The building which 5 ADS had occupied was in direct view of the enemy in Faenza and came in for some shelling prior to the launching of 5 Brigade's attack on 14 December. This led to the unit hanging a Red Cross sign 40 ft. by 40 ft. on the north side of the building. The shelling damaged some of the AFS ambulance cars. An ambulance-car post from 4 Field Ambulance comprising Captain Begg, [1] one corporal, one medical orderly, a cook, and the drivers of the two vehicles (a jeep and an 8-cwt truck) was established at the farthest point forward that could be reached by two-wheel-drive ambulance cars, some 6 miles from 5 ADS. Here all patients were checked over, classified for CCS or MDS, and then sent on to Forli by Austin cars of NZ Section MAC. This kept all four-wheel-drive

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[1] **Maj N. C. Begg, m.i.d.; Dunedin; born Dunedin, 13 Apr 1916; medical practitioner; medical officer 2 Gen Hosp Jan–Oct 1943; OC 102 Mob VD Treatment Centre Oct 1943–Jul 1944; RMO 25 and 21 Bns 1944; 5 Fd Amb Mar–May 1945; Repatriation Hospital (UK) Jun–Dec 1945.**

AFS vehicles forward, where they were most needed. A cart track deep in mud, with a bottleneck at the Bailey bridge across the river, was open for one-way down and up traffic alternately. This called for very careful medical planning. Casualties from three divisions, 46 British Division, 10 Indian Division, and 2 NZ Division, all came down this route, and only jeeps or four-wheel-drive vehicles could be used. The method adopted was to collect a convoy at 5 ADS at the start of the

down route and then, after close liaison with the provost, bring it through to a car post at the head of the two-way traffic route. Here the patients were resuscitated as necessary and taken onward in two-wheel-drive ambulance cars, the four-wheel-drive vehicles being retained forward. The evacuation from all three divisions was controlled by ADMS 2 NZ Division, Colonel R. A. Elliott.

This method of evacuation with the use of the ambulance-car post worked well in the very difficult circumstances, and no case was over twelve hours in reaching the CCS, which Colonel Elliott considered a creditable performance when the state of the down routes was taken into account.

The first casualties from the attack reached 5 ADS from the RAPs at 1 a.m. on 15 December. The evacuation route was open at 1.30 a.m. so an evacuation of three AFS car loads was made, followed by another carload at 3 a.m. and five at 7.30 a.m. The ADS was then informed that no further evacuations would be possible that day as Corps had closed the road for Polish up-traffic. However, ADMS 10 Indian Division contacted Corps regarding the closing of the road and was informed that ten ambulance cars could pass down at 2 p.m. Five carloads of Indian and five carloads of New Zealand patients, all priority cases, were then evacuated. The road was again open at 4.15 p.m., when the ADS was holding seventy patients. These were loaded into the ambulances and one 3-ton truck and taken back.

Casualties were fairly heavy during the day and it was necessary to give them more treatment than usual at an ADS, as it was taking four to eight hours for the wounded to reach the MDS and CCS. Plaster was used for most fractures and thirty bottles of blood and plasma were used in resuscitation. At one time there were eight transfusions running simultaneously. Lieutenant-Colonel Coutts, CO 5 Field Ambulance, worked at the ADS and his assistance was invaluable, as Captain Miller [1] was sent forward to replace Lieutenant Moore [2] as RMO of 28 (Maori) Battalion when the latter and three of his RAP staff were wounded.

[1] **Capt E. T. G. Miller; Levin; born England, 1 May 1902; medical practitioner; 3 Gen Hosp Aug–Dec 1944; 5 Fd Amb Dec 1944–Oct 1945.**

[2] **Capt P. W. E. Moore; Auckland; born England, 17 Mar 1918; medical student; RMO 28 (Maori) Bn Aug 1944–Jan 1946; wounded 14 Dec 1944.**

New Zealand casualties passing through 4 Field Ambulance car post from 11 to 17 December totalled 191 wounded and 24 sick, the biggest day being 15 December, when there were 116 battle casualties. More ambulances were obtained for this day from 4 and 5 Field Ambulances to bring up the strength to fourteen ambulances, thus ensuring that no wounded were held back for lack of transport.

The MDS and CCS were both in Forli. The CCS had taken over the school building, and the MDS had shifted to another building which had been a working men's club, but most of the casualties went direct to the CCS.

On 16 December 5 ADS moved into a building nearer to Faenza and there experienced two busy days, being assisted by 6 ADS car post. By 17 December the enemy had been cleared out of Faenza and the evacuation route was shortened. Notable work was performed at the ADS during this difficult period by the jeep and ambulance-car drivers and the medical orderlies and officers. A fine contribution was made by the AFS car drivers under the capable supervision of Lieutenant Perkins and Sergeant Fitter, whose untiring energy did much to smooth out the extremely difficult evacuation problems. An infantryman while moving up had a foot blown off by a Schu mine. An AFS car driver unhesitatingly went to his assistance and also lost a foot on a Schu mine. Stretcher-bearers brought them out of the minefield together.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MDS OPENS IN FAENZA

MDS Opens in Faenza

After the capture of Faenza by 2 NZ Division on the evening of 16 December, 4 MDS under Lieutenant-Colonel Owen-Johnston [1] left Forli at midday on 17 December and opened that afternoon in Faenza. From the time of opening there was a steady stream of patients, and as for the first few days this MDS was the only one in Faenza it handled not only New Zealand but also British, Indian, and Italian troops and a certain number of Italian civilians. Evacuation was by Route 9 to 1 Mobile CCS for New Zealand and attached troops, while seriously wounded British and Indian troops went to 57 FDS, less serious British cases to 5 British CCS, and similar Indian cases to 9 Indian CCS in Forli. Priority was given to ambulance cars on the road, with the result that patients arrived at the CCS usually within half an hour of leaving the MDS. A Bailey bridge was a big help in this sector.

The bank building used by the MDS was solidly constructed and offered fair protection from the heavy shelling of the town by the enemy, who during the night of 17–18 December had reached the outskirts of the town in a counter-attack. The reception and evacuation departments were both set up in one large room divided by a low partition, and both were within easy access of a large theatre beside which was a combined resuscitation and pre-operative ward. During busy periods two tables were conveniently accommodated in the theatre. Separated from these departments by a small courtyard was the hospital cookhouse, near enough to serve meals still hot to the patients. The members of the unit were billeted either in the bank building or in nearby houses, which they managed to heat by one means or another.

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[1] **Lt-Col A. W. Owen-Johnston, ED; born Christchurch, 30 May**

1892; surgeon; 1 NZEF, 1916–19, France and England; surgeon 2 Gen Hosp Aug 1943–May 1944; 6 Fd Amb May–Dec 1944; CO 4 Fd Amb Dec 1944–Aug 1945; CO 1 Mob CCS Aug–Oct 1945; CO 2 Gen Hosp Nov 1945; killed in accident 7 Dec 1955.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ATTACK TOWARDS THE SENIO RIVER

Attack Towards the Senio River

On the night of 19 December at nine o'clock, 6 Infantry Brigade and 43 Gurkha Lorried Infantry Brigade launched an attack under a heavy barrage and threw the enemy back to the line of the Senio River. Much ground was taken after heavy fighting and over 200 prisoners were captured.

The wounded included some twenty men of 25 Battalion who came from a platoon which was caught on the start line by the enemy's fire and by some 'shorts' fired by the artillery. Seven of them were painfully burned by a phosphorus bomb set off by a shell splinter. They found refuge in a building occupied by Tactical Headquarters 26 Battalion, taking the bodies of two dead with them. Some German wounded were also brought to this building from the forward areas. First aid was administered pending the arrival of ambulance jeeps and RAP staff to take them back to the ADS. Enemy shelling and mortaring was fairly severe and, after abating for a time, became heavy towards dawn, making the task of stretcher-bearers and ambulance drivers all the more dangerous as they moved to and from the company sectors.

Acting as ADS to 6 Brigade, the reorganised A Company of 6 Field Ambulance, now under Major Hall, [1] had its first real test of strenuous action. On 20 December it received over one hundred battle casualties in ten hours. It was reported at the time that the reorganisation appeared to have strengthened the company and increased its efficiency.

There was a rush period for 4 MDS on 20 December. Between midnight and eight o'clock in the morning 102 battle casualties were admitted. These were all cleared by midday and took from thirty to forty-five minutes to reach the CCS. The total admissions for the day were

142 battle casualties and 26 sick. No chest or abdominal wounds had surgical treatment at the MDS, but where necessary these cases received resuscitation before being evacuated to the CCS. The chief types of cases treated in the theatre were those requiring urgent operation for reasons such as haemorrhage or smaller wounds, and those, such as incomplete traumatic amputations, which could not conveniently be evacuated in that condition.

On succeeding days there was a steady flow of admissions, the highest totals being reached on Christmas Eve with 40 battle casualties and 30 sickness cases. A shell hit one of the MDS buildings on 24 December causing twelve casualties in the street, but no MDS personnel were wounded.

At dawn on 24 December A Company 26 Battalion made an attack on the eastern stopbank of the Senio as a preparation for a general advance on to the stopbank, which was 15 feet high and gave the enemy observation of the battalion areas. Although the artillery fired over 2000 shells into the target area within a short time, its fire was not sufficient to drive the Germans from their deep defences and fierce fighting took place at close quarters. The company gained possession of part of the stopbank, only to be forced off it again with a number of casualties. On the morning of 25 December stretcher-bearers returned to the foot of the stop-bank, where several wounded had been left, and found that German stretcher-bearers had already bound up the New Zealanders' wounds and moved them to a safer place, although the area had been under fire from both sides. A short truce was declared when the two parties met. Cigarettes were exchanged and, after some discussion, the enemy offered every facility for the removal of the wounded to 26 Battalion's lines.

The month's admissions to 4 MDS reached the totals of 343 sick and 371 battle casualties. It was felt that casualties had definitely benefited by the MDS being located well forward in good buildings, especially as the number of serious multiple wounds appeared to have been higher than usual.

The end of 1944 found the Division along the line of the Senio River in a holding role, which resulted in a diminution of casualties and a respite for the surgical staffs of medical units.

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[1] **Maj G. F. Hall, m.i.d.; Wellington; born Dunedin, 19 Jan 1914; house surgeon, Dunedin Hospital; medical officer Maadi Camp Feb–Apr 1942, Dec 1942–Jun 1943; 4 Fd Amb Jun–Dec 1943; RMO 5 Fd Regt Dec 1943–Nov 1944; 6 Fd Amb Dec 1944–Oct 1945.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL MEDICAL ARRANGEMENTS DURING THE PERIOD

GENERAL MEDICAL ARRANGEMENTS DURING THE PERIOD

During the operations from 22 September to 22 October the medical work in the Division was almost entirely undertaken by the field ambulances, certain special cases being referred for operation to the active Canadian CCS and to the British neurosurgical unit attached to 83 British General Hospital. Our own CCS was not used at this stage. Evacuation from the active MDSs was by motor ambulance direct to 1 General Hospital at Senigallia, and many cases were referred there for primary surgery. During the second period after the Division had returned to the front from the rest area, the New Zealand CCS was functioning at Forli and undertook the bulk of the forward surgical work.

Evacuation was still to Senigallia by motor ambulance, with staging available at a British hospital at Fano. In both periods the bulk of the medical cases was handled by the field ambulances and large numbers, up to a third of the total, were returned direct to their units.

At 1 General Hospital a great deal of primary and the bulk of the secondary surgical treatment was carried out and all the medical cases were admitted from the Division. Cases were then evacuated by hospital ship from Ancona to Bari and admitted to 3 General Hospital. A small number of cases, especially during the first period was admitted to 2 General Hospital at Caserta, but evacuation from Senigallia to Caserta proved unsatisfactory, the convoys being held up and the patients admitted to British hospitals at Rome. Not being busy, 2 General Hospital treated patients from other forces as well as the overflow cases from Bari, and the unit was held in readiness for transfer to the Po valley when Eighth Army reached that area.

The transfer of cases from Caserta to Bari led to some difficulty as hospital trains were seldom available, but walking cases were sent on civilian trains. At Bari 3 General Hospital acted as the base hospital for 2 NZEF in Italy, accumulating cases for evacuation to New Zealand by hospital ship, as well as giving later treatment to all types of cases. Hospital Ship *Maunganui* took 311 cases early in October and collected another 50 patients from 5 General Hospital at Helwan.

The Convalescent Depot functioned in two detachments, the headquarters being at Senigallia and the detachment at San Spirito. The detachment, being sited near the base hospital, received almost double the number of patients admitted to the headquarters section—1868 as against 1029 for the last quarter of 1944.

A well-equipped camp hospital was functioning at Advanced Base and cases of minor illness were adequately treated and returned to their units. This relieved 3 General Hospital and was economical in all respects, and also provided useful training for the medical personnel. The admissions were from 100 to 150 a month and the average bed state about thirty.

An advanced section of the medical stores moved to Senigallia from Bari in October. The depot had continued to be of great use to all the medical units.

Work at the ADS

Buildings were taken over by the ADSs at this period because of the severe wintry weather and the impossibility of using tents in the muddy, waterlogged country. The buildings enabled the ADS to provide warmth, comfort, and resuscitation even in bad weather.

During the early period the active MDS was very close to the RAPs and a large proportion of the casualties was admitted direct to the MDS; much the same conditions were present when 4 MDS moved into Faenza later. At other times the ADS was called upon to carry out treatment in

cases of delayed evacuation.

The Work at the MDS

This varied a good deal, depending on the use made of the CCS. For the first attack on Rimini the active MDS took over the functions of the CCS, except for certain types of cases which were sent on to the Canadian CCSs. The MDS operated on the large majority of the cases and evacuated them direct to 1 General Hospital at Senigallia by ambulance car.

Later, the MDS situated at Faenza was called upon to deal with many casualties before sending them on to the CCS at Forli, but operation was undertaken only on the very urgent of the major cases, and on the minor cases which could be passed quickly through to Senigallia. The performance of almost all the forward surgery at the MDS, followed by rapid evacuation to 1 General Hospital, did not produce as good results as those obtained during the second period when the CCS took over the bulk of the work in the forward area.

Work at the CCS

This unit was under command of ADMS 2 NZ Division during this period. It was out of action during practically the whole of the first period before the Division went out to rest.

After the CCS took over from the MDS on 18 October at Igiea Marina it dealt with over 600 cases, including 174 battle casualties, in twelve days. The unit then moved to a large school at Forli, and during December 762 cases, including 572 battle casualties, were admitted. The unit was strengthened by the attachment of a British FSU as well as of our own FSU and FTU, and also of Captain Hodgkiss, an experienced chest surgeon.

During October 15 abdomens were operated on, with 6 deaths. There were 10 penetrating abdomens with 4 deaths, and 5 thoraco-abdomens

with 2 deaths. Included in the cases were 5 prisoners of war, with 2 deaths. During December at Forli 20 abdomens were operated on, with 8 deaths. Many severe mine wounds were encountered and many amputations had to be performed.

The conditions were almost ideal; central heating was available and the seriously ill patients were held till their condition for evacuation was perfectly satisfactory.

The Work of the Field Surgical Unit

The unit, under Major D. P. O'Brien, was attached to the active MDS during September and up till 18 October, and again for the last four days of November. For the rest of the time it was attached to 1 NZ CCS. During the whole period 230 operations were performed as follows:

	Operations Performed				*Deaths*			
	Oct	*Nov*	*Dec*	*Total*	*Oct*	*Nov*	*Dec*	*Total*
Abdominal	5		14	19	1		3	4
Abdomen and thoracic	1		1	2				
Chests	4		4	8				
Heads								
Major amputations	1		4	5				
Fractures long bones	31	3	35	69	1			1
Ligation major blood vessels		1	1	2				
Major joints	2		8	10				
Gas gangrene	1		6	7			2	2
Wounds, severe	7		18	25				
Burns	1	1	1	3				
Secondary suture wounds	1	1		2				
Minor operations	46	10	22	78				
	100	16	114	230	2		5	7

Notes

(*a*) Abdomens and chests: All operations on these cases were performed when attached to NZ CCS.

(*b*) With the oncoming winter an increase in the number of chest complications was noted in the heavier cases such as abdomens. For the same reason, chests were now being held longer prior to evacuation.

Analysis of Deaths Prior to Evacuation

Time	*Cause*	*Oct*	*Nov*	*Dec*	*Total*
24 hours	Shock	1			1
24 hours	Blast	1			1
24 hours	Gas gangrene			2	2
24 hours	Pulmonary oedema			1	1
10 days	Anuria			1	1
20 days	Peritonitis			1	1
		2		5	7

Work of the Field Transfusion Unit

This unit was attached either to the active MDS or to the CCS throughout the period. There was some difficulty with blood during the first period and many bottles had to be discarded. Conditions improved later, and little difficulty arose during the Faenza offensive when 117 transfusions were given.

Shortage of Medical Officers

The shortage was becoming more marked during the early part of this period and in September the Division was twelve officers short. The commencement of New Zealand leave for medical officers accentuated the position. The most serious shortage was in the senior officers, and especially in those qualified for senior professional work in the hospitals and the CCS. The position was relieved later by the arrival of reinforcements from New Zealand, many of whom had served in the Pacific zone.

Surgery at 1 General Hospital

For the first month from the date of its opening at Senigallia at the beginning of September, 1 General Hospital performed surgery of the type usually done at the CCS, many wounds having their first surgical treatment there. Most of the wounded arrived in very good condition after their treatment at the field units and their journey back along the fairly smooth coast road, exceptions being men with compound fractures of the femur where infection had not been controlled by penicillin. Two of these had to have above-knee amputations following secondary haemorrhage from the popliteal artery.

Six cases of gas gangrene were encountered in September, one of the septicaemic type being the only death. The others recovered following excision of the muscle groups involved. Gas gangrene had been more commonly met with during the campaign in Italy and occasional severe cases arose, especially in late cases. Penicillin proved to be very useful when combined with adequate surgical excision. A much higher proportion of wounds was subjected to primary surgical treatment, partly as a precautionary measure against gas gangrene and partly to ensure success when subjected to delayed primary suture.

Delayed primary suture was performed for many wounds, use being made of either calcium penicillin, sulphanilamide powder, or proflavine powder. Results were good but there was often slight infection of the stitch holes. It was found that the third or fourth day was the optimum time for suture. Whenever possible the deep fascia was closed by means of figure-of-eight sutures, including the skin and the fascia. Where this was possible healing was more satisfactory and the scars less adherent.

Two cases of rectal wounds which had not been detected in the forward units were seen, colostomy and drainage of the pelvic cellular tissues being carried out. Both had severe accompanying wounds and neither had intra-peritoneal involvement.

The notable feature of the September casualties was the infrequency

of grossly infected wounds and, consequently, diminished toxaemia.

A feature of the later casualties was the large number of leg and thigh amputations, mainly the result of mine wounds, a considerable number of traumatic amputations having been sustained. A small number of cases of gas gangrene, but none of tetanus, was seen. In the larger wounds, including fracture cases, parenteral penicillin was given for some days to ensure the control of infection. All types of cases were dealt with except fractures of the femur, which were evacuated as soon as possible to 3 General Hospital at Bari for definitive treatment. In October 200 operations out of a total of 500 were performed for suture of wounds.

Intramuscular penicillin was being used freely by this time for severe bone and joint cases and in chests. There were remarkably few deaths at this period. The two unit surgeons, Lieutenant-Colonel Bridge and Major A. W. Douglas, carried the heavy load of surgery in the hospital at this time, though for a period a surgeon from 2 General Hospital was attached to the unit and gave valued assistance. Some diphtheritic infection of wounds occurred and proved a serious complication.

Surgery at 3 General Hospital

The majority of the wounded admitted to 3 General Hospital had already had wound suture performed at 1 General Hospital, Senigallia. Fractured femurs, however, were especially sent to Bari for wound suture. The closure of colostomies was also carried out when possible. Foreign bodies were also removed in some of the chest cases.

Surgery at 2 General Hospital

The comparatively small number of wounded transferred from 1 and 3 General Hospitals had had wound suture already performed, so that little surgery was done at Caserta.

Neurosurgical Cases

The head cases were sent from the field ambulances to the special advanced head centre attached to 83 British General Hospital at Riccione, where facio-maxillary and eye cases were also dealt with. They were later evacuated to head centres at Loreto, Bari, and Naples and then finally admitted to our base hospitals at Caserta or Bari.

Review of Surgery

The Consultant Surgeon 2 NZEF, Colonel Stout, in October 1944 reviewed the developments of surgery in the Italian campaign.

The large majority of deaths was due directly to the severity of the injury and the primary shock produced thereby. This was shown in both the chest and abdominal cases, in which a large number of the wounded were brought in dead to the field ambulances, and practically all the others who died did so in the first forty-eight hours.

Undoubtedly the most valuable form of treatment was transfusion of blood, given early and sustained till operative treatment was possible. The giving of blood during transit in the ambulance had proved of great value. The early administration of glucose saline, both to combat dehydration and also to act as a preventative of anuria, was being carried out.

In mangled limbs, commonly seen after mine injuries, early application of a tourniquet just above the damaged area to prevent bleeding and toxic absorption, followed by early amputation through healthy tissue, had become the routine. The dramatic improvement following the removal of the devitalised tissue was vouched for by many experienced surgeons.

Anuria, generally the direct result of severe and prolonged shock, had caused many deaths and no treatment was of any avail.

Infection was being combated by adequate primary wound excision and the local and parenteral administration of penicillin. Gas gangrene

had become more common but, except in a few fulminating cases, cleared up well with adequate surgery and penicillin.

Delayed primary suture of wounds had become the routine in simple wounds, in amputations, and in fracture cases and the results were satisfactory.

Chest cases with more thorough primary wound treatment and intrapleural penicillin had very rarely become septic.

Thoraco-abdominal cases showed a lower mortality when dealt with through the chest. A tendency to delay operation a little too long in abdominal cases had been noted, the pendulum having swung too far. In colon injuries the double loop colostomy was being carried out except in caecal injuries, where simple marsupialisation was all that was considered necessary. Rectal injuries associated with buttock wounds were common and sometimes apt to be over-looked. There had been an unusual number of abdominal wounds associated with evisceration of the bowel, and a more conservative approach was suggested in these cases which were almost invariably fatal.

Knee-joint cases did well with intra-synovial penicillin and adequate splintage.

Fascial incision following ligature of the popliteal and lower femoral arteries was successful in saving some limbs. A case of primary ligature of the lower part of the femoral artery dealt with by fascial split at that time was fully recorded by Major Owen-Johnston, and the subsequent progress for a period of years has been ascertained. Major Owen-Johnston wrote following the operation that:

If ischaemic gangrene does not develop in this case then I think that it can be accepted as a very good test of the efficacy of fasciotomy of the leg aponeurosis in preventing the onset of ischaemia where the popliteal or lower femoral artery has been tied in battle casualties. [1]

The importance of early and frequent hand movements in all arm

injuries was fully recognised.

In burns the problem was recognised as one of shock, and adequate plasma was the essential form of treatment. Simple dressings without anaesthesia were carried out, and penicillin utilised both locally and parenterally.

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[1] The patient's final result as recorded in November 1948 was that he was still experiencing cramp but had no pain in his foot, the sensation of which was normal. There was still weak action of his toe flexors. The soldier had been granted a permanent pension for a 25 per cent disability (15s. a week). He was employed driving a baker's delivery van. The original association of motor and sensory nerve disability had made the outcome still more satisfactory. There had been severe muscle loss but the patient had made an excellent recovery.

Climate

The winter in northern Italy was relatively severe, very wet and cold conditions being experienced. The plain of the Po valley became very muddy, making tank action generally impossible. There were occasional hard frosts, and light snow fell on the plains with heavier falls on the hills. The first fall of snow was experienced on 11 November both at Senigallia and Fabriano.

Health and Hygiene

In an effort to keep the sick rate of the Division as low as in the previous Italian winter, it was arranged that all men not actually in the most forward positions should have reasonably comfortable living conditions. All the field medical units, including 1 Mobile CCS, were well provided for in excellent buildings, and patients were treated under better conditions than had been possible the previous year.

Combatant units out of the line were also able to make use of buildings and so provide for the comfort of the troops in the wet and

cold conditions. Each man was issued with five blankets and five pairs of socks, and extra battle dress and underclothing were held by all units to allow frequent changes during the wet weather. Gumboots, leather jerkins, and duffle coats were also available.

Actually, owing to a reduction in the number of cases of infective hepatitis and fevers, the sick rate in the winter months showed a decline on the rate during the summer months. Accidental injuries, too, were fewer with the comparative immobilisation of the Division.

The quartering of troops in houses, however, made hygiene a much greater problem. The houses were usually also occupied by Italian civilians, it being found impossible to evacuate all civilians from the divisional areas. There then arose the problem of skin diseases, and other infectious diseases such as diphtheria, contracted from close living with an uncontrolled and relatively poor civilian population. Unit discipline down to the platoon or section level ensured the best control, but hot showers, adequate disinfestation, and the use of insecticide powder were all enforced on men in the forward areas. It was found better to dust the man and his clothes with insecticide rather than spray the billets, although this was done where possible. Living in towns and villages, where drains had been destroyed by shelling and bombing and where wells were thus contaminated, also raised problems, but rigid inspection and policing by 4 Field Hygiene Company ensured an adequate measure of control.

Rations: **These were as a rule excellent, with fresh vegetables generally procurable, but in November there was less fresh food and ascorbic acid tablets were used.**

Water: **Adequate filtering and chlorination of water from the village wells, with rigid inspection, was carried out. The wells were mostly large and deep and the water satisfactory. There was a shortage of water carts and of trained staff for water duties, and fresh personnel had to be trained.**

Refuse: **At first deep pits were used and burnt out regularly. Later, controlled tips were developed, but constant supervision was necessary as there was a tendency to use them for fluid refuse.**

Latrines: **Deep-trench latrines were used when possible and buckets were sometimes used.**

Showers: **Buildings were found to be essential for showers during the winter weather. The showers were freely provided.**

Malaria Control: **General measures were limited to spraying of buildings with DDT and flysol. The troops used nets and repellent cream, and mepacrine tablets were taken every evening, generally under the control of an NCO, till the end of the season.**

Typhus Prevention: **This was of considerable importance as the billeting of the troops led to a marked increase in infestation by lice and pediculi. The enemy troops were also known to be heavily infested with lice. An anti-typhus unit was formed out of one of the anti-malaria units and was active in spraying out billets with DDT. Spraying squads were attached to ADSs. It was considered, however, that the personal dusting of the troops with insecticide was more effective and this was carried out. No typhus infection was encountered.**

Sickness

Some general deterioration of the health of the troops was noted during this period, but this did not lead to any marked increase in the numbers evacuated sick. It was shown more in the lack of resistance to skin infections and mild general infections. The dominating factor was the marked epidemic of infective hepatitis which subsided during the winter.

Numbers of 'Fever NYD' cases were evacuated from units. Many of these cases were diagnosed later as infective hepatitis, others as sandfly fever, very few as malaria.

Upper respiratory infections increased during the winter but pneumonia was never very prevalent or serious.

Diarrhoea and dysentery were much less common.

As much of the illness was minor, a considerable number of those evacuated from the divisional units were returned to their units from the field ambulances within a few days. During October 500 men, one-third of the sickness cases, were held at the MDS at Riccione and returned to their units. This number did not include cases of hepatitis as these were all evacuated to the base hospitals. The numbers per 1000 per day evacuated beyond the RAPs were 2·54 from July to September and 2·67 from October to December.

Prevalent Diseases

Infective Hepatitis: **This disease completely dominated the medical picture, accounting in September for as many as 60 per cent of the medical cases. The New Zealand Division had the highest rate in Eighth Army. The Maoris were, as in previous epidemics, relatively unaffected. The number of cases reported during the period was: September 654, October 587, November 474, and December 206—a total of 1921. There was a sharp drop in incidence in January.**

At 1 General Hospital, where the divisional cases were first admitted to hospital, a thousand cases were admitted during the last quarter of the year. The chief feature was the generally mild nature of the disease. In no case had there been any cause for anxiety, and on the average the icterus had been only moderately severe and tended to clear rapidly. Prolonged pyrexia had not occurred, nor had there been the abdominal distension seen in previous years. Pruritis was relatively more common. Dyspeptic symptoms had been almost universal and fevers generally low and of minor significance. It had been observed that there was no jaundice in a considerable number of cases and the diagnosis depended on the dyspeptic symptoms and typical onset, together with an enlarged liver. In these cases the dyspepsia was prolonged, difficult to relieve by

the usual means, and tended to recur on leaving hospital. It had been noticed that men who had had jaundice in previous years, or who had been exposed in previous epidemics, tended to have milder attacks with only transient jaundice. It was noted also that the cases became more severe as the epidemic progressed. The liver was almost always enlarged, the spleen rarely so. Bronchitis and broncho-pneumonia were frequently associated with hepatitis. Special fat-free diets were prepared and skimmed milk powder was supplied to the hospitals. Extra protein and vitamins were provided.

Colonel Boyd, New Zealand consultant physician, made the following observations at that time:

Though it is perhaps not the final knock-out blow to the droplet infection theory in this disease, a considerable advance in our knowledge has recently been made by the demonstration of the infective agent in the urine and faeces. Filtrates were taken from both sources by Maj. Van Rooyen of the 15th (Scottish) Gen. Hosp., Cairo. The War Office having refused permission to carry the experiment further, the material was sent to Major J. Paul of the American Virus Commission who gave the filtrates orally to a number of volunteers. At the same time samples of blood serum from hepatitis cases were sent and these were fed to volunteers or injected parenterally. The results were:

Filtrates by mouth: Hepatitis developed on 22nd day.

Serum by mouth: Hepatitis developed on 35th day.

Serum parenterally: Hepatitis developed on 65th day.

The shorter period in the case of filtrates is, of course, likely to be due to heavy concentration of the virus in a small quantity of the carrying medium. In the case of blood serum the dose probably more closely approximates what occurs naturally. These discoveries largely elucidate many previously puzzling problems, e.g., the very low incidence among hospital staffs and nursing personnel, the relatively high incidence among British officers in the forward areas owing to the

use of community mess dishes; the low degree of spread in such isolated formations as gun or tank crews who have their individual dixies, and the lack of epidemic spread in our prisoner of war camps. They explain too the part played by winds, dust, and flies in spreading the infection.

I mention these matters because I think it worthy of record that these experiments were initiated by Maj. Van Rooyen (who acknowledges the fact) as the result of the epidemiological work done at 1 NZ Gen. Hosp. by Lt.-Col. Kirk and his colleagues.

There were 1139 cases admitted to 3 General Hospital during the quarter, mainly transferred from 1 General Hospital. It was noted that a number of the patients had had severe attacks with residual liver enlargement which necessitated down-grading. The average stay in hospital was twenty-nine days, and another twenty-one days were spent in the Convalescent Depot. Half the medical cases admitted to the convalescent depots were suffering from hepatitis. (See table.)

Infective Hepatitis 2 NZEF, Jan 1941 - Dec 1944

Year	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total*
1941	20	15		4	19	45	84	56	33	55	48	38	417
1942	52	16	3	6	17	8	13	47	374	952	695	341	2524
1943	85	37	23	14	18	30	36	35	52	40	62	144	576
1944	163	147	89	70	41	54	141	279	623	587	474	206	2874

Respiratory Infections: **There was no increase in these cases during the colder months and no recrudescence of the epidemic of atypical pneumonia as experienced at Cassino. At 1 General Hospital a falling-off in admissions was noted when the really cold weather became established. Sinusitis was common. All forms of pneumonia occurred. Primary atypical pneumonia was often recognised in cases which would otherwise have been classed as PUO. Broncho-pneumonics formed the majority of the remaining chest cases. Only one case of empyema was reported. There were five cases of pulmonary tuberculosis and four of tuberculous pleural effusion.**

Dysentery: **There was a marked drop in the incidence of diarrhoea in**

the Division, only 160 cases being admitted to medical units during the last quarter of the year. There were only 33 cases of dysentery evacuated. The cases of diarrhoea and dysentery admitted to 1 General Hospital fell from 48 in October to 16 in December. At 3 General Hospital the chronic cases of amoebic dysentery became a problem and investigation showed that there were many of these cases arising in Italy. During October 35 cases were reported, in November 34, and in December 39. The condition gave rise to general debility and prolonged treatment was required. The average period in 3 General Hospital of cases of diarrhoea was reported to be 14 days; of bacillary dysentery, 11 days; and of amoebic dysentery, 42 days.

Colonel Boyd, Consultant Physician 2 NZEF, in a lecture on the aftermath of infections contracted overseas, expressed the opinion that amoebiasis was likely to be the main problem in New Zealand and that the condition would give rise to difficulties in diagnosis. The main lesions encountered would be: (*a*) hepatitis and hepatic abscess; (*b*) caecal; (*c*) rectal. It had been found that in those developing hepatitis, 25 per cent had had previous treatment for amoebic dysentery, 25 per cent had never had any bowel symptoms, and 50 per cent gave negative results on investigation. Hepatic abscess generally developed in the upper and posterior part of the right lobe. Pain on the right side over the region of the liver was often present. The condition had often been mistaken for carcinoma of the stomach. [1]

Diphtheria: The mingling with the civilian population consequent on billeting of the troops resulted in sporadic cases of diphtheria. In the last quarter of the year 26 cases were reported in the Division and 37 at 1 General Hospital. During December there were 29 cases in the wards of the hospital as well as 6 cases of wounds infected with KLB. The infection was generally mild and responded to 48,000 units of serum. The cases did not clear up rapidly, a condition noticed previously in Egypt, where it was often necessary to have a tonsillectomy carried out to obtain negative swabs. There were very few cases in the other hospitals.

Skin Diseases: **Furunculosis was very common at this period, as were skin infections generally. Penicillin was used for the severe cases with good temporary results, but it did not stop relapses unless associated with general dietetic and vitamin treatment. Ultra-violet light was used with good results. Scabies and pediculosis showed a marked increase in the Division, again due to billeting.**

Malaria: **Only 27 cases were reported in the Division during the last quarter of the year as against 67 cases in the previous quarter. The total cases reported in 2 NZEF were:**

	Sep	*Oct*	*Nov*	*Dec*
Italy	**43**	**14**	**8**	**5**
Egypt	**16**	**16**	**2**	**1**

Malaria had not been a problem at all in our force, not even after the seasonal stopping of mepacrine. This suggested excellent control within units.

Venereal Disease: **There was a relatively low incidence of venereal disease during this period. There were 54 fresh cases in September, 48 in October, 71 in November, and 61 in December, and diagnoses were: syphilis 8; gonorrhoea 98; soft sore 27; balanitis 20; urethritis 53; penile sore 13; gonorrhoea and soft sore 3; prostatitis 4; and others 6. The majority of cases developed after leave, especially to Rome. The number of fresh cases was three times greater than those reported the year previously in Egypt. In October there were 800 cases under treatment and 100 final tests were completed during the month. Penicillin had been introduced for the treatment of both gonorrhoea and syphilis with excellent results. In December it was noted that the first apparent relapse following penicillin treatment for gonorrhoea had occurred, but it was suggested that this was a fresh infection. Fifteen cases of syphilis that had not completed two courses of arsenic injections were given 2,400,000 units of penicillin in seven and a half days in one and a half hourly injections. Cases of prostatitis were given intramuscular penicillin and also local penicillin by Ultzmann's syringe with good results. Hospitalisation had been reduced by the use of penicillin,**

syphilitic patients being retained for fourteen days, and cases of gonorrhoea for less than five days on an average. The urethritis cases showed no organisms but marked pus formation. The symptoms usually appeared three to five weeks after intercourse.

Hot showers were provided by the treatment centre for the patients in December. All brothels were placed out of bounds to the troops.

Anxiety States: **One hundred and twenty-four cases were evacuated from the Division during the quarter to the end of December as against 174 in the previous quarter. The cases were all admitted to 1 General Hospital, which reported that they occurred mostly among new arrivals and mainly among the less willing.**

Divisional Casualties, October-December 1944

	Sick	*BC*	*Total*
October	1648	332	1980
November	1478	30	1508
December	1342	574	1916
	4468	936	5404

(Previous quarter, 6063)

Admissions to Divisional Units, October–December 1944

	Oct-Dec 1944	*Jul-Sep 1944*
Hepatitis	880	778
Fever NYD	494	808
ENT	282	217
Accidental Injuries	456	639
Diarrhoea	162	304
Dysentery	33	49
Diphtheria	26	
Malaria		67
Exhaustion	124	174
VD	193	196

Admissions to 1 CCS, October–December 1944

	Sick	BC	Total	Deaths
18 Oct–30 Nov	443	174	617	8
1–31 Dec	190	572	762	14
	633	746	1379	22

Types of Wounds as Seen at 1 CCS, October–December 1944

Bullet wounds	100	13·2 per cent
Shell"	435	57·8 per cent
Bomb	79	10·5 per cent
Mine	54	7·2 per cent
Mortar	85	11·3 per cent
	753	100·0

Of these, multiple wounds 275

Admissions to 1 Gen Hosp, October–December 1944

	Oct	Nov	Dec	Total	
Surgical Admissions				1747	
Medical Admissions	1032	812	503	2347	4094
Principal Admissions—Battle Casualties				779	
Hepatitis	489	369	137	995	
Diarrhoea and Dysentery	48	38	16	102	
Skins	74	47	49	170	
Respiratory	78	58	37	173	
Diphtheria	12	4	21	37	
Anxiety States	19	57	46	122	
Furunculosis	11	28	29	68	

Evacuations from 1 Gen Hosp in October 1944

Evac. by hospital ship to Bari	1016
Evac. by hospital train	248
Evac. to reinforcement transit unit and unit	341
	1605

Admissions to 2 Gen Hosp; October–December 1944

	NZ Cases	Others	Total

Admitted direct	67	60	127
Transferred from other medical units	417	246	663
	484	306	790
Battle casualties	51	74	125

Admissions to 3 Gen Hosp, October–December 1944

Admitted direct	478
Transferred from other medical units	1373
Total	1851

[1] Colonel Boyd's opinion proved to be correct and chronic amoebiasis has been a cause of disability in a number of returned servicemen, but the number of new cases has diminished after some seven years. There were 148 cases accepted for pensions up to September 1949.

Admissions to other than New Zealand Hospitals

In September and October there were again considerable numbers of New Zealand patients temporarily in other hospitals. Some of these were in the forward areas in Canadian CCSs, in the British neurosurgical units, and in transit hospitals at Fano. In November a regular channel of evacuation through New Zealand units was functioning and the number was much smaller. Admissions to other hospitals were: September, 410; October, 528; November, 134; December, 151.

Deaths in New Zealand Medical Units, September-December 1944

There were very few deaths other than those occurring in the field ambulances and only two deaths in hospital in Italy other than from battle casualties, a remarkably small number in over 20,000 men in 2 NZEF in Italy. One of the two deaths followed an injury and the other was from a ruptured cerebral aneurysm.

	NZ	*Other*	*Total*
Deaths in FSU	**4**	**3**	**7**
Deaths in CCS	**16**	**6**	**22**
Deaths in 1 Gen Hosp	**10**	**4**	**14**
Deaths in 2 Gen Hosp	**3**		**3**
Deaths in 3 Gen Hosp	**1**		**1**
	34	**13**	**47**

***Casualty State 2 NZ Division, November 1943–November 1944* (*NB:* Accidental injuries are included in BC figures up to 31 January 1944.)**

	Sick	*BC*	*Acc. Inj.*	*Total*	*Discharged (RTU)*
1943					
18–30 Nov	**260**	**228**	**(not recorded)**	**488**	**43**
Dec	**833**	**1,011**	**(not recorded)**	**1,844**	**228**
1944					
Jan	**693**	**217**		**910**	**159**
Feb	**813**	**328**	**166**	**1,307**	**160**
Mar	**922**	**811**	**222**	**1,955**	**252**
Apr	**695**	**109**	**216**	**1,020**	**161**
May	**993**	**272**	**249**	**1,514**	**305**
Jun	**1,099**	**165**	**172**	**1,436**	**357**
Jul	**1,279**	**593**	**237**	**2,109**	**415**
Aug	**1,264**	**316**	**181**	**1,761**	**401**
Sep	**1,523**	**451**	**219**	**2,193**	**382**
Oct	**1,495**	**332**	**153**	**1,980**	**583**
1–17 Nov	**781**		**118**	**899**	**294**
Totals	**12,650**	**4,833**	**1,933**	**19,416**	**3,740**

Casualties in 2 NZ Division During Period of One Year in Italy up Till 17 November 1944

Battle Casualties (including killed and PW)	**6,094**
Sick	**14,583**
Evacuated for medical boarding	**288**
	20,965
Returned to units from MDS	**3,740**

Temporarily lost to the Division	**17,225**

The only permanent loss to the Division consisted of those men downgraded as unfit for further service in the Division and those evacuated to New Zealand. This would be a relatively small percentage of the total.

A total equal to the strength of the Division passed through the medical units in the year.

Main Categories	**Cases of Fever NYD**	**2,039**
	Cases of accidental injury	**1,933**
	Cases of Hepatitis	**1,924**
	Cases of VD	**1,028**
		6,924

Patients in Medical Units–Percentage of Troops in 2 NZEF

	Italy	*Egypt*	*Total Patients*
1 Oct	**10·62 (excluding BCs 4·94)**	**4·94**	**2947**
31 Oct	**9·96 (excluding BCs 7·84)**	**3·8**	**2698**
30 Nov	**9·81 (excluding BCs 8·38)**	**4·3**	**2847**
31 Dec	**9·75 (excluding BCs 6·98)**	**5·4**	**2720**

The surgical work carried out at 2 NZ General Hospital, our forward base hospital, during 1944 is well illustrated by the following statistics:

Classification of missiles causing wounds, and also regional distribution of wounds and deaths, of the 2084 battle casualties admitted to 2 General Hospital from forward areas in 1944. (Lieutenant-Colonel J. M. Clarke)

Missiles Responsible	*Patients*	*Percentage*
GSW	**276**	**13·24**
SW (HE)	**1072**	**51·48**
Mortar	**392**	**18·80**
Grenade	**146**	**7·00**
Mine	**148**	**7·10**

Aerial bomb	25	1·19
Bayonet	1	0·04
Various	24	1·15
	2084	100·00

Regional Distribution	*Wounds*	*Percentage*
Head wounds—Severe 51	123	5·9
Slight 72		
Spine, involving cord 13	17	0·8
Spine, not involving cord 4		
Neck, severe	3	0·1
Facio-maxillary	21	1·0
Eye	64	3·0
Blast effects—Ears	66	3·1
Other	24	1·2
Chest	53	2·5
Thoraco-abdominal	12	0·6
Abdominal	57	2·7
External genitalia	10	0·5
Major joints	117	5·6
Major nerves	103	4·9
Major vessels	52	2·5
Fractures, compound	352	16·9
Fractures, simple	8	0·4
Amputations—Major	55	2·75
Minor	15	0·75
Flesh wounds only	1153	55·3
Burns	15	0·75
Due to masonry	29	1·4

Deaths—	
Due to abdominal wounds	9
Due to thoraco-abdominal wounds	1
Due to chest wounds	2
Due to uraemia	2
Due to pyaemia from infected wounds	2

16—0·8 per cent of total

***Italy*, 1944–Comparative Casualty Rates of Cases Admitted to all Medical Units** (Rate per 1000 British troops per year taken as 100)

	British	*Canadian*	*New Zealand*	*Indian*	*African*	*Total Force*
Battle casualties	100	192	230	294	143	128
Accidental injuries	100	169	291	233	298	127
Burns	100	217	308	163	155	125
Diseases	100	153	161	83	110	107
All admissions	100	161	180	124	126	111

Diseases in Italy, 1944–Comparative Morbidity Rates of Cases Admitted to all Medical Units (Rate per 1000 British troops per year taken as 100)

	British	*Canadian*	*New Zealand*	*Indian*	*African*	*Total Force*
Malaria	100	76	12	29	33	88
Venereal disease	100	136	107	52	172	102
Infective hepatitis	100	353	677	59	98	142
Dysenteries	100	76	202	106	134	102
Diphtheria	100	163	135	6	34	100
Pneumonia	100	100	526	86	125	113
Influenza	100	967	354	148	235	204
Sandfly fever	100	13	68	46	94	86
Enteric fever	100	791	256	32	38	170
Tuberculosis	100	48	73	589	560	138
Helminthic diseases	100	238	1329	1757	33	267
Food poisoning	100	70	30	230	626	116
Nervous disorders (incl. exhaustion)	100	156	161	61	181	107
Skin diseases	100	132	185	108	94	106
IAT	100	130	179	114	127	107
All diseases	100	153	161	83	110	107

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

During the operations from 22 September to 22 October the medical work in the Division was almost entirely undertaken by the field ambulances, certain special cases being referred for operation to the active Canadian CCS and to the British neurosurgical unit attached to 83 British General Hospital. Our own CCS was not used at this stage. Evacuation from the active MDSs was by motor ambulance direct to 1 General Hospital at Senigallia, and many cases were referred there for primary surgery. During the second period after the Division had returned to the front from the rest area, the New Zealand CCS was functioning at Forli and undertook the bulk of the forward surgical work.

Evacuation was still to Senigallia by motor ambulance, with staging available at a British hospital at Fano. In both periods the bulk of the medical cases was handled by the field ambulances and large numbers, up to a third of the total, were returned direct to their units.

At 1 General Hospital a great deal of primary and the bulk of the secondary surgical treatment was carried out and all the medical cases were admitted from the Division. Cases were then evacuated by hospital ship from Ancona to Bari and admitted to 3 General Hospital. A small number of cases, especially during the first period was admitted to 2 General Hospital at Caserta, but evacuation from Senigallia to Caserta proved unsatisfactory, the convoys being held up and the patients admitted to British hospitals at Rome. Not being busy, 2 General Hospital treated patients from other forces as well as the overflow cases from Bari, and the unit was held in readiness for transfer to the Po valley when Eighth Army reached that area.

The transfer of cases from Caserta to Bari led to some difficulty as hospital trains were seldom available, but walking cases were sent on

civilian trains. At Bari 3 General Hospital acted as the base hospital for 2 NZEF in Italy, accumulating cases for evacuation to New Zealand by hospital ship, as well as giving later treatment to all types of cases. Hospital Ship *Maunganui* took 311 cases early in October and collected another 50 patients from 5 General Hospital at Helwan.

The Convalescent Depot functioned in two detachments, the headquarters being at Senigallia and the detachment at San Spirito. The detachment, being sited near the base hospital, received almost double the number of patients admitted to the headquarters section—1868 as against 1029 for the last quarter of 1944.

A well-equipped camp hospital was functioning at Advanced Base and cases of minor illness were adequately treated and returned to their units. This relieved 3 General Hospital and was economical in all respects, and also provided useful training for the medical personnel. The admissions were from 100 to 150 a month and the average bed state about thirty.

An advanced section of the medical stores moved to Senigallia from Bari in October. The depot had continued to be of great use to all the medical units.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK AT THE ADS

Work at the ADS

Buildings were taken over by the ADSs at this period because of the severe wintry weather and the impossibility of using tents in the muddy, waterlogged country. The buildings enabled the ADS to provide warmth, comfort, and resuscitation even in bad weather.

During the early period the active MDS was very close to the RAPs and a large proportion of the casualties was admitted direct to the MDS; much the same conditions were present when 4 MDS moved into Faenza later. At other times the ADS was called upon to carry out treatment in cases of delayed evacuation.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE WORK AT THE MDS

The Work at the MDS

This varied a good deal, depending on the use made of the CCS. For the first attack on Rimini the active MDS took over the functions of the CCS, except for certain types of cases which were sent on to the Canadian CCSs. The MDS operated on the large majority of the cases and evacuated them direct to 1 General Hospital at Senigallia by ambulance car.

Later, the MDS situated at Faenza was called upon to deal with many casualties before sending them on to the CCS at Forli, but operation was undertaken only on the very urgent of the major cases, and on the minor cases which could be passed quickly through to Senigallia. The performance of almost all the forward surgery at the MDS, followed by rapid evacuation to 1 General Hospital, did not produce as good results as those obtained during the second period when the CCS took over the bulk of the work in the forward area.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK AT THE CCS

Work at the CCS

This unit was under command of ADMS 2 NZ Division during this period. It was out of action during practically the whole of the first period before the Division went out to rest.

After the CCS took over from the MDS on 18 October at Igiea Marina it dealt with over 600 cases, including 174 battle casualties, in twelve days. The unit then moved to a large school at Forli, and during December 762 cases, including 572 battle casualties, were admitted. The unit was strengthened by the attachment of a British FSU as well as of our own FSU and FTU, and also of Captain Hodgkiss, an experienced chest surgeon.

During October 15 abdomens were operated on, with 6 deaths. There were 10 penetrating abdomens with 4 deaths, and 5 thoraco-abdomens with 2 deaths. Included in the cases were 5 prisoners of war, with 2 deaths. During December at Forli 20 abdomens were operated on, with 8 deaths. Many severe mine wounds were encountered and many amputations had to be performed.

The conditions were almost ideal; central heating was available and the seriously ill patients were held till their condition for evacuation was perfectly satisfactory.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE WORK OF THE FIELD SURGICAL UNIT

The Work of the Field Surgical Unit

The unit, under Major D. P. O'Brien, was attached to the active MDS during September and up till 18 October, and again for the last four days of November. For the rest of the time it was attached to 1 NZ CCS. During the whole period 230 operations were performed as follows:

	Operations Performed				*Deaths*			
	Oct	*Nov*	*Dec*	*Total*	*Oct*	*Nov*	*Dec*	*Total*
Abdominal	5		14	19	1		3	4
Abdomen and thoracic	1		1	2				
Chests	4		4	8				
Heads								
Major amputations	1		4	5				
Fractures long bones	31	3	35	69	1			1
Ligation major blood vessels		1	1	2				
Major joints	2		8	10				
Gas gangrene	1		6	7			2	2
Wounds, severe	7		18	25				
Burns	1	1	1	3				
Secondary suture wounds	1	1		2				
Minor operations	46	10	22	78				
	100	16	114	230	2		5	7

Notes

(*a*) Abdomens and chests: All operations on these cases were performed when attached to NZ CCS.

(*b*) With the oncoming winter an increase in the number of chest complications was noted in the heavier cases such as abdomens. For the same reason, chests were now being held longer prior to evacuation.

Analysis of Deaths Prior to Evacuation

Time	*Cause*	*Oct*	*Nov*	*Dec*	*Total*
24 hours	Shock	1			1
24 hours	Blast	1			1
24 hours	Gas gangrene			2	2
24 hours	Pulmonary oedema			1	1
10 days	Anuria			1	1
20 days	Peritonitis			1	1
		2		5	7

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK OF THE FIELD TRANSFUSION UNIT

Work of the Field Transfusion Unit

This unit was attached either to the active MDS or to the CCS throughout the period. There was some difficulty with blood during the first period and many bottles had to be discarded. Conditions improved later, and little difficulty arose during the Faenza offensive when 117 transfusions were given.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SHORTAGE OF MEDICAL OFFICERS

Shortage of Medical Officers

The shortage was becoming more marked during the early part of this period and in September the Division was twelve officers short. The commencement of New Zealand leave for medical officers accentuated the position. The most serious shortage was in the senior officers, and especially in those qualified for senior professional work in the hospitals and the CCS. The position was relieved later by the arrival of reinforcements from New Zealand, many of whom had served in the Pacific zone.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGERY AT 1 GENERAL HOSPITAL

Surgery at 1 General Hospital

For the first month from the date of its opening at Senigallia at the beginning of September, 1 General Hospital performed surgery of the type usually done at the CCS, many wounds having their first surgical treatment there. Most of the wounded arrived in very good condition after their treatment at the field units and their journey back along the fairly smooth coast road, exceptions being men with compound fractures of the femur where infection had not been controlled by penicillin. Two of these had to have above-knee amputations following secondary haemorrhage from the popliteal artery.

Six cases of gas gangrene were encountered in September, one of the septicaemic type being the only death. The others recovered following excision of the muscle groups involved. Gas gangrene had been more commonly met with during the campaign in Italy and occasional severe cases arose, especially in late cases. Penicillin proved to be very useful when combined with adequate surgical excision. A much higher proportion of wounds was subjected to primary surgical treatment, partly as a precautionary measure against gas gangrene and partly to ensure success when subjected to delayed primary suture.

Delayed primary suture was performed for many wounds, use being made of either calcium penicillin, sulphanilamide powder, or proflavine powder. Results were good but there was often slight infection of the stitch holes. It was found that the third or fourth day was the optimum time for suture. Whenever possible the deep fascia was closed by means of figure-of-eight sutures, including the skin and the fascia. Where this was possible healing was more satisfactory and the scars less adherent.

Two cases of rectal wounds which had not been detected in the

forward units were seen, colostomy and drainage of the pelvic cellular tissues being carried out. Both had severe accompanying wounds and neither had intra-peritoneal involvement.

The notable feature of the September casualties was the infrequency of grossly infected wounds and, consequently, diminished toxaemia.

A feature of the later casualties was the large number of leg and thigh amputations, mainly the result of mine wounds, a considerable number of traumatic amputations having been sustained. A small number of cases of gas gangrene, but none of tetanus, was seen. In the larger wounds, including fracture cases, parenteral penicillin was given for some days to ensure the control of infection. All types of cases were dealt with except fractures of the femur, which were evacuated as soon as possible to 3 General Hospital at Bari for definitive treatment. In October 200 operations out of a total of 500 were performed for suture of wounds.

Intramuscular penicillin was being used freely by this time for severe bone and joint cases and in chests. There were remarkably few deaths at this period. The two unit surgeons, Lieutenant-Colonel Bridge and Major A. W. Douglas, carried the heavy load of surgery in the hospital at this time, though for a period a surgeon from 2 General Hospital was attached to the unit and gave valued assistance. Some diphtheritic infection of wounds occurred and proved a serious complication.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGERY AT 3 GENERAL HOSPITAL

Surgery at 3 General Hospital

The majority of the wounded admitted to 3 General Hospital had already had wound suture performed at 1 General Hospital, Senigallia. Fractured femurs, however, were especially sent to Bari for wound suture. The closure of colostomies was also carried out when possible. Foreign bodies were also removed in some of the chest cases.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGERY AT 2 GENERAL HOSPITAL

Surgery at 2 General Hospital

The comparatively small number of wounded transferred from 1 and 3 General Hospitals had had wound suture already performed, so that little surgery was done at Caserta.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

NEUROSURGICAL CASES

Neurosurgical Cases

The head cases were sent from the field ambulances to the special advanced head centre attached to 83 British General Hospital at Riccione, where facio-maxillary and eye cases were also dealt with. They were later evacuated to head centres at Loreto, Bari, and Naples and then finally admitted to our base hospitals at Caserta or Bari.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

REVIEW OF SURGERY

Review of Surgery

The Consultant Surgeon 2 NZEF, Colonel Stout, in October 1944 reviewed the developments of surgery in the Italian campaign.

The large majority of deaths was due directly to the severity of the injury and the primary shock produced thereby. This was shown in both the chest and abdominal cases, in which a large number of the wounded were brought in dead to the field ambulances, and practically all the others who died did so in the first forty-eight hours.

Undoubtedly the most valuable form of treatment was transfusion of blood, given early and sustained till operative treatment was possible. The giving of blood during transit in the ambulance had proved of great value. The early administration of glucose saline, both to combat dehydration and also to act as a preventative of anuria, was being carried out.

In mangled limbs, commonly seen after mine injuries, early application of a tourniquet just above the damaged area to prevent bleeding and toxic absorption, followed by early amputation through healthy tissue, had become the routine. The dramatic improvement following the removal of the devitalised tissue was vouched for by many experienced surgeons.

Anuria, generally the direct result of severe and prolonged shock, had caused many deaths and no treatment was of any avail.

Infection was being combated by adequate primary wound excision and the local and parenteral administration of penicillin. Gas gangrene had become more common but, except in a few fulminating cases,

cleared up well with adequate surgery and penicillin.

Delayed primary suture of wounds had become the routine in simple wounds, in amputations, and in fracture cases and the results were satisfactory.

Chest cases with more thorough primary wound treatment and intrapleural penicillin had very rarely become septic.

Thoraco-abdominal cases showed a lower mortality when dealt with through the chest. A tendency to delay operation a little too long in abdominal cases had been noted, the pendulum having swung too far. In colon injuries the double loop colostomy was being carried out except in caecal injuries, where simple marsupialisation was all that was considered necessary. Rectal injuries associated with buttock wounds were common and sometimes apt to be over-looked. There had been an unusual number of abdominal wounds associated with evisceration of the bowel, and a more conservative approach was suggested in these cases which were almost invariably fatal.

Knee-joint cases did well with intra-synovial penicillin and adequate splintage.

Fascial incision following ligature of the popliteal and lower femoral arteries was successful in saving some limbs. A case of primary ligature of the lower part of the femoral artery dealt with by fascial split at that time was fully recorded by Major Owen-Johnston, and the subsequent progress for a period of years has been ascertained. Major Owen-Johnston wrote following the operation that:

If ischaemic gangrene does not develop in this case then I think that it can be accepted as a very good test of the efficacy of fasciotomy of the leg aponeurosis in preventing the onset of ischaemia where the popliteal or lower femoral artery has been tied in battle casualties. [1]

The importance of early and frequent hand movements in all arm injuries was fully recognised.

In burns the problem was recognised as one of shock, and adequate plasma was the essential form of treatment. Simple dressings without anaesthesia were carried out, and penicillin utilised both locally and parenterally.

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[1] **The patient's final result as recorded in November 1948 was that he was still experiencing cramp but had no pain in his foot, the sensation of which was normal. There was still weak action of his toe flexors. The soldier had been granted a permanent pension for a 25 per cent disability (15s. a week). He was employed driving a baker's delivery van. The original association of motor and sensory nerve disability had made the outcome still more satisfactory. There had been severe muscle loss but the patient had made an excellent recovery.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CLIMATE

Climate

The winter in northern Italy was relatively severe, very wet and cold conditions being experienced. The plain of the Po valley became very muddy, making tank action generally impossible. There were occasional hard frosts, and light snow fell on the plains with heavier falls on the hills. The first fall of snow was experienced on 11 November both at Senigallia and Fabriano.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH AND HYGIENE

Health and Hygiene

In an effort to keep the sick rate of the Division as low as in the previous Italian winter, it was arranged that all men not actually in the most forward positions should have reasonably comfortable living conditions. All the field medical units, including 1 Mobile CCS, were well provided for in excellent buildings, and patients were treated under better conditions than had been possible the previous year.

Combatant units out of the line were also able to make use of buildings and so provide for the comfort of the troops in the wet and cold conditions. Each man was issued with five blankets and five pairs of socks, and extra battle dress and underclothing were held by all units to allow frequent changes during the wet weather. Gumboots, leather jerkins, and duffle coats were also available.

Actually, owing to a reduction in the number of cases of infective hepatitis and fevers, the sick rate in the winter months showed a decline on the rate during the summer months. Accidental injuries, too, were fewer with the comparative immobilisation of the Division.

The quartering of troops in houses, however, made hygiene a much greater problem. The houses were usually also occupied by Italian civilians, it being found impossible to evacuate all civilians from the divisional areas. There then arose the problem of skin diseases, and other infectious diseases such as diphtheria, contracted from close living with an uncontrolled and relatively poor civilian population. Unit discipline down to the platoon or section level ensured the best control, but hot showers, adequate disinfestation, and the use of insecticide powder were all enforced on men in the forward areas. It was found better to dust the man and his clothes with insecticide rather than spray

the billets, although this was done where possible. Living in towns and villages, where drains had been destroyed by shelling and bombing and where wells were thus contaminated, also raised problems, but rigid inspection and policing by 4 Field Hygiene Company ensured an adequate measure of control.

Rations: **These were as a rule excellent, with fresh vegetables generally procurable, but in November there was less fresh food and ascorbic acid tablets were used.**

Water: **Adequate filtering and chlorination of water from the village wells, with rigid inspection, was carried out. The wells were mostly large and deep and the water satisfactory. There was a shortage of water carts and of trained staff for water duties, and fresh personnel had to be trained.**

Refuse: **At first deep pits were used and burnt out regularly. Later, controlled tips were developed, but constant supervision was necessary as there was a tendency to use them for fluid refuse.**

Latrines: **Deep-trench latrines were used when possible and buckets were sometimes used.**

Showers: **Buildings were found to be essential for showers during the winter weather. The showers were freely provided.**

Malaria Control: **General measures were limited to spraying of buildings with DDT and flysol. The troops used nets and repellent cream, and mepacrine tablets were taken every evening, generally under the control of an NCO, till the end of the season.**

Typhus Prevention: **This was of considerable importance as the billeting of the troops led to a marked increase in infestation by lice and pediculi. The enemy troops were also known to be heavily infested with lice. An anti-typhus unit was formed out of one of the anti-malaria units and was active in spraying out billets with DDT. Spraying squads were attached to ADSs. It was considered, however, that the personal dusting**

of the troops with insecticide was more effective and this was carried out. No typhus infection was encountered.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SICKNESS

Sickness

Some general deterioration of the health of the troops was noted during this period, but this did not lead to any marked increase in the numbers evacuated sick. It was shown more in the lack of resistance to skin infections and mild general infections. The dominating factor was the marked epidemic of infective hepatitis which subsided during the winter.

Numbers of 'Fever NYD' cases were evacuated from units. Many of these cases were diagnosed later as infective hepatitis, others as sandfly fever, very few as malaria.

Upper respiratory infections increased during the winter but pneumonia was never very prevalent or serious.

Diarrhoea and dysentery were much less common.

As much of the illness was minor, a considerable number of those evacuated from the divisional units were returned to their units from the field ambulances within a few days. During October 500 men, one-third of the sickness cases, were held at the MDS at Riccione and returned to their units. This number did not include cases of hepatitis as these were all evacuated to the base hospitals. The numbers per 1000 per day evacuated beyond the RAPs were 2·54 from July to September and 2·67 from October to December.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

PREVALENT DISEASES

Prevalent Diseases

Infective Hepatitis: **This disease completely dominated the medical picture, accounting in September for as many as 60 per cent of the medical cases. The New Zealand Division had the highest rate in Eighth Army. The Maoris were, as in previous epidemics, relatively unaffected. The number of cases reported during the period was: September 654, October 587, November 474, and December 206—a total of 1921. There was a sharp drop in incidence in January.**

At 1 General Hospital, where the divisional cases were first admitted to hospital, a thousand cases were admitted during the last quarter of the year. The chief feature was the generally mild nature of the disease. In no case had there been any cause for anxiety, and on the average the icterus had been only moderately severe and tended to clear rapidly. Prolonged pyrexia had not occurred, nor had there been the abdominal distension seen in previous years. Pruritis was relatively more common. Dyspeptic symptoms had been almost universal and fevers generally low and of minor significance. It had been observed that there was no jaundice in a considerable number of cases and the diagnosis depended on the dyspeptic symptoms and typical onset, together with an enlarged liver. In these cases the dyspepsia was prolonged, difficult to relieve by the usual means, and tended to recur on leaving hospital. It had been noticed that men who had had jaundice in previous years, or who had been exposed in previous epidemics, tended to have milder attacks with only transient jaundice. It was noted also that the cases became more severe as the epidemic progressed. The liver was almost always enlarged, the spleen rarely so. Bronchitis and broncho-pneumonia were frequently associated with hepatitis. Special fat-free diets were prepared and skimmed milk powder was supplied to the hospitals. Extra protein and

vitamins were provided.

Colonel Boyd, New Zealand consultant physician, made the following observations at that time:

Though it is perhaps not the final knock-out blow to the droplet infection theory in this disease, a considerable advance in our knowledge has recently been made by the demonstration of the infective agent in the urine and faeces. Filtrates were taken from both sources by Maj. Van Rooyen of the 15th (Scottish) Gen. Hosp., Cairo. The War Office having refused permission to carry the experiment further, the material was sent to Major J. Paul of the American Virus Commission who gave the filtrates orally to a number of volunteers. At the same time samples of blood serum from hepatitis cases were sent and these were fed to volunteers or injected parenterally. The results were:

Filtrates by mouth: Hepatitis developed on 22nd day.

Serum by mouth: Hepatitis developed on 35th day.

Serum parenterally: Hepatitis developed on 65th day.

The shorter period in the case of filtrates is, of course, likely to be due to heavy concentration of the virus in a small quantity of the carrying medium. In the case of blood serum the dose probably more closely approximates what occurs naturally. These discoveries largely elucidate many previously puzzling problems, e.g., the very low incidence among hospital staffs and nursing personnel, the relatively high incidence among British officers in the forward areas owing to the use of community mess dishes; the low degree of spread in such isolated formations as gun or tank crews who have their individual dixies, and the lack of epidemic spread in our prisoner of war camps. They explain too the part played by winds, dust, and flies in spreading the infection.

I mention these matters because I think it worthy of record that these experiments were initiated by Maj. Van Rooyen (who acknowledges the fact) as the result of the epidemiological work done at 1 NZ Gen.

Hosp. by Lt.-Col. Kirk and his colleagues.

There were 1139 cases admitted to 3 General Hospital during the quarter, mainly transferred from 1 General Hospital. It was noted that a number of the patients had had severe attacks with residual liver enlargement which necessitated down-grading. The average stay in hospital was twenty-nine days, and another twenty-one days were spent in the Convalescent Depot. Half the medical cases admitted to the convalescent depots were suffering from hepatitis. (See table.)

Infective Hepatitis 2 NZEF, Jan 1941 - Dec 1944

Year	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total*
1941	20	15		4	19	45	84	56	33	55	48	38	417
1942	52	16	3	6	17	8	13	47	374	952	695	341	2524
1943	85	37	23	14	18	30	36	35	52	40	62	144	576
1944	163	147	89	70	41	54	141	279	623	587	474	206	2874

Respiratory Infections: **There was no increase in these cases during the colder months and no recrudescence of the epidemic of atypical pneumonia as experienced at Cassino. At 1 General Hospital a falling-off in admissions was noted when the really cold weather became established. Sinusitis was common. All forms of pneumonia occurred. Primary atypical pneumonia was often recognised in cases which would otherwise have been classed as PUO. Broncho-pneumonics formed the majority of the remaining chest cases. Only one case of empyema was reported. There were five cases of pulmonary tuberculosis and four of tuberculous pleural effusion.**

Dysentery: **There was a marked drop in the incidence of diarrhoea in the Division, only 160 cases being admitted to medical units during the last quarter of the year. There were only 33 cases of dysentery evacuated. The cases of diarrhoea and dysentery admitted to 1 General Hospital fell from 48 in October to 16 in December. At 3 General Hospital the chronic cases of amoebic dysentery became a problem and investigation showed that there were many of these cases arising in Italy. During October 35 cases were reported, in November 34, and in December 39. The condition gave rise to general debility and prolonged**

treatment was required. The average period in 3 General Hospital of cases of diarrhoea was reported to be 14 days; of bacillary dysentery, 11 days; and of amoebic dysentery, 42 days.

Colonel Boyd, Consultant Physician 2 NZEF, in a lecture on the aftermath of infections contracted overseas, expressed the opinion that amoebiasis was likely to be the main problem in New Zealand and that the condition would give rise to difficulties in diagnosis. The main lesions encountered would be: (*a*) hepatitis and hepatic abscess; (*b*) caecal; (*c*) rectal. It had been found that in those developing hepatitis, 25 per cent had had previous treatment for amoebic dysentery, 25 per cent had never had any bowel symptoms, and 50 per cent gave negative results on investigation. Hepatic abscess generally developed in the upper and posterior part of the right lobe. Pain on the right side over the region of the liver was often present. The condition had often been mistaken for carcinoma of the stomach. [1]

Diphtheria: **The mingling with the civilian population consequent on billeting of the troops resulted in sporadic cases of diphtheria. In the last quarter of the year 26 cases were reported in the Division and 37 at 1 General Hospital. During December there were 29 cases in the wards of the hospital as well as 6 cases of wounds infected with KLB. The infection was generally mild and responded to 48,000 units of serum. The cases did not clear up rapidly, a condition noticed previously in Egypt, where it was often necessary to have a tonsillectomy carried out to obtain negative swabs. There were very few cases in the other hospitals.**

Skin Diseases: **Furunculosis was very common at this period, as were skin infections generally. Penicillin was used for the severe cases with good temporary results, but it did not stop relapses unless associated with general dietetic and vitamin treatment. Ultra-violet light was used with good results. Scabies and pediculosis showed a marked increase in the Division, again due to billeting.**

Malaria: **Only 27 cases were reported in the Division during the last**

quarter of the year as against 67 cases in the previous quarter. The total cases reported in 2 NZEF were:

	Sep	*Oct*	*Nov*	*Dec*
Italy	43	14	8	5
Egypt	16	16	2	1

Malaria had not been a problem at all in our force, not even after the seasonal stopping of mepacrine. This suggested excellent control within units.

Venereal Disease: There was a relatively low incidence of venereal disease during this period. There were 54 fresh cases in September, 48 in October, 71 in November, and 61 in December, and diagnoses were: syphilis 8; gonorrhoea 98; soft sore 27; balanitis 20; urethritis 53; penile sore 13; gonorrhoea and soft sore 3; prostatitis 4; and others 6. The majority of cases developed after leave, especially to Rome. The number of fresh cases was three times greater than those reported the year previously in Egypt. In October there were 800 cases under treatment and 100 final tests were completed during the month. Penicillin had been introduced for the treatment of both gonorrhoea and syphilis with excellent results. In December it was noted that the first apparent relapse following penicillin treatment for gonorrhoea had occurred, but it was suggested that this was a fresh infection. Fifteen cases of syphilis that had not completed two courses of arsenic injections were given 2,400,000 units of penicillin in seven and a half days in one and a half hourly injections. Cases of prostatitis were given intramuscular penicillin and also local penicillin by Ultzmann's syringe with good results. Hospitalisation had been reduced by the use of penicillin, syphilitic patients being retained for fourteen days, and cases of gonorrhoea for less than five days on an average. The urethritis cases showed no organisms but marked pus formation. The symptoms usually appeared three to five weeks after intercourse.

Hot showers were provided by the treatment centre for the patients in December. All brothels were placed out of bounds to the troops.

Anxiety States: **One hundred and twenty-four cases were evacuated from the Division during the quarter to the end of December as against 174 in the previous quarter. The cases were all admitted to 1 General Hospital, which reported that they occurred mostly among new arrivals and mainly among the less willing.**

Divisional Casualties, October-December 1944

	Sick	*BC*	*Total*
October	**1648**	**332**	**1980**
November	**1478**	**30**	**1508**
December	**1342**	**574**	**1916**
	4468	**936**	**5404**

(Previous quarter, 6063)

Admissions to Divisional Units, October–December 1944

	Oct-Dec 1944	*Jul-Sep 1944*
Hepatitis	**880**	**778**
Fever NYD	**494**	**808**
ENT	**282**	**217**
Accidental Injuries	**456**	**639**
Diarrhoea	**162**	**304**
Dysentery	**33**	**49**
Diphtheria	**26**	
Malaria		**67**
Exhaustion	**124**	**174**
VD	**193**	**196**

Admissions to 1 CCS, October–December 1944

	Sick	*BC*	*Total*	*Deaths*
18 Oct–30 Nov	**443**	**174**	**617**	**8**
1–31 Dec	**190**	**572**	**762**	**14**
	633	**746**	**1379**	**22**

Types of Wounds as Seen at 1

CCS, October–December 1944

Bullet wounds	100	13·2 per cent
Shell"	435	57·8 per cent
Bomb	79	10·5 per cent
Mine	54	7·2 per cent
Mortar	85	11·3 per cent
	753	100·0

Of these, multiple wounds 275

Admissions to 1 Gen Hosp, October–December 1944

	Oct	Nov	Dec	Total
Surgical Admissions				1747
Medical Admissions	1032	812	503	2347}4094
Principal Admissions—Battle Casualties				779
Hepatitis	489	369	137	995
Diarrhoea and Dysentery	48	38	16	102
Skins	74	47	49	170
Respiratory	78	58	37	173
Diphtheria	12	4	21	37
Anxiety States	19	57	46	122
Furunculosis	11	28	29	68

Evacuations from 1 Gen Hosp in October 1944

Evac. by hospital ship to Bari	1016
Evac. by hospital train	248
Evac. to reinforcement transit unit and unit	341
	1605

Admissions to 2 Gen Hosp; October–December 1944

	NZ Cases	Others	Total
Admitted direct	67	60	127
Transferred from other medical units	417	246	663
	484	306	790
Battle casualties	51	74	125

Admissions to 3 Gen Hosp, October–December 1944

Admitted direct	478

Transferred from other medical units	**1373**
Total	**1851**

[1] **Colonel Boyd's opinion proved to be correct and chronic amoebiasis has been a cause of disability in a number of returned servicemen, but the number of new cases has diminished after some seven years. There were 148 cases accepted for pensions up to September 1949.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ADMISSIONS TO OTHER THAN NEW ZEALAND HOSPITALS

Admissions to other than New Zealand Hospitals

In September and October there were again considerable numbers of New Zealand patients temporarily in other hospitals. Some of these were in the forward areas in Canadian CCSs, in the British neurosurgical units, and in transit hospitals at Fano. In November a regular channel of evacuation through New Zealand units was functioning and the number was much smaller. Admissions to other hospitals were: September, 410; October, 528; November, 134; December, 151.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DEATHS IN NEW ZEALAND MEDICAL UNITS, SEPTEMBER-DECEMBER 1944

Deaths in New Zealand Medical Units, September-December 1944

There were very few deaths other than those occurring in the field ambulances and only two deaths in hospital in Italy other than from battle casualties, a remarkably small number in over 20,000 men in 2 NZEF in Italy. One of the two deaths followed an injury and the other was from a ruptured cerebral aneurysm.

	NZ	*Other*	*Total*
Deaths in FSU	**4**	**3**	**7**
Deaths in CCS	**16**	**6**	**22**
Deaths in 1 Gen Hosp	**10**	**4**	**14**
Deaths in 2 Gen Hosp	**3**		**3**
Deaths in 3 Gen Hosp	**1**		**1**
	34	**13**	**47**

Casualty State 2 NZ Division, November 1943–November 1944 **(*NB:* Accidental injuries are included in BC figures up to 31 January 1944.)**

	Sick	*BC*	*Acc. Inj.*	*Total*	*Discharged (RTU)*
1943					
18–30 Nov	**260**	**228**	**(not recorded)**	**488**	**43**
Dec	**833**	**1,011**	**(not recorded)**	**1,844**	**228**
1944					
Jan	**693**	**217**		**910**	**159**
Feb	**813**	**328**	**166**	**1,307**	**160**
Mar	**922**	**811**	**222**	**1,955**	**252**
Apr	**695**	**109**	**216**	**1,020**	**161**
May	**993**	**272**	**249**	**1,514**	**305**
Jun	**1,099**	**165**	**172**	**1,436**	**357**
Jul	**1,279**	**593**	**237**	**2,109**	**415**

Aug	1,264	316	181	1,761	401
Sep	1,523	451	219	2,193	382
Oct	1,495	332	153	1,980	583
1–17 Nov	781		118	899	294
Totals	12,650	4,833	1,933	19,416	3,740

Casualties in 2 NZ Division During Period of One Year in Italy up Till 17 November 1944

Battle Casualties (including killed and PW)	6,094
Sick	14,583
Evacuated for medical boarding	288
	20,965
Returned to units from MDS	3,740
Temporarily lost to the Division	17,225

The only permanent loss to the Division consisted of those men downgraded as unfit for further service in the Division and those evacuated to New Zealand. This would be a relatively small percentage of the total.

A total equal to the strength of the Division passed through the medical units in the year.

Main Categories	Cases of Fever NYD	2,039
	Cases of accidental injury	1,933
	Cases of Hepatitis	1,924
	Cases of VD	1,028
		6,924

Patients in Medical Units–Percentage of Troops in 2 NZEF

	Italy	*Egypt*	*Total Patients*
1 Oct	10·62 (excluding BCs 4·94)	4·94	2947
31 Oct	9·96 (excluding BCs 7·84)	3·8	2698
30 Nov	9·81 (excluding BCs 8·38)	4·3	2847
31 Dec	9·75 (excluding BCs 6·98)	5·4	2720

The surgical work carried out at 2 NZ General Hospital, our forward base hospital, during 1944 is well illustrated by the following statistics:

Classification of missiles causing wounds, and also regional distribution of wounds and deaths, of the 2084 battle casualties admitted to 2 General Hospital from forward areas in 1944. (Lieutenant-Colonel J. M. Clarke)

Missiles Responsible	*Patients*	*Percentage*
GSW	276	13·24
SW (HE)	1072	51·48
Mortar	392	18·80
Grenade	146	7·00
Mine	148	7·10
Aerial bomb	25	1·19
Bayonet	1	0·04
Various	24	1·15
	2084	100·00

Regional Distribution	*Wounds*	*Percentage*
Head wounds—Severe 51	123	5·9
Slight 72		
Spine, involving cord 13	17	0·8
Spine, not involving cord 4		
Neck, severe	3	0·1
Facio-maxillary	21	1·0
Eye	64	3·0
Blast effects—Ears	66	3·1
Other	24	1·2
Chest	53	2·5
Thoraco-abdominal	12	0·6
Abdominal	57	2·7
External genitalia	10	0·5
Major joints	117	5·6
Major nerves	103	4·9
Major vessels	52	2·5

Fractures, compound	**352**	**16·9**
Fractures, simple	**8**	**0·4**
Amputations—Major	**55**	**2·75**
Minor	**15**	**0·75**
Flesh wounds only	**1153**	**55·3**
Burns	**15**	**0·75**
Due to masonry	**29**	**1·4**

Deaths—	
Due to abdominal wounds	**9**
Due to thoraco-abdominal wounds	**1**
Due to chest wounds	**2**
Due to uraemia	**2**
Due to pyaemia from infected wounds	**2**
	16—0·8 per cent of total

Italy, 1944–Comparative Casualty Rates of Cases Admitted to all Medical Units **(Rate per 1000 British troops per year taken as 100)**

	British	*Canadian*	*New Zealand*	*Indian*	*African*	*Total Force*
Battle casualties	**100**	**192**	**230**	**294**	**143**	**128**
Accidental injuries	**100**	**169**	**291**	**233**	**298**	**127**
Burns	**100**	**217**	**308**	**163**	**155**	**125**
Diseases	**100**	**153**	**161**	**83**	**110**	**107**
All admissions	**100**	**161**	**180**	**124**	**126**	**111**

Diseases in Italy, 1944–Comparative Morbidity Rates of Cases Admitted to all Medical Units **(Rate per 1000 British troops per year taken as 100)**

	British	*Canadian*	*New Zealand*	*Indian*	*African*	*Total Force*
Malaria	**100**	**76**	**12**	**29**	**33**	**88**
Venereal disease	**100**	**136**	**107**	**52**	**172**	**102**
Infective hepatitis	**100**	**353**	**677**	**59**	**98**	**142**
Dysenteries	**100**	**76**	**202**	**106**	**134**	**102**
Diphtheria	**100**	**163**	**135**	**6**	**34**	**100**
Pneumonia	**100**	**100**	**526**	**86**	**125**	**113**
Influenza	**100**	**967**	**354**	**148**	**235**	**204**

Sandfly fever	**100**	**13**	**68**	**46**	**94**	**86**
Enteric fever	**100**	**791**	**256**	**32**	**38**	**170**
Tuberculosis	**100**	**48**	**73**	**589**	**560**	**138**
Helminthic diseases	**100**	**238**	**1329**	**1757**	**33**	**267**
Food poisoning	**100**	**70**	**30**	**230**	**626**	**116**
Nervous disorders (incl. exhaustion)	**100**	**156**	**161**	**61**	**181**	**107**
Skin diseases	**100**	**132**	**185**	**108**	**94**	**106**
IAT	**100**	**130**	**179**	**114**	**127**	**107**
All diseases	**100**	**153**	**161**	**83**	**110**	**107**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 18 — SENIO TO TRIESTE

Contents

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

THE opening of 1945 found 2 NZ Division in the line but in a defensive role which was destined to last for many weeks. The withdrawal of troops from Italy to assist in quelling the disturbances in Greece led to lack of reserves, and the New Zealanders had to remain in the line longer than originally expected. No major offensive was attempted in January or February, partly because of the weather. There was also a temporary need for economy in artillery ammunition. Heavy snow fell in the divisional area from time to time and the weather was bitterly cold throughout, although about half the days were sunny.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ACTIVITIES OF MEDICAL UNITS

Activities of Medical Units

Patrol activity along the line east of the Senio River was more or less continuous and casualties resulted from patrol clashes, shellfire, and mine explosions. Early on the morning of the New Year 4 MDS at Faenza was kept busy with casualties following an attack by 24 Battalion. Admissions that day were 24 battle casualties and 31 sickness cases, but on subsequent days the totals were much lower. The disposition of medical units remained the same, with 1 Mobile CCS and 6 MDS both open in Forli. The 5th MDS remained closed but 5 ADS was open forward all the time. In spite of the bleak and biting weather, with frozen mud and snow, the sickness rate was satisfactorily low.

In the buildings occupied by the medical units, kerosene and oil-burning stoves were used to keep all departments and living quarters well heated and comfortable for both patients and staff.

In the latter part of January the British Central Medical Inspection Room moved from the area, and on 30 January 4 MDS took over the responsibility for treating sick from British and other neighbouring units. Necessary evacuations of British cases were carried out to 5 British CCS at Forli. Over a reasonably good road, this journey took approximately thirty minutes. Total sickness cases for the month were 578 and battle casualties 125.

At this time meetings of all available medical officers were held at weekly intervals. Short papers on different clinical subjects were read and free discussion followed. Brigadier Stammers, Consultant Surgeon to the Eighth Army, spoke on forward surgery and our own NZMC officers read papers at the other meetings, thus disseminating recent developments in war medicine and surgery and also providing a mental

stimulus in the quiet period.

The Division continued in the line during February in a purely holding role which made the month one of the quietest in its recent history. For the whole month only ninety-two battle casualties passed through 4 MDS, all but eight being New Zealand troops. Most of these admissions were from mine wounds, and a few from patrol clashes and enemy shelling. Admissions of sickness cases for the month totalled 592, of whom 446 were New Zealanders and 123 British.

The weather during February remained calm and fine except for two days on which rain fell. The sickness rate of the Division remained remarkably low and the morale of the troops was excellent.

On 1 February A Company 4 Field Ambulance had passed to the command of the newly formed 9 Infantry Brigade, comprising 22 Battalion, the Divisional Cavalry, and 27 Battalion, and moved with that group to Fabriano, where the brigade was organised. A Company set up an ADS for sick in the agricultural college building formerly occupied by 4 MDS and remained there throughout the month, sending patients daily to 1 General Hospital at Senigallia.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MDS

MDS

During January and February when conditions were static the active MDS limited its surgery to the relatively few urgent cases and the resuscitation of serious cases prior to evacuation to the nearby CCS. Over one thousand sick and two hundred battle casualties were dealt with by 4 MDS at Faenza. The minor sick were treated at 6 MDS at Forli. Nearly 1500 cases were admitted and nearly 60 per cent were able to be returned direct to their units. There was a marked diminution in the number of cases of infective hepatitis. An illustration of the type of work undertaken in the unit at that time is given by the following classification of cases treated:

***Skins*: 121 cases, including boils, which when associated with seborrhoea did badly.**

***Infestation*: 82 cases (scabies 66, pediculosis 16). Benzyl benzoate cleared up the scabies cases satisfactorily.**

***Tonsillitis*: 36 cases—many showed positive KLB.**

***Diphtheria*: Faucial 14 and skin 6 cases. 96,000 units of serum were given to each case.**

***Fevers*: 68 cases. The majority settled in twenty-four hours.**

***Hepatitis*: 27 cases.**

***Respiratory*: 44 cases. All except two pneumonia cases cleared up in two weeks.**

***Accidental Injuries*: 39, none serious, some due to skiing.**

***Malaria*: 2 cases.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CCS

CCS

During January and February the CCS was quite close to the field units. It undertook the forward surgery and looked after the cases of serious illness from the Division.

A total of 34 battle casualties and 319 sick were admitted. There were nine deaths, three of which occurred in the five abdominal cases operated on.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK AT THE BASE HOSPITALS

Work at the Base Hospitals

During the first three months of 1945 there was little change in the routine of the hospitals. At Senigallia 1 General Hospital continued to receive patients from the Division, and 3 General Hospital at Bari received patients from base units and carried out the later treatment of the cases evacuated from Senigallia. At 1 General Hospital all patients were held except those boarded for return to New Zealand and some special long-term cases. The great majority of the cases were returned to their units either direct or through the Convalescent Depot. A saline bath was set up at this time.

A mild epidemic of diphtheria was experienced, with some diphtheritic infection of wounds. At 1 General Hospital in January there were sixteen cases of diphtheria with some skin infections. In February a total of 97 cases, including 27 carriers, was recorded in 2 NZEF and 34 cases were admitted to 1 General Hospital. (Out of nine cases in 3 General Hospital, four developed widespread peripheral neuritis.) Most of the cases at 1 General Hospital were faucial cases of average severity evacuated from the Division. There were many cases in the civilian population at this time. Cutaneous diphtheria was also relatively common, but clinical nasal infection was uncommon though nasal carriers were frequent. No hypertoxic diphtheria was seen and no complicating neuritis developed after the adoption of a minimum dosage of 96,000 units of anti-toxin. Carriers were isolated, and segregation eventually controlled the outbreak. From twenty-four in March, the number of cases in 1 General Hospital dropped to seven in April, and the epidemic was over. In April there were only eleven cases, including two carriers, in the whole 2 NZEF.

No. 2 General Hospital continued in a backwater at Caserta, mainly treating British patients and making preliminary preparations in case of removal to the Po valley. (This projected move did not eventuate. A detachment, however, was sent forward, at first to relieve, and then to work in conjunction with, the CCS.)

During January one convoy of 137 patients was received from 3 General Hospital, otherwise only occasional New Zealand cases were admitted during the whole period. The majority of the cases were local sick from nearby British units and overflow cases from British and Canadian hospitals.

No. 2 General Hospital reported fifty-nine cases of atypical pneumonia amongst British troops during February, whereas there were only thirty-four cases of pneumonia of all types recorded in 2 NZEF. The atypical pneumonia cases ran much the same course as in the previous winter, with absence of clinical signs, positive X-ray shadows, and acute illness. Isolation of the cases was carried out.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK AT THE CONVALESCENT DEPOT

Work at the Convalescent Depot

The unit continued to function in two branches, the main body at Senigallia and the detachment at San Spirito, though the detachment dealt with more patients. There was no change in the type of work undertaken. At first, hepatitis cases were predominant, and later, after the battles, the lightly wounded were numerous. It was noted that the results of delayed primary suture were excellent and hastened full recovery.

The Consultant Surgeon, after his return from his tour of Britain and the north-west front in Europe, expressed a strong opinion that the training of specially selected physical training instructors would add tremendously to the efficiency of the convalescent depots. The name of 'convalescent' was unfortunate in its implication of a rest instead of a rehabilitation centre.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

RETURNED PRISONERS OF WAR

Returned Prisoners of War

Early in 1945 numbers of repatriated prisoners of war passed through the Middle East on their way back to New Zealand. Some had come out of Germany through Russia, some had escaped in Italy, and some had come from Germany via England.

In March a group of seventy-one disabled prisoners was examined in Egypt and, of these, six were found then to be Grade A, six Grade C, four Grade D, and the remainder (55) were Grade E. There were nine cases of pleurisy and four of tuberculosis, six cases of mental disease, and twenty-one battle casualties. The general condition of the large majority was quite satisfactory.

Of 130 British and New Zealand ex-prisoners of war who arrived from Odessa in March from camps in East Poland and East Germany, many had spent periods of privation in the snow while escaping eastwards. In spite of this, their general nutrition was fair and better than was expected.

At 3 General Hospital during May, 438 ex-prisoners of war were examined and X-rayed. Only four showed any marked degree of malnutrition and the general condition of the great majority was good. Thirty-five were admitted to hospital, including eight with amoebic dysentery, two with duodenal ulcer, and one with bilateral tuberculosis of the lung. There were altogether 56 X-ray chest abnormalities—23 of old or healed tubercle, 6 of suspected active tubercle, and 27 other changes.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

2 NZ DIVISION WITHDRAWN FROM SENIO FRONT

2 NZ Division Withdrawn from Senio Front

By the end of February it had been arranged that 5 Kresowa (Polish) Division would relieve 2 NZ Division between 1 and 7 March and that the New Zealanders would move to their former rest area around Fabriano, Matelica, and Camerino.

Fourth Field Ambulance closed as the MDS for battle casualties on 5 March, handing over the buildings at Faenza to 5 Polish MDS. Owing to the difficulty of moving tanks so far to the rear, 4 Armoured Brigade went to Cesenatico on the Adriatic coast north of Rimini and not with the rest of the Division. Fourth Field Ambulance came under 4 Armoured Brigade and moved with it to Cesenatico, and there set up an MDS for sick in a series of seaside cottages. The reception and evacuation departments, operating theatre, and cookhouse were centralised in the largest two-storied house. Sick and ordinary surgical cases were evacuated to 1 General Hospital at Senigallia and serious surgical cases to 66 British General Hospital at Rimini. Colonel Radcliffe [1] was now CO of 1 General Hospital.

The only New Zealand medical unit to remain in Forli was 1 Mobile CCS, which closed but retained its excellent site and buildings. In the rest areas 5, 6 and 9 Infantry Brigades each had its ADS under command. They evacuated sick to 5 MDS, which was open in a good building at Castel Lanciano and fairly central for all units. To deal with accidents and emergencies, 3 FSU was attached to 5 MDS, and the dressing station evacuated cases to 1 General Hospital at Senigallia but held minor sick up to about sixty at a time. In Fabriano 6 Field Ambulance remained closed and spent its time in intensive training, although all units took part in route marches, physical training, and

erecting canvas. The weather was fine for the three weeks of the rest period and the general fitness of all ranks improved noticeably. The sickness rate remained low but, as was usual in a rest period, the accidental injury rate increased. A programme for the coming malarial season was drawn up and all medical officers instructed by the ADMS and DADH 2 NZ Division on the measures to be taken. The training of anti-malaria squads was recommenced.

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[1] **Col D. G. Radcliffe, OBE; Christchurch; born Ayr, Queensland, 14 Jun 1898; surgeon; surgeon 1 Gen Hosp Mar 1940–Jun 1943; in charge surgical division 1 Gen Hosp, Jun 1943–Mar 1944; CO 5 Gen Hosp Mar 1944–Feb 1945; CO 1 Gen Hosp Feb–Nov 1945.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GENERAL SITUATION, APRIL 1945

General Situation, April 1945

Through the dismal winter of 1944–45 Allied and German troops watched each other across the lines of the Italian front, which had now ceded its place in world interest to the battles in North-West Europe. In the long winter months twenty-five divisions of Germans and five of Fascist Italians had been tied down by harassing patrols and air activity. Preparations for a spring offensive had been proceeding, and this was timed to start when the flooding rivers had subsided and the wet ground would bear the weight of armour.

The beginning of April found 2 NZ Division moving from its rest area towards the Senio River where, on 2 April, under command of 5 Corps, it took over a sector of the line north of Faenza, with 8 Indian Division on its right and 3 Carpathian Division and 5 Kresowa Division of 2 Polish Corps on its left. The first eight days of the month were spent in clearing the enemy from the near stop-bank and in active patrolling. These operations produced 120 battle casualties. The assault on the Senio was fixed for 9 April.

Formidable river barriers stood in the path of 2 NZ Division as it prepared to attack. The six rivers from the Senio to the Idice formed ideal defensive positions and the enemy had taken every advantage of them. The floodbanks were in many cases 30 feet high, tapering from a base of 100 feet thick up to a flat apex 10 feet wide. Between the banks themselves were mines and wire, and in places the water was 10 feet deep between the canalised perpendicular banks.

Field-Marshal Alexander's plan was to attack in the flat river country in the centre, thereby drawing off the enemy brigades from the marshes of the Adriatic coast and the Apennines, and when this had been

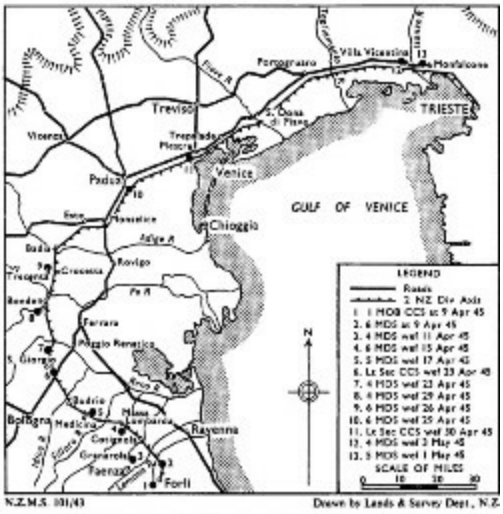
achieved, to push between the marshes through the narrow Argenta Gap on the northern flank. When all the enemy reserves had been drawn off the mountains, the final blow was to be struck by the Fifth American Army attacking through the hills towards Bologna. The underlying intention behind the whole plan was to defeat the German forces in their existing defences so that further enemy resistance on the big obstacles of the Po and Adige rivers would not be possible. The New Zealand Division, as part of 5 British Corps, was given the role of slogging across the rivers in the centre and fighting hard battles to carry out the job of smashing as much of the German Army as possible. In the original plan it was not intended that this thrust should break the enemy line, but so vigorously was the attack pushed ahead that it broke through before the flank attacks had made much progress, and the New Zealand Division was given its head to lead the advance.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ARRANGEMENTS FOR ATTACK

Medical Arrangements for Attack

For the attack on the Senio 6 Field Ambulance, supplemented by 4 Field Ambulance surgical team, was to be open for battle casualties. Evacuation was to be to 1 Mobile CCS in Forli and thence by NZ Section MAC to 1 General Hospital at Senigallia. Fifth Field Ambulance was open in Forli for sickness cases. On 4 April 4 Field Ambulance moved to an area near Forli, where it was under canvas for the first time since September 1944. A surgical unit and operating centre were temporarily attached to 6 MDS at Prada and the remainder of 4 Field Ambulance remained in reserve.



Forli to Trieste: Line of advance and positions of Medical Units (wef: with effect from)

Forli to Trieste: Line of advance and positions of Medical Units (wef: with effect from)

For the attack 6 MDS was sited in one of the farm buildings scattered along the road leading to the Lamone River, which was about 500 yards away. The farm building was small and the outbuildings useless. There were only four useful rooms on the ground floor and an attached lean-to, the latter being used by the reception section. The theatre was in a room a little too small but quite sound, and sterilising

had to be done in a passage. Across the passage in what had been a cookhouse, a room was prepared for the 4 Field Ambulance theatre team, the door being widened a little to take stretchers. The resuscitation section was in an old ox-stall. It was roomy and quite sound, had a clean brick floor, and already contained a Becchi stove, to which were added two kerosene heaters for warmth. Stretcher bays were contrived in the existing cattle stalls, which might almost have been designed for the purpose. Three tarpaulins were pitched outside on a broken-brick base to house the evacuation section, the pre-operation ward, and walking wounded. Later, another was erected for wounded prisoners of war. A car-park was formed by a bulldozer in a field alongside the MDS building and was paved with bricks. A circuit road in, bridging a ditch, was made by the engineers. So organised, the unit was prepared to handle a large number of casualties.

The MDS was to do only minor and toilet surgery, except for life-saving amputations and treatment of massive haemorrhages. The 1st Mobile CCS was quite near at Forli, a short trip over good roads, and the principal function of the MDS was to take the strain off the operating teams at the CCS. Light cases requiring no further immediate surgery than that performed at the MDS were to be evacuated direct to 1 General Hospital at Senigallia, minor sick and exhaustion cases to 5 MDS at Forli, and only severely wounded to the CCS. Fourth Field Ambulance joined 6 MDS on the morning of 9 April.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ATTACK ON THE SENIO

Attack on the Senio

On 9 April at 1.50 p.m. a terrific bombardment was begun by Allied air forces and artillery on the Eighth Army front. Hundreds of heavy bombers, Fortresses and Liberators, followed by mediums and fighter-bombers, swung down with small bombs designed to kill men, shatter vehicles, and cut communications without blowing the impassable craters that upset calculations at Cassino. Here the air power was greater than that which blitzed Cassino just over a year before. Then came the guns—more than there were at Alamein. Twelve regiments laid the barrage, while in the safety of the houses and ditches to which they had been withdrawn the infantry waited for H-hour. In brief breaks in the gunfire, Spitfires slashed in again and again, catching the bewildered defenders as they bobbed up to engage non-existent assault troops.

The enemy positions were battered for over five hours, and then at 7.20 p.m. the assaulting units attacked across the Senio. By nightfall the New Zealand Division had four battalions across the river and the engineers toiled ceaselessly to swing the iron trellis-work of Bailey bridging into place in the darkness. In a night of solid gains the bridgeheads of the New Zealanders, Indians, and Poles linked up. The following morning, again preceded by a heavy bombardment and closely supported by tanks, the infantry pushed forward to the line of the Lugo Canal, which they had reached in strength by midday. The New Zealand troops attacked again in the afternoon and, although their advance to the Santerno River was fiercely contested, they reached their objective that evening. There were 120 casualties in the first twenty-four hours.

In the evening of the 9th, soon after the infantry moved forward, the

wounded began to come in to the MDS, 58 of them by midnight. The 10th was the busiest day, 157 being admitted. There was a slight lull in the afternoon, and then a flood of severe cases came in. Very few came in between 10 p.m. on the 10th and 9 a.m. on the 11th when 6 MDS closed. Fourth Field Ambulance's team then rejoined its own unit, then at Granarolo, 1500 yards from the Senio stopbank, and 6 Field Ambulance surgical team joined it there on the 11th. Numerous wounded prisoners began to come through before 6 MDS closed.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FROM THE SENIO TO THE SANTERNO

From the Senio to the Santerno

The members of 4 Field Ambulance established themselves at Granarolo ready to receive battle casualties at 9 a.m. on 11 April when 6 MDS closed. The surgical teams from 4 and 6 Field Ambulances and all available ambulance cars were attached to 4 Field Ambulance.

Our infantry crossed the Santerno before dawn on 11 April, and by next morning the New Zealand, 8 Indian, and 3 Carpathian Divisions all had battalions across the river.

There was a steady flow of casualties back to 4 Field Ambulance, these totalling 94 on 11 April and 103 on 12 April.

Crossing the Santerno River with 9 Infantry Brigade on the morning of 13 April, 4 ADS opened to receive casualties from its brigade, which had relieved 5 Infantry Brigade. Steady progress was made towards the Sillaro River, and as 9 Infantry Brigade and 6 Infantry Brigade advanced, 4 ADS and then 4 MDS were kept busy with the casualties, the MDS admitting 89 on 13 April, 119 on 14 April, and 43 up to four o'clock on the afternoon of 15 April, when the unit closed. Its functions were taken over by 6 MDS, which opened under canvas 2 miles to the rear of Massa Lombarda and was assisted by the surgical team from 4 MDS.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ACROSS THE SILLARO

Across the Sillaro

When 13 Corps took over this sector of the front 2 NZ Division came under its command. Then at nine o'clock in the evening of 15 April, in fine weather and with a new moon, 6 and 9 Infantry Brigades attacked to cross the Sillaro, the operation being completely successful, involving only sixty-five battle casualties. It was necessary for the advanced dressing stations to move daily to keep up with the advance.

The Poles on the left and the Indians (now of 10 Indian Division, which had been switched from far on the left flank to replace 8 Indian Division) had kept abreast of the New Zealanders, who on 17 April made a sweeping advance along the Medicina- Budrio railway and reached the Gaiana River, where they found the enemy to be in strength on the far bank. On the night of 18–19 April the New Zealand Division stormed the Gaiana crossings in the face of vicious fire from dug-in positions on the floodbanks, and swept on across the Quaderna Canal against heavy resistance from German paratroops, many of whom died at their posts rather than surrender or retreat. Our casualties for the operation totalled 65.

The 5th MDS moved up to Ganzanigo on 17 April to take battle casualties from the Gaiana battle. It occupied a building that had been vacated by a German medical unit only the previous night, but had to clean it as it was in a filthy state. The MDS was temporarily reinforced by 3 FSU and 2 FTU and had a few days' heavy work with the wounded, and then on the night of 22–23 April there was another influx of casualties from the bombing and strafing of supply columns by enemy planes.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ACROSS THE IDICE

Across the Idice

By 20 April forward troops of 2 NZ Division had cleared Budrio and reached the banks of the river Idice. That night infantry smashed spandau nests and struggled over mines and wire on both floodbanks to force a crossing. Engineers had three bridges open by morning, and 5 and 6 ADSs moved across the river in the afternoon. The 4th MDS moved up to Medicina, in which vicinity 4 ADS had remained for five days, but the ADS was to move forward the following day.

The opposition was now staggering under repeated hammer blows. Polish troops had entered Bologna just as Fifth Army troops came in from the south. The New Zealand Division moved across Route 64, the main Bologna– Ferrara highway, and swung north by-passing San Giorgio, making contact with Fifth Army troops, and overrunning enemy rearguards. Plunging ahead, it crossed the river Reno and reached the Po, just south of Bondeno, by 23 April. On this date 4 MDS moved up to San Venanzio, just south of the Reno River, and that evening opened to take casualties and hold light sick. The Light Section 1 Mobile CCS had also moved well forward to San Marino earlier in the day. Arrangements had been made for a 100-bed detachment from 2 General Hospital to occupy the CCS building in Forli and act as a staging post on the lengthening line of evacuation, relieving the CCS and allowing it to go forward. From Forli cases had been evacuated by MAC cars and ambulance train to 1 General Hospital at Senigallia, a distance of nearly 100 miles, while cases had also been sent by air to 3 General Hospital at Bari, a distance of about 400 miles.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ACROSS THE PO

Across the Po

During 24 April forward infantry of 2 NZ Division crossed the formidable barrier of the river Po in assault boats. Opposition on the far bank was slight and a start was made by our engineers to bridge the river, a distance of some 600 feet. The bridge, Eighth Army's first over the Po, was completed on 25 April (Anzac Day) and that evening 6 ADS crossed this notable river, being the first medical unit to do so. The main part of the Division crossed the Po on 26 April. Owing to the difficulty of getting vehicles back across the river with the ceaseless advance of essential fighting transport, 6 MDS was moved over and established in Trecenta, where 3 FSU and 2 FTU later joined it. The 4th MDS closed for battle casualties with the opening of 6 MDS and received minor sick only. There had been only twelve battle casualties admitted in three days, contrasted with 104 sickness cases. At this stage all units of the Division's medical services were now open and stretched over a line of communication of 100 miles.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ACROSS THE ADIGE

Across the Adige

The difficult obstacle formed by the fast-flowing Adige River, between 100 and 200 yards wide, was forced by resolute infantry on the night of 26–27 April and one of the last water barriers before the Alps was crossed. Next day the New Zealand engineers were the first to bridge this second great water hazard. On 27 April it was directed that 9 Infantry Brigade and 43 Gurkha Lorried Infantry Brigade would pass through 5 and 6 Infantry Brigades, which would go temporarily into reserve. In the later afternoon 9 Brigade, accompanied by the 4 ADS, moved across the river Adige north of Badia. The Division advanced rapidly against slight opposition with few casualties, and on 28 April 4 ADS moved forward through San Margherita, continuing on through Este and Monselice to Padua, where it opened at night in a large house. Casualties received on the road were treated by a reception section by the roadside and evacuated back to 6 MDS at Trecenta.

Established across the Po on 26 April, 6 MDS had two operating teams and a capacity for thirty patients in its evacuation section, but the evacuation of patients back across the Po against the endless stream of traffic advancing over the bridge was precarious. On the 27th four ambulance cars left the unit to go south, but they experienced considerable difficulty in crossing the river. Eventually they were ferried across in returning tank ferries and hauled up the opposite bank by bulldozers. Later in the day 3 FSU and 2 FTU crossed the river and took some of the pressure off the unit operating teams. Admissions on successive days were only 29, 29, and 45, but the unit had to do all necessary surgery in case of hold-ups at the bridge. On 28 April these were considerable as the provost of 13 Corps objected to passing the ambulance cars over. After getting across the river the cars off-loaded at

4 MDS in order to make a quick return.

A move to the vicinity of Bondeno, south of the Po, was made by 4 MDS on the evening of 28 April in order to act as a staging post for all battle casualties and seriously sick cases on their route from 6 MDS to 1 Mobile CCS. Cases of minor sickness were held and all other cases sent back through Ferrara and along Route 64. On the way to Bondeno, at the Reno River crossing, was another zone of wreckage and a patch of road as rough as any yet encountered in the advance. Towards the Po there was untouched farming country, although the roadside was heavily stacked with German dumps, many of them blasted by the Desert Air Force.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TO VENICE

To Venice

The night of 28–29 April was memorable—the Division brushed aside enemy rearguards and, after an all-night move, was firmly established in Padua on the morning of the 29th. That day the Division captured Mestre on the mainland opposite Venice, and a few hours later it was sweeping along the broad causeway over the deep blue waters of the Venetian lagoon to the city, which it found in the hands of partisans. It was soon joined by 56 Division, and by 'Popski's Private Army' which had come by jeep and army-manned landing craft up the coast, capturing Chioggia on the way. The Division did not pause but carried on past Mestre, directed on to Trieste. On 29 April 6 MDS moved on to Padua, a distance of 43 miles. It took with it 3 FSU and 2 FTU, leaving a detachment, which with only one surgeon found the work long and tedious. One operating shift worked for sixteen hours and the surgeon for twenty-two hours, and then the detachment, having been ordered up to Padua, sent six ambulance-car loads of patients back. It was as well that there were relatively few casualties. On 30 April the Light Section 1 Mobile CCS moved up to a good building at Mestre, just at the landward end of the Venice causeway. There 3 FSU, 2 FTU, and MAC Section were ordered to join it, as also was the heavy section of the CCS. All cases were to be held and there was to be no further evacuation to the rear of Mestre, pending the establishment of air evacuation.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TO TRIESTE

To Trieste

Crossing the Piave River on the evening of 30 April, and then the Tagliamento and Isonzo, the Division pushed ahead and, advancing 75 miles, met at Monfalcone the forces of Marshal Tito advancing from the east. Keeping up with the forward elements of the Division were the ADSs, and 5 MDS joined 5 ADS at Trepalade, near Monfalcone, on 30 April ready to take battle casualties. Following its employment as the forward operating centre, this unit had been immobilised, well in the rear at Ganzanigo, by serious abdominal cases which could not be evacuated. On the morning of 1 May the ADS received some wounded from a company of engineers who had been attacked during the night by a strong party of escaping Germans. Later, German wounded came in, some of them in their own vehicles.

In spite of Marshal Tito's claim to have taken the city a few days before, Trieste was still in enemy hands. On the 27-mile strip of coast road between Monfalcone and Trieste, and particularly at Duino, Sistiana, and Miramare, there were strong German formations. The Yugoslav forces had worked their way through the mountains, but the main road to Trieste had still to be cleared. As garrison after garrison surrendered, the gleaming city came into view beyond the rugged headlands. At last 22 Battalion entered Trieste on the afternoon of 2 May. The Division's long trek had ended. In the twenty-three days from the attack across the Senio the New Zealanders had virtually destroyed three German divisions (*98* and *278 Infantry Divisions* and *4 Parachute Division*), captured over 40,000 prisoners, and advanced for 225 miles over difficult country through the wreckage of German armies. [1] It was most fitting, too, that the New Zealand Division, then the division with the longest service in Eighth Army, should have been

‘in at the kill’.

To the north of the New Zealanders 6 British Armoured Division had captured Udine and moved towards Gorizia, while on the Fifth Army front Americans had fanned out as far as the French border capturing Verona, the Brenner Pass, Milan, Genoa, and Turin.

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[1] New Zealand casualties from 27 October 1944 to 2 May 1945 were: Killed in action 324; died of wounds 111; wounded 2092. Most, but not all, of these were from the final offensive.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE SURRENDER

The Surrender

By 2 May 15 Army Group forces had occupied Italy. The country was entirely in our hands from Messina to the Brenner Pass, from the French border to Trieste. The Germans, cut to pieces, dazed, and despairing, laid down their arms on 2 May, adding 230,000 prisoners of war to those already taken, and raising the total bag to between 600,000 and 900,000 men.

On 7 May the BBC announced the complete surrender of all German forces in Europe, and the next day was celebrated as Victory-in-Europe Day (VE Day).

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL REVIEW

MEDICAL REVIEW

Reviewing the historic month of April, when 1090 New Zealand battle casualties were admitted to medical units, ADMS 2 NZ Division, Colonel R. A. Elliott, made the following comment:

The medical problems of the month have been interesting and difficult but the 2 NZ Div Medical Services rose to the occasion. At this time, when the European fighting of 2 NZ Div has ceased, ADMS 2 NZ Div would like to place on record his thanks to, and pride in the medical units and RMOs whom he has the honour to command. They have done all that has ever been asked of them, and more.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL WORK DURING THE ADVANCE

Medical Work During the Advance

Most of the casualties occurred in the early stages of the offensive. As the enemy became beaten and bewildered the opposition slackened considerably, and the advance tended to become more of a mopping-up operation. During the advance very many German wounded were captured, and ADMS 2 NZ Division obtained the release of prisoner-of-war medical officers and staff and established German hospitals, which later became a Corps' responsibility.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE RAPS

The RAPs

The majority of the RMOs at this period had only recently been attached to the Division, but they carried out their work efficiently. RAPs were set up in whatever suitable buildings were available during the advance, and preliminary treatment given to the wounded before evacuation to the ADS. Working in close co-operation with the regimental stretcher-bearers, Bren carriers marked with Red Crosses were used to collect the casualties from the companies. They had often to run the gauntlet of spandau and tommy-gun fire as well as shelling on the dusty roads. The rapidity of movement made the evacuation to the ADSs by ambulance car an urgent matter. Many German wounded, as well as Italian civilians, were attended to before evacuation to the rear.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE ADSS

The ADSs

With the speed of the advance the distinction between reception and evacuation sections of the ADSs became purely nominal, as they had frequently to open individually as complete sections and then leapfrog each other. Besides working in two sections, the ADSs often set up casualty posts and this necessitated the attachment of three medical officers. Under the conditions pressing needs were wireless communication and small lighting sets.

The role of the ADS was exacting, necessitating frequent sudden moves, often over bad roads, demolitions, and improvised bridges; but, except on a few occasions, the ADS was always less than an hour's run from the battalion RAPs, and usually much closer. Casualties were relatively light, but the line of evacuation to the MDS was seldom easy owing to the speed of the advance and the difficulties of a narrow axis with many one-way stretches. A round trip for ambulance cars of six hours to the MDS, sometimes 40 miles away, was not uncommon. This time factor made it essential for resuscitation and immobilisation to be more thorough than was usually required at an ADS.

Houses were taken over wherever possible. The 5th ADS moved fifteen times in twenty-one days and the 6th moved on every day except five between 9 and 30 April. In spite of this, large numbers of cases were treated, though mainly during the early part of the advance. Each ADS treated 700–800 patients, of whom 500 in each case were battle casualties.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MDSS

MDSs

April was a month of great activity for all the MDSs, and as soon as the Division moved forward beyond convenient range of the CCS, the MDSs in turn were called upon to assume the responsibility of undertaking the major forward surgery.

Each MDS provided an operating team which was attached either to the active MDS or to the CCS. In addition, the FSU and the FTU were sent forward from the CCS to the active MDS from 18 to 25 April and from 27 April. Fortunately, during that period casualties were light and the MDSs were able to keep moving. The 5th MDS, however, was immobilised for ten days by seven serious casualties, mainly abdominal cases. The other MDSs each had nine different locations.

The surgical work performed is illustrated by the record of 6 MDS team, which performed 152 operations during the month. These included six amputations, six compound fractures, five ligatures of main vessels, and two operations on main joints. One death occurred during a double amputation at the thigh. During May the MDSs were looking after the sick and also doing surgery as the CCS was nearly a hundred miles away at Mestre. In June the MDSs returned to their normal routine of caring for the minor sick as the CCS had moved up to Udine and handled the serious cases.

FSU

FSU

The 3rd FSU was attached to the CCS for twenty-one days and to the active MDSs for nine days and was operating every day after 3 April. Seventy per cent of the cases were serious. Altogether, 150 operations were performed, with six deaths. One gas gangrene case recovered. Of the abdomens, six lived and six died (the only deaths). The abdominal injuries were very severe in type. The anaesthetics employed were: pentothal in 115 cases; pentothal and inhalation, 24; local, 4.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FTU

FTU

Transfusions were given by 2 FTU to 115 casualties: a total of 328 pints, 183 of blood and 145 of plasma. They were given to injuries of the limbs in 43 cases, chests 22, abdomens 39, heads 7, and burns 3.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

THE WORK OF THE CCS

The Work of the CCS

During April the CCS admitted 1004 battle casualties and 454 sick, a total of 1458, the great majority during the first twenty-six days at Forli. There were 26 deaths and one admitted dead. Of the 28 abdominal cases, 11 died.

The incidence of the different types of injury among battle casualties is shown by the following figures:

GSW	**227**
Shell	**294**
Bomb	**122**
Mine	**34**
Mortar	**292**
Other causes	**35**
	1004

For anaesthesia pentothal was used in 380 cases, whereas inhalation anaesthesia, half with pentothal inductions, was used for only 45 cases, and local for 37 cases.

During May 57 battle casualties and 498 sick were admitted, with three deaths; also five were brought in dead. At Mestre very satisfactory accommodation in buildings was available for the surgical cases, while the medical cases, under the care of the detachment from 2 General Hospital, were in tents.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION IN FORWARD AREAS

Evacuation in Forward Areas

During the static period evacuation of casualties from the front line to the ambulance units and also to the CCS was easy and rapid. When the Division moved rapidly forward the evacuation of casualties became difficult, partly because of the long distances to be covered and partly because of movement against the general stream of traffic at the many bridges. To counter these difficulties the ambulance units moved steadily forward and split up so as to leave personnel in charge of serious cases which could not be evacuated. Evacuation was by motor ambulance back to the MDS active at the time, and from the MDS back by road to the CCS. The only delay in the arrival of forward casualties recorded by the CCS was after the crossing of the Santerno, during the latter part of the CCS's stay at Forli, and during its last few days at San Marino.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

EVACUATION FROM THE CCS

Evacuation from the CCS

While the evacuation of patients to the CCS at Forli was excellent, the evacuation from the CCS was better than it had ever been. From 9 April quite a large proportion of the cases, including fractured femur cases, were flown to 3 General Hospital at Bari, and many serious cases arrived there within twenty-four hours of being wounded. This saved congestion at 1 General Hospital and also a double trip for the serious cases. The cases arrived at 3 General Hospital in excellent condition without any untoward incident. Evacuation to 1 General Hospital during the offensive was carried out smoothly both by ambulance car and later, from 18 April, by hospital train from Forli to Senigallia.

From San Marino evacuation was by road to Forli, where the detachment from 2 General Hospital at first acted as a staging post, thence by air and rail.

When the CCS reached Mestre at the end of April evacuation was by road to San Marino and Forli, a long, slow, and arduous journey. During May road evacuations took place to 54 British General Hospital at Ferrara, and also to 1 General Hospital, a very long route and a severe trial to the patients. Erratic air evacuation was available from 11 May to 1 General Hospital at Senigallia.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WORK OF THE BASE HOSPITALS

Work of the Base Hospitals

In April the heavy casualties from the Division were dispersed satisfactorily from the CCS by road, rail, and air to the two active base hospitals and were dealt with very promptly and efficiently. The air evacuation to 3 General Hospital was particularly effective, and serious cases in large numbers were admitted to the hospital, many within twenty-four hours of wounding.

As the advance continued, as already mentioned, evacuation became much less satisfactory and air transport rather meagre.

Remarkably few deaths occurred in the hospitals at this time.

During April 584 battle casualties were admitted to 1 General Hospital, but it was noted that very few were serious and that mine cases were less numerous. The casualties included 8 fractured femurs, 24 fractured legs, 18 chests, 7 abdomens. Thirty cases were transfused. There was more sepsis in the later cases, a natural sequence of the difficulties in the forward areas and, especially, of the long and difficult evacuation.

During May the admissions fell markedly to a total of 450, of which 37 came by train and 52 by air; 84 were German prisoners. The delayed primary suture of wounds had been the established routine for a considerable period and the results at this period were excellent. There were no deaths in battle casualties for the two months following the offensive.

Comparatively few cases of exhaustion were evacuated during this period. In April, when the battles were being fought, only fifty-two cases

were admitted to 1 General Hospital.

Whereas during the first three months of 1945 work at 3 General Hospital was light, few cases being admitted from the forward areas, during April there was a marked change, largely brought about by the introduction of air evacuation from Forli to Bari.

Altogether, 1021 cases were admitted to 3 General Hospital in April, including 495 battle casualties. One hundred and seventy-three cases were received by land, 477 cases by sea, and 371 cases by air. Serious surgical, eye, and facio-maxillary cases came from 66 British General Hospital, Rimini, by air. All the patients sent by air arrived in very good condition.

A total of 553 operations was performed, including 33 for delayed primary suture and 68 for the application of plasters. Three cases of gas gangrene were recorded. The great majority of the anaesthetics given consisted of pentothal alone.

A serious explosion of an ammunition ship occurred in Bari harbour on 9 April and thirty-four serious cases were admitted to 3 General Hospital. A Special Order of the Day highly commending the work of the hospital was issued by the Area Commandant. Many New Zealand troops volunteered as blood donors for the victims of the explosion, and 210 pints were obtained from 230 of the men.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

SURGERY IN THE FINAL BATTLES

Surgery in the Final Battles

In spite of the fact that many divisional medical officers were experiencing their first battle, the standard of treatment was high, few deficiencies being noted by the Consultant Surgeon 2 NZEF. At 1 Mobile CCS at Forli there was a steady turnover of casualties throughout the offensive, and at no time was there any difficulty in coping with the operative work. At times a small convoy of lighter cases was sent on by ambulance car to 1 General Hospital so as to ensure earlier operation. At other times the active MDS helped by dealing with lighter cases, as well as operating on those urgent cases normally dealt with at the MDS. The co-ordination between the MDS and the CCS was good. All head cases and maxillo-facial and eye injuries were sent to 66 British General Hospital at Riccione, where the special teams were kept very busy. Their results were very good, with almost complete absence of sepsis.

At first severe mine injuries were encountered and many leg and thigh amputations were performed. Then a series of severe abdominal cases was dealt with, many of them having also severe general injuries. Most of the deaths were in the abdominal group. A change to the horizontal position for the first twenty-four to forty-eight hours was made in the nursing of the abdominal cases at this period. This was more suitable for the shocked cases and facilitated nursing. The majority of cases operated on had X-ray films taken before operation, and the foreign bodies were generally removed. Parenteral penicillin was given to all wounds of any severity, including all abdominal cases.

At the base hospitals little sepsis was encountered and the delayed primary suture of wounds was carried out in the majority of cases with good results. A rapid turnover of patients was experienced and there

were relatively few septic and toxic cases. The chest and head cases had done particularly well, with an almost complete absence of sepsis. Selected cases of nerve injury and cranial defect were operated on at 3 General Hospital so as to obviate delay, especially in the nerve cases, before operations could be carried out in New Zealand. The cranial defects were filled with bone chips from the crest of the ilium. At 3 General Hospital, and to a lesser extent at 1 General Hospital, closure of the colostomy in the abdominal wounds was undertaken in all suitable cases at this period. The results obtained were highly satisfactory, especially in those cases where an adequate spur had been made at the original operation.

There was a marked deficiency of trained anaesthetists in the Medical Corps at that time. Cyclopropane was being increasingly used, and it was considered that all the base hospitals as well as the CCS should possess an anaesthetic machine to enable cyclopropane to be administered to suitable cases.

The opinion of the Consultant Surgeon 2 NZEF (Colonel Stout) was that the treatment of war casualties at the end of the war in Europe had reached a very high level, both in the saving of life and in the freedom from sepsis and the rapid repair of wounds. To this progress the New Zealand Medical Corps had contributed its share and had rapidly adopted any progressive developments in treatment. The young medical officers in the forward areas had especially distinguished themselves by their painstaking and skilled work.

In mentioning the work of the New Zealand Medical Corps, recognition had to be given to the high standard of efficiency and conscientious work of the 'other ranks' of the Medical Corps, again especially in the forward areas. The nursing attention given by the men in the field ambulances and casualty clearing station was assiduous and capable, and many very serious cases were nursed through to safety without the benefit of being nursed by New Zealand sisters. The work of the sisters was held in the highest esteem by all, including the RAMC officers who had knowledge of their work.

Altogether, the work of the NZMC during the campaigns was thought to have been quite up to the high standard set by the RAMC; and in the forward areas the work, especially of the field ambulances, was perhaps a shade better.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TENSENESS IN TRIESTE

Tenseness in Trieste

After the cessation of hostilities in Italy on 2 May 1945, 2 NZ Division continued in an operational role in the occupation of Trieste and areas east of the Isonzo River, the same areas being claimed and partially occupied by Yugoslav troops. Political difficulties created a tense situation, with an ever-present possibility of an armed clash. For this reason the medical layout had to be a tactical one.

The 4th MDS was moved up on 1 May from Bondeno, south of the Po, to open on 3 May at Villa Vicentina on the western side of the Isonzo, where it would not be involved in case of active operations against the Yugoslavs. All minor sick, up to about one hundred, were held there. Evacuation was carried out by NZ Section MAC to Mestre, where 1 Mobile CCS was assisted by a 100-bed detachment from 2 General Hospital. The 6th MDS was closed at Sistiana, but was in a good building and prepared to open within the divisional defence perimeter should hostilities break out. The 5th MDS was located at Mirano, near Venice, and had established a rest camp for 2 NZ Division personnel on leave to Venice. Accommodation was provided for 200 men in EPIP tents and tarpaulin shelters, and a large villa was utilised for administration and staff. Towards the end of May an air evacuation centre was opened at Udine, and 1 Mobile CCS with attached units prepared to move to that town.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

POST-ARMISTICE MEDICAL ARRANGEMENTS

Post-Armistice Medical Arrangements

The buildings occupied by 4 MDS at Villa Vicentina were former Italian-German barracks entirely suitable for medical work, water supply, electricity, latrines, and ablution rooms being available. As was usual during a rest period, there were numerous accidental injuries, many minor and some serious. As 1 Mobile CCS at Mestre was at first 70 miles away, all acute surgery was done at the MDS with the assistance of the attached 3 FSU. There was a steady stream of sickness cases, with ten cases of malaria and many with skin infections, and fewer cases of diarrhoea than might have been expected. The MDS also took the sick parade for any of the adjacent units of the Division which were without RMOs, and for several British units, some of which were attached to 2 NZ Division. The average number of cases examined and treated daily in the reception section without admission was fifty. From 3 May 102 Mobile VDTC was attached and was kept extremely busy, there being a very marked increase in the incidence of venereal disease, due partly to the cessation of hostilities and partly to the impossibility, because of political difficulties, of exercising adequate control in Trieste.

In Monfalcone 4 ADS treated and evacuated casualties on the morning of 2 May and then in the afternoon moved forward to Trieste. A building was selected in the town and the unit set up an ADS that night. During the next three days numerous casualties, mostly enemy, were treated and evacuated. During May cases of sickness and accidental injuries were treated by all three ADSs attached to their respective brigades in the areas of Monfalcone and Trieste, and then evacuated to 4 MDS at Villa Vicentina.

Instructions were received on 20 May for the evacuation of Trieste

by 9 Infantry Brigade in the event of the outbreak of hostilities. It was expected that warning would be given and that A Company 4 Field Ambulance would move to a position west of Miramare, five miles from Trieste. It was, however, considered inadvisable to retain unnecessary transport and staff in Trieste, and on 21 May twenty-one men, three vehicles, and attached AFS ambulances were sent back to 4 MDS. At the same time 5 Brigade was moved nearer Trieste and 6 Brigade was deployed to protect lines of communication. The plans in the event of hostilities were amended on 25 May, when it was decided that 9 Brigade would remain in Trieste. The ADS then moved to a site in the vicinity of Brigade Headquarters and there set up for the reception of casualties. Fortunately there were no battle casualties after the first few days of the month, and it was possible to carry on the work of the ADS with the reduced number of staff resulting from the transfer of the party to 4 MDS.

In June 4 MDS continued to remain at Villa Vicentina and handled sickness cases. During May there had been delay in the cases reaching the CCS as the Division was one hundred miles away. This was rectified when the CCS moved to Udine at the beginning of June. Evacuation from 4 MDS to the CCS then took less than one hour, but some cases had still to be evacuated by road to Ferrara, a distance of 160 miles, and isolated cases were sent by road direct to Senigallia. The lack of adequate air transport for casualties at that period caused much anxiety to our medical service. After 1 Mobile CCS had moved north to a large school building in Udine, where there was an adjacent airfield, patients were evacuated by one plane twice weekly to Falconara for admission to 1 General Hospital at Senigallia.

With the opening of 6 MDS at Villa Opicina on 21 June, 4 MDS closed but continued to hold sick parades for neighbouring New Zealand and British units. Accidents, especially traffic accidents, had increased, and scarcely a day passed without one or two serious traffic casualties. Along with the remainder of 9 Infantry Brigade, 4 ADS had moved from Trieste to an area north of Prosecco on 2 June. The ADS was established

there until 17 June, when a further move by the brigade took it north-west of Basovizza.

Ample facilities for recreation continued to be available during June. There were brigade and divisional sports meetings, cricket matches, and whenever possible swimming parties went to the beaches daily. Members of the units went on leave to Venice, to leave camps, and on organised four-day tours of northern Italy to Milan and the Lake district. Frequent cinema and operatic performances also provided entertainment. Day leave to Trieste was permitted later in the month and those not on duty made good use of this privilege. The active campaigning of the Division was over, the tension in Trieste eased, and the Division generally relaxed prior to the gradual return of men to New Zealand and a decision by the New Zealand Government regarding the future employment of the force in the Pacific.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HEALTH OF TROOPS

Health of Troops

The only endemic diseases of importance in the first half of 1945 were malaria, diphtheria, typhoid, and the venereal diseases. The force was affected only in a very minor degree by diphtheria and malaria and not at all by typhoid, but was seriously affected by venereal diseases when Trieste was occupied.

The health of the troops had been generally excellent during the winter months, and with the decreased incidence of hepatitis the number of sick evacuated from the Division had diminished appreciably.

The number of sick admissions in the Division were 1030 in January, 815 in February, 1074 in March, 967 in April, and 1009 in May. At times up to 60 per cent of the cases were returned to their units without being evacuated beyond the divisional medical units.

2 NZEF (Italy and Egypt)
Admissions to Medical Units

	Total Cases	*With BCs Excluded*
January	2143	2040
February	1984	1893
March	2095	2074
April	2769	1679
May	2141	2074
	11,132	9760

2 NZEF
Patients in Medical Units

1 Jan	2720

31 Jan 2104
28 Feb 1775
31 Mar 1523
30 Apr 2399
31 May 1410

ACCIDENTAL INJURIES

Accidental Injuries

The effect of accidental injuries in adding greatly to the admissions to medical units, with a loss of manpower—temporary, if not as a rule permanent—is well shown by the following table giving the figures for the Division of battle casualties and accidental injuries during the first five months of the year:

	BC	*AI*
January	**103**	**234**
February	**91**	**196**
March	**21**	**376**
April	**1090**	**251**
May	**64**	**303**
Totals	**1369**	**1360**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MALARIA

Malaria

Administrative arrangements had been made for the prevention of malaria during the season, and this was of particular importance as the Division passed through areas in which malaria was prevalent. The malaria units were reconstituted and malaria circulars were issued similar to those drawn up the previous year. Protective clothing and nets, repellent liquid (dimethyl phthalate), and mepacrine were used. The OC 4 Field Hygiene Company was appointed special malaria officer and the RMOs acted as unit advisers, but the OCs of units were held responsible for the enforcement of actual measures in their own units. Unit anti-malaria squads were formed of one NCO and three other ranks, with equal numbers of reserves. The spraying of living quarters and also of any casual water in the unit area was carried out. (It was stated that the incidence of malaria in the forces in Italy in 1944 had varied from 0·64 to 1·34 per thousand, but in the New Zealand Division it had only been 0·16 per thousand. In one Allied division, which had stayed one night without precautions in a highly malarious area, there had been over 540 cases in one week and over 500 in another.)

The necessity of keeping camps away from villages and low-lying areas was stressed, 2000 yards being laid down as the minimum distance. Adult mosquitoes were destroyed by daily spraying, and larvae by weekly dusting of water surfaces with Paris green. One part of Paris green was mixed with ninety-nine parts of any convenient dry material such as soil, fine sand, or sawdust and handsown from haversacks.

Any cases of fever were adequately investigated and blood tests taken. Medical officers were trained in the diagnosis from blood films and a malaria officer was appointed in each field ambulance. These

measures proved satisfactory.

The cases reported in the Division were: January, 1; February, 2; March, 1; April, 2; May, 22; June, 12.

The hospital figures for the whole 2 NZEF were:

	CMF	*MEF*	*Total*
Jan	1	4	5
Feb	5	4	9 (4 relapses)
Mar	14	4	18 (8 relapses)
Apr	16	3	19 (7 relapses)
May	25	6	31
Jun	20	13	33
	81	34	115

No case of any severity was reported. Malaria provided no problem as regards man wastage or serious illness, because of the efficient control measures adopted by the Army generally and by 2 NZ Division in particular. The taking of mepacrine produced only very minor disturbance to general health in some cases.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

VENEREAL DISEASE

Venereal Disease

During this period venereal disease provided the major incidence of sickness in the Division and there was an appalling increase following the occupation of the Trieste area. There were fourteen licensed brothels in Trieste, normally under good Italian medical supervision, and there were two hundred licensed street-walkers. The city was a seaport and venereal disease was known to be rife. The unsettled political position, arising out of the attitude of the Yugoslavs, disorganised any normal control and prevented any control by our forces. The War Office had decreed that no official army brothels should be allowed.

The cases recorded in the divisional area by 102 Mobile VDTC were as follows:

	Syphilis	*Gonorrhoea*	*Soft Sore*	*Urethritis*	*Penile Sore*	*Balanitis*	*Prostatitis*	*Other*	*To*
Jan	7	21	8	16	5	7	2	2	68
Feb	2	32	4	11	6	2		4	61
Mar	3	22	5	26	6	3	3	3	71
Apr		28	16	29	2	1	4		80
May		131	49	50	6	3	1	4	24
Jun	2	183	61	77	7	6	1	4	34
	14	417	143	209	32	22	11	17	86

The figures show clearly the enormous increase in the cases of gonorrhoea, soft sore, and urethritis during May and June, and also the low incidence of syphilis. The total for May exceeded the previous highest monthly total of 217 in July 1944.

In January a marked improvement in the results of treatment of soft sore was brought about by daily examinations and frequent changes in

the antiseptics used. Hospitalisation was thereby reduced from an average of twenty-two days in November to eight in January. During February a new routine of penicillin treatment for gonorrhoea was adopted. Five injections of 20,000 units were given three-hourly, thereby halving the period of hospitalisation. Only one relapse was recorded in thirty-two checked cases. Nonspecific urethritis was found to arise two to three weeks after penicillin treatment for gonorrhoea.

In a survey of the results of penicillin treatment for gonorrhoea it was found that of ninety cases there had been six cases of urethritis, eleven of prostatitis, and two of cystitis. These complications subsided under routine treatment. In March cases of urethritis arising two to three weeks after intercourse with no evidence of gonorrhoea were found to respond well to penicillin.

In June the dosage of sulphathiazole for soft sore was increased to 28 grammes (an initial dose of 4 grammes followed by four-hourly doses of 2 grammes) and this accelerated healing. The treatment of both syphilis and gonorrhoea had been much simplified by the adoption of concentrated penicillin dosage and the immediate results proved satisfactory. The enormous increase in the incidence of these diseases could thus be satisfactorily handled by the Mobile Treatment Centre and comparatively little disability and wastage occurred. This was in marked contrast to the First World War, there having been a truly remarkable advance in the treatment of venereal diseases.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DYSENTERY

Dysentery

Admissions to medical units were:—

1945	*CMF*	*MEF*	*Total*
January	47	2	49
February	18	4	22
March	22	1	23
April	31	5	36
May	40	94	134
June	27	34	61

The incidence of dysentery was very low throughout this period. In Italy there were few cases except those reported as amoebic dysentery by 3 General Hospital, mainly following examination of the stools of patients and staff. Amoebae were found following routine stool examination for bacillary dysentery or acute gastroenteritis, when it was considered that the amoebiasis was not responsible for the symptoms. The diagnosis of amoebiasis was made in many cases in patients admitted primarily for other diseases, such as diphtheria, coronary artery disease, infective hepatitis, and atypical pneumonia. Such cases had given a history of previous diarrhoea, ill-defined dyspepsia, vague ill-health, or loss of weight, and had shown on purgation to be harbouring entomoeba histolytica. In June it was noted in 3 General Hospital that of the 173 medical cases remaining in hospital at the end of the month, 47 were suffering from amoebiasis. (It is possible that in some of these cases there was no active amoebic infection but, on the other hand, the development of symptoms of amoebic dysentery later in New Zealand has been a prominent feature in returned servicemen and tends to confirm the findings at 3 General Hospital.)

Enlargement of the liver was noted in 103 of the 252 cases of

intestinal amoebiasis at 3 General Hospital. Of the cases with enlargement, thirty-seven had had a previous attack of infective hepatitis and all these cases failed to respond to emetine. All but six of these cases had returned to normal within six months and none developed amoebic abscess. Of the sixty-six cases with no history of infective hepatitis, all were well after three to six months, but half of them still had some enlargement of the liver. It was considered as a result of the investigations that there was no conclusive evidence that the liver enlargement was due to amoebiasis.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HYGIENE

Hygiene

In the months prior to the advance hygiene arrangements were routine—chlorination of water, burial of refuse in deep pits which were burnt out, use of deep-trench latrines, provision of showers for the troops, and use of the mobile laundry for washing clothes. Greater prevalence of lice rendered disinfestation more necessary and it was done either by dusting with DDT or by steam disinfestation.

During the advance the hundreds of dead animals, as well as dead Germans, created a problem. The animals were sprayed with tar oil, collected, and buried. A recovery vehicle was used to drag animals off the road and out of ditches. Civilian labourers and German prisoners of war were employed in these duties, and AMGOT took over the work after the advance.

During May hygiene was a problem in Trieste because of the difficult position and lack of control. Water was chlorinated in the carts; showers were made available; but the digging of latrines proved difficult because of the rocky country. A municipal tip was used at Trieste for refuse. After the active operations were over, hygiene discipline became difficult to enforce, especially as regards precautions against malaria, and the OC Hygiene Company reported that he had the greatest difficulty in getting the necessary support from officers in this respect.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CHAPTER 19 — FINAL PERIOD IN ITALY

Contents

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[SECTION]

THE early months of 1945 did not present any particular problems of administration as regards the base units, whose locations (apart from Detachment 2 General Hospital) remained static until the cessation of hostilities, and in whose essential functions no important changes were made. There were numerous changes in command as senior long-service officers were released for return to New Zealand.

Victory, and the cessation of hostilities, was naturally the forerunner of further changes. The DMS 2 NZEF, Brigadier Kenrick, and the Principal Matron 2 NZEF, Miss Mackay, relinquished their appointments towards the end of May and Brigadier G. W. Gower and Miss M. Chisholm were appointed in their place. Colonel J. E. Caughey became CO 3 General Hospital and Miss I. MacKinnon [1] Matron of 1 General Hospital. Before leaving, Brigadier Kenrick placed on record his warm-hearted appreciation of the loyal support given him by all members of the medical service, and his admiration for the work they had accomplished; the spirit which pervaded the Corps, he said, was such that his had been a happy as well as a proud command. In addition, Brigadier Kenrick acknowledged that the active interest shown by the GOC in all medical problems had greatly lightened the task of the DMS 2 NZEF.

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[1] **Matron Miss I. MacKinnon, m.i.d.; Palmerston North; born NZ 14 Jul 1909; Sister; Sister, First Echelon; 2 Gen Hosp Jul 1940–Nov 1941; 1 Gen Hosp Nov 1941–Jun 1943; Ch Str 2 Gen Hosp Jun 1943–Jun 1945; Matron 1 Gen Hosp Jun–Oct 1945; Matron 6 Gen Hosp Oct–Dec 1945; Principal Matron Dec 1945–Jan 1946.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

STAFF FOR REPATRIATION UNIT, UNITED KINGDOM

Staff for Repatriation Unit, United Kingdom

With the ending of the war in Europe and the consequent release of thousands of New Zealand prisoners of war, most of whom were taken across Western Europe to England, there was an accentuated demand for the expansion of medical facilities with the New Zealand Prisoner-of-war Repatriation Unit in the United Kingdom. The ADMS 2 NZEF (UK), Brigadier J. M. Twhigg, in anticipation of the cessation of hostilities, was anxious to receive reinforcements of medical officers, sisters, and other ranks from 2 NZEF in MEF and CMF earlier than May. Personnel, however, could not easily be spared prior to, and during, the final offensive, as there was more often an insufficiency rather than a surplus of staff for medical units, especially as regards medical officers.

However, by 14 May a total of 67 medical personnel (12 medical officers, 12 NZANS, 9 NZWAAC, and 34 other ranks) had been despatched to the United Kingdom. While the DMS 2 NZEF fully appreciated the difficulties under which this medical unit in the United Kingdom was working owing to the sudden influx of repatriated prisoners of war, he found it impossible to send more in the meantime because of: (*a*) the long lines of communication in Italy; (*b*) the fact that New Zealand hospitals were still dealing with battle casualties, sick, repatriated New Zealand prisoners of war, and wounded German prisoners; (*c*) the closing of 2 General Hospital preparatory to its move to Egypt; and (*d*) the late arrival of the medical draft of the 15th Reinforcements. When the post-battle rush of work had been cleared and the tension eased in Trieste, it was possible to release more personnel to the United Kingdom.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL SERVICES WITH PRISONER-OF-WAR REPATRIATION GROUP

Medical Services with Prisoner-of-war Repatriation Group

In the middle of 1944 plans had been made for the establishment of a medical service in England with the New Zealand Repatriation Group being established to care for New Zealand prisoners of war as they were released in Europe. In August 1944 two medical officers, six sisters of the NZANS, and twenty other ranks were chosen from the New Zealand Medical Corps in Italy to go to England as the nucleus of a camp hospital staff. This medical group embarked at Naples on 4 September and reached Liverpool on the 14th, actually disembarking on 18 September.

While the medical group was awaiting disembarkation there disembarked ahead of them 116 New Zealand prisoners of war who had been repatriated from Germany on medical grounds. These repatriated men went to Headquarters 2 NZEF (UK) Reception Group, Aylesbury, to which destination also went the medical staff for the camp hospital, except the sisters who were posted to the Connaught Military Hospital until December 1944.

Only two of this first group of New Zealanders to be repatriated to England required immediate hospital care, and most were allowed to go on leave. Upon their return from leave arrangements were made for the supply of artificial limbs and specialist treatment. All were medically examined by the camp medical staff and preparations made for their return home. On 5 November forty-seven embarked for New Zealand on a transport, and on 14 November fifty-five embarked on the hospital ship *Oranje* for New Zealand.

In October Brigadier Twhigg, who had been DDMS 2 NZEF (IP), arrived from New Zealand to take over the medical command in the

United Kingdom. Brigadier Twhigg had been recalled hurriedly from New Caledonia, where 2 NZEF (IP) was disbanding prior to return to New Zealand, and was sent by air to the United Kingdom, arriving there on 2 October. There were some grounds for urgency in view of General Montgomery's plan to advance immediately to the Rhine. This plan was not followed. General Eisenhower's plan to proceed through Belgium and Holland was adopted and, because of setbacks, it was obvious when Brigadier Twhigg reached the United Kingdom that hostilities would not end for some months. The New Zealand Military Liaison Officer, Brigadier Park, [1] then arranged with Army Headquarters, New Zealand, for Brigadier Twhigg to be appointed ADMS (UK), with supervision of the medical services of the Reception Group. As ADMS (UK) he was able to act as medical liaison officer, an office which Brigadier Park had long been keen to establish, and for which there was considerable justification. With the war in Europe continuing, and with the further prospect of prolonged hostilities in the Far East, there was ample opportunity for liaison work. This involved War Office conferences, consultants' and service meetings at the Medical Branch of the War Office, and contact with the liaison officers of Canadian, Indian, South African, and Australian forces. In addition, United Kingdom hospitals were visited for consultation regarding New Zealand patients, and to make arrangements for the post-graduate training of New Zealand medical officers.

In the early part of October 1944 2 NZEF (UK) Reception Group moved to Old Park Barracks, Dover, where it was accommodated in modern barrack buildings built in 1939 and only slightly damaged since then by bombs and shellfire. Group Headquarters, including the ADMS's office, occupied one administration building, and in Freyberg Wing all repatriated personnel were quartered.

Pending the completion of arrangements for a building for the Camp Reception Hospital, a few patients were admitted to British hospitals. Early in December approval was obtained for the taking over of buildings adjoining the Emergency Medical Services hospital, Dover, to

accommodate the New Zealand Camp Reception Hospital. About the same time ADMS 2 NZEF (UK) and his office staff established themselves at New Zealand Military Headquarters, London, and conducted the medical administration of the Reception Group from there. Another medical officer had been made available from 2 NZEF in Italy to take command of the reception hospital.

Steps were taken to prepare the EMS buildings at Dover for the purposes of the Camp Reception Hospital, the buildings and their facilities being most suitable. However, just as the hospital was preparing to open in February 1945, the Reception Group was transferred to the Margate area, Isle of Thanet, Kent, at the request of the War Office, which desired the Old Park Barracks to be vacated.

It was considered advisable to transfer the hospital also. Suitable accommodation was found and made available at the Isolation Hospital, Haine, which was centrally located to the rest of the Reception Group. At this time it was decided to change the title of the hospital to New Zealand Military Hospital (UK) owing to the misleading nature of the previous title when applied to an establishment which was intended to function as a military hospital and not merely as a camp reception station.

The hospital staff completed the move from the EMS hospital, Dover, to the Haine hospital, near Ramsgate, on 19 March 1945 and set about establishing a 60-bed hospital for use by 9 April. The buildings, constructed of brick were in the form of semi-detached wards, with a main administration block. The entire hospital had been used to house British troops, and much labour was called for from the small medical staff to produce a hospital standard of cleanliness. By 8 April seventy-six beds were available for occupation. A section of the British Red Cross Society ambulance unit, comprising five ambulance cars and drivers, was made available to the Reception Group, and the supply of comforts arranged through the Joint Council of the Order of St. John and New Zealand Red Cross Society. Volunteer civilian helpers gave a measure of assistance in lighter work on the hospital buildings.

On 9 April the first patients, six, were admitted to the hospital from British units in the Kent area. Next day the first group of repatriated New Zealand prisoners of war to be admitted arrived, and occupied all the available beds. Steps had to be taken to prepare additional wards in the hospital buildings. By 25 April five wards had been opened and the hospital had been raised to a 200-bed status, with a suitable establishment. Sisters from QAIMNS and RAMC personnel were attached to the staff pending the arrival in May of reinforcements from 2 NZEF in Italy. The last were made available as readily and in as large numbers as possible, having due regard to the commitments of the New Zealand Medical Corps in Italy, where it was under strength in both officers and men. The sudden expansion found the hospital temporarily short of equipment.

During April 250 New Zealand repatriated prisoners of war were admitted to the hospital, of whom 201 were still patients at the end of the month. The average period in hospital of the repatriates was approximately fifteen days. The number of New Zealanders in British military and EMS hospitals at 30 April was ninety-one, the majority having been direct admissions from British reception camps or from ports and airfields.

The repatriated prisoners of war, who began to arrive in appreciable numbers at the New Zealand Reception Group early in April, continued to arrive in a steady stream throughout the month, the total arrivals being 1427. Returning ex-prisoners of war came mainly through British reception groups, but a proportion reached the New Zealand Reception Group direct from Manston airfield which was the airport destination for New Zealanders.

As a result of privations and hardships immediately prior to repatriation, the general condition of the returned prisoners of war was poor, and a high proportion was found to be suffering from varying degrees of malnutrition and avitaminosis. Of the number reporting to 2 NZEF (UK) Reception Group, approximately 18 per cent required

hospital treatment, the percentage being higher among those who reported during the first two weeks. Some of the later arrivals had been held in British reception camps in Europe and the more seriously ill cases were admitted to military hospitals there, with the result that the hospital admission rate in the United Kingdom dropped to between 10 and 15 per cent.

In April a medical headquarters was established in Margate close to the reception and transit wing of the Group. At this headquarters was the office of ADMS 2 NZEF (UK) and a medical examination centre providing facilities for four medical-board rooms. The task of carrying out routine medical examinations on all men and of providing medical care was an arduous one for the five medical officers, which was the total number at first available for such work. There was also a sudden expansion of the hospital because of unexpected sickness which taxed the resources of all ranks on the staff, including NZANS sisters. For specialist opinions the New Zealand medical services was largely dependent on the facilities and personnel of British hospitals.

In regard to the pressure on planned hospital arrangements it should be noted that the British, Canadian, Australian, and South African authorities on the whole met with the same experience with returning ex-prisoners of war. The Canadians at the end of April began to use a general hospital, and the South Africans increased their hospital beds from 200 to 300. The Australians had set up no military hospital of their own in the United Kingdom and their ex-prisoners of war were scattered among as many as twenty-seven EMS hospitals throughout the country.

During May 1945 New Zealand ex-prisoners of war to the number of 4060 arrived in the United Kingdom, and the New Zealand Military Hospital (UK) was kept running to capacity practically throughout the month. It was necessary to transfer some ninety-five cases to nearby hospitals to make provision for any future emergency intake of patients. No attempt was made to increase the Military Hospital (UK) beyond the capacity of the buildings available at the institution at Haine. By

arranging for the quartering of the staff, other than female personnel, in neighbouring requisitioned buildings, a total capacity of approximately 250 beds could be provided, of which 100 beds were suitable only for cases which required mainly rest and special diet and little in the way of nursing. During May the medical staff at the hospital received valuable assistance from three attached Canadian medical officers who rejoined their own corps after the arrival of six medical officers, seven NZANS sisters, six WAAC nurses, and nine NZMC other ranks from 2 NZEF in Italy. Some medical officers and other ranks from repatriated NZMC personnel also volunteered for duty with the Reception Group.

As the Director of Hygiene, War Office, pointed out at a conference of the senior medical officers of Dominion forces on 2 May 1945, events had not followed the anticipated plan. The original medical arrangements were based on Germany capitulating as a whole. When this occurred, prisoners of war were to stay in the camps and be supplied with food and arms from the air. After their camps had been reached by the Allied armies, the prisoners of war were to be moved to staging camps, and thence to ports for passage to the United Kingdom by sea.

When repatriation did actually occur, the situation proved very different from what had been envisaged. Firstly, the forced march of a large proportion of prisoners of war led to a higher incidence of severe malnutrition than had been expected from previous experience. Secondly, prisoner-of-war camps in Germany were overrun and the inmates released before the cessation of hostilities. Thirdly, the prisoners of war were transferred rapidly from operational areas to the United Kingdom by air, often without examination and sorting on the Continent.

The fact, also, that elaborate emphasis had been placed on the psychological aspects of the problem was thought to militate against adequate provision being made for the emergency circumstances that did arise. In point of experience all the Dominion forces found that the men appeared psychologically normal, and it was thought preferable to allow them to go on recuperative leave without psychiatric

investigation. The only possibly untoward symptom noticed by ADMS 2 NZEF (UK) was the difficulty experienced in getting them to go on their twenty-eight days' leave after they seemed fit to leave hospital.

Analysis of Medical Condition of all New Zealand ex-Prisoners of War Eva
Europe to the United Kingdom, 1945

Treatment Required	*Orthopaedic*	*General Surgery*	*Ophthalmic*	*ENT*	*General Medical*	*Malnutrition*	*Total Unfit*
Officers	13	31	54	8	21	17	144
Other Ranks	197	362	379	241	383	138	1,700
	210	393	433	249	404	155	1,844

Note: The number of individual soldiers covered in this table is probably about 6000 as a number of those unfit had more than one class of disability. The figures are not complete for all New Zealand ex-prisoners of war as complete records were not available at the time of the survey in August 1945.

In June the work of the hospital at Haine was of a more routine nature. The crisis expansion was largely completed in May, which was also the month of the greatest numerical intake into the Reception Group. The occupied beds declined to 150 on 5 June, but rose again to 212 by 22 June. This rise was due, firstly, to the transfer from other hospitals of patients fit to travel, and secondly, to the admission of men with minor medical and surgical disabilities whose treatment had been deferred during the earlier rush period until the completion of leave.

On 10 July many of the more seriously ill were cleared to the hospital ship NMHS *Oranje*, which took sixty-four hospital patients to New Zealand via Italy and Egypt. However, coincident with the reduction of the numbers of ex-prisoner-of-war patients, the hospital undertook the admission of British troops to afford some relief to the EMS hospitals of the area, which had co-operated so well with the New Zealand organisation in its period of strain.

In the following months to September the demands on the hospital steadily declined as more of the men departed for New Zealand, mostly

on transports. In September the winding up of the Reception Group came in for consideration. It was decided to close the hospital at Haine and open a 30-bed camp reception station at 1 NZ Transit Camp, Folkestone, Kent, to provide hospital facilities for leave parties visiting the United Kingdom from the New Zealand forces in Italy. The transfer to this new hospital was made in the second week of October and the hospital served the needs of leave personnel until the cessation of the leave scheme, when the camp reception station was officially closed and its staff returned to New Zealand at the beginning of 1946.

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[1] **Brig R. S. Park, CB, CBE; Auckland; born Dunedin, 18 Feb 1895; Regular soldier; Lt NZ Fd Arty 1917–19; NZ Military Liaison Officer, London, 1939–46; comd 2 NZEF (UK) 1941–46; appointed New Zealand representative on Joint Planning Staff, Chiefs of Staff Committee, London, Feb 1942; Commandant, Northern Military District, May 1947–Feb 1950; Commander K Force (Korea) Aug 1950–Nov 1953.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

ITALY—UNCERTAINTY BEFORE VJ DAY

Italy—Uncertainty before VJ Day

When, in May 1945, the GOC 2 NZEF indicated that in due course 2 NZEF would probably be withdrawn from Italy to Egypt, it was arranged that 2 General Hospital should transfer from its location at Caserta to Helwan in Egypt to provide ample base hospital facilities. The hospital unit arrived in Egypt on 5 July and took over control at Helwan on 11 July, absorbing 5 General Hospital and forming a 900-bed hospital, with Colonel H. D. Robertson as CO and Miss V. M. Hodges as Matron.

In July there was still no firm decision as to the constitution of the new force for the Pacific, but on the assumption that 2 NZEF as a body would proceed to Egypt, it was arranged that 1 Convalescent Depot also should close and pack at Senigallia preparatory to moving to a chosen site at Agami, 8 miles west of Alexandria. Then, at the end of July, information was received that the Division might bypass Egypt after all, so the move of 1 Convalescent Depot was cancelled. The unit was closed and packed, and this hastened the decision for its disbandment, which was effected in August.

Then on 15 August came the welcome news that Japan had surrendered unconditionally to the Allies. Discussions concerning the future sphere of service for the Division and the composition of the force were happily brought to a sudden end. Provision for an occupational force for Japan, approximating only to brigade strength, did not occasion the same concern, although a complete medical service had to be provided but on a much smaller scale. Final decisions on the question of J Force were not made for some weeks, however, pending the announcement of policy by the New Zealand Government.

The reduced strength of 2 NZEF and the absence of battle casualties

and a low incidence of sickness resulted in the equipped bed state of hospitals in Italy not being fully required, and in August 1 General Hospital and 3 General Hospital were both reduced from 900 to 600 beds. When 1 Convalescent Depot was disbanded, the unit's detachment at San Spirito was re-formed with an establishment of 300 beds. At this stage 1 General Hospital at Senigallia was evacuating to 3 General Hospital by ambulance train along the Adriatic coast, the railway line having at last been reconstructed.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

MEDICAL ADMINISTRATION 2 NZ DIVISION

Medical Administration 2 NZ Division

The first three weeks of July found 2 NZ Division still in the Trieste area. Little training was in progress and ample leave and recreation was available to all ranks. The sickness rate was low and no administrative problems arose. Sick and accident cases were sent by the brigade ADSs to 6 MDS at Villa Opicina, and then to 1 Mobile CCS at Udine by ambulance cars of NZ Section MAC. Thence evacuation was by air to Senigallia.

The ADMS 2 NZ Division, Colonel Elliott, attended a number of conferences at which the organisation of a possible new force for service in the war against Japan was discussed from all angles. However, in the absence of a definite decision from the New Zealand Government, nothing concrete could be done in the way of reorganisation. A selection was made by ADMS 2 NZ Division and DMS 2 NZEF of essential officers for a new force.

On 24 July the Division began to move to a new area in the Lake Trasimene region in central Italy, the move of 400 miles taking four days. At a central site in the new divisional area 5 Field Ambulance opened for the reception of sickness cases and evacuation was made to 1 Mobile CCS, which opened at Assisi, and thence by NZ MAC to 1 General Hospital at Senigallia. Owing to the departure of long-service men for New Zealand and the lack of reinforcements, it was impossible to operate the advanced dressing stations separately and, on arrival in the new area, the ADS companies rejoined their parent units.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DISBANDMENT OF UNITS

Disbandment of Units

In July 3 Field Surgical Unit and 2 Field Transfusion Unit were disbanded; they were followed by 4 Field Ambulance, which held a final ceremonial parade on 14 August before the remaining members of the staff were transferred to other medical units. The growing shortage of medical personnel as successive drafts left to return to New Zealand made it impossible to staff fully all the medical units.

During September the Division remained in the Trasimene area, but when it was decided to move into the Florence area for winter quarters arrangements for this move and concentration were put in hand. As a result it was possible for DMS 2 NZEF to order the disbandment of 5 and 6 Field Ambulances as from 15 and 31 October respectively. All medical (I. 1248) equipment was packed for return to New Zealand and all ordnance (G. 1098) equipment was returned to NZ AOD for disposal in Italy. Vehicles were returned to NZASC. The personnel, reduced in number by the departure of the 9th Reinforcements, were re-posted to other medical units.

In Florence a modern hospital building was secured for 1 Mobile CCS. The light section of the unit moved there on 28 September and opened with fifty beds. It was later joined by the heavy section, the beds being increased to 200, with expansion planned to 300, and 14 Optician Unit and 102 Mobile VDTC were attached. Two good villas were also secured for the establishment of 4 Rest Home of fifty beds to take convalescents from 1 Mobile CCS. Evacuation from 1 Mobile CCS was either direct to British hospitals in Florence, or, for long-term invalids, by ambulance train from Florence to 3 General Hospital at Bari.

As 1 General Hospital was now no longer required, it began to

disband as from 30 September, transferring its patients to 3 General Hospital, Bari. A further reduction in establishment from 600 to 300 beds in 2 General Hospital in Egypt was also made at this time, as New Zealand troops were embarking direct from Italy for New Zealand.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CONCENTRATION IN FLORENCE

Concentration in Florence

In October the Division moved from Lake Trasimene, and HQ 2 NZEF from Senigallia, to Florence. The 4th, 5th and 6th Brigades were housed in former Italian barracks, while 9 Brigade and other troops were in tents and Nissen huts. Headquarters 2 NZ Division and HQ 2 NZEF were amalgamated with a reduction of staff, and the combined administration was housed in a modern office building in the centre of Florence. The DMS 2 NZEF, Brigadier G. W. Gower, and ADMS 2 NZ Division, Colonel R. A. Elliott, were replaced by Colonel F. B. Edmundson, as DDMS 2 NZEF, and Lieutenant-Colonel V. T. Pearse as SMO 2 NZ Division.

The 4th Field Hygiene Company was reinforced by the Hygiene Section previously operating at Senigallia, its commanding officer was also appointed DADH Florence Command, and later the control of hygiene in the Florence sub-area was entirely undertaken by this unit. Its duties were onerous as New Zealand troops continued to show the highest venereal disease rate of Allied troops in the area, and also a high incidence of pediculosis and scabies, which pointed to a low standard of personal cleanliness in a large number of the troops.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

HYGIENE DURING THE FINAL PERIOD IN ITALY

HYGIENE DURING THE FINAL PERIOD IN ITALY

Trieste Area

When active warfare ceased and the unsettled position at Trieste was resolved, hygiene became the most important aspect of the medical services. At first in the Trieste area the prevention of malaria gave rise to some anxiety, as with lax discipline it became difficult to enforce the carrying out of the necessary precautions, especially as regards dress. The high incidence of venereal disease and the associated laxity of moral control and cleanliness caused great anxiety to the medical services and to the general command.

Lake Trasimene

The Trasimene area gave less trouble as it was not a malarious area and there was a lowered incidence of venereal disease.

Water supply provided some difficulty as the local supply near the lake was unsatisfactory and water had to be drawn from Foligno, Perugia, and other surrounding areas. The lake water was unfortunately very dirty and generally unsuitable even for bathing. Bathing was available at Foligno. Skin infestations became very common and all blankets were disinfested, a thousand being done daily. All buildings were sprayed with DDT to counteract flies, mosquitoes, bedbugs, cockroaches, and fleas.

Florence

***Water*: When the troops moved into Florence they were housed mostly in good winter quarters with good sanitary arrangements.**

Swimming baths were available and the units had independent shower facilities. The buildings were sprayed with DDT. Although the incidence of scabies and lice decreased, it was still very high. Our Hygiene Company had control of the whole Florence area and supervised the city water supply and cesspits and refuse disposal.

The water supply was drawn from a series of surface wells linked up with pumping stations, where chlorine was added by a continuous flow from demijohns containing a solution of bleaching powder. Weekly bacteriological tests were carried out by a local civilian laboratory.

***Refuse Disposal*: The city refuse pit had to be rigidly guarded and controlled before it functioned satisfactorily on the Bradford system. The OC Hygiene Company, Major Dick, [1] described the conditions of refuse disposal as follows:**

On moving into Florence we inherited a controlled tip, the outstanding feature of which was the entire lack of control, and one of the first jobs was to create order out of chaos. To describe adequately the state of affairs at a non-supervised refuse dump in a city teeming with poverty and with the smallest articles of salvage bringing in fantastic prices on the black market is impossible: it represents a low ebb in a sordid struggle for existence. The engineers were called on to erect a barricade fence, the area was posted with the wonder sign 'proibite ai civile', the help of the Provost was enlisted to keep out the teeming multitude of scavengers, and a satisfactory working arrangement was made with the City Council whereby the army supplied six trucks, the Council supplied labour, and bombed out areas were cleared of rubble which was used as covering material for refuse, and so a military tip was brought under control, and a city was helped with the healing of its war wounds even though some of its less fortunate citizens found the struggle for existence made harder.

The city sewerage system consisted of cesspits emptied by a civilian contractor.

***Rats*: The rat menace was investigated by the Hygiene Company. No rats were found harbouring typhus fever, bubonic plague, or Weil's disease. Efforts were made to keep their numbers down. The rat is suspicious of any new object and traps had to be left in position several days before being set, and also unpoisoned baits had to be left for five days before the poison was laid. The baits used were millable wheat or barley soaked twelve to twenty-four hours in water, bread mash and sugar-meal, and a dry bait of fifteen parts flour with one part fine sugar. The poisons used were zinc phosphide, arsenious oxide, barium carbonate, and red squill. Zinc phosphide, 5 per cent by weight, was mixed in any wet bait; arsenic oxide, 10 per cent by weight in bread mash only; and red squill, 10 per cent by weight, in a wet bait. When the rats were eliminated old rat holes were cemented up and buildings were proofed with wire netting.**

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[1] **Maj E. T. Dick; Dunedin; born Dunedin, 13 Feb 1918; medical student; medical officer *Oranje* Feb–Sep 1943; RMO 25 Bn Jan–Aug 1944; 3 Gen Hosp Aug 1944–Jul 1945; DADH Jul 1945–Feb 1946.**

Diseases

***Hepatitis*: The incidence of infective hepatitis was much lower than in the previous year and it was of a milder type.**

***Pneumonia*: Primary atypical pneumonia also was much less common.**

***Malaria*: There were very few cases of malaria in the Division, 32, 19, and 18 cases being reported in the first three months of the malaria season.**

***Amoebic Dysentery*: This disease continued to be a source of trouble as it was frequently found to be the cause of ill-health, especially in hospital personnel, and it was difficult to effect a cure. Major Dick, OC**

Hygiene Company, stated that the disease was endemic among the troops and that any soldier presenting with a history of bowel irregularity and malaise was vigorously purged and investigated for entamoeba histolytica; and that any soldier presenting with a similar history after return to New Zealand might well be suffering from amoebic dysentery.

Lieutenant-Colonel Hayward [1] reported in July that cases of amoebic dysentery continued to provide the largest single group of cases under treatment by the medical division of 3 General Hospital. During the month thirty-four fresh cases had been diagnosed, including two sisters and one nurse on the staff of the hospital. In view of the continued incidence of amoebic dysentery among members of the staff, stools were examined from all the cooks. Of twenty-three cooks tested, five were found to have trophozoites of entamoeba histolytica in the stools. Only one showed amoebic cysts and he, after mild purgation, produced negative forms. Of the five positive cases, three gave no history of diarrhoea for the previous month. Earlier stool examinations had failed to show amoebae or dysentery organisms, and the one cyst-passer had had recurrent mild attacks of diarrhoea during the previous year.

The finding of apparently healthy men passing vegetative forms of entamoeba histolytica was unusual as the carrier state was associated with the passing of cysts. Experience in Italy had shown that the finding of amoebic cysts in the stools was uncommon—only two out of a group of 100 cases of amoebic dysentery diagnosed in 3 General Hospital had shown cysts. While the only cyst-passer of the five cooks was theoretically capable of transmitting the disease, it was probable that daily stool examinations in the others over a longer period would have shown cysts.

***Poliomyelitis*: A small epidemic of poliomyelitis was noted amongst the civilian population at this period, and a few cases arose in our force. In July one death occurred in 3 General Hospital; in August one severe case was reported from 3 General Hospital; in September two cases were reported in the Division, with one death in the CCS.**

Chest Examinations of Hospital Staff: These were carried out by 3 General Hospital, and in August it was reported that all the staff of the unit had been examined and two very early active cases of pulmonary tuberculosis had been revealed among the WAAC personnel.

Venereal Disease: There was an appalling increase in the numbers affected by venereal disease in Florence and a particular increase in the syphilitic cases. The venereal disease rate was six times, and in one month ten times, as high as in British troops in the Florence area. The OC 102 Mobile VDTC considered this was due partly to the attractiveness of the women, but mainly to the wilful neglect of all precautions by the men. Some 70· per cent admitted that they took no precautions. The SMO 2 NZ Division considered there was inadequate discipline and moral laxity of the troops in an area so beset with sexual opportunities.

The Italian Red Cross ran a venereal diseases hospital for infected women, the patients being supplied by military and Italian police, who followed up histories of infections and apprehended girls of whom they were suspicious. Those who were infected were then forced to remain as patients in the hospital, and, following treatment and discharge, were supervised and brought back to the hospital for further examination by the police. Over a three-month period, of the 45 per cent found to be infected, 20 per cent were suffering from syphilis, 78 per cent from gonorrhoea, and the remaining 2 per cent with disease of suspected venereal origin. The hospital accommodation was increased from fifty to eighty beds and it came under the supervision of the DADH. The APM arranged extra surveillance of suspected women, prophylactic centres were established in the city, and all brothels were placed out of bounds to the troops.

In December 1945 there were 402 cases of venereal disease in 2 NZEF (399 in Italy and 3 in Egypt) against a total of 107 in December 1944 for a much larger force.

Fresh cases of venereal disease were:

	Jul	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total*
Syphilis	8	7	12	18	31	17	93
Gonorrhoea	123	69	103	196	305	262	1058
Soft sore	23	13	8	25	63	60	192
Urethritis	25		1	3		35	64
Penile sore	2	1	4	5	14		26
Balanitis	6	1	1		4		12
Prostatitis	1	1	10	6	39		57
Other	4	3		8	17	28	60
Total venereal fresh cases	192	95	139	261	473	402	1562
Non-venereal	73	49	68	127	22		339
Relapse	14	8	2	17	41		82
Total all cases	279	152	209	405	536	402	1983

The magnitude of the increase in incidence is shown by the fact that the total number of cases of venereal disease recorded from the beginning of 1940 to February 1945 in 2 NZEF, which was much greater in size than the force in the Florence area, was 4085. (This figure excluded those diagnosed as non-venereal, and comprised gonorrhoea 1826, venereal sores 1203, urethritis 476, syphilis 260, other diseases 320.)

The average monthly incidence per 1000 troops in 2 NZEF was:

1940	*1941*	*1942*	*1943*	*1944*	*Jan–Jun 1945*	*Jul–Dec 1945*
4·2	3·6	1·8	1·0	3·5	6·7	15·4

By April 1945 all the men in the Division who were receiving arsenical treatment for syphilis had completed their courses. All subsequent cases were treated by the speedier, though not totally proven, method of penicillin injections. Changes in treatment took place as the original penicillin treatment was found to require adjustment. In July the dosage of penicillin given for syphilis was changed to 30,000 units two-hourly for seven days, a total of 2,550,000 units. Penicillin was also given two-hourly in doses of 15,000 units for gonorrhoea.

In November there was a temporary shortage of penicillin and sulphathiazole was used to treat gonorrhoea, but as many as 50 per cent

of relapses was expected. An increase in complications of gonorrhoea was noted at that time.

In December a marked increase in complications arose and as a result treatment was again changed. For gonorrhoea penicillin was given in dosage of 30,000 units two-hourly for ten doses, double the previous dosage. For syphilis, because a number of the cases showed Kahn tests rising, a series of ten daily intravenous injections of marpharsen (0·06 gm.) were given, combined with 85 injections of 30,000 units of penicillin two-hourly.

Blood tests were routinely carried out in the American and Canadian forces prior to the men returning to civilian life. At 3 General Hospital the opportunity was taken to carry out the tests during July and August on a total of 671 men returning to New Zealand. Only four were found to be strongly positive and two weakly positive. (The Wassermann reaction was negative in these latter two cases.) It was concluded that as the incidence of latent syphilis among New Zealand troops was low, and there was little tendency to conceal primary syphilis, a strong case could not be made out in favour of applying compulsory tests to all returning personnel.

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[1] Lt-Col G. W. Hayward; born Cardiff, Wales, 7 Jun 1911; medical practitioner; 3 Gen Hosp Jun 1942–Nov 1945.

Graded Men in 2 NZEF

Throughout the war large numbers of graded men were retained overseas. They were unfit for full service with the Division and were employed in base units, though a small number with minor disabilities were used in special positions in the Division. From time to time some of those on unimportant jobs were selected to return to New Zealand because of the essential nature of their pre-war occupations, re-engagement in which would be of greater help to the war effort.

Much the largest group of graded men were the neurotics. Out of 2175 graded men at 30 June 1945, there were 782 with functional nervous disease. Other large groups were: wounds 245, foot trouble 169, accidental injuries 172, knee disorders 92, debility 76, deafness 71, arthritis 52, fibrositis 50, eye trouble 50, ear trouble 48, skin trouble 44, hernia 43.

Optician Unit

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Establishments were drawn up for a general hospital of 300 beds, a camp hospital, which could also function as an ADS if necessary, a rest home, a VD treatment centre, hygiene section, and an optician unit. It was decided to staff the Florence hospital and rest home with J Force personnel, thus giving the staffs an opportunity to work together as units before going to Japan, and also releasing other personnel for return to New Zealand. Major Archer [2] was appointed SMO J Force and CO 6 General Hospital.

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During December the medical staff, which was chosen for J Force from the later reinforcements (13th, 14th and 15th), was gathered together in Florence. There were insufficient other ranks of the NZMC available in the reinforcements and some thirty or forty were transferred from other units. A large number of medical officers, however, was available from these reinforcements, but many were comparatively junior and the services of two more senior men were retained as surgeon and physician. In the case of the NZANS and NZWAAC (Medical Division) there was an ample supply of volunteers.

In December 1945 there was a vast improvement in the shipping position and, as a result, a greater exodus of 2 NZEF troops than had been anticipated and an acceleration in the final winding-up of 2 NZEF. The shifting of large numbers of troops to southern Italy for embarkation proceeded smoothly. Movement was carried out largely by train, with rather unsatisfactory accommodation consisting of box-cars, without seats and very draughty. The number of ships available enabled most of the troops to embark for New Zealand in December and January.

In Florence HQ 2 NZEF continued to function until the end of the year, but nearly all divisional formations and the divisional RAPs were disbanded. The only medical units remaining in Florence at the end of December were those of J Force. No. 6 General Hospital ceased to receive patients and those already held were transferred to the adjacent 100 British General Hospital, where a New Zealand staff looked after them. These facilities extended by the British authorities were of great

value and enabled 6 General Hospital to pack its equipment for despatch to Japan. The 4th Rest Home also closed and packed, but 102 VD Treatment Centre continued to function, it being arranged that its equipment should be taken on the ship conveying the troops to Japan.

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[1] Maj-Gen K. L. Stewart, CB, CBE, DSO, m.i.d., MC (Greek), Legion of Merit (US); Kerikeri; born Timaru, 30 Dec 1896; Regular soldier; 1 NZEF 1917–19; GSO I NZ Div, 1940–41; Deputy Chief of General Staff, Dec 1941-Jul 1943; comd 5 Bde, Aug-Nov 1943, 4 Armd Bde, Nov 1943-Mar 1944, and 5 Bde, Mar-Aug 1944; p.w. 1 Aug 1944-Apr 1945; comd 9 Bde (2 NZEF, Japan) Nov 1945-Jul 1946; Adjutant-General, NZ Military Forces, Aug 1946-Mar 1949; Chief of General Staff Apr 1949-Mar 1952.

[2] Lt-Col K. R. Archer, m.i.d.; Thames; born NZ 6 Nov 1915; medical practitioner; 1 Mob CCS Oct 1944; 4 Fd Amb 1945; CO 6 Gen Hosp and SMO J Force, Nov 1945-Jun 1946.

Wind-up in Southern Italy

In southern Italy the medical units were kept busy with the influx of troops from Florence. At Bari 3 General Hospital continued to function with a reduced staff, but transferred its patients to 98 British General Hospital and commenced to disband in January 1946; it was wound up by the end of that month. The detachment of 1 Convalescent Depot at San Spirito started closing in the middle of December, but it was necessary to use its buildings for some weeks to accommodate convalescents from 3 General Hospital. Advanced Base Camp Hospital was likewise busy, but began and completed its disbandment in January.

Medical Stores Depot in Bari was working hard collecting equipment for J Force, and also checking and packing equipment from disbanding medical units. The New Zealand Government had directed that all medical (I. 1248) equipment held by 2 NZEF medical units should be returned to New Zealand, where it could be handed over for civilian use or held as a military reserve. Allied Force Headquarters agreed to replace

part-worn equipment with new or reserviced I. 1248 equipment. These replacements were collected by the New Zealand Medical Stores Depot, which thus gathered complete equipment for two 600-bed hospitals, a casualty clearing station, and three field ambulances for shipment to New Zealand. The I. 1248 equipment of 2 General Hospital in Egypt was similarly packed and shipped to New Zealand.

By the end of January there were fewer than one thousand New Zealand troops in Italy, and within a few weeks these, too, were on their way home. The sick were transferred to 45 British General Hospital, Taranto, and were embarked at that port by HS *Maunganui* on 11 February, which date marked the end of activities of the New Zealand medical services in Italy.

Closing Days in Egypt

With the reduction of troops in Maadi Camp to fewer than two thousand (troops having being moved from Egypt to Italy for the formation of J Force) it was decided to close 2 General Hospital from 21 November, but a 100-bed expansion was established by a New Zealand staff at 15 Scottish General Hospital in Cairo.

In December all the New Zealand medical units in Egypt were disbanded with the exception of the office of SMO Maadi Camp. The final dates of disbandment were: Maadi Camp Hospital, 19 December 1945; 2 General Hospital, 28 December; Maadi Camp Hygiene Section, 26 December; and 2 Rest Home, 2 January 1946. Use was made of British units when required. When 15 Scottish General Hospital closed, the New Zealand patients were transferred to 63 British General Hospital (the old 2/10) at Helmieh. It was fitting that the British hospital which cared for our First Echelon patients should also tend the last hospital patients of 2 NZEF overseas. As in 1940, the patients remained under the care of New Zealand medical and nursing personnel. Patients suitable for evacuation by hospital ship were embarked on HS *Maunganui* on 15 February 1946 for return to New Zealand.

By this date the final details were completed for the winding-up of the New Zealand medical services in 2 NZEF, which had commenced their proud history in Egypt just six years previously.

In his farewell message on 22 November 1945 on handing over his command to Major-General Stevens, after holding it for six years, General Freyberg said:

I feel.... the important part we played was far in excess of the size of our Force. Looking back over the long years of war, it seems to me that we have been present at most of the vital moments such as the disasters of Greece and Crete, the battle to save Tobruk in 1941, the battle to save Egypt in 1942, El Alamein, the turning of Agheila, the Mareth Line, the battle for Cassino and the final advance across the Po Valley to Trieste. Always, as I see it, the Second New Zealand Division has been in the forefront of the battle. I do not believe I am overstating the case when I say that just as Mr Churchill inspired the nation by his words, so have you by your deeds. I am sure there is no finer fighting force amongst the armies of the Allies. I realise how privileged I have been, for no commander ever went into battle with greater confidence than I have done during the last six years and no confidence has been better justified. For all these long years you have gone on fighting, never failing, never faltering, never depressed, always cheerful. No commander has been better served....

During the six years of the war over 4000 officers, sisters, voluntary aids, and orderlies served with the New Zealand Medical Corps in the Middle East and Italy. With them were associated regimental stretcher-bearers, ASC drivers, dental officers and orderlies, and chaplains. They all applied to the medical services their energy, intelligence, and initiative, and attained a high degree of skill backed by careful solicitude for their patients. They earned the respect of the combatant units, and all officers from the GOC downwards gave their co-operation.

In a memorial oration in 1951 Lieutenant-General Sir Bernard Freyberg said:

The New Zealand Expeditionary Force landed in Greece in March 1941, and finished 50 months of fighting at Trieste on 2 May 1945. During those years we had to face grave and difficult problems, with heavy battle casualties and sickness. But, during the whole of those months and years, we were always battleworthy. We owed our efficiency to the type of men and women we had overseas, and to a great extent to our nursing and medical services.

Major-General Barrowclough, who served with 2 NZEF in the Middle East and commanded 3 NZ Division in the Pacific, said in an oration in 1953 in memory of those medical officers who gave their lives:

It is a very terrible and shocking ordeal to be wounded in battle.... I am proud to acknowledge that the New Zealand Medical Corps has always operated in such a way that our soldiers have ever been able to carry with them into battle those encouraging and comforting thoughts [of the care and efficiency of the medical services]. I am certain that our morale was immensely increased by our knowledge of the efficiency of your organisation and by our personal experience of your fearless devotion to duty. If the New Zealand soldier has earned some reputation as a fighting man I say unhesitatingly that much of the credit for it must go to the medical services which it has been his good fortune to enjoy....

On the same theme, General Freyberg said in a report to the New Zealand Government on 13 May 1945 after the conclusion of the campaign in Italy:

In the opinion of members of 2 NZEF, and this opinion is borne out by comments from outside sources, the New Zealand Medical Services are without equal. The standard of surgical and medical treatment and administration of hospitals, casualty clearing stations, field ambulances and convalescent depots has been most important in keeping up the high standard of morale in your force overseas. The personal interest shown by the medical staff has established a sense of confidence in all who have come under their care.

The New Zealand Medical Corps, however, did not build up its standards unaided. It owed much to the RAMC, upon whose help it could rely at all times, and also at different times to units from Australia, Canada, South Africa, India, and the United States of America. Together, the Allied medical units, in association with motor, train, and air ambulance units, sought to achieve the fullest measure of service for the sick and wounded.

An extract from a letter addressed by Major-General W. C. Hartgill, DMS AFHQ, to Colonel Stout, Consultant Surgeon 2 NZEF, on the eve of his departure for New Zealand in August 1945, also illustrates the standard attained by Allied medical units, including New Zealand units:

.... Your departure is another forcible reminder of the speed with which events are moving. It is rather tragic to see the wonderful organisation we have built up in the CMF dwindling away to a shadow of its pristine glory. However, it is inevitable and the sooner we can close down the better.

It may interest you to know that all the War Office Consultants after touring CMF have come to me and said that the medical set-up out here was easily the best of all the theatres of war and the clinical standard the highest ever achieved. The last Consultant said that it was now accepted in the Colleges at Home that we had provided the blue print for the future....

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

TRIESTE AREA

Trieste Area

When active warfare ceased and the unsettled position at Trieste was resolved, hygiene became the most important aspect of the medical services. At first in the Trieste area the prevention of malaria gave rise to some anxiety, as with lax discipline it became difficult to enforce the carrying out of the necessary precautions, especially as regards dress. The high incidence of venereal disease and the associated laxity of moral control and cleanliness caused great anxiety to the medical services and to the general command.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

LAKE TRASIMENE

Lake Trasimene

The Trasimene area gave less trouble as it was not a malarious area and there was a lowered incidence of venereal disease.

Water supply provided some difficulty as the local supply near the lake was unsatisfactory and water had to be drawn from Foligno, Perugia, and other surrounding areas. The lake water was unfortunately very dirty and generally unsuitable even for bathing. Bathing was available at Foligno. Skin infestations became very common and all blankets were disinfested, a thousand being done daily. All buildings were sprayed with DDT to counteract flies, mosquitoes, bedbugs, cockroaches, and fleas.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

FLORENCE

Florence

***Water*: When the troops moved into Florence they were housed mostly in good winter quarters with good sanitary arrangements. Swimming baths were available and the units had independent shower facilities. The buildings were sprayed with DDT. Although the incidence of scabies and lice decreased, it was still very high. Our Hygiene Company had control of the whole Florence area and supervised the city water supply and cesspits and refuse disposal.**

The water supply was drawn from a series of surface wells linked up with pumping stations, where chlorine was added by a continuous flow from demijohns containing a solution of bleaching powder. Weekly bacteriological tests were carried out by a local civilian laboratory.

***Refuse Disposal*: The city refuse pit had to be rigidly guarded and controlled before it functioned satisfactorily on the Bradford system. The OC Hygiene Company, Major Dick, [1] described the conditions of refuse disposal as follows:**

On moving into Florence we inherited a controlled tip, the outstanding feature of which was the entire lack of control, and one of the first jobs was to create order out of chaos. To describe adequately the state of affairs at a non-supervised refuse dump in a city teeming with poverty and with the smallest articles of salvage bringing in fantastic prices on the black market is impossible: it represents a low ebb in a sordid struggle for existence. The engineers were called on to erect a barricade fence, the area was posted with the wonder sign 'proibite ai civile', the help of the Provost was enlisted to keep out the teeming multitude of scavengers, and a satisfactory working arrangement was made with the City Council whereby the army supplied

six trucks, the Council supplied labour, and bombed out areas were cleared of rubble which was used as covering material for refuse, and so a military tip was brought under control, and a city was helped with the healing of its war wounds even though some of its less fortunate citizens found the struggle for existence made harder.

The city sewerage system consisted of cesspits emptied by a civilian contractor.

***Rats*: The rat menace was investigated by the Hygiene Company. No rats were found harbouring typhus fever, bubonic plague, or Weil's disease. Efforts were made to keep their numbers down. The rat is suspicious of any new object and traps had to be left in position several days before being set, and also unpoisoned baits had to be left for five days before the poison was laid. The baits used were millable wheat or barley soaked twelve to twenty-four hours in water, bread mash and sugar-meal, and a dry bait of fifteen parts flour with one part fine sugar. The poisons used were zinc phosphide, arsenious oxide, barium carbonate, and red squill. Zinc phosphide, 5 per cent by weight, was mixed in any wet bait; arsenic oxide, 10 per cent by weight in bread mash only; and red squill, 10 per cent by weight, in a wet bait. When the rats were eliminated old rat holes were cemented up and buildings were proofed with wire netting.**

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[1] **Maj E. T. Dick; Dunedin; born Dunedin, 13 Feb 1918; medical student; medical officer *Oranje* Feb–Sep 1943; RMO 25 Bn Jan–Aug 1944; 3 Gen Hosp Aug 1944–Jul 1945; DADH Jul 1945–Feb 1946.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

DISEASES

Diseases

***Hepatitis*: The incidence of infective hepatitis was much lower than in the previous year and it was of a milder type.**

***Pneumonia*: Primary atypical pneumonia also was much less common.**

***Malaria*: There were very few cases of malaria in the Division, 32, 19, and 18 cases being reported in the first three months of the malaria season.**

***Amoebic Dysentery*: This disease continued to be a source of trouble as it was frequently found to be the cause of ill-health, especially in hospital personnel, and it was difficult to effect a cure. Major Dick, OC Hygiene Company, stated that the disease was endemic among the troops and that any soldier presenting with a history of bowel irregularity and malaise was vigorously purged and investigated for entamoeba histolytica; and that any soldier presenting with a similar history after return to New Zealand might well be suffering from amoebic dysentery.**

Lieutenant-Colonel Hayward [1] reported in July that cases of amoebic dysentery continued to provide the largest single group of cases under treatment by the medical division of 3 General Hospital. During the month thirty-four fresh cases had been diagnosed, including two sisters and one nurse on the staff of the hospital. In view of the continued incidence of amoebic dysentery among members of the staff, stools were examined from all the cooks. Of twenty-three cooks tested, five were found to have trophozoites of entamoeba histolytica in the stools. Only one showed amoebic cysts and he, after mild purgation, produced

negative forms. Of the five positive cases, three gave no history of diarrhoea for the previous month. Earlier stool examinations had failed to show amoebae or dysentery organisms, and the one cyst-passer had had recurrent mild attacks of diarrhoea during the previous year.

The finding of apparently healthy men passing vegetative forms of entamoeba histolytica was unusual as the carrier state was associated with the passing of cysts. Experience in Italy had shown that the finding of amoebic cysts in the stools was uncommon—only two out of a group of 100 cases of amoebic dysentery diagnosed in 3 General Hospital had shown cysts. While the only cyst-passer of the five cooks was theoretically capable of transmitting the disease, it was probable that daily stool examinations in the others over a longer period would have shown cysts.

***Poliomyelitis*: A small epidemic of poliomyelitis was noted amongst the civilian population at this period, and a few cases arose in our force. In July one death occurred in 3 General Hospital; in August one severe case was reported from 3 General Hospital; in September two cases were reported in the Division, with one death in the CCS.**

***Chest Examinations of Hospital Staff*: These were carried out by 3 General Hospital, and in August it was reported that all the staff of the unit had been examined and two very early active cases of pulmonary tuberculosis had been revealed among the WAAC personnel.**

***Venereal Disease*: There was an appalling increase in the numbers affected by venereal disease in Florence and a particular increase in the syphilitic cases. The venereal disease rate was six times, and in one month ten times, as high as in British troops in the Florence area. The OC 102 Mobile VDTC considered this was due partly to the attractiveness of the women, but mainly to the wilful neglect of all precautions by the men. Some 70· per cent admitted that they took no precautions. The SMO 2 NZ Division considered there was inadequate discipline and moral laxity of the troops in an area so beset with sexual opportunities.**

The Italian Red Cross ran a venereal diseases hospital for infected women, the patients being supplied by military and Italian police, who followed up histories of infections and apprehended girls of whom they were suspicious. Those who were infected were then forced to remain as patients in the hospital, and, following treatment and discharge, were supervised and brought back to the hospital for further examination by the police. Over a three-month period, of the 45 per cent found to be infected, 20 per cent were suffering from syphilis, 78 per cent from gonorrhoea, and the remaining 2 per cent with disease of suspected venereal origin. The hospital accommodation was increased from fifty to eighty beds and it came under the supervision of the DADH. The APM arranged extra surveillance of suspected women, prophylactic centres were established in the city, and all brothels were placed out of bounds to the troops.

In December 1945 there were 402 cases of venereal disease in 2 NZEF (399 in Italy and 3 in Egypt) against a total of 107 in December 1944 for a much larger force.

Fresh cases of venereal disease were:

	Jul	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total*
Syphilis	8	7	12	18	31	17	93
Gonorrhoea	123	69	103	196	305	262	1058
Soft sore	23	13	8	25	63	60	192
Urethritis	25		1	3		35	64
Penile sore	2	1	4	5	14		26
Balanitis	6	1	1		4		12
Prostatitis	1	1	10	6	39		57
Other	4	3		8	17	28	60
Total venereal fresh cases	192	95	139	261	473	402	1562
Non-venereal	73	49	68	127	22		339
Relapse	14	8	2	17	41		82
Total all cases	279	152	209	405	536	402	1983

The magnitude of the increase in incidence is shown by the fact that the total number of cases of venereal disease recorded from the

beginning of 1940 to February 1945 in 2 NZEF, which was much greater in size than the force in the Florence area, was 4085. (This figure excluded those diagnosed as non-venereal, and comprised gonorrhoea 1826, venereal sores 1203, urethritis 476, syphilis 260, other diseases 320.)

The average monthly incidence per 1000 troops in 2 NZEF was:

1940	*1941*	*1942*	*1943*	*1944*	*Jan–Jun 1945*	*Jul–Dec 1945*
4·2	3·6	1·8	1·0	3·5	6·7	15·4

By April 1945 all the men in the Division who were receiving arsenical treatment for syphilis had completed their courses. All subsequent cases were treated by the speedier, though not totally proven, method of penicillin injections. Changes in treatment took place as the original penicillin treatment was found to require adjustment. In July the dosage of penicillin given for syphilis was changed to 30,000 units two-hourly for seven days, a total of 2,550,000 units. Penicillin was also given two-hourly in doses of 15,000 units for gonorrhoea.

In November there was a temporary shortage of penicillin and sulphathiazole was used to treat gonorrhoea, but as many as 50 per cent of relapses was expected. An increase in complications of gonorrhoea was noted at that time.

In December a marked increase in complications arose and as a result treatment was again changed. For gonorrhoea penicillin was given in dosage of 30,000 units two-hourly for ten doses, double the previous dosage. For syphilis, because a number of the cases showed Kahn tests rising, a series of ten daily intravenous injections of marpharsen (0·06 gm.) were given, combined with 85 injections of 30,000 units of penicillin two-hourly.

Blood tests were routinely carried out in the American and Canadian forces prior to the men returning to civilian life. At 3 General Hospital the opportunity was taken to carry out the tests during July and August on a total of 671 men returning to New Zealand. Only four were found to

be strongly positive and two weakly positive. (The Wassermann reaction was negative in these latter two cases.) It was concluded that as the incidence of latent syphilis among New Zealand troops was low, and there was little tendency to conceal primary syphilis, a strong case could not be made out in favour of applying compulsory tests to all returning personnel.

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[1] **Lt-Col G. W. Hayward; born Cardiff, Wales, 7 Jun 1911; medical practitioner; 3 Gen Hosp Jun 1942–Nov 1945.**

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GRADED MEN IN 2 NZEF

Graded Men in 2 NZEF

Throughout the war large numbers of graded men were retained overseas. They were unfit for full service with the Division and were employed in base units, though a small number with minor disabilities were used in special positions in the Division. From time to time some of those on unimportant jobs were selected to return to New Zealand because of the essential nature of their pre-war occupations, re-engagement in which would be of greater help to the war effort.

Much the largest group of graded men were the neurotics. Out of 2175 graded men at 30 June 1945, there were 782 with functional nervous disease. Other large groups were: wounds 245, foot trouble 169, accidental injuries 172, knee disorders 92, debility 76, deafness 71, arthritis 52, fibrositis 50, eye trouble 50, ear trouble 48, skin trouble 44, hernia 43.

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EVACUATION OF INVALIDS FROM ITALY AND EGYPT

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UNITED KINGDOM LEAVE SCHEME

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When the scheme for leave from Italy to the United Kingdom was initiated in October, orderlies and ambulance cars were located at each of the six staging camps on the overland route to deal with any emergency cases. A proportion of the medical personnel not required for J Force or for essential duties was able to participate in the leave scheme.

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[1] Maj-Gen K. L. Stewart, CB, CBE, DSO, m.i.d., MC (Greek),

Legion of Merit (US); Kerikeri; born Timaru, 30 Dec 1896; Regular soldier; 1 NZEF 1917–19; GSO I NZ Div, 1940–41; Deputy Chief of General Staff, Dec 1941-Jul 1943; comd 5 Bde, Aug-Nov 1943, 4 Armd Bde, Nov 1943-Mar 1944, and 5 Bde, Mar-Aug 1944; p.w. 1 Aug 1944-Apr 1945; comd 9 Bde (2 NZEF, Japan) Nov 1945-Jul 1946; Adjutant-General, NZ Military Forces, Aug 1946-Mar 1949; Chief of General Staff Apr 1949-Mar 1952.

[2] Lt-Col K. R. Archer, m.i.d.; Thames; born NZ 6 Nov 1915; medical practitioner; 1 Mob CCS Oct 1944; 4 Fd Amb 1945; CO 6 Gen Hosp and SMO J Force, Nov 1945-Jun 1946.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

WIND-UP IN SOUTHERN ITALY

Wind-up in Southern Italy

In southern Italy the medical units were kept busy with the influx of troops from Florence. At Bari 3 General Hospital continued to function with a reduced staff, but transferred its patients to 98 British General Hospital and commenced to disband in January 1946; it was wound up by the end of that month. The detachment of 1 Convalescent Depot at San Spirito started closing in the middle of December, but it was necessary to use its buildings for some weeks to accommodate convalescents from 3 General Hospital. Advanced Base Camp Hospital was likewise busy, but began and completed its disbandment in January.

Medical Stores Depot in Bari was working hard collecting equipment for J Force, and also checking and packing equipment from disbanding medical units. The New Zealand Government had directed that all medical (I. 1248) equipment held by 2 NZEF medical units should be returned to New Zealand, where it could be handed over for civilian use or held as a military reserve. Allied Force Headquarters agreed to replace part-worn equipment with new or reserviced I. 1248 equipment. These replacements were collected by the New Zealand Medical Stores Depot, which thus gathered complete equipment for two 600-bed hospitals, a casualty clearing station, and three field ambulances for shipment to New Zealand. The I. 1248 equipment of 2 General Hospital in Egypt was similarly packed and shipped to New Zealand.

By the end of January there were fewer than one thousand New Zealand troops in Italy, and within a few weeks these, too, were on their way home. The sick were transferred to 45 British General Hospital, Taranto, and were embarked at that port by HS *Maunganui* on 11 February, which date marked the end of activities of the New Zealand

medical services in Italy.

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

CLOSING DAYS IN EGYPT

Closing Days in Egypt

With the reduction of troops in Maadi Camp to fewer than two thousand (troops having being moved from Egypt to Italy for the formation of J Force) it was decided to close 2 General Hospital from 21 November, but a 100-bed expansion was established by a New Zealand staff at 15 Scottish General Hospital in Cairo.

In December all the New Zealand medical units in Egypt were disbanded with the exception of the office of SMO Maadi Camp. The final dates of disbandment were: Maadi Camp Hospital, 19 December 1945; 2 General Hospital, 28 December; Maadi Camp Hygiene Section, 26 December; and 2 Rest Home, 2 January 1946. Use was made of British units when required. When 15 Scottish General Hospital closed, the New Zealand patients were transferred to 63 British General Hospital (the old 2/10) at Helmieh. It was fitting that the British hospital which cared for our First Echelon patients should also tend the last hospital patients of 2 NZEF overseas. As in 1940, the patients remained under the care of New Zealand medical and nursing personnel. Patients suitable for evacuation by hospital ship were embarked on HS *Maunganui* on 15 February 1946 for return to New Zealand.

By this date the final details were completed for the winding-up of the New Zealand medical services in 2 NZEF, which had commenced their proud history in Egypt just six years previously.

In his farewell message on 22 November 1945 on handing over his command to Major-General Stevens, after holding it for six years, General Freyberg said:

I feel.... the important part we played was far in excess of the size of

our Force. Looking back over the long years of war, it seems to me that we have been present at most of the vital moments such as the disasters of Greece and Crete, the battle to save Tobruk in 1941, the battle to save Egypt in 1942, El Alamein, the turning of Agheila, the Mareth Line, the battle for Cassino and the final advance across the Po Valley to Trieste. Always, as I see it, the Second New Zealand Division has been in the forefront of the battle. I do not believe I am overstating the case when I say that just as Mr Churchill inspired the nation by his words, so have you by your deeds. I am sure there is no finer fighting force amongst the armies of the Allies. I realise how privileged I have been, for no commander ever went into battle with greater confidence than I have done during the last six years and no confidence has been better justified. For all these long years you have gone on fighting, never failing, never faltering, never depressed, always cheerful. No commander has been better served....

During the six years of the war over 4000 officers, sisters, voluntary aids, and orderlies served with the New Zealand Medical Corps in the Middle East and Italy. With them were associated regimental stretcher-bearers, ASC drivers, dental officers and orderlies, and chaplains. They all applied to the medical services their energy, intelligence, and initiative, and attained a high degree of skill backed by careful solicitude for their patients. They earned the respect of the combatant units, and all officers from the GOC downwards gave their co-operation.

In a memorial oration in 1951 Lieutenant-General Sir Bernard Freyberg said:

The New Zealand Expeditionary Force landed in Greece in March 1941, and finished 50 months of fighting at Trieste on 2 May 1945. During those years we had to face grave and difficult problems, with heavy battle casualties and sickness. But, during the whole of those months and years, we were always battleworthy. We owed our efficiency to the type of men and women we had overseas, and to a great extent to our nursing and medical services.

Major-General Barrowclough, who served with 2 NZEF in the Middle East and commanded 3 NZ Division in the Pacific, said in an oration in 1953 in memory of those medical officers who gave their lives:

It is a very terrible and shocking ordeal to be wounded in battle.... I am proud to acknowledge that the New Zealand Medical Corps has always operated in such a way that our soldiers have ever been able to carry with them into battle those encouraging and comforting thoughts [of the care and efficiency of the medical services]. I am certain that our morale was immensely increased by our knowledge of the efficiency of your organisation and by our personal experience of your fearless devotion to duty. If the New Zealand soldier has earned some reputation as a fighting man I say unhesitatingly that much of the credit for it must go to the medical services which it has been his good fortune to enjoy....

On the same theme, General Freyberg said in a report to the New Zealand Government on 13 May 1945 after the conclusion of the campaign in Italy:

In the opinion of members of 2 NZEF, and this opinion is borne out by comments from outside sources, the New Zealand Medical Services are without equal. The standard of surgical and medical treatment and administration of hospitals, casualty clearing stations, field ambulances and convalescent depots has been most important in keeping up the high standard of morale in your force overseas. The personal interest shown by the medical staff has established a sense of confidence in all who have come under their care.

The New Zealand Medical Corps, however, did not build up its standards unaided. It owed much to the RAMC, upon whose help it could rely at all times, and also at different times to units from Australia, Canada, South Africa, India, and the United States of America. Together, the Allied medical units, in association with motor, train, and air ambulance units, sought to achieve the fullest measure of service for the sick and wounded.

An extract from a letter addressed by Major-General W. C. Hartgill, DMS AFHQ, to Colonel Stout, Consultant Surgeon 2 NZEF, on the eve of his departure for New Zealand in August 1945, also illustrates the standard attained by Allied medical units, including New Zealand units:

.... Your departure is another forcible reminder of the speed with which events are moving. It is rather tragic to see the wonderful organisation we have built up in the CMF dwindling away to a shadow of its pristine glory. However, it is inevitable and the sooner we can close down the better.

It may interest you to know that all the War Office Consultants after touring CMF have come to me and said that the medical set-up out here was easily the best of all the theatres of war and the clinical standard the highest ever achieved. The last Consultant said that it was now accepted in the Colleges at Home that we had provided the blue print for the future....

APPENDIX I

Appendix I

2 NZEF, MEF and CMF: Average Daily Sickness Rate per-1000 All Ranks

	1941		1942		1943		1944		1945	
	Offrs	ORs	Offrs	ORs	Offrs	ORs	Offrs	ORs	Offrs	ORs
Jan			1.36	1.35	1.1	1.3	1.28	1.29	1.89	2.2
Feb			1.56	1.53	1.1	1.3	2.1	2.08	1.73	2.05
Mar			0.75	0.92	1.5	1.49	2.2	2.2	1.69	2.13
Apr			0.98	1.53	1.96	2.35	1.4	1.35	2.07	3.25
May			1.37	1.39	1.5	1.7	1.75	2.0	1.52	2.35
Jun			1.5	2.2	1.9	1.95	1.46	1.73	1.87	2.79
Jul			2.0 *	2.2 *	1.87	2.43	2.2	2.04	1.79	2.24
Aug	2.4	2.03	2.0 *	2.2 *	1.84	2.09	1.96	2.17	2.05	2.41
Sep	1.9	1.6	2.2	2.2	1.46	1.95	2.33	2.55		
Oct	2.0	2.2	3.62	3.57	0.84	1.12	2.74	3.16		
Nov	1.9	2.0	2.2	2.3	1.09	1.19	2.84	2.84		
Dec	1.4	1.4	1.9	1.76	1.85	1.85	1.94	2.94		

Percentage of 2 NZEF, MEF and CMF, in Medical Units at End of Each Month

	1942		1943		1944		1945		
	Sick and BC	Sick	Sick and BC	Sick	Sick and BC	Sick	Sick and BC	Sick	
Jan			5.62	4.4	5.89	4.55	7.36	5.91	Italy
					9.60	5.82	3.28	3.28	Egypt
Feb			5.52	4.86	7.77	6.13	5.77	4.67	Italy
					7.17	4.01	2.7	2.7	Egypt
Mar			6.61	4.74	9.05	5.74	5.78	5.0	Italy
					4.67	3.21	4.2	4.2	Egypt
Apr			7.97	4.98	7.71	5.46	9.18	4.77	Italy
					4.7	2.97	5.1	5.1	Egypt
May	5.45		5.88	4.02	7.49	5.79	4.69	3.43	Italy

				3.93	3.73	5.3	5.3	Egypt
Jun	6.57	6.32	5.25	4.43	5.96	5.08	4.38	3.58 Italy
					3.26	3.16	4.48	4.48 Egypt
Jul	12.03	7.83	5.26	5.03	8.25	5.98	3.04	2.97 Italy
					3.08	3.08		Egypt
Aug	13.48	8.49	4.47	4.39	7.69	5.64	3.56	3.52 Italy
					3.79	3.79		Egypt
Sep	12.3	9.1	4.59	4.54	10.62	7.84	4.67	4.64 Italy
					3.8	3.8		Egypt
Oct	13.02	11.2	3.97	3.93	9.96	7.84	4.44	4.43 Italy
					4.94	4.94		Egypt
Nov	13.41	8.96	3.29	3.14	9.81	8.38	3.79	3.77 Italy
					4.3	4.3		Egypt
Dec	9.32	6.84	6.00	3.74	9.75	6.98	5.03	4.97 Italy
					5.4	5.4		Egypt

The only two large epidemics (those of infective hepatitis) are reflected in the high figures for autumn 1942 and autumn 1944.

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* **Estimated only.**

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2 NZEF Casualties

Campaign	*Killed in Action*	*Died of Wounds*	*Wounded*	*Prisoners of War Died of Wounds*	*Wounded*	*Total*
Greece	180	50	371	25	225	851
Crete	507	136	1039	31	496	2209
Libya, 1941	671	208	1699	5	201	2784
Egypt	587	313	2414	36	247	3597
Alamein-Tripoli	335	123	1527	1	5	1991
Tunisia	316	71	1297	2	9	1695
Sangro	298	101	1116	4	16	1535
Cassino	340	114	1823	2	7	2286
Florence	227	71	896		4	1198
Rimini	180	44	878		8	1110
Faenza	141	52	847	1		1041

Senio-Trieste	183	59	1145			1387
	3965	1342	15,052	107	1218	21,684

Ratios (approximate) *Indicate some Trends:*

	Killed to Wounded (Omitting Died of Wounds) Including PW	*Died of Wounds to Wounded (not PW)*	*Killed and Died of Wounds to Wounded, Including PW*
Greece	1:3	1:8	2:5
Crete	1:3	1:8	2:5
Libya, 1941	1:3	1:8	1:2
Egypt	1:4 ½	1:8	1:3
Alamein-Tripoli	1:5	1:12	1:3
Tunisia	1:5	1:12	1:3
Sangro	1:5	1:12	1:3
Cassino	1:5	1:12	1:4
Florence	1:5	1:12	1:3
Rimini	1:5	1:20	1:4
Faenza	1:6	1:20	1:4
Senio-Trieste	1:6	1:20	1:5

The middle column indicates an improved recovery rate for wounded as war medical science progressed and as lines of evacuation became more favourable. (If prisoners of war are also included, the only changes are that Crete and Libya become 1: 9 instead of 1: 8.)

Analysis of other columns must take account of more complications, but the severity of injury resulting in death (immediate or postponed) seems to have decreased as the balance of power in armour, air force, and artillery swung from the enemy to us.

New Zealand Medical Corps, 2 NZEF, in Middle East, with Reinforcements

Rft	*Unit*	*Embarked*	*Disembarked*	*ME Offrs*	*ANS*	*ORs*	*WAAC NZ*

	Advance Party	11/12/39	7/1/40	2		2	
1 Ech	4 Fd Amb	5/1/40	13/2/40	10	18	171	
	4 Fd Hyg	5/1/40	13/2/40	1		28	
2 Ech	5 Fd Amb	1/5/40	3/3/41	11		171	
	1 Gen Hosp	1/5/40	16/11/40	21	37	144	
	1 Conv Dep	1/5/40	15/9/40 (ex UK)	5		47	
3 Ech	6 Fd Amb	27/8/40	26/10/40	13		170	
	2 Gen Hosp	27/8/40	1/10/40	18	39	148	
4th: 1 Sec		8/11/40	16/12/40	3	6	47	
2 Sec		20/12/40	28/1/41	16	5	17	
3 Sec	3 Gen Hosp	1/2/41	23/3/41	19	46	149	
5th		7/4/41	13/5/41	5	12	154	
6th		27/6/41	29/7/41	16	39	225	
Maunganui		25/7/41	25/8/41	7			
7th		15/9/41	19/10/41	15	18	166	
Maunganui		22/12/41	25/1/42	8	5	116	196
Maunganui		5/11/42	6/12/42			60	10
8th		12/12/42	18/1/43	2	8	49	
9th		14/5/43	12/6/43	1	5	96	3
Maunganui		19/6/43	21/7/43	1	21	1	17
10th		22/7/43	21/8/43	8	20	120	
Misc 1943, ex hosp ship, etc.				7	13		8
11th: 1 Sec		12/1/44	26/2/44	5	8	268 *	6
2 Sec		31/3/44	6/5/44	7	12	118	
Oranie		15/12/43	29/2/44	2	20	3	28
Maunganui		24/5/44	30/6/44	1	18		9
12th		29/6/44	5/8/44	4	12	39 †	

Maunganui	23/8/44	27/9/44	7	19	6	28
13th	28/9/44	5/11/44	18		14	
Maunganui	6/12/44	14/1/45	4	27		61
Misc 1944, ex hosp ship and air, etc.			18	6	10	2
14th	4/1/45	29/1/45	4	8	206	28
15th	20/4/45	16/5/45	35	30	201	32
Total			294	452	2946	428
					Total	4120

(Additions to medical officers listed are RMOs sailing with combatant units and some MOs recruited in United Kingdom—total approx. 30.)

Casualties

	Offrs	*ANS*	*ORs*	*WAAC*
Killed, died	9	2	44	6
Wounded	11		61	
Prisoners of war	32		492	

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* Incl 50 ex-furlough

† Incl 15 ex-furlough

Deaths from Disease in 2 NZEF, MEF and CMF, 1940–45

Meningitis (all forms)	29
Pneumonia, labor	14
Septicaemia	12
Cerebral haemorrhage	7
Appendicitis and Peritonitis	13
Poliomyelitis	8
Diphtheria	4
Typhus	6
Dysentery	8

Cancer	**8**
Heart disease	**17**
Nephritis	**6**
Duodenal ulcer	**3**
Tuberculosis	**4**
Typhoid	**7**
Infective hepatitis	**6**
PUO	**2**
Anaemia	**5**
Malaria	**2**
Acute abdominal	**8**
Other	**19**
	188

(Deaths from disease in 1 NZEF overseas in the First World War were 1579)

NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

GLOSSARY

Glossary

AA & QMG A/Q	**Assistant Adjutant and Quartermaster-General**
AAMC	**Australian Army Medical Corps**
A & D	**Admission and Discharge**
ADH	**Assistant Director of Hygiene**
ADMS	**Assistant Director of Medical Services**
ADOS	**Assistant Director of Ordnance Services**
ADS	**Advanced Dressing Station**
AFHQ	**Allied Force Headquarters**
AFS	**American Field Service**
AI	**Accidental Injury**
AIF	**Australian Imperial Force**
AMCU	**Anti-malaria Control Unit**
AMD	**Army Medical Department**
AMGOT	**Allied Military Government of Occupied Territory**
APM	**Assistant Provost Marshal**
ASC	**Army Service Corps**
ATS	**Anti-tetanus Serum**
BC	**Battle Casualty**
BCOF	**British Commonwealth Occupation Force**
BID	**Brought in Dead**
BMA	**British Medical Association**
BNA	**British North Africa**
BP	**Blood Pressure**
BT	**Benign Tertian (malaria)**
BTE	**British Troops in Egypt**
CCS	**Casualty Clearing Station**
CD	**Contagious Disease**
CMF	**Central Mediterranean Force**
CNS	**Central Nervous System**
CO	**Commanding Officer**

DAAG	**Deputy Assistant Adjutant General**
DADH	**Deputy Assistant Director of Hygiene**
DADMS	**Deputy Assistant Director of Medical Services**
DAPM	**Deputy Assistant Provost Marshal**
DDMS	**Deputy Director of Medical Services**
DDP	**Deputy Director of Pathology**
DDS	**Director of Dental Services**
DDT	**Dichlor-Diphenyl-Trichlorethane**
DGMS	**Director-General of Medical Services**
DJAG	**Deputy Judge Advocate General**
DMS	**Director of Medical Services**
EMS	**Emergency Medical Service**
ENT	**Ear, Nose, and Throat**
EPIP	**European Privates, Indian Pattern (tent)**
FDS	**Field Dressing Station**
FGCM	**Field General Court Martial**
FSU	**Field Surgical Unit**
FTU	**Field Transfusion Unit**
GHQ	**General Headquarters**
GOC	**General Officer Commanding**
GS	**General Service**
GSW	**Gunshot Wound**
HMT	**His Majesty's Troopship (Transport)**
HP	**High Pressure**
HP	**Hospital Pattern**
HQ	**Headquarters**
HS	**Hospital Ship**
IAT	**Inflammation Areolar Tissue**
KLB	**Klebs Loeffler Bacillus**
L of C	**Line of Communication**
LG	**Landing Ground**
LRDG	**Long Range Desert Group**
MAC	**Motor Ambulance Column (Convoy)**
MDS	**Main Dressing Station**
MEF	**Middle East Force**
MI Room	**Medical Inspection Room**
MO	**Medical Officer**

MRC	**Medical Research Council**
MSU	**Mobile Surgical Unit**
MT	**Malignant Tertian (malaria)**
NAAFI	**Navy, Army, and Air Force Institutes**
NAB	**Nov-Arseno-Benzol**
NCO	**Non-commissioned officer**
NYD (N)	**Not Yet Diagnosed (Nervous)**
NZEF	**New Zealand Expeditionary Force**
NZEF (IP)	**New Zealand Expeditionary Force (in Pacific)**
NZEF (UK)	**New Zealand Expeditionary Force (United Kingdom)**
NZGH	**New Zealand General Hospital**
NZMC	**New Zealand Medical Corps**
OC	**Officer Commanding**
OCTU	**Officer Cadet Training Unit**
ONS	**Organisation for National Security**
ORA	**Operation Room Assistant**
ORs	**Other Ranks**
OUMC	**Otago University Medical Company**
PA	**Prophylactic Ablution**
PAD	**Passive Air Defence**
PMO	**Principal Medical Officer**
PUO	**Pyrexia of Unknown Origin**
PW	**Prisoner of War**
QAIMNS	**Queen Alexandra's Imperial Military Nursing Service**
QM	**Quartermaster**
RAMC	**Royal Army Medical Corps**
RAP	**Regimental Aid Post**
RMO	**Regimental Medical Officer**
RMT	**Reserve Mechanical Transport**
RNZAF	**Royal New Zealand Air Force**
RNZN	**Royal New Zealand Navy**
RTU	**Reinforcement Transit Unit**
SMO	**Senior Medical Officer**
Stalag	**Prison Camp, Other Ranks (in Germany)**
TAB	**Typhoid, Paratyphoid A and B (vaccine)**
TANS	**Territorial Army Nursing Service (British)**
Tb	**Tuberculosis**

UDF	**Union Defence Force (South Africa)**
VAD	**Voluntary Aid Detachment**
VD	**Venereal Disease**
VDTC	**Venereal Disease Treatment Centre**
WAAC	**Women's Army Auxiliary Corps**
WE	**War Establishment**
WO	**Warrant Officer**
WSP	**Water Softening Powder**
WWSA	**Women's War Service Auxiliary**

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NEW ZEALAND MEDICAL SERVICES IN MIDDLE EAST AND ITALY

[BACKMATTER]

This volume was produced and published by the War

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The author: Colonel Stout was educated at Wellington College and at Guys Hospital, London. He served overseas for the whole period of the 1914–18 War, first in the Samoan Advance Force and then in Egypt, Salonika, France, and England. He was attached to 1 NZ Stationary Hospital and was seconded with a New Zealand surgical team to British casualty clearing stations during the battles of the Somme and Vimy. He was later Surgical Divisional Officer at 1 NZ General Hospital at Brockenhurst and acted as Consultant Surgeon 1 NZEF at the later stages of the war. He was awarded the DSO and OBE and mentioned in despatches. After the war he was attached as Surgical Consultant to the Trentham Military Hospital and later acted as surgical examiner for the Pensions Department throughout the inter-war period.

Proceeding overseas with the Second Echelon in May 1940, he served with 2 NZEF in England, Egypt, Greece, North Africa and Italy, first as Surgical Divisional Officer 1 NZ General Hospital and, from May 1941 till October 1945, as Consultant Surgeon 2 NZEF. We was awarded the CBE and mentioned in despatches.

In civil life Colonel Stout held the position of Senior Surgeon to the Wellington Hospital from 1920 till 1945, since when he has been an

honorary Consultant Surgeon to the hospital. For many years he was a University lecturer in surgery and also an examiner in surgery to the University of New Zealand. He has played an active part in the British Medical Association and has held the position of President and Chairman of Council of the New Zealand Branch. He was also for many years on the New Zealand Committee of the Royal Australasian College of Surgeons. He has been associated with the University of New Zealand as a Member of Senate and also as a member and chairman of the Victoria College Council and as a member of the Massey College Council.