THE NEW ZEALAND DENTAL SERVICES

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PART II — THE MIDDLE EAST AND CENTRAL MEDITERRANEAN

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THE NEW ZEALAND DENTAL SERVICES

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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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1960

THE NEW ZEALAND DENTAL SERVICES

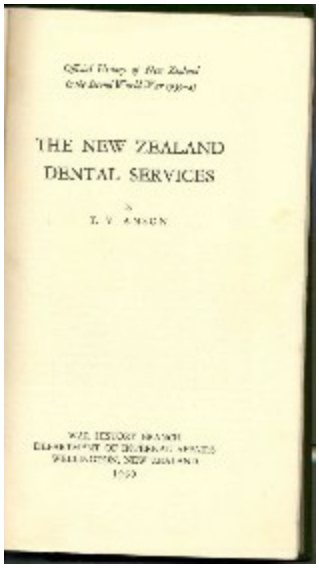
[FRONTISPIECE]

Colonel B. S. Finn, CBE, DSO, ED, Director of Dental Services, Navy, Army and Air

Colonel B. S. Finn, CBE, DSO, ED, Director of Dental Services, Navy, Army and Air

THE NEW ZEALAND DENTAL SERVICES

[TITLE PAGE]


THE NEW ZEALAND
DENTAL SERVICES

T. V. ANSON

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

THE NEW ZEALAND DENTAL SERVICES

T. V. ANSON

WAR HISTORY BRANCH

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THE NEW ZEALAND DENTAL SERVICES

PREFACE

Preface

APART from the factual recording of past incidents, there are two qualities essential in any history. Sufficient emphasis must be laid on errors of commission and omission to prevent their repetition in the future and the whole must be presented with enough interest that he who runs may read, not nod. In telling the story of the New Zealand Dental Corps it is impossible to avoid the use of technical terms, for dentistry is a scientific subject, so if some of the explanations seem empirical to the dental reader, his indulgence is craved. May he share with the lay reader some enjoyment of the successful struggle of the Corps for recognition by the Armed Forces, which should appeal to anyone who has read 'Cinderella'.

There is little of the blood and thunder of war but enough fights, if only on paper, to satisfy even an Irishman. There is something from every theatre of war in which the New Zealand troops fought, for the Corps was responsible for the dental health of every man and woman of the Navy, Army and Air Force at all times. If there is some pride of achievement there is some justification, for New Zealand led the way in providing organised dental service for her armed forces; conceived the ideal of the establishment of complete dental fitness at all times, as distinct from the maintenance of a casualty service, not only at the Base but in the field; clung to this ideal with such fierce intensity that the New Zealand forces, handicapped by an initial grave burden of dental infirmity, enjoyed a standard of oral health second to none of their Allies.

It is a far cry from the experimental inclusion of two dental officers in the field ambulance that left New Zealand in 1914 with the Samoan Relief Expedition to the highly organised and efficient dental service of today known as the Royal New Zealand Dental Corps. Memory is short

and the achievements of 1914–18 were mostly forgotten until Hitler jolted the world out of peaceful slumber. The achievements of 1939–45 could easily suffer a similar fate should, as we hope, our prayers for a lasting peace be granted. So this saga has been told. The facts have been carefully checked amid the chaos of a peculiar recording system and anything not documentarily substantiated has been labelled as such.

The thanks of the author are offered to many, too numerous to mention in detail, for willing assistance. It is desired to place on record, however, the names of some without whose help it would have been well-nigh impossible to complete the task: the late Colonel B. S. Finn, whose long and intimate association with the Corps shone a beacon of light through the fog of early research; Colonel J. F. Fuller, who read and corrected Part II of the history and lightened the task of the author by the excellence and lucidity of his war diaries; Captain B. Wilson, WO I Peters and WO II Styche of RNZDC Headquarters, who were more than willing at all times to give of their experience; Miss Lorna Clendon of the War History Branch of the Department of Internal Affairs, who searched and annotated the files and records with such meticulous care; Major G. H. Gilbert, who began the writing of this history when stationed at Army Headquarters; and the late Major-General Sir Howard Kippenberger, Editor-in-Chief of the War Histories in New Zealand, and his staff, whose maps, indexing and general supervision were so essential.

Wellington, New Zealand

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CHAPTER 1 — THE ORIGIN AND DEVELOPMENT OF THE NEW ZEALAND DENTAL CORPS IN THE GREAT WAR, 1914–18

CHAPTER 1

The Origin and Development of the New Zealand Dental Corps in the Great War, 1914-18

BEFORE the Great War of 1914–18, the connection between dental health and fighting efficiency was but faintly recognised. There was a grudging acknowledgment that a toothless recruit might cause embarrassment when confronted with standard rations and thus be a military misfit, but little thought had been given to adjusting his disabilities to the military machine. In most cases he was rejected with the lame, the halt and the blind. Even the layman could see the injustice and futility of this policy, as instanced by the indignant reply of the Scottish recruit in *Punch* when told that his lack of teeth disqualified him from army service, 'Mon, I'm no wanting to bite the Germans.'

Napoleon emphasised the importance of good food to the soldier, Florence Nightingale showed the advantages of sound nursing, the triumph of Sir Ronald Ross over the mosquitoes of Panama demonstrated to the world in dramatic fashion one vital part that medicine could play in any campaign. Anything approaching an organised army dental service, however, was as yet unknown in military history. It is not surprising, therefore, to find that at the outbreak of war in August 1914 no organisation existed in New Zealand to provide dental service for the military forces. It is encouraging that there were men with sufficient vision to see the necessity for such a service and the courage to provide one. Ten days after the declaration of war, a force left New Zealand for Samoa. It included, as members of the New Zealand Medical Corps, two dental officers attached to the field ambulance. Two and a half months later, when the Main Body of the Expeditionary Force sailed for Egypt, it included ten dental officers, still members of the NZMC.

These arrangements were thought to be unnecessarily lavish at the time but were fully justified by the work of these officers in Egypt,

Gallipoli and France. A brief account of their activities as they affected the formation of the NZDC will be given later, but in the meantime important developments were taking place in New Zealand.

During the first nine months of the war, civilian dental practitioners were treating recruits both prior to mobilisation and after they had entered camp, either free of cost or at reduced fees borne by the recruit himself. In spite of this a large number of otherwise fit men were being rejected because of gross dental defects, and amongst those accepted there was still much treatment needed. Recognising this as a waste of manpower and seeing the difficulties in providing treatment for the Expeditionary Force, the New Zealand Dental Association in June 1915 put proposals to the Government for the formation of a co-ordinated dental service by civilian practitioners. It offered on behalf of its members to treat all enlisting men who would otherwise be rejected solely on account of dental defects. The fees for this work were to be at ordinary hospital rates, i.e., sufficient only to defray the cost of materials. It proposed that two of its members be appointed supervising officers to act as consultants and advisers to the Director of Medical Services in all matters connected with the dental treatment of recruits and troops. It also proposed that the treatment in camps by the few dental officers attached to the NZMC be reorganised, and it offered £100 towards the provision of better facilities for this.

The Association was taking a realistic view of a situation which demanded urgent action. Instead of pressing for the formation of an army dental service which would take time to organise and develop, it immediately made available a practical service from civilian practitioners. The scheme had the added value of getting the treatment done before the recruit entered camp, thus saving interruption of training. This was an important consideration in view of the announcement by the Minister of Defence that the period of training was to be reduced at the request of the Imperial authorities. It was gladly accepted by the Government and for over two years assisted in making most of the men for the reinforcements dentally fit. Mr T. A. Hunter, [1]

chairman of the Executive Council of the Association, and Dr H. P. Pickerill, [2] Dean of the faculty of dentistry of the University of Otago, were appointed as supervising officers.

The scheme, however, was put forward as an emergency measure only, intended to supply the need until an army dental service was formed. About this time, Surgeon-General R. S. F. Henderson, RAMC, arrived in New Zealand to advise on the reorganisation of the medical services to the NZEF. He was so impressed by the need for an efficient army dental service as advocated by the New

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[1] Col Sir Thomas Hunter, KBE; born Dunedin, 10 Feb 1863; dental surgeon; Director of Dental Services, NZ Dental Corps, 1916–30; died Heretaunga, 29 Dec 1958.

[2] Lt-Col H. P. Pickerill, CBE; born Hereford, England, 1879; plastic surgeon; Major, NZMC, 1916–20; died Silverstream, Aug 1956.

Zealand Dental Association that, within two months of the Government's acceptance of the civilian practitioners' scheme, the formation of the New Zealand Dental Corps was authorised.

In November 1915 the New Zealand Dental Corps came into being. It was to be a separate organisation from the New Zealand Medical Corps, controlled by a Director of Dental Services in the rank of lieutenant-colonel, with two Assistant Directors in the rank of major. Mr Hunter became the first DDS and Dr Pickerill and Mr J. N. Rishworth [1] were appointed as ADDSs. Principal Dental Officers were appointed to the main mobilisation camps, those dental officers attached to the NZMC were transferred to the new Corps and additional officers were appointed. The *Gazette* notice of the formation of the New Zealand Dental Corps appeared on 24 February 1916. (See Appendix I.)

At this time the 9th and 10th Reinforcements were in camp. The Principal Dental Officers at Featherston and Trentham soon found that

the amount of work was enormous and asked for help. The Corps grew rapidly. More officers were appointed, buildings were erected, equipment found, mechanics and orderlies provided and a general organisation evolved. However, it was not until the 17th Reinforcements were in camp that the NZDC and the civilian practitioner scheme were completely coping with the work. This reinforcement numbered 1998 men, and the treatment given to them by the Corps and the civilians amounted to 6335 fillings, 5237 extractions and 854 dentures, leaving 371 fillings, 48 extractions and 32 dentures still to be done.

The Army's policy was to send away each month a reinforcement numbering approximately two thousand. During 1917 most of the treatment, and during 1918 practically all the treatment, was done before embarkation.

Overseas, the autonomy of control of the Dental Corps was not so quickly achieved as in New Zealand, but this is readily understandable in view of the obstacles to be overcome in fitting a new service into an established organisation such as a fighting division. During the voyage of the Main Body of the Expeditionary Force from New Zealand to Egypt, the dental officers began, under the poorest conditions, the task of examining every soldier and carrying out as much urgent treatment as possible. Their examinations revealed a serious condition, fully justifying the foresight of the authorities in providing dental officers for the Expeditionary Force. What had appeared to the critics to be an unnecessary luxury was soon to be applauded as an important contribution to the

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[1] Col J. N. Rishworth, MBE; born Blenheim, 1876; dental surgeon; DDDS, 1 NZEF 1917–19; DDS, NZDC, 1930–34; died Auckland, Feb 1946.

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ance

of fighting strength. [1] It was expected that the Main Body would very soon be in action after only a short period of training. The ADMS [2] therefore instructed the dental officers to concentrate on making every soldier, as far as possible, free from pain or disability in the near future. On arrival in Egypt they were distributed among the various regiments and units, where they extracted septic roots and badly decayed teeth, placed temporary fillings in large cavities, removed salivary calculus and made the mouths as healthy as possible. To attempt the achievement of complete dental fitness was quite impossible. As it was, the working conditions were far from ideal. Soldiers requiring treatment were undergoing a course of intensive training and could not be readily spared for dental parades. Fortunately, commanding officers were quick to realise the importance of the work and did much to assist. This appreciation of the value of the dental service was increased when it was learned that the Australian forces had arrived in Egypt without dental officers and had asked for assistance from those of the NZEF. Four New Zealand officers were temporarily transferred for duty with the Australians in spite of their inability to cope with all the urgent work amongst their own troops. Soon also, many patients from the British forces came seeking treatment.

When the Anzac forces went to Gallipoli, four New Zealand dental officers went with them, two with the New Zealanders and two with the Australians. The equipment for each officer was greatly curtailed, provision being made only for emergency operations for the relief of pain. During this campaign the troops lived mostly on bully beef and hard biscuits which played havoc with teeth, both natural and artificial, with the result that it was not long before there were urgent requests for more equipment.

After some months, five more dental officers were sent to Gallipoli from Egypt and a Field Dental Clinic was established at No. 2 Outpost, Anzac. The area was continually under fire and, owing to the scarcity of fresh water, constant visits had to be made to the beach for sea water to use in the vulcanisers. This clinic was the wonder and admiration of the

British and Australian forces. It is interesting to quote from the official history of the New Zealand Medical Services, 1914–18, by Lieutenant-Colonel A. D. Carbery, CBE, NZMC:

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[1] 'An army today is a self-contained community; it contains everything its members need for war, from bullets to blood banks. I will always remember Churchill's anger when he heard of several dentist's chairs being landed over the beaches in Normandy! But we have learnt since the 1914–18 war that by caring for a man's teeth, we keep him in the battle.'— *The Memoirs of Field-Marshal Montgomery*, p. 348.

[2] Assistant Director of Medical Services.

New Zealand had certainly led the way in the provision of an adequate dental service for an Expeditionary Force and a dental hospital capable of carrying out any form of repair or mechanical work and the making of dentures, and provided with cylinders of nitrous oxide gas and dental engines, perched on a trenched hillside, cheek by jowl with a very noisy mountain battery, surely reaches the 'limit' in front line dentistry.

Following the evacuation from Gallipoli in December, there was a period of rest for the NZEF in Egypt. This was followed by a programme of training and a reorganisation to form a New Zealand Division. At this stage one of the original dental officers, Captain B. S. Finn, DSO, NZMC, [1] was appointed Administrative Dental Officer to supervise and co-ordinate the work of the Dental Services. These were, however, still part and parcel of the medical services under the control of the ADMS. The autonomy of control achieved in New Zealand did not apply to the dental services overseas. That was to come later. The rap on the door requesting admission was insistent enough to demand attention. As Carbery states when discussing the reorganisation of the medical services for the Division at this stage:

One other administrative matter we must consider. The New

Zealand Dental Service was now to be reorganised. Captain Finn, DSO, NZMC, the dental officer whom we have seen evacuating wounded from the No. 3 Pier at Chailak Dere, for which good work he had a DSO, was now appointed as acting administrative dental officer, attached to NZEF Headquarters. The ideal of a compact dental service attached to a Division was not as yet fully attained. The opinion of the GOC, NZEF at this time was that the OC of a medical unit to which a dental section was attached should be able to undertake the administration of the section so that a separate Dental Corps Headquarters was unnecessary.

Dental sections were formed comprising one dental officer, two mechanics and one orderly. Two were attached to each of the three field ambulances, with nine panniers of equipment weighing 7½ cwt. Later this was reduced as it was considered to be too much for the ambulance transport. In all, eleven sections were allotted to various units, including two to the New Zealand Infantry Base Depot which was to accompany the Division and one to the New Zealand Stationary Hospital. The Dental Stores Depot, with reserve stocks, was mobile and had a staff of one quartermaster-sergeant and a packer under the administrative dental officer.

In April 1916, when the Division took up its position in the Armentières sector in France, the dental services worked to this plan but in August of that year, when the Division moved preparatory to the Battle of the Somme, the dental sections were ordered to the Base as it was found impossible to carry their equipment.

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[1] Col B. S. Finn, CBE, DSO, ED, m.i.d.; born Invercargill, 17 Oct 1880; dental surgeon; trooper, South African War, 1900–02; NZ Dental Corps, 1914–18 (Major, ADDS); DDS (Navy, Army and Air), 1934–49; died 23 Aug 1952.

The service had, however, attracted attention because of its novelty and efficiency. Inquiries came from the DMS [1] of the Fourth Army, to

which the ADMS of the New Zealand Division replied that he considered the sections unsatisfactory as field units because of the weight of their equipment, and that he preferred the old arrangement of having a dental officer with light equipment, weighing only 80 lb, attached to each field ambulance. In the meantime the sections concentrated on the treatment of reinforcements at the infantry base at Etaples.

They were soon missed in the field, and late in October 1916, at the request of the ADMS, three sections were returned to the Division. So much work had accumulated that they were quite unable to cope with it and the ADMS, in consultation with the GOC, decided to transfer several dental surgeons and mechanics, who were serving in a combatant capacity, to the Corps, and in November a dental hospital was established in a small communal school with a few huts attached. For the first time overseas the NZDC worked apart from medical units. As Carbery writes of this dental hospital:

> **Days of attendance were allotted to brigades and other formations. Sundays were also work days and were devoted to officers. The NZDC worked hard and well; in their first two months they treated 1702 cases and owing to the close proximity of the trenches—the front line was only 3¾ miles away—of a fully equipped dental establishment capable of executing any type of work required, a soldier could come down from the most advanced positions and have efficient treatment without being more than a few hours absent from his duties in the line.**
>
> **A very important work performed by the dental officers this winter was the prophylaxis and treatment of 'Trench Mouth' or ulcero-membranous gingivitis caused by Vincent's organisms, now very prevalent amongst the men and, in the opinion of some observers, the cause of secondary lung complications of a severe type.**

Another quotation from the same source refers to the period of rest and reorganisation of the New Zealand Division in July 1917 following

the battle of Messines, and indicates a further stage in the evolution of the New Zealand dental services in the field:

> **The New Zealand dental sections had been remodelled and had now reached their perfected organisation. The dental section which had been formed in the United Kingdom to accompany the Fourth Field Ambulance was a very mobile unit; all cumbersome equipment had been eliminated, with the result that two small panniers (one pack mule load) now contained sufficient instruments and material for all operations, surgical and prosthetic, and the actual space taken up in transport only half of a half limbered G.S. cart. [2] The dental hospital had also been made mobile by allotting one threeton lorry to the purpose of its transport as required.**

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[1] **Director of Medical Services.**

[2] **General Service cart.**

> **There was no difficulty in maintaining a constant supply of expendable material as, in accordance with a contract made between the New Zealand Government and the War Office, all necessary dental equipment could be obtained from Advanced Supply Depots of Medical Stores. In this way all difficulties had been overcome by experience in the field and the New Zealand Dental Corps may justly claim to be the pioneers of a movement which resulted in an efficient and practical dental service for the front line troops.**

Not only was dentistry establishing itself as a service to the troops; it was identifying itself as an essential component of the fighting machine, selling its wares with the utmost confidence to a cautious but rapidly appreciative market. These first steps in mobility are interesting as a prototype of the mobile dental unit in the next war, when the whole

character of the war made fluidity of movement a primary essence for every unit in a military force.

From the beginning of 1917 onwards the NZDC established many sections in England for the treatment of New Zealand troops, as well as continuing its service in France. There was a depot on Salisbury Plain to train reinforcements as they arrived from New Zealand, two General Hospitals, a Convalescent Depot and, later, separate training depots for machine-gunners, engineers and artillery. To provide adequate dental service for these scattered portions of the New Zealand Forces the establishment of the NZDC was greatly increased. The DDS, Lieutenant-Colonel Hunter (later Sir Thomas Hunter) visited England to advise and report. Major Finn was appointed Deputy Director of Dental Services to the New Zealand Forces overseas, until he was recalled to New Zealand under the exchange system then in force, when Major Rishworth replaced him.

In December 1916 Major Pickerill, one of the two original Assistant Directors of Dental Services, arrived in England. The holder of medical as well as dental qualifications, he was soon seconded to the NZMC and established a plastic surgery and jaw injuries hospital. He devoted his efforts to the surgical aspect of the work, being assisted by a special section of the NZDC. His outstanding work further enhanced the prestige of the young Dental Corps, as well as that of the Corps to which he was seconded.

When the war ended in November 1918 the strength of the NZDC overseas was 42 officers and 70 other ranks.

This necessarily brief outline of the origin and development of the NZDC emphasises in particular the development of the Corps from a minor star in the medical firmament to a constellation of its own. Many authoritative references lead to the conclusion that New Zealand was well to the fore in providing dental services for its army, and particularly in establishing a Dental Corps as a separate entity from the Medical Corps. At this stage it is of little value to retrace the steps by which this

independence was won. The important fact is that at the end of the Great War the New Zealand Dental Corps was independent of the Medical Corps as far as administration of its affairs was concerned. This cannot be too strongly stressed in view of the determined efforts made in the Second World War to take away this independence and merge the Dental Corps once more with the Medical Corps. The arguments used to justify the control of the Dental Corps by the Director-General of Medical Services were based chiefly on an examination of the conditions existing in other countries such as England and Australia. It is right, therefore, to emphasise in this chapter the claim that the New Zealand Dental Corps was the pioneer in providing dental service to the armed forces, that the service was a success and that it was independent in the control of its affairs. If these facts are borne in mind the depth of feeling exhibited in the controversy will be better understood.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 2 — BETWEEN THE TWO WARS, 1919–39

CHAPTER 2
Between the Two Wars, 1919-39

IN December 1919 general demobilisation of the New Zealand Military Forces was nearly complete and the need for a large Dental Corps had passed. Lieutenant-Colonel Hunter was demobilised but was retained as Director of Dental Services for the Military Forces on a peacetime basis. He remained responsible for all policy matters which were referred to him by Major C. G. Gray, [1] late Assistant Director of Dental Services, who remained on the active list and became Administrative Officer for the DDS. This was purely a temporary appointment to tide over the short remaining period of transition from war to peace.

The only treatment left for the Corps was that of patients at the military hospital at Trentham, the convalescent hospitals at Hanmer and Rotorua and the sanatoria at Cashmere and Pukeora. For this, one officer, Major R. D. Elliott, [2] and one mechanic were considered sufficient. There was also a section still attached to the jaw hospital in Dunedin where Lieutenant-Colonel Pickerill was completing the treatment of the long-term cases of jaw and facial injuries. One dental officer, Captain W. S. Seed, [3] and one mechanic comprised this section. With these exceptions, the NZDC was demobilised and its officers posted to the reserve. Within two years none was left on the active list.

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[1] Maj C. G. Gray; born 1880; dental surgeon; died 15 Aug 1941.

[2] Maj R. D. Elliott; Eastbourne; born Northern Ireland, 5 Feb 1879; dental surgeon.

[3] Capt W. S. Seed; Christchurch; born Christchurch, 1887; dental surgeon.

In exile, 1922-33

After the war, a Territorial Force was maintained in New Zealand on a compulsory basis, the training consisting of regular parades and annual camps. In the annual report for 1920, the General Officer Commanding the New Zealand Military Forces made the following reference to the NZDC:

> It is not proposed to retain a permanent establishment of the Dental Corps, but experience has shown the need for an Army to be dentally fit and the great influence sound teeth in a soldier have in reducing the rates of sickness and invaliding. It is proposed to maintain the Dental Corps as part of the New Zealand Territorial Force, utilising it in all future camps of training that force. A definite establishment will be laid down which will provide for peace requirements and for the expansion of the Corps for war purposes if necessary.

For the next decade, however, in spite of this statement of policy, the NZDC was not maintained as part of the Territorial Force, although there was retained a Director of Dental Services and a Reserve of Officers.

In 1930 Lieutenant-Colonel Hunter was posted to the retired list in the rank of colonel and was replaced as DDS by Lieutenant-Colonel J. N. Rishworth, MBE. Then, in 1931, the Territorial Force was placed on a voluntary basis, with considerable reduction in size. Strange to say, this general reduction was soon followed by a revival of the NZDC, but before describing this it is necessary to go back a year or so.

In 1928 a Territorial unit known as the Otago University Medical Company had been formed. It consisted of medical and dental students who were liable for compulsory military training and it aimed at combining this training with specialised work to qualify them as medical or dental officers in a future war. Commanded by Lieutenant-Colonel C. E. Hercus, DSO, OBE, NZMC, [1] it attended annual camps of fourteen days, the training consisting in instruction and exercises in stretcher drill, first aid in the field, military hygiene and the organisation of

medical services in the field. This was in addition to instruction in general military subjects such as close-order drill, map reading and army organisation. The abolition of compulsory training produced a unit keen enough to flourish on a voluntary basis. From 1932 onwards, dental as well as medical instructors were included and the dental students were trained in the work and problems of a field dental officer in wartime. On the completion of their second and third annual camps, examinations, both practical and written, were held for the students. As a result of these examinations the dental students received an 'A' certificate after the second camp and a 'B' certificate after the third. A unit founded as a legitimate escape from the boredom and impracticability of the compulsory training scheme, which was lethargically administered and supinely accepted, fanned the spark of enthusiasm which had characterised the NZDC in the 1914–18 War. There would never be another war of course, the Great War had been a war to end wars, but the subject was extremely interesting and, who could tell, there were still armies and, where there were armies there was a need for a Dental Corps. The Otago University Medical Company thought so and so did the DDS.

In September 1931, Lieutenant-Colonel Rishworth submitted a memorandum to the GOC recommending that the Dental Corps be re-established as an active part of the Territorial Force. He sub-

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[1] Lt-Col Sir Charles Hercus, DSO, OBE, m.i.d.; Dunedin; born Dunedin, 1888; Professor of Bacteriology and Preventive Medicine, University of Otago; DADMS, A and NZ Mtd Div, 1916–19; Dean of Otago University Medical School, 1937–58.

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mitted

establishments for that Force and also for an Expeditionary Force in the event of mobilisation. Dental students who had completed their training in the Otago University Medical Company and had gained their

two certificates would, on graduation, be eligible for commissions in the NZDC. They would be placed on the active list as soon as vacancies occurred in the establishment.

This was not wholly acceptable, and the matter was temporarily held in abeyance. Something, however, was done. Captains H. E. Suckling [1] and R. B. Dodds [2] were transferred from the reserve to the active list, the former as dental officer to the 3rd Territorial Field Ambulance and the latter as instructional officer to the Otago University Medical Company. In addition, Mr O. E. L. Rout [3] was given a commission in the NZDC as a lieutenant in the Otago University Medical Company. Then, in January 1934, Lieutenant-Colonel Rishworth relinquished his appointment in favour of Lieutenant-Colonel Finn.

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[1] Lt-Col H. E. Suckling, ED; Blenheim; born Christchurch, 1890; dental surgeon; Capt, NZDC, 1917–19; ADDS, Army HQ, 1940–45.

[2] Lt-Col R. B. Dodds, ED; Dunedin; born Ashburton, 1894; Dean of Dental Faculty, University of Otago; CO 15 Fd Amb.

[3] Lt-Col O. E. L. Rout, ED; Wellington; born Invercargill, 15 Jan 1904; dental surgeon; ADDS (Army, Navy and Air) 1941–42, Mar 1946–Feb 1947; ADDS 2 NZEF(IP) 1942–44; ADDS 2 NZEF (UK) 1944–46.

Revival, 1934-39

Due to Lieutenant-Colonel Finn's strong recommendation to the GOC, the NZDC was re-established in the Territorial Force in 1934. He submitted that this was the only method of ensuring an efficient dental service to be put into the field in the event of general mobilisation, in contrast to the position in 1914. A peacetime establishment was authorised:

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With the appointment of officers already mentioned, this left a vacancy for five more officers for the sections attached to the field ambulances. These were filled by commissioning recent graduates from the Dental School instead of using reserve officers who had served in the last war. To complete the establishment, dental clerk orderlies were recruited, chiefly from the staffs of the dental trading companies. There were fourteen days of annual training, made up of weekend or whole-day parades and an annual camp of six days.

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Very soon two significant facts were noticed. Firstly, there were more applications for commissions in the NZDC than there were vacancies, and secondly, there were more requests from commanding officers of Territorial units for dental sections than there were sections available. The enthusiasm of the profession, and of the Territorial units, did not result in an increase in establishment. New Zealand, in common with other members of the British Commonwealth, had not as yet provided the funds for other than a peacetime army. This, however, did not deter the DDS from planning for war, and Lieutenant-Colonel Finn gave freely of his own time in preparing a basis of organisation and

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In April 1939 three Assistant Directors of Dental Services were appointed, with the rank of major, one to the staff of each Military District headquarters.

As a result of Lieutenant-Colonel Finn's initiative and perseverance and the ready response of members of the profession, the skeleton of an army dental service was built up prior to the outbreak of war in September 1939. It was a new skeleton, for the old one had been buried

after the last war, but it was ready to be clothed with the traditions of the past, so carefully preserved by the small band of enthusiasts to whom the NZDC owes a lasting debt of gratitude.

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

IN December 1919 general demobilisation of the New Zealand Military Forces was nearly complete and the need for a large Dental Corps had passed. Lieutenant-Colonel Hunter was demobilised but was retained as Director of Dental Services for the Military Forces on a peacetime basis. He remained responsible for all policy matters which were referred to him by Major C. G. Gray, [1] late Assistant Director of Dental Services, who remained on the active list and became Administrative Officer for the DDS. This was purely a temporary appointment to tide over the short remaining period of transition from war to peace.

The only treatment left for the Corps was that of patients at the military hospital at Trentham, the convalescent hospitals at Hanmer and Rotorua and the sanatoria at Cashmere and Pukeora. For this, one officer, Major R. D. Elliott, [2] and one mechanic were considered sufficient. There was also a section still attached to the jaw hospital in Dunedin where Lieutenant-Colonel Pickerill was completing the treatment of the long-term cases of jaw and facial injuries. One dental officer, Captain W. S. Seed, [3] and one mechanic comprised this section. With these exceptions, the NZDC was demobilised and its officers posted to the reserve. Within two years none was left on the active list.

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[1] **Maj C. G. Gray; born 1880; dental surgeon; died 15 Aug 1941.**

[2] **Maj R. D. Elliott; Eastbourne; born Northern Ireland, 5 Feb 1879; dental surgeon.**

[3] **Capt W. S. Seed; Christchurch; born Christchurch, 1887; dental surgeon.**

THE NEW ZEALAND DENTAL SERVICES

IN EXILE, 1922-33

In exile, 1922-33

After the war, a Territorial Force was maintained in New Zealand on a compulsory basis, the training consisting of regular parades and annual camps. In the annual report for 1920, the General Officer Commanding the New Zealand Military Forces made the following reference to the NZDC:

> **It is not proposed to retain a permanent establishment of the Dental Corps, but experience has shown the need for an Army to be dentally fit and the great influence sound teeth in a soldier have in reducing the rates of sickness and invaliding. It is proposed to maintain the Dental Corps as part of the New Zealand Territorial Force, utilising it in all future camps of training that force. A definite establishment will be laid down which will provide for peace requirements and for the expansion of the Corps for war purposes if necessary.**

For the next decade, however, in spite of this statement of policy, the NZDC was not maintained as part of the Territorial Force, although there was retained a Director of Dental Services and a Reserve of Officers.

In 1930 Lieutenant-Colonel Hunter was posted to the retired list in the rank of colonel and was replaced as DDS by Lieutenant-Colonel J. N. Rishworth, MBE. Then, in 1931, the Territorial Force was placed on a voluntary basis, with considerable reduction in size. Strange to say, this general reduction was soon followed by a revival of the NZDC, but before describing this it is necessary to go back a year or so.

In 1928 a Territorial unit known as the Otago University Medical Company had been formed. It consisted of medical and dental students

who were liable for compulsory military training and it aimed at combining this training with specialised work to qualify them as medical or dental officers in a future war. Commanded by Lieutenant-Colonel C. E. Hercus, DSO, OBE, NZMC, [1] it attended annual camps of fourteen days, the training consisting in instruction and exercises in stretcher drill, first aid in the field, military hygiene and the organisation of medical services in the field. This was in addition to instruction in general military subjects such as close-order drill, map reading and army organisation. The abolition of compulsory training produced a unit keen enough to flourish on a voluntary basis. From 1932 onwards, dental as well as medical instructors were included and the dental students were trained in the work and problems of a field dental officer in wartime. On the completion of their second and third annual camps, examinations, both practical and written, were held for the students. As a result of these examinations the dental students received an 'A' certificate after the second camp and a 'B' certificate after the third. A unit founded as a legitimate escape from the boredom and impracticability of the compulsory training scheme, which was lethargically administered and supinely accepted, fanned the spark of enthusiasm which had characterised the NZDC in the 1914–18 War. There would never be another war of course, the Great War had been a war to end wars, but the subject was extremely interesting and, who could tell, there were still armies and, where there were armies there was a need for a Dental Corps. The Otago University Medical Company thought so and so did the DDS.

In September 1931, Lieutenant-Colonel Rishworth submitted a memorandum to the GOC recommending that the Dental Corps be re-established as an active part of the Territorial Force. He sub-

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[1] Lt-Col Sir Charles Hercus, DSO, OBE, m.i.d.; Dunedin; born Dunedin, 1888; Professor of Bacteriology and Preventive Medicine, University of Otago; DADMS, A and NZ Mtd Div, 1916–19; Dean of Otago University Medical School, 1937–58.

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establishments for that Force and also for an Expeditionary Force in the event of mobilisation. Dental students who had completed their training in the Otago University Medical Company and had gained their two certificates would, on graduation, be eligible for commissions in the NZDC. They would be placed on the active list as soon as vacancies occurred in the establishment.

This was not wholly acceptable, and the matter was temporarily held in abeyance. Something, however, was done. Captains H. E. Suckling [1] and R. B. Dodds [2] were transferred from the reserve to the active list, the former as dental officer to the 3rd Territorial Field Ambulance and the latter as instructional officer to the Otago University Medical Company. In addition, Mr O. E. L. Rout [3] was given a commission in the NZDC as a lieutenant in the Otago University Medical Company. Then, in January 1934, Lieutenant-Colonel Rishworth relinquished his appointment in favour of Lieutenant-Colonel Finn.

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[1] Lt-Col H. E. Suckling, ED; Blenheim; born Christchurch, 1890; dental surgeon; Capt, NZDC, 1917–19; ADDS, Army HQ, 1940–45.

[2] Lt-Col R. B. Dodds, ED; Dunedin; born Ashburton, 1894; Dean of Dental Faculty, University of Otago; CO 15 Fd Amb.

[3] Lt-Col O. E. L. Rout, ED; Wellington; born Invercargill, 15 Jan 1904; dental surgeon; ADDS (Army, Navy and Air) 1941–42, Mar 1946–Feb 1947; ADDS 2 NZEF(IP) 1942–44; ADDS 2 NZEF (UK) 1944–46.

THE NEW ZEALAND DENTAL SERVICES

REVIVAL, 1934-39

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THE NEW ZEALAND DENTAL SERVICES

CHAPTER 3 — TRANSITION FROM PEACE TO WAR, 1939

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Transition from Peace to War, 1939

THE outbreak of war in September 1939 found the New Zealand Dental Corps poor in strength but rich in theory. A peacetime establishment had been recognised, and although a full wartime establishment was not generally welcomed, there was at least an admission that without dentistry the health service to the armed forces was incomplete. The admission had advanced little beyond the conception of a cadre staff of trained organisers and an unspecified number of civilian executives. How far this conception fell short of the actual requirements and the story of the fight for recognition will be told later. In the meantime, the suggested plan for the examination and treatment of troops in the event of mobilisation had to be carried into effect with the dental forces available at the time. The position was definitely better than that existing at the beginning of the first war.

It has already been mentioned in the previous chapter that Lieutenant-Colonel Finn had submitted certain proposals to Headquarters for action in the case of general mobilisation. This transition period is concerned chiefly with two aspects of these proposals:

1. **The standard of dental fitness expected of the troops.**
2. **The methods by which dental fitness was established.**

1. Dental Standards

Certain standards were laid down for medical and dental fitness in Appendix XXIV of Army Standing Orders for Mobilisation, 1939, the dental ones being the result of submissions from Lieutenant-Colonel Finn.

The standards are given in detail in Appendix II, omitting the medical ones which are not relevant to this history. They were grouped under four headings:

1. **Armed Forces for Home Defence.**
2. **Large Expeditionary Force.**
3. **Small Expeditionary Force for Garrison Duty Abroad.**
4. **Temporary Employment in New Zealand.**

On examination the men were classified as:

1. **'F' or dentally fit or capable of being made so in three working hours.**
2. **'T' or requiring treatment longer than three hours to be made fit.**
3. **'U' or dentally unfit, such as those requiring multiple extractions or suffering from a contagious oral disease.**

For home defence nobody in categories 'F' or 'T' who was willing to receive treatment was to be rejected, but for small or large expeditionary forces only category 'F' men were to be accepted to begin with.

Standing Orders also gave instructions to dental examiners as a guide to assessment of standard, as well as defining their authority to make decisions and receive payment for their services. It is unnecessary to quote these details in full, but one curious anomaly is mentioned as an example of how confusion can be caused when regulations have to be built piecemeal to meet unknown contingencies. When these regulations were framed, the DDS did not know whether the dental treatment for the armed forces would be by civilians or a Dental Corps, and they reflect the uncertainty of the time, being built as a patchwork according to fluctuating circumstances. The anomaly concerned the standard expected of an artificial denture and probably arose from an attempt to ease the severity of the dental standards because of the urgent need for manpower, but the new patch was put in without taking out the old one. The two paragraphs, separated from their context, are:

1. **Definition of a well fitting denture A denture will not be considered as 'well fitting' *unless six months have elapsed* [1] from the completion of the extraction of the replaced teeth; no further extractions must be required which will affect the stability of the denture or necessitate alterations. The denture must fit firmly, be without movement on mastication and complete all spaces where natural teeth are missing. The**

artificial teeth must correctly meet the corresponding teeth in the opposite jaw and afford a good masticating surface. The denture must be free from cracks and breaks.

2. **[The dental examiner is wholly responsible for] ... assessing approximately the time that may be involved in the treatment decided upon, taking into consideration from the information that will be made available to him whether arrangements have been made for a camp system of dental attention or by individual practitioners and, also, that where extensive extractions and the provision of artificial dentures is indicated, only the extractions should be completed and the provision of dentures deferred pending absorption. Impressions for dentures, especially full dentures, will not be taken *within a period of four months* from the date of the completed extractions and, in no case, will they be taken, even though four months may have elapsed, until the dental examiner is satisfied that absorption is sufficiently completed for permanent dentures to be inserted.**

In regulations framed on the basis of a known policy such a discrepancy would be unlikely to occur. As it was, it did not inspire confidence in the efficiency of the Army Dental Service in the eyes of civilian dentists.

2. The Methods by which Dental Fitness was Established

During the pre-war months of 1939, when general mobilisation was expected, the DDS made detailed arrangements for dental examination and charting of recruits. This was to be done by civilian dentists appointed as members of medical examining boards in the various districts. Careful consideration was given to the method of charting to be used and a Form NZ 360 (Record of Dental Examination), together with instructions to examining dentists, was prepared. The Assistant Directors of Dental Services, who had been appointed to the three Military Districts, prepared lists of dentists to serve on these boards and tested the organisation by the examination of recruits to fill the increased establishment of the Territorial Force. The result was that at the outbreak of war, many dentists were familiar with the routine and the scheme was ready for immediate adoption. As will be seen later, there were imperfections in the scheme but it was a good start and, in

the absence of other than a skeleton Territorial Dental Corps, the only practical solution.

A plan had also been prepared and authorised whereby civilian dentists would do the limited amount of treatment at a stated scale of fees.

On 6 September 1939, three days after the declaration of war, Cabinet authorised the mobilisation of a Special Force of 6600 men to serve within or beyond New Zealand. Volunteers for this force, ultimately to become the First Echelon of the 2nd New Zealand Expeditionary Force (2 NZEF), were immediately dentally examined according to plan. Within two weeks, the results showed that the number falling into dental category 'F' was so low that too many otherwise medically fit men were being rejected for dental reasons. The standard for acceptance was then lowered by including in category 'F' those whose treatment to make them dentally fit would take six instead of three hours. Even then, many men who were medically fit were rejected because of dental defects. The added burden thrown on the shoulders of the civilian dentists by this change of standard and the rejection of valuable manpower gave impetus to the Army's programme for the construction of dental hospitals in the mobilisation camps and the formation of a Corps capable of undertaking full treatment of all troops.

NEW ZEALAND

The aim of the New Zealand Dental Corps was to send every overseas contingent away from New Zealand as nearly dentally fit as possible. This was stated in the 1914–18 War but was achieved only in the later stages of that war. In this war the plan of dental selection of recruits and their immediate treatment made it effective from the beginning. It was never more than a makeshift plan calculated to implement the NZDC policy and give the necessary breathing space for the mobilisation of the NZDC on a war basis. It was, however, a distinct advance on the position existing in 1914.

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[1] **Author's italics.**

THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

CHAPTER 4 — MOBILISATION

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Mobilisation

CIVILIAN dentists were examining and treating the volunteers for the First Echelon of 2 NZEF before their entry into the mobilisation camps. As far as it went it was an excellent scheme, but none knew better than the DDS that it could not survive the deluge of work soon to be expected. For this reason, he regarded it as only a stepping stone to the ideal of a fully staffed and equipped Army Dental Service. For this reason, also, he had spent hours of the time that could so easily have been devoted to his private practice in Auckland, in transforming his dream into a practical plan to be adopted in the event of war. Strings of official memoranda and explanatory personal letters adorn the files of the Territorial Dental Corps as a testimony to his enthusiasm and persistence. His plans duly arrived at Army Headquarters, but not for adoption as will be seen later.

On 17 September 1939 he arrived in Wellington to take up his appointment as Director of Dental Services on a full-time basis. His first efforts were directed to staffing the new Corps and providing stock and equipment for it. He was quickly to realise the gulf between the ideal and reality. There was a lethargy at Army Headquarters, if not an actual antagonism, towards establishing an adequate Army Dental Service. Working from a small box of an office, without a clerk or a typist, he began the fight again. Once more he had to explain the need for an Army Dental Service, to justify the provision of staff and equipment, to haggle over expenditure that the lessons of the last war demanded if the mistakes were not to be repeated in this. Knowing full well that his policy was correct and that eventually circumstances would force its recognition, he went ahead with his plans largely on his own initiative, accepting the kicks as an earnest of the halfpence to come.

The attitude of Army Headquarters is explained in the following memorandum to the Minister of Defence on the subject of dental examinations and treatment. Dated 8 September 1939, it was signed by

the Adjutant-General and the Director of the Division of Dental Hygiene. It stated *inter alia:*

It is recommended that a reasonable amount of dental treatment should be provided in order to make the men fully fit. If this recommendation is approved, consideration should be given to the two methods by which such treatment may be carried out.

(*a*) Dental treatment after enlistment and concentration at mobilization camps.

(*b*) Dental treatment after enlistment but prior to concentration at mobilization camps.

With regard to (*a*), this will entail the provision of:

1. **An extensive dental hospital at each of the four mobilization camps. This would involve heavy expenditure in buildings and after the initial pressure of work had been overcome, would be much greater than the normal requirement of the camp.**
2. **Equipment for such hospitals. A large quantity of equipment would be necessary at the outset and in this case also the amount would be far beyond normal requirements. In addition, the equipment required could only be obtained from dental supply houses and it is known that sufficient stocks are not held by these. Importation of equipment or commandeering from civil dentists is the only alternative if equipment is to be provided at mobilization camps.**
3. **Staffs of dentists, dental mechanics and orderlies for each hospital. These would have to be brought into camp on a temporary basis and naturally will involve heavy expenditure.**

With reference to (*b*), this course has none of the disadvantages outlined above. The treatment would be spread over the dental practitioners of the Dominion, thus making full use of existing facilities. The work could be carried out expeditiously and prior to the men going onto the Army pay roll. The men would arrive in camp medically and dentally fit and therefore able to proceed with their training without interruption.

It is therefore recommended that method (*b*) should be

adopted.

The memorandum then outlined the procedure to be adopted under paragraph (*b*) and was approved by the Minister of Finance on 9 September. This is a remarkable document and deserves the closest scrutiny, for it is difficult to imagine a more fertile field in which to examine the political and military thought of the time.

The Director of Dental Services was, by his appointment, adviser to the Army on all matters connected with the dental treatment of the troops and had already submitted war establishments for the NZDC, plans for treatment and specifications for buildings. The memorandum was drawn up without consulting him. Advice was sought from the Director of the Division of Dental Hygiene, the head of a Government department dealing chiefly with the dental treatment of primary school children. It is reasonable, therefore, to assume that the plans of the Director of Dental Services were incompatible with the views of the army authorities and that they sought other advice. Acceptance of the suggestions in the memorandum without a struggle would have reduced the authority of the Director of Dental Services to that of a rubber stamp. Had they not collapsed under the weight of their own inaccuracies, Lieutenant-Colonel B. S. Finn would probably have slipped from the pages of this history.

The 1914–18 War had shown the large volume of dental work that could be expected among the troops and the tremendous struggle the New Zealand Dental Corps had to cope with it all. This was surely enough evidence to discourage any civilian scheme for dental treatment. Dentists were working hard and could not be expected to give priority to army patients, and it would have been impossible to force them to do so. Also, some of them would have to be brought into the Army to train as dental officers for the forces overseas. Staffs of dentists, mechanics and orderlies would therefore still be needed. If the work was to be carried out ‘prior to the men going onto the Army pay roll’, the time for this to be done must be much longer than if the men were all congregated in camp. The mobilisation of the Division and its reinforcements must

therefore be delayed to that extent.

Expense was stressed in the memorandum on two occasions in connection with buildings and equipment, but no comparison was made with the expense of operating the civilian scheme nor was a premium put on the greater efficiency of an Army Dental Corps, as proved beyond doubt in the 1914–18 War.

The statement that equipment was not available from the supply houses was not correct as the Director of Dental Services had submitted lists of equipment and stocks (together with prices) which were held ready for the purpose. The Assistant Directors in the three Districts had made full inquiries as to suitable non-expendable equipment for purchase, hire or gift in addition to that held by the supply houses. There were also seven field surgical panniers equipped to mobilisation standard. Some equipment was therefore available to start the Corps, although the machinery for obtaining further supplies was not perhaps as facile as it might have been. It must also be remembered that under the civilian scheme additional stock would be needed under less economic conditions.

The assertion that large dental hospitals would be beyond the needs of the camps after the initial pressure of work had been overcome was a guess wide of the mark. It showed a disregard of experience and was directly opposed to the considered opinion of the Director of Dental Services. A bad guess can be forgiven on the score of ignorance, but there was no such excuse in this case as there was ample evidence on which to form an opinion without recourse to guessing. It is therefore difficult to understand how an appreciation of the position so unrelated to the actual situation could have been given.

The result of this uncooperative attitude was that there was a serious check to the formation of the Corps on a war basis. In spite of it, however, the DDS went ahead with his plans, but every request had to be fought for and many ventures had to be launched on his own initiative without the blessing of official authority. It is quite certain that, if he

had not been so sure of the rectitude of his cause as to be prepared to act first and argue afterwards, the New Zealand Dental Corps would not have amounted to much.

Such was the position in September 1939, with the DDS seeing clearly the large amount of work pending and, even more clearly, the difficulty in getting staff, equipment and buildings. It was known that a force of approximately 16,000 men was to be mobilised and sent overseas in three echelons, to be followed by regular reinforcement drafts. Men would also be needed for staffing the camps and for coastal defence and anti-aircraft batteries. The following notes were compiled at the time by the DDS to illustrate how the staffing position was approached. The ratio of dental officers to men was varied later, but the main principles give a much more realistic view of the whole situation than that of the memorandum quoted above:

New Zealand Dental Corps. War Establishment Notes

(*a*) Establishment of dental officers to accompany New Zealand Special Force overseas.

1. **When troops first leave New Zealand they will be dentally fit and the establishment of dental officers at this stage will be based on a requirement for maintenance purposes of *one* dental officer for 2,000 men.**
2. **When troops have been absent from New Zealand for six months it is estimated that their dental requirements will show a marked increase and the Dental Corps will require to be reinforced to the extent of providing *one* dental officer for 1,000 men.**
3. **When troops have been absent from New Zealand for a further six months, i.e., a total of twelve months, there will be a further increase in their dental requirements and it is considered that the ultimate strength of the Dental Corps should be based on a requirement of *one* dental officer per 500 men.**

The Dental Corps overseas was to be gradually reinforced by sending dental officers at regular intervals to bring the strength up to 32, or one

officer to 500 men in a force of 16,000. This gave an opportunity for dentists to be brought in from civilian life in time to be trained as dental officers before being sent overseas. To continue with the notes of the DDS:

(*b*) Establishment of Dental Officers in mobilization camps in New Zealand. The following factors must be taken into account in deciding upon the number of dental officers required in the mobilization camps:

1. The completion of initial dental treatment for recruits.
2. The maintenance of dental fitness for troops in training.
3. The training of dental officers for the supply of reinforcements to the NZDC overseas.

1. The completion of initial dental treatment for recruits.

(*a*) First Echelon. The majority of the recruits will be dentally fit on entry into camp but there will be a fair proportion who require denture work to complete the restoration of their occlusion in accordance with the accepted standard of dental fitness.

(*b*) Second and Third Echelons and Reinforcement Drafts. A large number of these men, say 80%, will require some form of dental treatment before being passed as dentally fit. If the present system is continued and all surgical work (fillings and extractions) and repairs to dentures, up to a maximum of six hours' work, is undertaken by private practitioners, there will still remain an increasingly high proportion, say 40%, who will require denture work.

2. The maintenance of dental fitness for troops in training. This should be comparatively light for several months after the initial treatment is completed. Each man however will be examined on entry into camp. This is essential. It is also highly desirable that each man should be re-examined as far as possible at six monthly intervals.

3. The training of dental officers for the supply of reinforcements to the NZDC overseas. It is essential that dental officers going overseas should have at least three months' preliminary experience in New Zealand Dental Corps methods and organisation in a mobilization camp. During this period also it would be possible to gauge each officer's suitability for the work. As already shown ..., there will be a progressive

increase in the number of dental officers required overseas and it is therefore necessary that the amount of initial treatment performed for recruits *in camp* should be considered in the light of the necessity for drafting dental officers into mobilization camps and providing them with an adequate amount of work. It thus becomes obvious that an increasing amount of initial dental treatment will require to be performed in camp and a correspondingly decreasing proportion carried out by private practitioners before recruits enter camp.

Meanwhile, the civilian practitioner scheme as applied to the examination and treatment of the men of the First Echelon was in full swing. Despite its value as the temporary expedient for which it was designed, it soon became obvious that it had many imperfections. Some of these were noted in a memorandum to the DDS from Major R. B. Dodds, NZDC, Dean of the faculty of dentistry of the Otago University in Dunedin:

The medical boarding of the first draft from this area is practically completed now. I have attended every board as an assistant in the organisation under Dr Fergus. The boards, as you know, have been held in the dental school and I have had an excellent opportunity of discussing with all dental supervisors matters relating to the dental examinations. Further, some of the 'F' and 'T' men have been treated at the dental school, the latter at half hospital fees.

I feel now that the position calls for certain comments with regard to the system as it is operating at present. All these points are derived from first hand knowledge. I have concluded:

1. **That the system of examination with mirror and probe cannot be accurate enough to ensure that, even if Form 362 is completed, the soldier would proceed to camp dentally fit on NZDC standards.**
2. **That a number of 'F' class men, either through lack of opportunity or other reasons, have failed to attend their dentist to have the treatment in Form 362 completed and thus have gone to camp with a large number of fillings and other work outstanding.**

3. That the whole system offers far too great a variation in the standards of examination, classification and treatment, i.e., there is no common standard in these things that would be acceptable, for instance, to a Principal Dental Officer of a mobilization camp.

4. That the present system is not sound economically. Organised and disciplined treatment by Dental Corps personnel must inevitably serve the troops on the most economical basis possible.

It follows from these conclusions that, if a force is to proceed overseas using a dental standard accepted by the Dental Corps during the last war, the system must inevitably be that developed during that war from 1917 onwards. Ample evidence that history is repeating itself with regard to this matter may be obtained from a study of old files of the New Zealand Dental Journal—evidence moreover which can be corroborated by NZDC officers who had experience of mobilization camps of the last war.

(signed) R. B. Dodds,
Major NZDC
11 October 1939

Major Dodds was merely emphasising imperfections of the scheme which had been anticipated by the DDS and of which he had warned Headquarters with such little effect. There was, however, another factor which carried considerable weight. The public purse was being affected. A draft memorandum by the Adjutant-General, undated but probably written in November, sums up the position with suitable emphasis:

It was anticipated that when recruiting for the special force commenced, the response would be of such an extent that it would provide wide scope in the process of selection and, in consequence, the cost of dental treatment would be kept at a moderate level by selecting from those offering their services only those who were of the required dental standard or those who, by the repair of minor dental defects, involving not more than three hours' dental treatment, could be raised to the dental standard specified.

In view of the above, it was decided that the dental treatment then anticipated as requisite should be carried out by civilian dental practitioners prior to the men being concentrated at mobilization camps.

Actually, the number offering their services was not so great as anticipated and it also became evident that the general dental condition of the men offering their services was much below the standard expected. So much so that it was found necessary to increase the period of dental treatment required to six hours. Even with this added facility considerable difficulty was experienced by Districts in filling their quotas of men who were dentally as well as medically fit. Consequently the initial estimate of costs of requisite dental treatment has been exceeded, and it is therefore considered desirable that the situation in regard to dental treatment should be reviewed with the object of ascertaining if a more economical method could be instituted.

As far as can be gathered at the moment, of the number who have offered their services and have been accepted in the first echelon, not less than 85% have required dental treatment and, from the information at present available, it is estimated that the average cost per man of such initial treatment will be approximately £2 2s. 0d. The estimated cost for the first echelon is £11,780.

Other factors are, that of recruits entering mobilization camps whose dental treatment was carried out by civilian dentists, it has been found that 15% require further treatment. This is due to an inevitable amount of dental defects being missed by the dental member of the medical board and the ever-recurring denture remakes and repairs which are to be expected when approximately 25% are wearing some form of artificial denture. There will also be a percentage of those accepted for the special force who may have to be provided with partial dentures to remedy deficiencies that are

considered detrimental to their general health.

It is anticipated that the general dental condition of the men enlisted in the second and third echelons of the special force will be lower than the standard of those enlisted with the first echelon. If the dental treatment of these two echelons is carried out in the same manner as that for the first echelon, it is estimated that the cost of such treatment will amount to approximately £17,417, giving for the three echelons a total estimated cost of £29,197.

It is estimated that the cost of the alternative method of rendering the special force dentally fit by carrying out all dental treatment in mobilization camps after the troops are concentrated will be £17,135.

In addition to this, trouble was arising out of the claims from the civilian dentists for payment for their services. There were cases when the work was not done satisfactorily, and even claims for work that had not been done. Men were being treated who did not appear in camp for one reason or another. Enlistments were sometimes cancelled after treatment had been completed; specialist fees were being claimed, and so on. The whole position became so confused that finally, on 19 December 1939, the DDS suggested to the Adjutant-General that all claims be certified and passed for payment as the cost of checking them would amount to more than could be saved by adjusting the discrepancies.

The scheme collapsed under its own weight and on 15 December authority was given for all dental treatment, with the exception of extractions which would bring the recruit temporarily below a minimum standard of masticatory efficiency, to be carried out in camp by the NZDC. Even this exception was removed on 9 January 1940, leaving the NZDC with full responsibility for all treatment. In March the dental member of the medical board was dispensed with and all examinations were carried out in camp by the NZDC, the only exception being those suffering from infective oral condi- tions such as ulcero-membranous

stomatitis, which could be recognised by the medical member of the board and deferred until the condition had been treated.

It must not be thought that while this fight for recognition was going on there was nothing happening in the Dental Corps outside Headquarters. Most of the recruits for the First Echelon entered mobilisation camps at Ngaruawahia, Trentham and Burnham at the beginning of October. Fourth Field Ambulance went to Burnham and to it was attached Lieutenant W. McD. Ford. [1] At the same time three other officers were mobilised and posted to the camps: Lieutenant J. A. S. Mackenzie [2] to Ngaruawahia, Lieutenant J. F. Fuller [3] to Trentham and Captain E. B. Reilly [4] to Burnham. These four officers had all served in the Territorial Force. Dental sections were set up in the camps for the treatment of casualties, mostly denture repairs. Accommodation was limited to tents except in Trentham, where a building was taken over. Very little work was done at this stage as there was only the Territorial equipment available and this did not include prosthetic equipment. The denture repairs were done with the use of equipment borrowed from private practitioners.

Towards the end of October six more officers were mobilised and posted to the camps: Lieutenants J. G. W. Crawford [5] and C. K. Horne [6] to Ngaruawahia, Lieutenants H. A'C. G. Fitzgerald, [7] G. McCallum [8] and T. V. Anson [9] to Trentham, and Lieutenant J. R. H. Hefford [10] to Burnham. Two of these, McCallum and Hefford, had served in the Territorial Force. A little extra equipment had been obtained but practically all the instruments and much of the stock was provided by the officers themselves. Accommodation at Ngaruawahia and Burnham had been improved by the provision of marquees. Living accommodation, especially at Trentham, was exceedingly primitive, consisting for the dental officers of the bare minimum of four walls, a roof and a bed.

Dental examination of all troops in the three camps was then undertaken. This, with completing treatment not finished by the civilian dentists, emergency work for the camp staff and maintenance for the 6600 men of the First Echelon, kept the dental officers fully occupied,

working as they were under field conditions.

Towards the end of November a new stage was reached. The dental services expanded and, from an administrative point of view, became consolidated to form camp dental hospital groups rather than multiple field dental sections. Papakura Mobilisation Camp, which was to replace Ngaruawahia as the main camp in the Northern Military District, was opened and Lieutenant Mackenzie was transferred there to take charge. Lieutenant Fuller was placed in charge of Trentham and Captain O. E. L. Rout was mobilised and posted to Burnham. These three officers held the appointments of Principal Dental Officer in accordance with the NZDC war establishments drawn up in pre-war years and now approved. (See

Chapter 5, Organisation.)

By the end of December the mobilised strength of the NZDC was 22 officers and about 50 other ranks. Buildings for dental hospitals at Papakura and Burnham were completed and occupied in December, although still far from complete with many internal fittings. Thus in the three main mobilisation camps accommodation was available, for at Trentham a building had been available as a temporary hospital from the start. At Ngaruawahia, however, tents were still in use.

When the troops of the First Echelon were ready to embark on 5 January 1940, they had all received a final check of their dental condition and some 6500 men left New Zealand completely dentally fit. Part of the credit for this must be given to the civilian dentists but the Dental Corps can claim its share. The approximate figures for the treatment carried out for the First Echelon while in camp, i.e., by the NZDC, are: 3000 fillings, 750 extractions, 250 dentures (full, partial and remodelled) and 200 repairs to dentures. The work was done in the face of many handicaps. Temporary accommodation had to be set up and equipment found before anything other than emergency treatment was possible. It took time to make satisfactory arrangements with the camp authorities and officers commanding units to provide a flow of patients, for at this time the general camp organisation itself was only in the developmental stage and the training programmes were subject to sudden changes. Final leave of fourteen days further interrupted the work just at a time when it had started to run more smoothly. Still, by dint of hard work and long hours, the result was achieved and the subsequent history of the dental services with 2 NZEF overseas indicates that this effort and the treatment by the NZDC of the succeeding echelons and reinforcements was the foundation of the excellent dental health record enjoyed by New Zealand troops throughout the war.

There were other troops in New Zealand than the echelons of 2 NZEF and they provided a problem of their own. Within a week of the declaration of war a force was mobilised to man the coastal batteries

and subsidiary defence stations. These men were not selected according to any standard of dental fitness, nor were they included in the civilian practitioner scheme for dental treatment. The only provision made for them was that when a man reported with toothache, the medical officer authorised the necessary treatment from a civilian dentist. This was only for the relief of pain and did not include other work to make him dentally fit.

In December Government approval was given for dental examination and treatment of these troops to be undertaken by the NZDC. The policy was that the NZDC would be temporarily detached from the mobilisation camps whenever intervals in the treatment of overseas drafts made this possible. They were to operate as mobile field dental sections, taking fully equipped outfits from the mobilisation camps. The first of these intervals occurred when the First Echelon went on final leave, and between 21 December 1939 and 11 January 1940 field dental sections operated at Narrow Neck and North Head in the Northern Military District, Fort Dorset in the Central and Battery Point and Godley Head in the Southern Districts. The result was that at least all urgent work was completed for the fortress troops at these establishments.

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[1] Lt-Col W. McD. Ford, ED; Wellington; born Christchurch, 1910; dental surgeon; dental officer, 2 NZEF, 1939–41; served in NZ, 1942–44; PW Repatriation Gp (UK) 1944–45; ADDS, Army HQ, 1949–.

[2] Maj J. A. S. Mackenzie, m.i.d.; Waikohowai, Huntly; born Levin, 26 Jun 1908; dental surgeon; OC NZ Mobile Dental Sec Jun 1940–Apr 1941; p.w. 25 Apr 1941.

[3] Col J. F. Fuller, OBE, ED, m.i.d.; Wellington; born Westport, 1913; dental surgeon; ADDS 2 NZEF, Jan 1940–Oct 1944; DDS (Navy, Army and Air) 1949–.

[4] Maj E. B. Reilly, ED; Christchurch; born 1905; dental surgeon.

[5] **Maj J. G. W. Crawford, MBE, ED; Auckland; born Gisborne, 2 Jul 1909; dental surgeon; p.w. 25 Apr 1941.**

[6] **Capt C. K. Horne; Auckland; born NZ 8 Oct 1913; dental surgeon.**

[7] **Maj H. A'C. G. Fitzgerald; Hastings; born 1908; dental surgeon.**

[8] **Maj G. McCallum, MBE, ED, m.i.d.; Wellington; born Milton, 1905; dental surgeon; PDO Trentham and Burnham Camps 1939–41; OC 1 Mobile Dental Unit Aug 1943–Nov 1944.**

[9] **Maj T. V. Anson; Wellington; born Wellington, 1902; dental surgeon; PDO, Northern Military District, 1940–41; Brigade Dental Officer, 8 Bde, Fiji, Jul 1941–Jan 1942; Dental Officer, No. 2 (GR) Sqn, Nelson, Feb–Oct 1942.**

[10] **Capt J. R. H. Hefford; Christchurch; born England, 1917; dental surgeon.**

Staffing the New Zealand Dental Corps

In staffing the Corps there were two important questions to answer:

1. **How much treatment was needed to make the troops dentally fit and maintain them so?**
2. **How many dentists, mechanics and orderlies were required to do this?**

The first question could not be answered with complete accuracy but the amount of treatment could be roughly assessed by analysing the results of the examination of the men who volunteered for the First Echelon and the results of examination and treatment in the 1914–18 War. From these figures it was possible to arrive at a fair average for a given number of men.

The answer to the second question then appeared to be one of mathematics, provided the source of supply did not dry up. It was known approximately how much work a dental officer could do in a given period, how many mechanics and orderlies he needed to assist him and how much equipment he would need. On paper the problem was simple; in practice not so simple. In the first few months of the war the DDS used the rules of mathematics to justify his requests for staff but, when it was decided that the Corps was to be built up in proportion to the armed forces, other factors had to be considered. There were different factors affecting dentists, mechanics and orderlies, so the three will be considered separately.

Dental Officers

There was no difficulty at the beginning of the war in finding enough dentists to volunteer for service in the Corps; in fact, more applied than could be immediately accepted. But, even in these early times, the action of volunteering did not mean acceptance, as the DDS demanded a high standard for the Corps, quite apart from medical fitness to stand up to the work. The dentist had to have high professional ability and be of good ethical standing, fit to receive the King's Commission. The Dental Corps was not going to be a dumping ground for profession failures or playboys. The needs of the civilian population also had to be considered and dentists could not be drawn into the Army from areas poorly provided with dental services.

The maintenance of a balance between civilian and military requirements was recognised as important by the Government, and in December 1939 the Minister of Health approved the setting up of a sub-committee of the Medical Committee of the Organisation for National Security to advise on this and other dental matters of national concern. Consisting of Mr J. L1. Saunders, [1] Director of the Division of Dental Hygiene in the Department of Health, Lieutenant-Colonel Finn, and Mr O. M. Paulin [2] representing the New Zealand Dental Association, the dental sub-committee held its inaugural meeting on 29 January 1940 in

Wellington. By this time thirty-one dentists had received, or were about to receive, their commissions in the NZDC, so the first action was to ratify these appointments. This they did with the exception of Captain O. E. L. Rout who, they considered, would be better employed in his capacity as a lecturer at the Otago University Dental School.

At the beginning of the war there were 697 dentists on the New Zealand register. Twenty-five of these were in Government employment, at the dental school or in the island dependencies, so in the meantime were not to be considered. This left 672, of whom many, through age or ill health, were unable to serve with the military forces, but who might release younger and fitter men for service.

At this time all manpower for the fighting forces came from volunteers so the authority of the Organisation for National Security and its committees was limited. In the case of dentists the committee's main function was to see that the needs of the civilian population were not adversely affected by too many enlistments from the same quarter. To help it in deciding this, it asked the New Zealand Dental Association to appoint dentists in the various districts throughout the Dominion from whom recommendations could be obtained. Subject to this proviso, the selection of applicants was made by the DDS after careful inquiry into their suitability and the committee abided by his recommendations.

On 18 June 1940, however, the National Service Regulations were gazetted by Order in Council. By these regulations 22 July 1940 was made the closing date for voluntary enlistment, and thereafter men were called up by ballot both for overseas and Territorial service with the armed forces. Dentists were therefore liable to be called up as combatants either for overseas service or Territorial training, and the delicate balance between military and civilian dental requirements was in jeopardy. Exemption from combatant service could not be granted by the committee, but the National Service Department recognised the need for some degree of conservation of dental manpower. The department had what was known as a 'Schedule of Important Occupations', which was in the process of revision when this question

was being considered. The Director, Mr J. S. Hunter, wrote to the Medical Committee on 2 September 1940 to the effect that while the postponement or reservation of a person drawn in a ballot was a matter entirely for the decision of a tribunal that was to be set up, certain recommendations for dentists and dental mechanics were suggested for inclusion in the revised schedule. No dentist would be released for Territorial training and if he was called up in a ballot for overseas service his case would be referred to the National Medical Committee, which included the dental subcommittee, whose opinion would be transmitted to the Appeal Board for consideration. The result was eminently satisfactory as the Appeal Board invariably acted on the recommendations of the committee.

The committee also recommended that those dental students who had completed one full year of professional study, i.e., who had completed the second year of their dental course, should not be withdrawn for military service but would be required to continue their professional studies.

The result of this was that the DDS was able to select those dentists he needed for the Corps with a reasonable chance of getting them, and still had a free hand in rejecting unsuitable applicants, with a knowledge that they would not be withdrawn from the general dental pool. That the DDS was careful in his choice is shown by the very small number who turned out to be misfits. That his standard was high can be seen by the instructions given on many occasions to officers leaving to take up a command overseas:

> **You will remember that your first duty is to look after the men you command, then to equip yourself with the necessary military and specialist knowledge to make your branch of the service the most efficient section of the military organisation. Everything has been done to give you rank and status in the Force and it rests with you to build up from this with your own initiative and personal application a branch of the service that will function**

under all conditions presenting. It is up to you to live up to the ideals of your profession apart from inculcating into the minds of other branches of the force, by practical demonstration and propaganda amongst all Units, the importance of our specialist service and the essential part that dental health contributes to the mental and bodily health of the soldier.

With the strictest observance of Service Regulations and Procedure and the continuance of the loyalty and co-operation you have shown, so will the 'Esprit de Corps' be built up and the traditions of the New Zealand Dental Corps and your profession be upheld. Nevertheless do not forget that commissioned rank in the professional services is easily gained and the soldier who presents to you for treatment, of whatever rank, is deserving of all the consideration that you, as a professional man, can offer him, and *he will get it* and with good measure from the New Zealand Dental Corps.

The Corps owes a debt of gratitude to Colonel Finn for selecting his officers with such care and for constantly refreshing them with his own idealism. At one time in the war he was so desperate for dental officers that he was prepared to take them direct from graduation and train them at the camp dental hospitals. This was against his principles, and later when the supply improved he insisted that new graduates must have at least six, or preferably twelve, months' practical experience in the dental department of a public hospital. The wisdom of this is seen when troops are scattered over the country and dental officers have to work alone, supported only by their own initiative and professional experience.

Civilian requirements were assessed as one dentist to 2200, but in 1942, when general mobilisation had taken place and large numbers of dental officers were needed, the profession was asked to work at a ratio of one to 3300. It is interesting to compare the civilian figures with those of the 1914–18 War as computed by the National Efficiency Board. The ratio of dentists to population in 1914 was one to 2196, and in 1917

one to 2922. The difference in the ratio at the peak periods of the two wars can be attributed to the fact that in 1942 New Zealand was threatened with invasion and a large number of men were mobilised to protect the homeland, needing more dental officers in the armed forces and leaving fewer for civilian requirements. So serious was the position in 1942 that the dental sub-committee circularised the dentists advising them of the position and asking that they co-operate by modifying their plans for treatment, simplifying as far as possible all operative and prosthetic work while the emergency lasted. The general reaction to this circular was favourable as it was realised that some action was necessary if the interests of the civil and military population were to be safeguarded. There was some criticism, especially from a company providing certain services to the profession, on the grounds that their interests were being vitally affected, but the position was too serious for much notice to be taken of it.

The Germans apparently had the same difficulty in providing an adequate dental service for the civilian population. In May 1942 the following paragraph appeared in the dental magazine *Oral Hygiene:*

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[1] Col J. L1. Saunders, CBE, DSO, m.i.d.; Lower Hutt; born Dunedin, 1891, dental surgeon; Otago Regt 1914–18 (Lt-Col); twice wounded; comb 2 Inf Bde (Territorial Force) 1939–42.

[2] Capt O. M. Paulin; born Dunedin, 14 Jul 1895; dental surgeon; NZDC 1918 and 1942–45; died Richmond, 14 May 1959.

Nazis Lack Dentists

With many of the country's dentists in military service, toothaches are becoming widespread in Germany. The *Koelnische Zeitung* of Cologne reported 'There simply are not enough dentists.' The paper urges the people to be patient, to consult a dentist only when absolutely necessary, 'as for example when the pain becomes too great or chewing is impaired seriously'.

Further steps were taken in 1943 to stabilise the dental service to civilians. A Dentists' Employment Order, 1943, was written into the Industrial Manpower Emergency Regulations, 1942. Briefly, this order, operating from 9 September, prevented any registered dentist from ceasing practice, changing his type of practice or setting up practice at any other place or places without prior consent in writing of a District Manpower Officer. This order served two useful purposes. It helped the work of the dental sub-committee by simplifying the organisation of dental manpower and it protected those dentists already serving with the NZDC from unscrupulous opportunists who might seek to filch their practices from them in their absence.

Dental Mechanics

The National Service Department did not recognise dental mechanics as belonging to the 'Schedule of Important Occupations' but it did concede that they should be subject to some direction. All those drawn in the ballots for overseas service were referred to the National Medical Committee as in the case of dentists. For those drawn in the ballots for Territorial training, postponement of calling up was dealt with by the Appeal Board on the individual merits of the case. A letter from the DDS to the Director of Mobilisation on 1 May 1941 ran:

> **The New Zealand Dental Corps can absorb all dental mechanics or dental technicians available through Expeditionary Force ballots and the Director of National Service has notified Appeal Boards accordingly, also suggesting that, where these ballotees are released for military service it should be conditional upon service in their technical capacity and additionally that the appeals of grade II and III mechanics should be adjourned until their medical board papers have been perused at Army Headquarters with a view to their being utilised in home service duties thereby releasing grade I mechanics for overseas.**

It should be explained that the classifications 'Dental Mechanic'

and 'Dental Technician' are synonymous and appear indiscriminately in memoranda quoted in the text.

There was, however, a definite need to preserve the balance between military and civilian requirements, although perhaps not to such an extent as with dentists. It was therefore decided that if the dental sub-committee was satisfied that a mechanic was a competent tradesman and essential to civil requirements, an appeal from military service would be lodged on his behalf on the grounds of public interest. This was not entirely satisfactory as it entailed much unnecessary correspondence and delay. Also, in many cases, no sooner were appeals lodged and dealt with than the DDS would require the men urgently and could not get them until the appeals had been withdrawn. A simpler scheme was therefore evolved. After the issue of the *Gazette* the sub-committee made inquiries into the *bona fides* of each mechanic drawn in the ballot. This was a necessary precaution as in a number of cases boys who could barely lay claim to the proficiency of a 'plaster boy' had styled themselves dental mechanics. These were useless to the NZDC and to the civilian population except as trainees. After their *bona fides* had been established, the mechanics continued in their civil occupation until their services were asked for by the DDS. In other words, every dental mechanic was kept in his trade either in civilian or military practice. This exemption applied also to the National Military Reserve and the Home Guard, except of course in the event of full mobilisation of the latter in the defence of New Zealand's very existence, when dentists, mechanics, Toms, Dicks and Harrys would all be in it together.

In February 1943 Mr G. Clark of the dental mechanics' union was appointed by the Minister of Health to the dental sub-committee. He attended only those meetings at which the release of dental mechanics was being discussed.

These arrangements did not fully satisfy the demands of the NZDC for trained mechanics and already attempts had been made to train its own in the mobilisation camps. As will be seen in the chapter on this subject, this was not completely successful at first, but it led to the

formation of training schools under capable teachers in March 1943. The demand for mechanics from civilian life therefore decreased and actually none were brought into either the Army or the Air Force after October 1942. Eventually, on 16 February 1944 the following resolution was passed by the National Medical Committee on the advice of the DDS:

> That with the dental mechanics who are gradually being released to civilian occupation from the Armed Forces, together with those already serving as apprentices and employed as journeymen mechanics, or in business on their own account, the dental profession is reasonably served by dental mechanics under present conditions.
>
> That in view of the increasing number of dental mechanics being released from the Armed Forces, the necessity no longer exists for dental mechanics who are, or have been, called in ballots to be retained in their civilian occupations or for their work to be regarded as a protected industry.

The removal of dental mechanics from an essential industry classification restored the balance which had been disturbed by the release of mechanics from the armed forces. Those who had been drawn in ballots were then called up either for general military service or for other essential industries in equal numbers to those released from time to time by the armed forces.

Dental Orderlies

In selecting non-technical staff for the Corps, the policy was to look for keen men of a reasonable standard of education and personal cleanliness, fit to work in a hospital team. The choice was limited by the needs of the combatant units, for whereas dentists and mechanics naturally gravitated towards the Dental Corps whatever their medical grading, untrained men who were medically Grade I could not often be spared for a non-combatant unit such as the NZDC. There were, however, many men graded II for slight abnormalities sufficient to

disqualify them for service in a combatant unit who were of a sufficient standard of physical fitness to make them valuable members of the NZDC. It was perhaps not fully appreciated at first to what extent the NZDC would be employed and the high standard of fitness required of those serving in a field ambulance or a mobile dental unit, but it was realised that there must be Grade I men to accompany the NZDC overseas. The result during the first ten months of the war, when all the men were voluntary enlistments, was that Grade II men welcomed the opportunity to serve with the NZDC but Grade I men were difficult to get, as the choice of orderlies for service overseas was limited by the large amount of work the NZDC had to do in New Zealand.

There were certain key men who should not be called nontechnical. Men with a knowledge of dental stock, such as employees of supply houses, were the natural choice for NCOs in charge of stores, but these were hard to get as they could ill be spared from their civilian occupations. Most of the stores NCOs were trained in the Corps after serving as dental orderlies. Men with the capacity for leadership were needed as administrative NCOs. Again, these mostly proved their worth as dental orderlies and rose in rank and authority according to merit, as there were very few men who had had experience in the Territorial Dental Corps from whom to chose.

The general selection of orderlies in the early part of the war was excellent and to those who served in New Zealand and overseas in the NZDC can be attributed much of the success of the Corps in the war. There were difficulties at a later date when the Dental Corps, in common with other non-combatant units, had to absorb its share of pacifists and objectors, but the constitution of the Corps was then sufficiently strong to do this without serious indigestion.

The obvious course of employing women in the camp dental hospitals to release men for service overseas and in the mobile units in the field was delayed by prejudice from the more conservative of the military authorities, and it was nearly eighteen months after the declaration of war before serious consideration was given to this prolific

source. Before this no facilities existed for women in camp except for nursing sisters, and even the welcome invasions by concert parties arrived under strong duennal escort. Appropriately it was the youngest service which made the first move to use women as dental orderlies, as selection of suitable girls to join the Women's Auxiliary Air Force began in July 1941. The type sought was those who were 'bright and quick in the uptake but not necessarily with previous dental experience'. Added incentive was given by arranging classes of instruction by dental officers to qualify them to sit for trade tests which gave extra status and, of course, extra pay. Later the Navy and the Army used girls of the Women's Royal New Zealand Naval Service and the Women's Army Auxiliary Corps. There is no doubt about the success of the women as dental orderlies, and some were even trained as dental mechanics in the NZDC training schools. Some adjustment of existing establishments was necessary as it was not considered right to ask for the same amount of work from the women as was expected from the men. The proportion was fixed at three women to replace two men.

Summary

The number of dentists, mechanics and orderlies serving in the NZDC in the war varied considerably at different times, but the following figures are interesting. Taking 697 as the number of dentists on the register at the beginning of the war, and remembering that many of these, through age, health or location were debarred from service, the creditable number of 215 were mobilised in the NZDC for varying periods. Practically every experienced dental mechanic in the Dominion who was fit for service was also mobilised at some time or other. The number of men and women who served as orderlies is difficult to assess but the strength of the NZDC for the three services at 31 March 1945 was:

Officers	*NCOs and Other Ranks*	*Males*	*Females*	*Total*
137 *		341	95	573

On the whole the staffing system worked satisfactorily and the

balance between military and civilian requirements was well maintained.

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* **This includes three non-professional officers.**

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

CIVILIAN dentists were examining and treating the volunteers for the First Echelon of 2 NZEF before their entry into the mobilisation camps. As far as it went it was an excellent scheme, but none knew better than the DDS that it could not survive the deluge of work soon to be expected. For this reason, he regarded it as only a stepping stone to the ideal of a fully staffed and equipped Army Dental Service. For this reason, also, he had spent hours of the time that could so easily have been devoted to his private practice in Auckland, in transforming his dream into a practical plan to be adopted in the event of war. Strings of official memoranda and explanatory personal letters adorn the files of the Territorial Dental Corps as a testimony to his enthusiasm and persistence. His plans duly arrived at Army Headquarters, but not for adoption as will be seen later.

On 17 September 1939 he arrived in Wellington to take up his appointment as Director of Dental Services on a full-time basis. His first efforts were directed to staffing the new Corps and providing stock and equipment for it. He was quickly to realise the gulf between the ideal and reality. There was a lethargy at Army Headquarters, if not an actual antagonism, towards establishing an adequate Army Dental Service. Working from a small box of an office, without a clerk or a typist, he began the fight again. Once more he had to explain the need for an Army Dental Service, to justify the provision of staff and equipment, to haggle over expenditure that the lessons of the last war demanded if the mistakes were not to be repeated in this. Knowing full well that his policy was correct and that eventually circumstances would force its recognition, he went ahead with his plans largely on his own initiative, accepting the kicks as an earnest of the halfpence to come.

The attitude of Army Headquarters is explained in the following memorandum to the Minister of Defence on the subject of dental

examinations and treatment. Dated 8 September 1939, it was signed by the Adjutant-General and the Director of the Division of Dental Hygiene. It stated *inter alia:*

It is recommended that a reasonable amount of dental treatment should be provided in order to make the men fully fit. If this recommendation is approved, consideration should be given to the two methods by which such treatment may be carried out.

(*a*) Dental treatment after enlistment and concentration at mobilization camps.

(*b*) Dental treatment after enlistment but prior to concentration at mobilization camps.

With regard to (*a*), this will entail the provision of:

1. **An extensive dental hospital at each of the four mobilization camps. This would involve heavy expenditure in buildings and after the initial pressure of work had been overcome, would be much greater than the normal requirement of the camp.**
2. **Equipment for such hospitals. A large quantity of equipment would be necessary at the outset and in this case also the amount would be far beyond normal requirements. In addition, the equipment required could only be obtained from dental supply houses and it is known that sufficient stocks are not held by these. Importation of equipment or commandeering from civil dentists is the only alternative if equipment is to be provided at mobilization camps.**
3. **Staffs of dentists, dental mechanics and orderlies for each hospital. These would have to be brought into camp on a temporary basis and naturally will involve heavy expenditure.**

With reference to (*b*), this course has none of the disadvantages outlined above. The treatment would be spread over the dental practitioners of the Dominion, thus making full use of existing facilities. The work could be carried out expeditiously and prior to the men going onto the Army pay roll. The men would arrive in camp medically and dentally fit and therefore able to proceed with their training without interruption.

It is therefore recommended that method (*b*) should be adopted.

The memorandum then outlined the procedure to be adopted under paragraph (*b*) and was approved by the Minister of Finance on 9 September. This is a remarkable document and deserves the closest scrutiny, for it is difficult to imagine a more fertile field in which to examine the political and military thought of the time.

The Director of Dental Services was, by his appointment, adviser to the Army on all matters connected with the dental treatment of the troops and had already submitted war establishments for the NZDC, plans for treatment and specifications for buildings. The memorandum was drawn up without consulting him. Advice was sought from the Director of the Division of Dental Hygiene, the head of a Government department dealing chiefly with the dental treatment of primary school children. It is reasonable, therefore, to assume that the plans of the Director of Dental Services were incompatible with the views of the army authorities and that they sought other advice. Acceptance of the suggestions in the memorandum without a struggle would have reduced the authority of the Director of Dental Services to that of a rubber stamp. Had they not collapsed under the weight of their own inaccuracies, Lieutenant-Colonel B. S. Finn would probably have slipped from the pages of this history.

The 1914–18 War had shown the large volume of dental work that could be expected among the troops and the tremendous struggle the New Zealand Dental Corps had to cope with it all. This was surely enough evidence to discourage any civilian scheme for dental treatment. Dentists were working hard and could not be expected to give priority to army patients, and it would have been impossible to force them to do so. Also, some of them would have to be brought into the Army to train as dental officers for the forces overseas. Staffs of dentists, mechanics and orderlies would therefore still be needed. If the work was to be carried out 'prior to the men going onto the Army pay roll', the time for this to

be done must be much longer than if the men were all congregated in camp. The mobilisation of the Division and its reinforcements must therefore be delayed to that extent.

Expense was stressed in the memorandum on two occasions in connection with buildings and equipment, but no comparison was made with the expense of operating the civilian scheme nor was a premium put on the greater efficiency of an Army Dental Corps, as proved beyond doubt in the 1914–18 War.

The statement that equipment was not available from the supply houses was not correct as the Director of Dental Services had submitted lists of equipment and stocks (together with prices) which were held ready for the purpose. The Assistant Directors in the three Districts had made full inquiries as to suitable non-expendable equipment for purchase, hire or gift in addition to that held by the supply houses. There were also seven field surgical panniers equipped to mobilisation standard. Some equipment was therefore available to start the Corps, although the machinery for obtaining further supplies was not perhaps as facile as it might have been. It must also be remembered that under the civilian scheme additional stock would be needed under less economic conditions.

The assertion that large dental hospitals would be beyond the needs of the camps after the initial pressure of work had been overcome was a guess wide of the mark. It showed a disregard of experience and was directly opposed to the considered opinion of the Director of Dental Services. A bad guess can be forgiven on the score of ignorance, but there was no such excuse in this case as there was ample evidence on which to form an opinion without recourse to guessing. It is therefore difficult to understand how an appreciation of the position so unrelated to the actual situation could have been given.

The result of this uncooperative attitude was that there was a serious check to the formation of the Corps on a war basis. In spite of it, however, the DDS went ahead with his plans, but every request had to be

fought for and many ventures had to be launched on his own initiative without the blessing of official authority. It is quite certain that, if he had not been so sure of the rectitude of his cause as to be prepared to act first and argue afterwards, the New Zealand Dental Corps would not have amounted to much.

Such was the position in September 1939, with the DDS seeing clearly the large amount of work pending and, even more clearly, the difficulty in getting staff, equipment and buildings. It was known that a force of approximately 16,000 men was to be mobilised and sent overseas in three echelons, to be followed by regular reinforcement drafts. Men would also be needed for staffing the camps and for coastal defence and anti-aircraft batteries. The following notes were compiled at the time by the DDS to illustrate how the staffing position was approached. The ratio of dental officers to men was varied later, but the main principles give a much more realistic view of the whole situation than that of the memorandum quoted above:

THE NEW ZEALAND DENTAL SERVICES

NEW ZEALAND DENTAL CORPS. WAR ESTABLISHMENT NOTES

New Zealand Dental Corps. War Establishment Notes

(*a*) Establishment of dental officers to accompany New Zealand Special Force overseas.

1. **When troops first leave New Zealand they will be dentally fit and the establishment of dental officers at this stage will be based on a requirement for maintenance purposes of *one* dental officer for 2,000 men.**
2. **When troops have been absent from New Zealand for six months it is estimated that their dental requirements will show a marked increase and the Dental Corps will require to be reinforced to the extent of providing *one* dental officer for 1,000 men.**
3. **When troops have been absent from New Zealand for a further six months, i.e., a total of twelve months, there will be a further increase in their dental requirements and it is considered that the ultimate strength of the Dental Corps should be based on a requirement of *one* dental officer per 500 men.**

The Dental Corps overseas was to be gradually reinforced by sending dental officers at regular intervals to bring the strength up to 32, or one officer to 500 men in a force of 16,000. This gave an opportunity for dentists to be brought in from civilian life in time to be trained as dental officers before being sent overseas. To continue with the notes of the DDS:

(*b*) Establishment of Dental Officers in mobilization camps in New Zealand. The following factors must be taken into account in deciding upon the number of dental officers required in the mobilization camps:

1. **The completion of initial dental treatment for recruits.**
2. **The maintenance of dental fitness for troops in training.**
3. **The training of dental officers for the supply of reinforcements to the NZDC overseas.**

1. The completion of initial dental treatment for recruits.
   (a) First Echelon. The majority of the recruits will be dentally fit on entry into camp but there will be a fair proportion who require denture work to complete the restoration of their occlusion in accordance with the accepted standard of dental fitness.
   (b) Second and Third Echelons and Reinforcement Drafts. A large number of these men, say 80%, will require some form of dental treatment before being passed as dentally fit. If the present system is continued and all surgical work (fillings and extractions) and repairs to dentures, up to a maximum of six hours' work, is undertaken by private practitioners, there will still remain an increasingly high proportion, say 40%, who will require denture work.
2. The maintenance of dental fitness for troops in training. This should be comparatively light for several months after the initial treatment is completed. Each man however will be examined on entry into camp. This is essential. It is also highly desirable that each man should be re-examined as far as possible at six monthly intervals.
3. The training of dental officers for the supply of reinforcements to the NZDC overseas. It is essential that dental officers going overseas should have at least three months' preliminary experience in New Zealand Dental Corps methods and organisation in a mobilization camp. During this period also it would be possible to gauge each officer's suitability for the work. As already shown ..., there will be a progressive increase in the number of dental officers required overseas and it is therefore necessary that the amount of initial treatment performed for recruits *in camp* should be considered in the light of the necessity for drafting dental officers into mobilization camps and providing them with an adequate amount of work. It thus becomes obvious that an increasing amount of initial dental treatment will require to be performed in camp and a correspondingly decreasing proportion carried out by private practitioners before recruits enter camp.

Meanwhile, the civilian practitioner scheme as applied to the examination and treatment of the men of the First Echelon was in full swing. Despite its value as the temporary expedient for which it was designed, it soon became obvious that it had many imperfections. Some

of these were noted in a memorandum to the DDS from Major R. B. Dodds, NZDC, Dean of the faculty of dentistry of the Otago University in Dunedin:

The medical boarding of the first draft from this area is practically completed now. I have attended every board as an assistant in the organisation under Dr Fergus. The boards, as you know, have been held in the dental school and I have had an excellent opportunity of discussing with all dental supervisors matters relating to the dental examinations. Further, some of the 'F' and 'T' men have been treated at the dental school, the latter at half hospital fees.

I feel now that the position calls for certain comments with regard to the system as it is operating at present. All these points are derived from first hand knowledge. I have concluded:

1. **That the system of examination with mirror and probe cannot be accurate enough to ensure that, even if Form 362 is completed, the soldier would proceed to camp dentally fit on NZDC standards.**
2. **That a number of 'F' class men, either through lack of opportunity or other reasons, have failed to attend their dentist to have the treatment in Form 362 completed and thus have gone to camp with a large number of fillings and other work outstanding.**
3. **That the whole system offers far too great a variation in the standards of examination, classification and treatment, i.e., there is no common standard in these things that would be acceptable, for instance, to a Principal Dental Officer of a mobilization camp.**
4. **That the present system is not sound economically. Organised and disciplined treatment by Dental Corps personnel must inevitably serve the troops on the most economical basis possible.**

It follows from these conclusions that, if a force is to proceed overseas using a dental standard accepted by the Dental Corps during the last war, the system must inevitably be that developed during that war from 1917 onwards. Ample evidence that history is repeating itself with regard to this matter may be obtained from a

study of old files of the New Zealand Dental Journal—evidence moreover which can be corroborated by NZDC officers who had experience of mobilization camps of the last war.

(signed) R. B. Dodds,
Major NZDC
11 October 1939

Major Dodds was merely emphasising imperfections of the scheme which had been anticipated by the DDS and of which he had warned Headquarters with such little effect. There was, however, another factor which carried considerable weight. The public purse was being affected. A draft memorandum by the Adjutant-General, undated but probably written in November, sums up the position with suitable emphasis:

It was anticipated that when recruiting for the special force commenced, the response would be of such an extent that it would provide wide scope in the process of selection and, in consequence, the cost of dental treatment would be kept at a moderate level by selecting from those offering their services only those who were of the required dental standard or those who, by the repair of minor dental defects, involving not more than three hours' dental treatment, could be raised to the dental standard specified.

In view of the above, it was decided that the dental treatment then anticipated as requisite should be carried out by civilian dental practitioners prior to the men being concentrated at mobilization camps.

Actually, the number offering their services was not so great as anticipated and it also became evident that the general dental condition of the men offering their services was much below the standard expected. So much so that it was found necessary to increase the period of dental treatment required to six hours. Even with this added facility considerable difficulty was experienced by Districts in filling their quotas of men who were dentally as well as

medically fit. Consequently the initial estimate of costs of requisite dental treatment has been exceeded, and it is therefore considered desirable that the situation in regard to dental treatment should be reviewed with the object of ascertaining if a more economical method could be instituted.

As far as can be gathered at the moment, of the number who have offered their services and have been accepted in the first echelon, not less than 85% have required dental treatment and, from the information at present available, it is estimated that the average cost per man of such initial treatment will be approximately £2 2s. 0d. The estimated cost for the first echelon is £11,780.

Other factors are, that of recruits entering mobilization camps whose dental treatment was carried out by civilian dentists, it has been found that 15% require further treatment. This is due to an inevitable amount of dental defects being missed by the dental member of the medical board and the ever-recurring denture remakes and repairs which are to be expected when approximately 25% are wearing some form of artificial denture. There will also be a percentage of those accepted for the special force who may have to be provided with partial dentures to remedy deficiencies that are considered detrimental to their general health.

It is anticipated that the general dental condition of the men enlisted in the second and third echelons of the special force will be lower than the standard of those enlisted with the first echelon. If the dental treatment of these two echelons is carried out in the same manner as that for the first echelon, it is estimated that the cost of such treatment will amount to approximately £17,417, giving for the three echelons a total estimated cost of £29,197.

It is estimated that the cost of the alternative method of rendering the special force dentally fit by carrying out all dental treatment in mobilization camps after the troops are concentrated

will be £17,135.

In addition to this, trouble was arising out of the claims from the civilian dentists for payment for their services. There were cases when the work was not done satisfactorily, and even claims for work that had not been done. Men were being treated who did not appear in camp for one reason or another. Enlistments were sometimes cancelled after treatment had been completed; specialist fees were being claimed, and so on. The whole position became so confused that finally, on 19 December 1939, the DDS suggested to the Adjutant-General that all claims be certified and passed for payment as the cost of checking them would amount to more than could be saved by adjusting the discrepancies.

The scheme collapsed under its own weight and on 15 December authority was given for all dental treatment, with the exception of extractions which would bring the recruit temporarily below a minimum standard of masticatory efficiency, to be carried out in camp by the NZDC. Even this exception was removed on 9 January 1940, leaving the NZDC with full responsibility for all treatment. In March the dental member of the medical board was dispensed with and all examinations were carried out in camp by the NZDC, the only exception being those suffering from infective oral condi- tions such as ulcero-membranous stomatitis, which could be recognised by the medical member of the board and deferred until the condition had been treated.

It must not be thought that while this fight for recognition was going on there was nothing happening in the Dental Corps outside Headquarters. Most of the recruits for the First Echelon entered mobilisation camps at Ngaruawahia, Trentham and Burnham at the beginning of October. Fourth Field Ambulance went to Burnham and to it was attached Lieutenant W. McD. Ford. [1] At the same time three other officers were mobilised and posted to the camps: Lieutenant J. A. S. Mackenzie [2] to Ngaruawahia, Lieutenant J. F. Fuller [3] to Trentham and Captain E. B. Reilly [4] to Burnham. These four officers had all served in the Territorial Force. Dental sections were set up in the camps for the

treatment of casualties, mostly denture repairs. Accommodation was limited to tents except in Trentham, where a building was taken over. Very little work was done at this stage as there was only the Territorial equipment available and this did not include prosthetic equipment. The denture repairs were done with the use of equipment borrowed from private practitioners.

Towards the end of October six more officers were mobilised and posted to the camps: Lieutenants J. G. W. Crawford [5] and C. K. Horne [6] to Ngaruawahia, Lieutenants H. A'C. G. Fitzgerald, [7] G. McCallum [8] and T. V. Anson [9] to Trentham, and Lieutenant J. R. H. Hefford [10] to Burnham. Two of these, McCallum and Hefford, had served in the Territorial Force. A little extra equipment had been obtained but practically all the instruments and much of the stock was provided by the officers themselves. Accommodation at Ngaruawahia and Burnham had been improved by the provision of marquees. Living accommodation, especially at Trentham, was exceedingly primitive, consisting for the dental officers of the bare minimum of four walls, a roof and a bed.

Dental examination of all troops in the three camps was then undertaken. This, with completing treatment not finished by the civilian dentists, emergency work for the camp staff and maintenance for the 6600 men of the First Echelon, kept the dental officers fully occupied, working as they were under field conditions.

Towards the end of November a new stage was reached. The dental services expanded and, from an administrative point of view, became consolidated to form camp dental hospital groups rather than multiple field dental sections. Papakura Mobilisation Camp, which was to replace Ngaruawahia as the main camp in the Northern Military District, was opened and Lieutenant Mackenzie was transferred there to take charge. Lieutenant Fuller was placed in charge of Trentham and Captain O. E. L. Rout was mobilised and posted to Burnham. These three officers held the appointments of Principal Dental Officer in accordance with the NZDC war establishments drawn up in pre-war years and now approved. (See

Chapter 5, Organisation.)

By the end of December the mobilised strength of the NZDC was 22 officers and about 50 other ranks. Buildings for dental hospitals at Papakura and Burnham were completed and occupied in December, although still far from complete with many internal fittings. Thus in the three main mobilisation camps accommodation was available, for at Trentham a building had been available as a temporary hospital from the start. At Ngaruawahia, however, tents were still in use.

When the troops of the First Echelon were ready to embark on 5 January 1940, they had all received a final check of their dental condition and some 6500 men left New Zealand completely dentally fit. Part of the credit for this must be given to the civilian dentists but the Dental Corps can claim its share. The approximate figures for the treatment carried out for the First Echelon while in camp, i.e., by the NZDC, are: 3000 fillings, 750 extractions, 250 dentures (full, partial and remodelled) and 200 repairs to dentures. The work was done in the face of many handicaps. Temporary accommodation had to be set up and equipment found before anything other than emergency treatment was possible. It took time to make satisfactory arrangements with the camp authorities and officers commanding units to provide a flow of patients, for at this time the general camp organisation itself was only in the developmental stage and the training programmes were subject to sudden changes. Final leave of fourteen days further interrupted the work just at a time when it had started to run more smoothly. Still, by dint of hard work and long hours, the result was achieved and the subsequent history of the dental services with 2 NZEF overseas indicates that this effort and the treatment by the NZDC of the succeeding echelons and reinforcements was the foundation of the excellent dental health record enjoyed by New Zealand troops throughout the war.

There were other troops in New Zealand than the echelons of 2 NZEF and they provided a problem of their own. Within a week of the declaration of war a force was mobilised to man the coastal batteries

and subsidiary defence stations. These men were not selected according to any standard of dental fitness, nor were they included in the civilian practitioner scheme for dental treatment. The only provision made for them was that when a man reported with toothache, the medical officer authorised the necessary treatment from a civilian dentist. This was only for the relief of pain and did not include other work to make him dentally fit.

In December Government approval was given for dental examination and treatment of these troops to be undertaken by the NZDC. The policy was that the NZDC would be temporarily detached from the mobilisation camps whenever intervals in the treatment of overseas drafts made this possible. They were to operate as mobile field dental sections, taking fully equipped outfits from the mobilisation camps. The first of these intervals occurred when the First Echelon went on final leave, and between 21 December 1939 and 11 January 1940 field dental sections operated at Narrow Neck and North Head in the Northern Military District, Fort Dorset in the Central and Battery Point and Godley Head in the Southern Districts. The result was that at least all urgent work was completed for the fortress troops at these establishments.

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[1] Lt-Col W. McD. Ford, ED; Wellington; born Christchurch, 1910; dental surgeon; dental officer, 2 NZEF, 1939–41; served in NZ, 1942–44; PW Repatriation Gp (UK) 1944–45; ADDS, Army HQ, 1949–.

[2] Maj J. A. S. Mackenzie, m.i.d.; Waikohowai, Huntly; born Levin, 26 Jun 1908; dental surgeon; OC NZ Mobile Dental Sec Jun 1940–Apr 1941; p.w. 25 Apr 1941.

[3] Col J. F. Fuller, OBE, ED, m.i.d.; Wellington; born Westport, 1913; dental surgeon; ADDS 2 NZEF, Jan 1940–Oct 1944; DDS (Navy, Army and Air) 1949–.

[4] Maj E. B. Reilly, ED; Christchurch; born 1905; dental surgeon.

[5] **Maj J. G. W. Crawford, MBE, ED; Auckland; born Gisborne, 2 Jul 1909; dental surgeon; p.w. 25 Apr 1941.**

[6] **Capt C. K. Horne; Auckland; born NZ 8 Oct 1913; dental surgeon.**

[7] **Maj H. A'C. G. Fitzgerald; Hastings; born 1908; dental surgeon.**

[8] **Maj G. McCallum, MBE, ED, m.i.d.; Wellington; born Milton, 1905; dental surgeon; PDO Trentham and Burnham Camps 1939–41; OC 1 Mobile Dental Unit Aug 1943–Nov 1944.**

[9] **Maj T. V. Anson; Wellington; born Wellington, 1902; dental surgeon; PDO, Northern Military District, 1940–41; Brigade Dental Officer, 8 Bde, Fiji, Jul 1941–Jan 1942; Dental Officer, No. 2 (GR) Sqn, Nelson, Feb–Oct 1942.**

[10] **Capt J. R. H. Hefford; Christchurch; born England, 1917; dental surgeon.**

THE NEW ZEALAND DENTAL SERVICES

STAFFING THE NEW ZEALAND DENTAL CORPS

Staffing the New Zealand Dental Corps

In staffing the Corps there were two important questions to answer:

1. **How much treatment was needed to make the troops dentally fit and maintain them so?**
2. **How many dentists, mechanics and orderlies were required to do this?**

The first question could not be answered with complete accuracy but the amount of treatment could be roughly assessed by analysing the results of the examination of the men who volunteered for the First Echelon and the results of examination and treatment in the 1914–18 War. From these figures it was possible to arrive at a fair average for a given number of men.

The answer to the second question then appeared to be one of mathematics, provided the source of supply did not dry up. It was known approximately how much work a dental officer could do in a given period, how many mechanics and orderlies he needed to assist him and how much equipment he would need. On paper the problem was simple; in practice not so simple. In the first few months of the war the DDS used the rules of mathematics to justify his requests for staff but, when it was decided that the Corps was to be built up in proportion to the armed forces, other factors had to be considered. There were different factors affecting dentists, mechanics and orderlies, so the three will be considered separately.

THE NEW ZEALAND DENTAL SERVICES

DENTAL OFFICERS

Dental Officers

There was no difficulty at the beginning of the war in finding enough dentists to volunteer for service in the Corps; in fact, more applied than could be immediately accepted. But, even in these early times, the action of volunteering did not mean acceptance, as the DDS demanded a high standard for the Corps, quite apart from medical fitness to stand up to the work. The dentist had to have high professional ability and be of good ethical standing, fit to receive the King's Commission. The Dental Corps was not going to be a dumping ground for profession failures or playboys. The needs of the civilian population also had to be considered and dentists could not be drawn into the Army from areas poorly provided with dental services.

The maintenance of a balance between civilian and military requirements was recognised as important by the Government, and in December 1939 the Minister of Health approved the setting up of a sub-committee of the Medical Committee of the Organisation for National Security to advise on this and other dental matters of national concern. Consisting of Mr J. L1. Saunders, [1] Director of the Division of Dental Hygiene in the Department of Health, Lieutenant-Colonel Finn, and Mr O. M. Paulin [2] representing the New Zealand Dental Association, the dental sub-committee held its inaugural meeting on 29 January 1940 in Wellington. By this time thirty-one dentists had received, or were about to receive, their commissions in the NZDC, so the first action was to ratify these appointments. This they did with the exception of Captain O. E. L. Rout who, they considered, would be better employed in his capacity as a lecturer at the Otago University Dental School.

At the beginning of the war there were 697 dentists on the New Zealand register. Twenty-five of these were in Government employment, at the dental school or in the island dependencies, so in the meantime

were not to be considered. This left 672, of whom many, through age or ill health, were unable to serve with the military forces, but who might release younger and fitter men for service.

At this time all manpower for the fighting forces came from volunteers so the authority of the Organisation for National Security and its committees was limited. In the case of dentists the committee's main function was to see that the needs of the civilian population were not adversely affected by too many enlistments from the same quarter. To help it in deciding this, it asked the New Zealand Dental Association to appoint dentists in the various districts throughout the Dominion from whom recommendations could be obtained. Subject to this proviso, the selection of applicants was made by the DDS after careful inquiry into their suitability and the committee abided by his recommendations.

On 18 June 1940, however, the National Service Regulations were gazetted by Order in Council. By these regulations 22 July 1940 was made the closing date for voluntary enlistment, and thereafter men were called up by ballot both for overseas and Territorial service with the armed forces. Dentists were therefore liable to be called up as combatants either for overseas service or Territorial training, and the delicate balance between military and civilian dental requirements was in jeopardy. Exemption from combatant service could not be granted by the committee, but the National Service Department recognised the need for some degree of conservation of dental manpower. The department had what was known as a 'Schedule of Important Occupations', which was in the process of revision when this question was being considered. The Director, Mr J. S. Hunter, wrote to the Medical Committee on 2 September 1940 to the effect that while the postponement or reservation of a person drawn in a ballot was a matter entirely for the decision of a tribunal that was to be set up, certain recommendations for dentists and dental mechanics were suggested for inclusion in the revised schedule. No dentist would be released for Territorial training and if he was called up in a ballot for overseas service his case would be referred to the National Medical Committee,

which included the dental subcommittee, whose opinion would be transmitted to the Appeal Board for consideration. The result was eminently satisfactory as the Appeal Board invariably acted on the recommendations of the committee.

The committee also recommended that those dental students who had completed one full year of professional study, i.e., who had completed the second year of their dental course, should not be withdrawn for military service but would be required to continue their professional studies.

The result of this was that the DDS was able to select those dentists he needed for the Corps with a reasonable chance of getting them, and still had a free hand in rejecting unsuitable applicants, with a knowledge that they would not be withdrawn from the general dental pool. That the DDS was careful in his choice is shown by the very small number who turned out to be misfits. That his standard was high can be seen by the instructions given on many occasions to officers leaving to take up a command overseas:

> **You will remember that your first duty is to look after the men you command, then to equip yourself with the necessary military and specialist knowledge to make your branch of the service the most efficient section of the military organisation. Everything has been done to give you rank and status in the Force and it rests with you to build up from this with your own initiative and personal application a branch of the service that will function under all conditions presenting. It is up to you to live up to the ideals of your profession apart from inculcating into the minds of other branches of the force, by practical demonstration and propaganda amongst all Units, the importance of our specialist service and the essential part that dental health contributes to the mental and bodily health of the soldier.**
>
> **With the strictest observance of Service Regulations and Procedure and the continuance of the loyalty and co-operation you**

have shown, so will the 'Esprit de Corps' be built up and the traditions of the New Zealand Dental Corps and your profession be upheld. Nevertheless do not forget that commissioned rank in the professional services is easily gained and the soldier who presents to you for treatment, of whatever rank, is deserving of all the consideration that you, as a professional man, can offer him, and *he will get it* and with good measure from the New Zealand Dental Corps.

The Corps owes a debt of gratitude to Colonel Finn for selecting his officers with such care and for constantly refreshing them with his own idealism. At one time in the war he was so desperate for dental officers that he was prepared to take them direct from graduation and train them at the camp dental hospitals. This was against his principles, and later when the supply improved he insisted that new graduates must have at least six, or preferably twelve, months' practical experience in the dental department of a public hospital. The wisdom of this is seen when troops are scattered over the country and dental officers have to work alone, supported only by their own initiative and professional experience.

Civilian requirements were assessed as one dentist to 2200, but in 1942, when general mobilisation had taken place and large numbers of dental officers were needed, the profession was asked to work at a ratio of one to 3300. It is interesting to compare the civilian figures with those of the 1914–18 War as computed by the National Efficiency Board. The ratio of dentists to population in 1914 was one to 2196, and in 1917 one to 2922. The difference in the ratio at the peak periods of the two wars can be attributed to the fact that in 1942 New Zealand was threatened with invasion and a large number of men were mobilised to protect the homeland, needing more dental officers in the armed forces and leaving fewer for civilian requirements. So serious was the position in 1942 that the dental sub-committee circularised the dentists advising them of the position and asking that they co-operate by modifying their plans for treatment, simplifying as far as possible all operative and

prosthetic work while the emergency lasted. The general reaction to this circular was favourable as it was realised that some action was necessary if the interests of the civil and military population were to be safeguarded. There was some criticism, especially from a company providing certain services to the profession, on the grounds that their interests were being vitally affected, but the position was too serious for much notice to be taken of it.

The Germans apparently had the same difficulty in providing an adequate dental service for the civilian population. In May 1942 the following paragraph appeared in the dental magazine *Oral Hygiene:*

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[1] **Col J. L1. Saunders, CBE, DSO, m.i.d.; Lower Hutt; born Dunedin, 1891, dental surgeon; Otago Regt 1914–18 (Lt-Col); twice wounded; comb 2 Inf Bde (Territorial Force) 1939–42.**

[2] **Capt O. M. Paulin; born Dunedin, 14 Jul 1895; dental surgeon; NZDC 1918 and 1942–45; died Richmond, 14 May 1959.**

THE NEW ZEALAND DENTAL SERVICES

NAZIS LACK DENTISTS

Nazis Lack Dentists

With many of the country's dentists in military service, toothaches are becoming widespread in Germany. The *Koelnische Zeitung* of Cologne reported 'There simply are not enough dentists.' The paper urges the people to be patient, to consult a dentist only when absolutely necessary, 'as for example when the pain becomes too great or chewing is impaired seriously'.

Further steps were taken in 1943 to stabilise the dental service to civilians. A Dentists' Employment Order, 1943, was written into the Industrial Manpower Emergency Regulations, 1942. Briefly, this order, operating from 9 September, prevented any registered dentist from ceasing practice, changing his type of practice or setting up practice at any other place or places without prior consent in writing of a District Manpower Officer. This order served two useful purposes. It helped the work of the dental sub-committee by simplifying the organisation of dental manpower and it protected those dentists already serving with the NZDC from unscrupulous opportunists who might seek to filch their practices from them in their absence.

THE NEW ZEALAND DENTAL SERVICES

DENTAL MECHANICS

Dental Mechanics

The National Service Department did not recognise dental mechanics as belonging to the 'Schedule of Important Occupations' but it did concede that they should be subject to some direction. All those drawn in the ballots for overseas service were referred to the National Medical Committee as in the case of dentists. For those drawn in the ballots for Territorial training, postponement of calling up was dealt with by the Appeal Board on the individual merits of the case. A letter from the DDS to the Director of Mobilisation on 1 May 1941 ran:

> **The New Zealand Dental Corps can absorb all dental mechanics or dental technicians available through Expeditionary Force ballots and the Director of National Service has notified Appeal Boards accordingly, also suggesting that, where these ballotees are released for military service it should be conditional upon service in their technical capacity and additionally that the appeals of grade II and III mechanics should be adjourned until their medical board papers have been perused at Army Headquarters with a view to their being utilised in home service duties thereby releasing grade I mechanics for overseas.**
>
> **It should be explained that the classifications 'Dental Mechanic' and 'Dental Technician' are synonymous and appear indiscriminately in memoranda quoted in the text.**

There was, however, a definite need to preserve the balance between military and civilian requirements, although perhaps not to such an extent as with dentists. It was therefore decided that if the dental sub-committee was satisfied that a mechanic was a competent tradesman and essential to civil requirements, an appeal from military service would be lodged on his behalf on the grounds of public interest. This was

not entirely satisfactory as it entailed much unnecessary correspondence and delay. Also, in many cases, no sooner were appeals lodged and dealt with than the DDS would require the men urgently and could not get them until the appeals had been withdrawn. A simpler scheme was therefore evolved. After the issue of the *Gazette* the sub-committee made inquiries into the *bona fides* of each mechanic drawn in the ballot. This was a necessary precaution as in a number of cases boys who could barely lay claim to the proficiency of a 'plaster boy' had styled themselves dental mechanics. These were useless to the NZDC and to the civilian population except as trainees. After their *bona fides* had been established, the mechanics continued in their civil occupation until their services were asked for by the DDS. In other words, every dental mechanic was kept in his trade either in civilian or military practice. This exemption applied also to the National Military Reserve and the Home Guard, except of course in the event of full mobilisation of the latter in the defence of New Zealand's very existence, when dentists, mechanics, Toms, Dicks and Harrys would all be in it together.

In February 1943 Mr G. Clark of the dental mechanics' union was appointed by the Minister of Health to the dental sub-committee. He attended only those meetings at which the release of dental mechanics was being discussed.

These arrangements did not fully satisfy the demands of the NZDC for trained mechanics and already attempts had been made to train its own in the mobilisation camps. As will be seen in the chapter on this subject, this was not completely successful at first, but it led to the formation of training schools under capable teachers in March 1943. The demand for mechanics from civilian life therefore decreased and actually none were brought into either the Army or the Air Force after October 1942. Eventually, on 16 February 1944 the following resolution was passed by the National Medical Committee on the advice of the DDS:

> **That with the dental mechanics who are gradually being released to civilian occupation from the Armed Forces, together with those already serving as apprentices and employed as**

journeymen mechanics, or in business on their own account, the dental profession is reasonably served by dental mechanics under present conditions.

That in view of the increasing number of dental mechanics being released from the Armed Forces, the necessity no longer exists for dental mechanics who are, or have been, called in ballots to be retained in their civilian occupations or for their work to be regarded as a protected industry.

The removal of dental mechanics from an essential industry classification restored the balance which had been disturbed by the release of mechanics from the armed forces. Those who had been drawn in ballots were then called up either for general military service or for other essential industries in equal numbers to those released from time to time by the armed forces.

THE NEW ZEALAND DENTAL SERVICES

DENTAL ORDERLIES

Dental Orderlies

In selecting non-technical staff for the Corps, the policy was to look for keen men of a reasonable standard of education and personal cleanliness, fit to work in a hospital team. The choice was limited by the needs of the combatant units, for whereas dentists and mechanics naturally gravitated towards the Dental Corps whatever their medical grading, untrained men who were medically Grade I could not often be spared for a non-combatant unit such as the NZDC. There were, however, many men graded II for slight abnormalities sufficient to disqualify them for service in a combatant unit who were of a sufficient standard of physical fitness to make them valuable members of the NZDC. It was perhaps not fully appreciated at first to what extent the NZDC would be employed and the high standard of fitness required of those serving in a field ambulance or a mobile dental unit, but it was realised that there must be Grade I men to accompany the NZDC overseas. The result during the first ten months of the war, when all the men were voluntary enlistments, was that Grade II men welcomed the opportunity to serve with the NZDC but Grade I men were difficult to get, as the choice of orderlies for service overseas was limited by the large amount of work the NZDC had to do in New Zealand.

There were certain key men who should not be called nontechnical. Men with a knowledge of dental stock, such as employees of supply houses, were the natural choice for NCOs in charge of stores, but these were hard to get as they could ill be spared from their civilian occupations. Most of the stores NCOs were trained in the Corps after serving as dental orderlies. Men with the capacity for leadership were needed as administrative NCOs. Again, these mostly proved their worth as dental orderlies and rose in rank and authority according to merit, as there were very few men who had had experience in the Territorial

Dental Corps from whom to chose.

The general selection of orderlies in the early part of the war was excellent and to those who served in New Zealand and overseas in the NZDC can be attributed much of the success of the Corps in the war. There were difficulties at a later date when the Dental Corps, in common with other non-combatant units, had to absorb its share of pacifists and objectors, but the constitution of the Corps was then sufficiently strong to do this without serious indigestion.

The obvious course of employing women in the camp dental hospitals to release men for service overseas and in the mobile units in the field was delayed by prejudice from the more conservative of the military authorities, and it was nearly eighteen months after the declaration of war before serious consideration was given to this prolific source. Before this no facilities existed for women in camp except for nursing sisters, and even the welcome invasions by concert parties arrived under strong duennal escort. Appropriately it was the youngest service which made the first move to use women as dental orderlies, as selection of suitable girls to join the Women's Auxiliary Air Force began in July 1941. The type sought was those who were 'bright and quick in the uptake but not necessarily with previous dental experience'. Added incentive was given by arranging classes of instruction by dental officers to qualify them to sit for trade tests which gave extra status and, of course, extra pay. Later the Navy and the Army used girls of the Women's Royal New Zealand Naval Service and the Women's Army Auxiliary Corps. There is no doubt about the success of the women as dental orderlies, and some were even trained as dental mechanics in the NZDC training schools. Some adjustment of existing establishments was necessary as it was not considered right to ask for the same amount of work from the women as was expected from the men. The proportion was fixed at three women to replace two men.

THE NEW ZEALAND DENTAL SERVICES

SUMMARY

Summary

The number of dentists, mechanics and orderlies serving in the NZDC in the war varied considerably at different times, but the following figures are interesting. Taking 697 as the number of dentists on the register at the beginning of the war, and remembering that many of these, through age, health or location were debarred from service, the creditable number of 215 were mobilised in the NZDC for varying periods. Practically every experienced dental mechanic in the Dominion who was fit for service was also mobilised at some time or other. The number of men and women who served as orderlies is difficult to assess but the strength of the NZDC for the three services at 31 March 1945 was:

Officers	*NCOs and Males Other Ranks*	*Females*	*Total*
137 *	341	95	573

On the whole the staffing system worked satisfactorily and the balance between military and civilian requirements was well maintained.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 5 — ORGANISATION IN NEW ZEALAND—ARMY

Contents

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

THERE are two main points to be considered in the organisation of any unit in the armed forces:

1. **The relationship of the unit to the general organisation.**
2. **The internal organisation of the unit itself.**

The relationship of the New Zealand Dental Corps to the general organisation of the Army centres round the head of the Corps, the Director of Dental Services. It is therefore essential that his position be clearly understood.

THE NEW ZEALAND DENTAL SERVICES

THE DIRECTOR OF DENTAL SERVICES

The Director of Dental Services

The General Officer Commanding a force is responsible for everything pertaining to that force, including the dental health of his troops, but being a layman, he appoints a dental expert to organise and carry out the necessary work on his behalf. The Director of Dental Services is therefore an administrative officer with dental qualifications. The terms of his appointment read that he is responsible to the Adjutant-General for the organisation, maintenance and efficient working of the New Zealand Dental Corps and to the Quartermaster-General for the provision and inspection of dental equipment and stores.

In addition to these administrative and supply duties he has another role, viz., operational. He has to deploy his units in accordance with the commander's plan and must issue his orders in exactly the same manner as does any other commanding officer, such as the Commander of the Royal Artillery or the Director-General of Medical Services. He must therefore have close liaison with the operational staff. The shorter the channels of communication between him and the heads of the other departments, the more expeditiously can his organisation function. Similarly, any interference with these channels of communication must affect the efficiency of his organisation. In the case of the Director of the New Zealand Dental Corps, there was interference with the channels of communication by the claim of the Director-General of Medical Services that the dental services were part of the medical and, as such, should be subject to his direction. The terms of the Director of Dental Services' appointment in this war were clear and precise so it would appear that the claim should have been dismissed, but unfortunately it was allowed to persist and became a source of annoyance and confusion. The main argument in favour of medical supervision was that the general health of the troops was the responsibility of the Director-

General of Medical Services and that dental health was included in this category. This was correct up to a point, and the Director of Dental Services was always ready to agree that he had a responsibility to ensure that the dental health of the troops conformed to the general standards of health laid down by the medical services. To this extent he recognised a responsibility to the Director-General of Medical Services. A conference was held early in 1939, of which the closest search has revealed only pencilled minutes, in which it is claimed that the DDS agreed that the NZDC should revert to control by the DGMS. As no alteration in the terms of the appointment of the DDS was made officially by the Adjutant-General, it can only be assumed that this referred to the question of general policy affecting the health of the troops and not to matters of internal organisation. What the DDS did not agree to, and what the terms of his appointment contradicted, was the right of the Director-General of Medical Services to have any say in the method by which the standard of dental health was maintained. The controversy was bitter and undoubtedly affected the harmonious relationship which should have existed between the two Corps, and most certainly made the task of organisation more difficult for the DDS. Strong action by the Adjutant-General in support of his written instructions would have ended the controversy, but such action was not forthcoming, and what there was was tempered by expediency, allowing the sore to fester and erupt again.

Apart from his army appointment, the DDS was made responsible to the Naval Board through the Naval Secretary, and the Air Board through the Air Member for Personnel, for the dental health of the men in their services. His official title was therefore Director of Dental Services, Navy, Army and Air, but he carried army rank only.

The DDS was given the task of rendering all the armed forces dentally fit and maintaining them so. The responsibility was his and his alone. He had direct access to the heads of the services for his requirements, his immediate superior officer being the Adjutant-General or his counterparts in the Navy and the Air Force. He was expected to

co-operate freely with the heads of other departments but was subordinate to none. All appointments to the NZDC were made by Army Headquarters on his recommendation. He was responsible for the training and distribution of officers and other ranks of the Corps and their calling up for service in New Zealand or overseas. His advice was available on professional questions, dental statistics and reports. In co-operation with other branches of the staff, he was responsible for the provision of accommodation in military districts, camps, depots, hospitals, transports and hospital ships for the successful dental treatment of the troops. He was expected to inspect the dental services in military camps and formations at bases and in the field. Also he was expected to co-operate with the dental council and the representatives of the dental profession in the conservation of the needs of the civilian population.

During the whole of the war the DDS was Colonel B. S. Finn, who received his army command in 1934, his naval command in April 1939 and his Air Force command on 17 September 1939.

THE NEW ZEALAND DENTAL SERVICES

INTERNAL ORGANISATION

Internal Organisation

In a previous chapter it has been stated that the Director of Dental Services had given considerable thought before the war to the organisation of the NZDC for war purposes and had made certain recommendations to Headquarters. It is now convenient to examine his recommendations regarding organisation in more detail and to see what notice was taken of them. The analysis will show how difficult it was to carry out his obligations in the face of the uncooperative attitude of the authorities. His recommendations were:

1. **Some administrative staff at headquarters.**
2. **A quartermaster for Dental Services to negotiate and advise in the purchase of equipment and stores, to be responsible for the issue and maintenance of the same and the establishment of an Army Dental Store in conjunction with the Ordnance Department.**
3. **Three Assistant Directors of Dental Services to rank as Lieutenant-Colonels and act as staff officers for dental services attached to each military command headquarters. Their duties would be to co-ordinate between their respective command headquarters, the Principal Dental Officers of military districts and standing camps and the Director of Dental Services and to act for the latter in their districts. The Central Military District ADDS was in addition to assist the DDS at Headquarters.**
4. **Three district Principal Dental Officers whose duties were to be:**
   - **(*a*) To assist the command ADDS.**
   - **(*b*) Be dental officer in charge of any dental centre situated in command headquarters area and carry out the dental duties required for the personnel of the troops in that area including the dental examination of recruits, invalid soldiers and members of the Forces as might be required by the Commandant.**

(c) Give regular oral hygiene lectures to troops and hold classes of instruction for non-commissioned officers and other ranks of the NZDC in connection with their specialist duties.

Considerable correspondence passed between the Director of Dental Services and the Director-General of Medical Services, on the one hand, and the Adjutant-General on the other, with the following result:

1. Administrative Staff at Headquarters No appointments were made, not even a typist.
2. Quartermaster No appointment was made, with the result that all the stores organisation and administration, which was highly technical and could not be handled by the Ordnance Department without advice, fell on the already overburdened shoulders of the DDS himself. It was not until the war had been in progress for seven months that Major H. E. Suckling relinquished his appointment as ADDS of the Southern Military District and was appointed ADDS, Army and Air, at Army Headquarters, where he gradually took over all the stores administration. This appointment he held until 31 January 1945.
3. Three Assistant Directors of Dental Services Three part-time majors only were appointed, one each to the Northern, Central and Southern districts. Each of these officers was responsible to the DDS for the dental fitness of all mobilised military personnel in his district. They supervised and controlled on behalf of the DDS all dental services required for the Army and were responsible for the checking of the dental accounts rendered by the civilian dentists treating troops. This part-time service was to be not less than two and a half hours daily and the remuneration was £150 per annum. The duties took up much longer than two and a half hours a day, but even if this were not the case, each officer had to work at least fifteen hours a week at four shillings an hour. They were all running busy dental practices in which overhead expenses went on while they were on army duty, so that actually they were paying for the privilege of serving in the Army. It is hardly surprising that this part of the organisation did not last and that, in the middle of 1940, the Principal Dental Officers of the three main mobilisation camps took over these duties as well as their own.
4. Three District Principal Dental Officers It was found that the district mobilisation camps were close enough to their district headquarters to dispense with these appointments and allow the Principal Dental Officers of the camps to act in the dual capacity. As soon as the mobilisation camps were ready a Principal Dental Officer was

appointed to each, i.e., Papakura, Trentham and Burnham in the Northern, Central and Southern Military Districts respectively. The Principal Dental Officer was responsible through the Camp Commandant, and the District ADDS, to the DDS for:

(*a*) Dental examination and condition of the troops, the class of operations performed and for all professional matters connected with his Corps.

(*b*) The control of the dental centre and staff, being responsible to the Camp Commandant for the discipline of his unit.

(*c*) Dental equipment and stores issued to him and the submission of requisitions for approval for all dental stores required by the unit.

(*d*) Arranging regular lectures to all troops in the camp on oral hygiene, classes of instruction in specialist duties for non-commissioned officers and other ranks of the NZDC, and for grading mechanics.

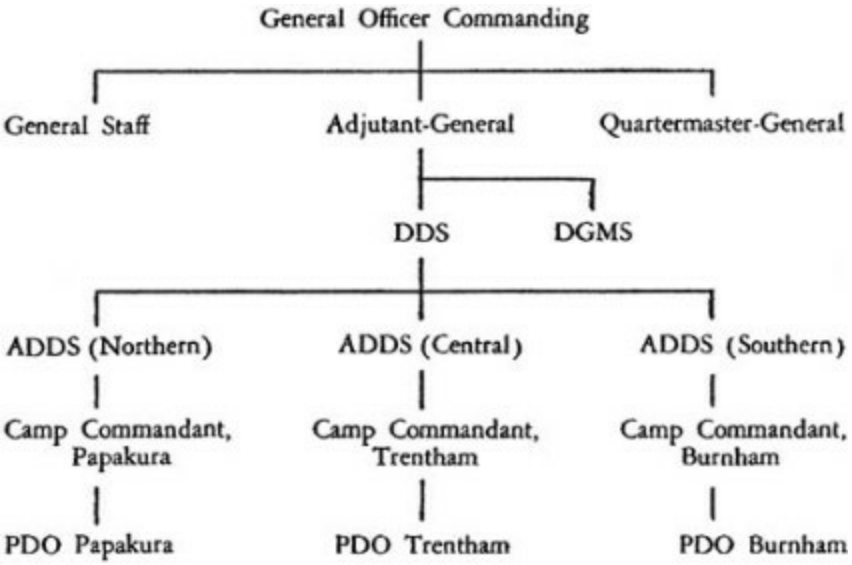
(*e*) Arranging special classes of instruction for dental officers in military routine and procedures.

(*f*) General co-operation with the training staff in completing the dental treatment of the troops so as to interfere as little as possible with their training.

(*g*) Furnishing all reports through Camp Headquarters on the dental treatment and any returns that might be required by the DDS.

Although the Principal Dental Officers were appointed as executive officers, it can be seen that their administrative duties were considerable, especially when they took over the additional duties of ADDS of the district. They therefore had little time available for the actual practice of dentistry. Nevertheless they were appointed for their professional knowledge as well as for their administrative ability and were nominally responsible for the standard of work of the dental officers and mechanics under their command.

This was the framework on which the future organisation was built:



The Director-General of Medical Services has been included in this diagram to show that he, like the Director of Dental Services, was responsible to the Adjutant-General and was in no way included in the dental organisation.

Organisation below the level of the Principal Dental Officers was dependent on general army policy so it is as well to outline briefly once again what that policy was. A special force of approximately 16,000 men was to be mobilised, initially trained and sent overseas in three echelons, to be followed by various reinforcement drafts. In addition, other troops were mobilised to man the coastal defence and anti-aircraft batteries, to act as camp and headquarters staff, guards of vital points such as hydro-electric stations and reservoirs, and later for a field force.

Three main mobilisation camps had been built, one at Papakura, 18 miles south of Auckland, one at Trentham, the same distance north of Wellington, and one at Burnham in the South Island, about 16 miles south of Christchurch. In addition to this there was a canvas camp at Ngaruawahia, on the Waikato River near Hamilton, and in early 1940 the Show Grounds at Palmerston North were taken over for the training of the Maori Battalion.

Dental treatment for these different groups of troops had to be arranged according to the time available. The intention of the Corps to send every soldier overseas dentally fit meant that first priority must be

given to the echelons and reinforcements. The first concentration of dental personnel must therefore be in the mobilisation camps and the size of the establishments was calculated by the DDS and submitted to Army Headquarters. The amount of work could be assessed reasonably accurately, the time available was known within predictable limits and the rate of work of the average dental officer had already been noted from previous experience. To cope with the simultaneous dental treatment of the other mobilised troops bigger establishments would be needed, but the DDS only asked for enough to carry out the urgent task of sending the overseas troops away dentally fit, relying on the intervals between the echelons to catch up with arrears in the other work until the Corps organisation could be built up to cover everything. The problem was complicated and there was a reluctance to provide what, with some justification, appeared to be a sledgehammer to kill a gnat. There was no precedent in any country where a concentrated effort to promote complete dental fitness had been attempted except in the New Zealand Forces in the latter stages of the 1914–18 War, and it appeared that the lessons of that war had been imperfectly digested. The result was that every establishment submitted was sifted through the finest financial grille and the early dental staff had to work phenomenal hours to achieve their objective.

As an example of this, establishments to begin with were cut down to nearly two-thirds of those recommended by the DDS; they were accompanied by a grudging admission of their inadequacy, as shown by the following extract from a memorandum from the Adjutant-General dated 5 March 1940:

> **The DDS still retains the authority to move personnel to overtake necessary work, even to the limit of adding surplus to the Camp Hospital, but at all times drawing from another authorised establishment.**

This was robbing Peter to pay Paul and took no notice of the fact that more or less equal work was needed in each centre at the same time. The privilege was therefore of little use. That the memorandum

was accompanied by an enclosure of outdated establishments when new ones had been authorised on 23 February was but another indication of the confusion existing at the time.

Out of the confusion, however, came reasonable establishments to cope with the echelons and reinforcements, though little relief for the DDS from his administrative problems at headquarters and an inadequacy for the amount of work throughout the country.

Dental treatment for the mobilised troops in the coastal batteries, etc., was provided in Wellington and Christchurch by the respective mobilisation camps, but in Auckland there was a special dental hospital for this purpose. At a delightful camp at Narrow Neck on the north shore of the Waitemata harbour, a building, originally used as a dental hospital in the 1914–18 War, was reconditioned and again brought into service for one dental officer, orderly and mechanic. In Dunedin, and elsewhere in the south, use had to be made of the civilian dentists.

Later, when troops became dispersed and when more dental personnel became available, the organisation expanded accordingly. Other large hospitals were built, such as that at Waiouru near the centre of the North Island. Group hospitals were established such as that at Linton, near Palmerston North, and, most important of all, mobile sections and caravans were used. By this time the importance of dental health was fully recognised and no difficulty was experienced in building up a large and efficient organisation. A study of the following diagram will explain the organisation as it existed when more troops were mobilised in New Zealand than ever before in her history. [1]

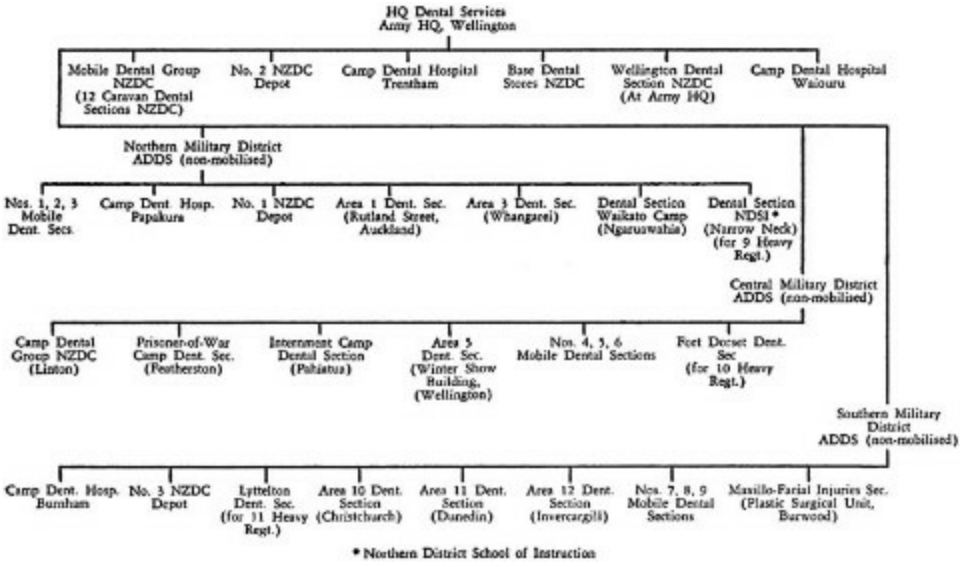
This organisation, although authorised, was never fully used as it was found to be impossible to staff it at a time when every man and woman was needed to defend the country against the threat of Japanese invasion. Some appointments had to be abandoned and some had to be filled by those doing other duties. For example, the depot was staffed by mobilisation camp personnel and did not function as a separate entity, although it has since become the nucleus of the suggested peacetime

organisation of the Corps and is an integral part of the framework on which the Corps can be built for a future war.

Certain sections and groups of the organisation were under the direct control of the DDS and the others were divided among the three military districts. These were under the command nominally of the Officer Commanding the District Depot, but actually of the Principal Dental Officer of the mobilisation camp, who combined these two appointments.

As in the study of biology we find the most complex structures can all be reduced to a cellular fundament, so can the operative organisation of the NZDC be considered in terms of its smallest unit, the dental section. The dental section is a self-contained unit capable of carrying out all classes of dental treatment other than specialties. It was designed to operate in areas, training depots, forts and camps, other than mobilisation camps, and consisted of one officer, one or two orderlies and one mechanic. From this minimum can be built all the other organisations required, but below this the unit cannot function.

It is now possible to analyse the full organisation of the NZDC in New Zealand. Before doing this it is interesting to note that history up to a point was repeated. Although the dental treatment in this war was begun in earnest much sooner than in the 1914–18 War, it was again three years before the organisation was at its peak. In the Great War it was 1917 before the Dental Corps arrived at the stage of sending all troops overseas dentally fit, and in the Second World War it was 16 October 1942 before the full organisation was authorised. It must surely be admitted that the task is easier of accomplishment with efficient organisation, and it is hoped that the record of the work of the Corps in the two wars will bear testimony to its worth, and that the organisation in another war will be there at the beginning.


HQ Dental Services
Army HQ, Wellington
Mobile Dental Group NZDC (12 Caravan Dental Sections NZDC)
No. 2 NZDC Depot
Camp Dental Hospital Trentham
Base Dental Stores NZDC
Wellington Dental Section NZDC (At Army HQ)
Camp Dental Hospital Waiouru
Northern Military District ADDS (non-mobilised)
Nos. 1, 2, 3 Mobile Dent. Secs.
Camp Dent. Hosp. Papakura
No. 1 NZDC Depot
Area 1 Dent. Sec. (Rutland Street, Auckland)
Area 3 Dent. Sec. (Whangarei)
Dental Section Waikato Camp (Ngaruawahia)
Dental Section NDSI * (Narrow Neck) (for 9 Heavy Regt.)
Central Military District ADDS (non-mobilised)
Camp Dental Group NZDC (Linton)
Prisoner-of-War Camp Dent. Sec. (Featherston)
Internment Camp Dental Section (Paihatua)
Area 5 Dent. Sec. (Winter Show Building, (Wellington)
Nos. 4, 5, 6 Mobile Dental Sections
Fort Dorset Dent. Sec (for 10 Heavy Regt.)
Southern Military District ADDS (non-mobilised)
Camp Dent. Hosp. Burnham
No. 3 NZDC Depot
Lyttelton Dent. Sec. (for 31 Heavy Regt.)
Area 10 Dent. Section (Christchurch)
Area 11 Dent. Section (Dunedin)
Area 12 Dent. Section (Invercargill)
Nos. 7, 8, 9 Mobile Dental Sections
Maxillo-Facial Injuries Sec. (Plastic Surgical Unit, Burwood)
* Northern District School of Instruction

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[1] **See p. 46.**

THE NEW ZEALAND DENTAL SERVICES

HEADQUARTERS DENTAL SERVICES

Headquarters Dental Services

On 16 October 1942 the Adjutant-General authorised an establishment for this headquarters to administer the NZDC for the Navy, Army and Air Force. It comprised:

1. **Director of Dental Services in the rank of colonel.**
2. **Assistant Director of Dental Services, stores and equipment, in the rank of lieutenant-colonel.**
3. **Assistant Director of Dental Services, administration, in the rank of major.**
4. **Staff Officer in the rank of captain (or subaltern). This officer was not a dentist and it is interesting to note that this appointment, together with that of the officer in charge of the dental store, was the first authorisation for commissioned rank in the NZDC for a non-professional. Although authorised in October 1942, it was not until 15 December 1943 that F. D. Sheppard [1] and G. A. Hay [2] were gazetted as second-lieutenants in the appointments of Staff Officer and Quartermaster respectively. They were promoted to lieutenants on 15 December 1944, the highest rank to be achieved by a layman in the NZDC in the war.**
5. **Administrative Warrant Officer. There was authority for the rank of first class, but only second class was granted.**
6. **Four clerks for general duties. One of these was a staff-sergeant and the other three were WAACs, one of whom was a corporal.**
7. **One WAAC orderly.**
8. **Two civilian typists.**

For transport a five-seater car was allotted.

The organisation had grown to such an extent that even this seemingly generous allocation was not enough and should be regarded as the minimum rather than a satisfactory precedent to follow. Asked to comment on it at the time, the DDS wrote in characteristic fashion:

Officers—No argument. Four is the irreducible minimum. Even this

involves them in long and arduous hours to the point of real risk to health. Staff Officer dental services has recently been graded three and this is undoubtedly due to pressure of responsibilities and hours aggravating a physical disability of long standing origin.

His detailed comments in the same report on the duties of noncommissioned officers and other ranks show that there were no drones in the headquarters hive.

Reference to the diagram will show that the following were under the direct command of this headquarters:

Base Dental Store

No. 2 NZDC Depot

Mobile Dental Caravan Group

Army Headquarters Dental Section

Trentham Camp Dental Hospital

Waiouru Camp Dental Hospital

Northern, Central and Southern Military Districts

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[1] **Lt F. D. Sheppard, MBE; Christchurch; born Dover, Kent, 23 May 1907; manufacturing chemist's representative.**

[2] **Lt G. A. Hay; Christchurch; born Christchurch, 1916; accountant.**

THE NEW ZEALAND DENTAL SERVICES

BASE DENTAL STORE

Base Dental Store

This store was administered by the ADDS and had, up to 1942, been working under the handicap of very inadequate staff. The new establishment was as follows:

1. **Quartermaster in the rank of captain (or subaltern). As mentioned above, this officer was not a dentist and thus did not receive the professional pay allowance granted to dental officers in New Zealand and overseas.**
2. **Accountant in the rank of Warrant Officer first class.**
3. **Head storeman in the rank of Warrant Officer second class.**
4. **Three ledger clerks who were WAACs, one being a sergeant, one a corporal and one a private.**
5. **Four storeman-packers (male). One was a sergeant and one a corporal.**
6. **One civilian typist.**

This gave the store a staff of eleven, an increase of five on the previous figure.

THE NEW ZEALAND DENTAL SERVICES

THE DEPOT

The Depot

This was a decentralisation of command on lines similar to the original appointment of an Assistant Director of Dental Services in each Military District headquarters. The Assistant Directors' positions could still be filled if required, but it was not intended to do this except on direct instructions from Army Headquarters, so the officers commanding the three depots really acted in those capacities. No. 1 Depot was in the Northern District, No. 2 in the Central and No. 3 in the Southern. As has been already pointed out, the depot was a phantom organisation staffed by mobilisation camp personnel. In other words, the Principal Dental Officer of the district was officer commanding the depot, principal dental officer of the mobilisation camp and Assistant Director of Dental Services at district headquarters combined in one person. It was a strange position, reminiscent of Pooh Bah in *The Mikado*, for by a strict observance of the correct channels of communication there were occasions when he carried on a correspondence with himself.

Each depot was responsible for the staffing and maintenance of camp dental hospitals, maxillo-facial injury sections, static and mobile sections, and for the dental health of the army troops, divisional troops, area troops and fortress troops in the district. The establishment was eight:

1. **Officer Commanding in the rank of major.**
2. **Adjutant, a captain or subaltern, who was not a dental officer.**
3. **Regimental Sergeant-Major in the rank of Warrant Officer first class. His duties were to take charge of general military training for the Corps.**
4. **Staff-sergeant in charge of the district store.**
5. **Three clerks. One a sergeant and one a corporal.**
6. **An orderly, general duties, who would act also as a batman.**

A five-seater car was allotted to the depot, with the exception of Depot No. 2 which shared that provided for Dental Headquarters and had none of its own.

The Adjutant and the Regimental Sergeant-Major were not appointed owing to the difficulty in procuring suitable men at a time when this type of officer could not be spared from duty with combatant units.

THE NEW ZEALAND DENTAL SERVICES

MOBILE DENTAL CARAVAN GROUP

Mobile Dental Caravan Group

This group must not be confused with the mobile dental sections operating in the three districts. It was a group of twelve caravan trailer sections under the direct control of the DDS. Each section consisted of four, a dental officer in the rank of captain, a sergeant mechanic, and a sergeant and private clerk orderly. The trailer was fully equipped and was drawn by a 2-ton truck fitted with a special draw bar. One of the orderlies was the driver and was in charge of the vehicles.

This group enabled the DDS to send dental reinforcements quickly to any district. The section would then come under the temporary command of the Officer Commanding the Depot. There was an allocation of these sections to each depot but this was not used in the form of rigid attachment, the former method being found more satisfactory under the fluid conditions of troop deployment existing at the time. The origin of these trailer caravans is interesting. As the troops were scattered all over the country they could not attend the established dental hospitals, nor was it possible, or politic, to establish new hospitals for them. The NZDC had to work on them where they were. Sometimes huts could be found to work in but often enough only a tent was available. With the approach of winter this was not a cheerful prospect, and the Auckland Branch of the New Zealand Dental Association, realising this, made a fine patriotic gesture. It subscribed to the building of a caravan trailer to be equipped as a dental surgery and prosthetic laboratory. After consultation with the DDS as to the design, one was built and duly presented to the New Zealand Government for the use of the NZDC. The cost, complete with all fittings such as instrument drawers, sterilising unit, sink and water supply, electric light, benches, cupboards and cabinet work, but exclusive of tyres, was £430. This price included £55 sales tax, which it was thought might have been forgone

by the Government under the circumstances, but all efforts to have this done were fruitless. The movable equipment was supplied by the DDS from the Army Dental Store and the tyres were procured from army stock.

This gesture by the Auckland dentists provided the example for the provision of a number of these vehicles. The Wellington Branch of the New Zealand Dental Association followed suit, and then on 16 July 1942 authority was given by the War Cabinet for the expenditure of £4300 for ten more. Actually it was a saving of expense as the Government had already approved the provision of standard dental huts in certain camps with an establishment of 800 to 1000 men, at a cost of £450 each. Besides being cheaper in initial cost, the caravans could serve more troops.

The provision of these caravan trailers did not do away with the necessity of providing some huts but it did allow scattered units of the Army and Air Force to be treated in comparative comfort in places where it was uneconomical to erect huts. There were some limitations in the use of caravans. They could not negotiate some of the narrower bridges which still existed in parts of New Zealand, e.g., on the road round Lake Taupo. A clearance of 9 ft was necessary and every driver carried a 9 ft rope in the cab of the truck with which to take measurements. Also, after experience with the first gift trailer, it was found that the tempered masonite used in its construction was not strong enough to withstand the hard knocks sustained in travelling, e.g., in passing through frequent mobs of driven stock. The newer trailers were therefore made of 20-gauge steel for the lower half of the body, with masonite above.

That they were a success is undoubted. To quote one report from Lieutenant P. B. Sutcliffe, NZDC, [1] to the DDS:

> Dental caravans are absolutely necessary. There is no comparison between working in a tent and working in a caravan. In the north, where there is a lot of rain, a caravan makes it

possible to carry on with good work in all weather and at all hours. The hygienic appearance of the caravan creates a good impression on officers and men alike. The whole outfit has the appearance of good dentistry, not a makeshift.

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[1] **Capt P. B. Sutcliffe; Auckland; born USA, 15 Mar 1900; dental surgeon.**

THE NEW ZEALAND DENTAL SERVICES

WELLINGTON DENTAL SECTION

Wellington Dental Section

This part of the organisation is only mentioned because it was responsible for the dental treatment of Navy, Army and Air Force personnel at headquarters in Wellington. Although living in Wellington with its civilian dental facilities, these men and women were as much a responsibility of the NZDC as the troops in camp or in the field. The section was no different from any other dental section and was situated in a glassed-in annex of Government Buildings, familiarly known as 'The Tomato House'. It was under the direct control, indeed almost under the actual view, of the DDS himself.

THE NEW ZEALAND DENTAL SERVICES

TRENTHAM AND WAIOURU CAMPS

Trentham and Waiouru Camps

These were army camps as distinct from district camps. That is to say, they were controlled by the DDS from Army Headquarters and did not come under Central Military District command.

THE NEW ZEALAND DENTAL SERVICES

NORTHERN, CENTRAL AND SOUTHERN MILITARY DISTRICTS

Northern, Central and Southern Military Districts

Most of the district organisation is easily understood by examining the diagram on page 46. The areas mentioned are geographical military divisions, and it will be noticed that all areas did not have a dental section attached to them. In such cases an area was serviced by a conveniently situated Air Force dental section, a mobile section, or possibly a caravan trailer section. Possibly it might already have a section there under a different name, as was the case with Area 4, in which Ngaruawahia Camp was located. There are one or two other organisations that need some explanation, such as the Camp Dental Group at Linton, the maxillo-facial injuries section at Burwood and the mobile dental sections. Before giving details of these it is necessary to include a description of the Territorial Force which, by the time these establishments were authorised, had played a part in moulding NZDC policy.

THE NEW ZEALAND DENTAL SERVICES

DENTAL SERVICES FOR THE TERRITORIAL FORCE

Dental Services for the Territorial Force

In May 1940 a programme of intensive training for the Territorial Force was begun. Territorial units went into camp at various times and in various places throughout the country. Racecourses and show-grounds were usually used, but there was also the permanent camp at Waiouru which catered especially at this time for Territorial training. The men underwent a course of three months' continuous training in camp and in the field and by May 1941 over 30,000 had been trained under this scheme. The scheme was quite independent of the training of troops for overseas service which was going on at the same time in the mobilisation camps, and the 30,000 mentioned above was additional to the 23,483 trained and despatched to the New Zealand Expeditionary Force during the same period.

From what has been said of the dental condition of the recruits for the Expeditionary Force, it can be understood that at least an emergency dental service had to be provided for the Territorial troops if they were to be under continuous training for three months. The treatment was limited to the relief of pain and to other dental operations which would retain the soldier on duty and enable him to carry on during his period of training. It included the extraction of teeth for the relief of pain or a septic condition, the insertion of dressings to relieve pain when extraction was unnecessary, the repair of broken artificial dentures and the treatment of diseases or neglected conditions of the gums by the removal of accumulated calculus and by other prophylactic measures. In addition to this treatment, a further duty of the dental officers was to educate all ranks in the importance of oral hygiene and care of the teeth by individual instruction where necessary, by short lectures on the subject, and by arranging with commanding officers to draw attention to the matter in standing and routine orders. A complete

dental examination of all troops in camp was to be carried out and this was to be recorded on the usual dental history chart, NZ361, which was then to be attached to the personal file of the soldier concerned. The object of the examination and charting was to find out the amount of treatment required should the soldier be called for general service requiring dental fitness.

The method of providing this limited service was by field dental sections at the various camps and a permanent dental section at Waiouru Camp. The field sections comprised one officer and one or more other ranks, with equipment limited to a field surgical pannier and field dental chair. On arrival they established themselves in any available accommodation, tented or otherwise. The limited service authorised and the limited personnel and equipment to carry it out did not warrant the permanent attachment of a section to all the numerous camps in the country with the exception of Waiouru. It was usual to attach a section long enough to carry out the examinations and any necessary urgent treatment, then withdraw it and reattach it about a month later. The personnel and equipment were provided by the camp dental hospitals, which in this respect assumed the role of NZDC depots. The Principal Dental Officer of the mobilisation camp, acting in the capacity of Principal Dental Officer of the district with the authority of an Assistant Director of Dental Services, made all the detailed arrangements for the Territorial camps to be treated other than the decision when and where the dental section should be attached, which was made by the DDS. As the ADDS was in the terms of his appointment responsible to the DDS for the dental fitness of all mobilised personnel in his district, it is suggested that the decision as to when and where a section should be attached would have been better made by him than by the DDS, whose knowledge of local conditions was second-hand. The reluctance of the DDS to decentralise command appears as a weakness in an otherwise excellent organisation.

Up to the end of 1941 these field dental sections had operated in Territorial camps in Whangarei, Avondale, Ellerslie, Alexander Park,

Cambridge, Te Aroha, Rotorua, Wanganui, Waverley, Foxton, Palmerston North, Napier, Dannevirke, Tauherenikau, Addington and Forbury Park. In some cases where the camps were near a mobilisation camp or Air Force station, the troops could be sent there for treatment.

In spite of these arrangements it was soon apparent that members of the Territorial Force were being sent to private practitioners in nearby towns for treatment. This was no doubt due to the fact that sections were not permanently attached and, owing to the limited scope of treatment, emergencies were bound to occur in their absence. It was the obvious course to take when the NZDC had not the staff to cope fully with the situation, but this was not the view taken by the authorities. In January 1941 a circular memorandum was sent to all dental practitioners informing them that the NZDC was attempting to provide all necessary urgent treatment for Territorial troops while in camp, and pointing out that any of these men seeking treatment were responsible for all fees incurred and that these could not be claimed from the State. The NZDC did its best to give extra service—for instance, one section moved for several months on a circuit covering camps at Palmerston North, Dannevirke, Wanganui and Foxton, visiting each twice weekly—but this was a severe strain on its resources and was still inadequate. The position was most unsatisfactory. There was very little urgent work coming within the scope of the NZDC, and what there was could not be timed to coincide with the visits of the sections. To use sections capable of a big output of work to deal with occasional emergencies was uneconomic.

In July 1941 there was a complete reversal of policy and it was decided that, apart from Waiouru and camps close to permanent dental sections of the Army or Air Force, all necessary urgent treatment for Territorial troops would be carried out by private practitioners in the nearest town. The DDS nominated the practitioners to whom the soldiers would be referred by the camp medical officer. The soldier himself paid the fee but received a refund from the Army by handing the receipt to the adjutant of the camp. These instructions and the

maximum fees recoverable by the soldier for various types of treatment were incorporated in a circular memorandum sent out from the Adjutant-General to all camps and dental practitioners concerned.

Under the original plan it had been intended to examine and chart all Territorial troops under training, retaining the forms for future reference. In January 1941 this was discontinued as it was considered that sufficient data had been acquired, and that to continue the procedure was a waste of time for the NZDC and an interference with training programmes. The annual report on the dental services for the year ending 31 May 1941 shows that the number examined during that year was 11,215 and that the dental condition was similar to that of recruits for the 2 NZEF, except that to make them dentally fit more fillings but fewer dentures would be needed.

Further information about the dental condition of the young men of New Zealand was obtained in August 1941 when the 18-year-old reservists were being called up in the Territorial ballot for training. The Director-General of Health asked for a survey of the dental condition of these men in the 18–19 age group. He said that particular attention was being paid to their medical condition to find out the number fit for service and the reasons for rejecting those not fit. In conjunction with this he wanted to find out the relative dental fitness of the group and, in particular, the number wearing artificial dentures. The examinations were carried out in September and the results were staggering: 2020 were examined, and for every 100 of these, 540 fillings, 103 extractions and 10·2 dentures were required. Of every 100 men examined, 7·1 were wearing full upper and lower dentures, 13·2 were wearing full upper or lower dentures and 4·3 were wearing partial dentures. Thus 24·6 per cent of these men at 18 to 19 years of age were wearing an artificial denture of some kind.

During the last three months of 1941, owing to the threatening position in the Pacific, large numbers of Territorial troops were fully mobilised, becoming known as embodied cadres of the Territorial Force. Being fully mobilised they were to receive full treatment from the NZDC.

They went into camps at Whangarei, Avondale, Rotorua, Palmerston North, Forbury Park and Wingatui. Dental sections had to be permanently attached to these camps, with full equipment and facilities for carrying out all surgical and prosthetic treatment. At all these camps, with the exception of Palmerston North, the sections consisted of one officer and one or two other ranks, and accommodation was sought in some existing hut or building where running water and good light were available. At Palmerston North, where the camp was in the Show Grounds, a temporary dental hospital was established in an existing building to provide accommodation for 6 officers and 11 other ranks. The majority of the embodied cadres at this camp were to be dispersed to other camps and a concentrated effort was made to make them dentally fit before this happened.

Another group was also mobilised at the end of 1941, the National Military Reserve. This meant that the NZDC in early 1942 became responsible for the dental health of a large portion of the male population of New Zealand. With the best will in the world, the achievement of complete dental fitness for all these men was impossible with the staff available. There had to be some rationing of work and the standard of treatment for the Territorials and the National Military Reserve had to be reviewed. The two groups presented different problems: the former had a dental condition similar to that of the men called for overseas service and the latter, being drawn from a much older age group, consisted in the main of denture wearers.

The first undertaking was to remedy septic conditions by the removal of roots or irreparable teeth and to treat any oral lesion so as to place the oral cavity in a reasonably healthy condition, being careful not to reduce the masticatory efficiency below a workable minimum. No organised attempt, however, was to be made to achieve complete dental fitness. Prosthetic work was limited to the repair of existing dentures. To quote the DDS in a memorandum to PDOs and OsC dental sections dated 13 January 1942:

It is to be remembered by all concerned that, if a man who has been mobilized from civil life and is thus otherwise medically fit, presents with a hopeless carious condition of teeth or is fully or even partially edentulous, and claims that he does not possess artificial dentures or is wearing dentures and requests remodelling, he will have to carry on as he did before mobilization. He obviously managed to assimilate three meals a day, maintained his working efficiency in that state and was physically fit, so he can continue to carry out his military duties until the situation is stabilized, especially when one considers that the daily rations are similar, if not in some cases better, than those to which he is accustomed.

On 21 February 1942 instructions were given to chart the dental condition of all ranks and to proceed with any necessary treatment, giving priority to the 18–25 year-old Territorial group. The others, including the National Military Reserve, were eventually to be provided for. In the meantime their urgent requirements were to be met by the NZDC, with the assistance of the selected private practitioners in the scheme inaugurated in December 1941.

As the troops were even more scattered over the country than in 1941, it was even more important that the NZDC should devise a method of treating them wherever they were so as to interfere as little as possible with the general defence scheme. This led to the formation of Mobile Field Dental Sections, and these will now be described in detail as part of the district organisation.

THE NEW ZEALAND DENTAL SERVICES

MOBILE DENTAL SECTIONS IN NEW ZEALAND

Mobile Dental Sections in New Zealand

The original method of carrying out dental treatment for the Territorial Force in New Zealand was by attaching a dental section to each field ambulance. With the troops scattered all over the country and with the amount of work to be done, this was impracticable and some method had to be devised to provide a more extensive and elastic organisation. It was quite impossible for the troops to attend the existing dental hospitals and equally impossible to provide enough new hospitals to cover the vast area over which they were spread. The answer was obvious. If the troops could not come to the NZDC, the NZDC must go to the troops and, like the snail, take its house with it. The Mobile Field Dental Section therefore became an important part of the NZDC organisation. At the same time, the necessity for attaching a dental section to the field ambulance disappeared under the conditions existing in New Zealand in early 1942, although, as will be seen in later chapters, this method of attachment had other uses.

On 8 January 1942 authority was given to form nine Mobile Field Dental Sections, three to be attached to each military district. They were to be fully equipped and given two months' supplies and were to be staffed from the three mobilisation camp dental hospitals. Then, on 26 March, a further war establishment enlarged on this and provided for six sub-sections to be attached to each section. The sections were numbered from 1 to 9 and the sub-sections from 1 to 6. There were three in each military district. In referring to any sub-section, the number of the parent section was shown first, followed by the number of the sub-section, e.g., 5/6 was the sixth sub-section of No. 5 Mobile Field Dental Section operating in the Central District command. The normal attachment of a mobile section was to a brigade group or Area and sub-sections were detached for duty with the units comprising the group or

area.

The sub-section became attached to a unit and was rationed, quartered and paid by that unit. The sub-sections were fully equipped and capable of carrying out all classes of treatment.

The general organisation of the section was elastic enough to allow the officer in charge wide scope for variation in the employment of his men. For instance, by omitting the prosthetic pannier and substituting an orderly for the mechanic, a sub-section could be sent out as a surgical unit and the prosthetic cases could be sent by motor-cycle transport to the Field Prosthetic Laboratory for pro- cessing. During hostilities a sub-section could be attached to a medical unit if required, or all the sub-sections could be withdrawn to Lines of Communication or the Base and reattached when conditions were more suitable for dental work. The basis of allocation in the Territorial Force was one dental officer to 800 men. This took into consideration that the existing dental hospitals were able to do some of the work when suitably situated.

With the attachment of the mobile dental section to a brigade group or Area, the officer commanding the section became responsible to the DDS for the dental health of the troops and acted as adviser to the Brigade or Area Commander on dental matters. All movements or arrangements for treatment were made through the headquarters of the formation to which he was attached, but he could communicate direct with the DDS on technical subjects. He was expected to co-operate closely with the Senior Medical Officer in matters affecting the general health of the troops. In other words, he was to the officer commanding the formation what the DDS was to the GOC.

The personnel of a mobile dental section numbered 43. There were 8 officers, 1 warrant officer, 2 staff-sergeants, 6 sergeants, and 13 rank and file of the NZDC, and 1 sergeant and 12 rank and file of the Army Service Corps attached to drive and service the vehicles. These were divided into a headquarters section and six sub-sections.

Headquarters Section consisted of:

Officer Commanding	**Major**
Dental Officer	**Captain or Subaltern**
Staff Quartermaster-Sergeant	**Warrant Officer Second Class**
Three orderlies	**Staff-Sergeant, Corporal and Private**
Two mechanics	**Staff-Sergeant and Corporal**
Two clerks	**Corporal and Private**
Two motor-cycle orderlies	**Privates**
Army Service Corps (7)	**Sergeant, Corporal and five Privates.**

Each of the six sub-sections consisted of:

Dental Officer	**Captain or Subaltern**
Orderly	**Sergeant**
Mechanic	**Sergeant, Corporal or Lance-Corporal**
Army Service Corps (1)	**Private.**

There were thirteen motor vehicles allotted to each section. Each sub-section had a 30-cwt truck to carry personnel and equipment.

At headquarters there were:

One covered 3-ton truck fitted as a prosthetic laboratory.
One covered 3-ton truck for ordnance equipment and stores.
One 15-cwt truck as a water tank.
One 30-cwt truck.
One heavy motor car.
Two motor-cycles.

The prosthetic laboratory on the 3-ton truck was fitted with benches so fixed that they could be easily removed and re-erected in a hut, building or tent. Water was in an 8-gallon tank. Lighting was by two six-volt batteries with two in reserve. There were windows for natural lighting. The canopy of the truck was raised to give a minimum clearance of 5 ft 9 in. Access was from the back by steps and the whole truck could be locked up when not in use. Bottled gas [1] was used for the Bunsen burners and vulcanisers, and foot-treadle lathes and foot engines were used in the absence of electric power.

The equipment for the section was carried in panniers. Each subsection had a surgical, prosthetic and stores pannier, an emergency haversack, canvas chair case and two Indian pattern tents, one for operating and one for prosthetics. A tarpaulin 18 feet by 12 feet was also included. Sub-sections did not carry bottled gas but worked with primuses. The headquarters section, however, had a pannier for bottled gas and two each of the surgical, prosthetic and stores panniers, two haversacks, three tents and two tarpaulins. With this equipment the section and sub-sections could work under all conditions and were independent of building accommodation, although huts or houses were always used if available in preference to tents. The tent is difficult to camouflage and is easily visible from the air so was an unwelcome addition to a fighting unit. At one time it was thought that a 'Hubbard hut', named after the designer, would solve the problem but they proved to be unsatisfactory, being too low in the stud, unable to be kept open in wet weather and too difficult to keep clean in fine weather. Their only use was as sleeping accommodation.

Ten pistols, £455 or £38 inch, with 180 rounds and thirteen £303 rifles with 1300 rounds were issued to each section. The dental officers carried pistols, but the rifles were issued to the Army Service Corps drivers as the Dental Corps was non-combatant and carried the same certificates of identity required by the Geneva Convention as did the Medical Corps, nursing service and chaplains. On the other hand it did not use the Red Cross on its vehicles, buildings, panniers, etc., except when working with a medical unit. In this respect the following correspondence is interesting:

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[1] **A natural rock gas from California, bottled in cylinders.**

THE NEW ZEALAND DENTAL SERVICES

DENTAL OFFICER, LAUTHALA BAY STATION, FIJI, TO DDS, 10 DECEMBER 1942:

Dental Officer, Lauthala Bay Station, Fiji, to DDS, 10 December 1942:

Some confusion seems to exist as to our position in relation to the British Red Cross. Some orderlies have Form NZ 630 (Certificate of Identity) as well as rifles. Four of us have not been issued with the above forms. This causes us no particular concern but we feel that there should be some uniformity in this matter one way or the other. We understand that both American and Australian Dental Corps travel under the Red Cross.

THE NEW ZEALAND DENTAL SERVICES

DDS TO DENTAL OFFICER, LAUTHALA BAY STATION, FIJI:

DDS to Dental Officer, Lauthala Bay Station, Fiji:

It is to be noted that NZDC personnel are not permitted to carry rifles. Please take steps immediately to withdraw any rifles that have already been issued. With reference to the Red Cross, this emblem is not used by the NZDC on any vehicles, buildings, panniers etc.

This was in line with a decision already given in 1940 by the British Army in Egypt in answer to an inquiry from the New Zealand Mobile Dental Section. (See pp. 166– 7.)

The Mobile Dental Section proved its worth in the Army and, in a country like New Zealand with its scattered farming community, the lesson might be remembered and the same or a similar organisation adopted in a civilian dental service.

THE NEW ZEALAND DENTAL SERVICES

THE MAXILLO-FACIAL INJURIES SECTION

The Maxillo-Facial Injuries Section

This was at Burwood, near Christchurch, where the Army built accommodation in conjunction with a branch of the Christ-church Public Hospital. The hospital itself was a civilian organisation but the army part was in charge of a New Zealand Medical Corps plastic surgeon, who had with him a dental officer and mechanic who had received specialist training in maxillo-facial work in England. The section consisted of the officer and mechanic mentioned and an orderly, either NZDC or WAAC. A more detailed description of this specialist section is given in the chapter devoted to maxillo-facial work.

THE NEW ZEALAND DENTAL SERVICES

THE CAMP DENTAL GROUP

The Camp Dental Group

At Linton, near Palmerston North, a dispersal camp was built for troops retained for the defence of New Zealand, the design differing from that of the mobilisation camps. The men were quartered in blocks spread over about fifteen acres. Each block was therefore almost a camp in itself, being self-supporting and fully equipped, though controlled from one headquarters.

If one dental hospital had been built as in a mobilisation camp, the men would have had to travel some distance for their treatment, with the loss of valuable time. It was therefore decided to build a small dental hospital for two chairs in each block and control them from a headquarters in much the same way as was done in the Mobile Dental Section. Indeed, until these small hospitals were built, No. 5 Mobile Dental Section was located at Linton and undertook all treatment for the camp. In October 1943 the mobile dental section was disbanded and was immediately re-formed as the Camp Dental Group. The organisation was really a mobile dental section shorn of most of its transport.

It consisted of a headquarters and six sections, but as each hospital was designed for two officers, the usual proviso regarding temporary increase in personnel applied to cover excessive demands on their services. The establishment was as follows:

Group Dental Officer in the rank of major.

Seven dental officers, captains or subalterns.

Administrative Warrant Officer second class.

Staff-sergeant as storeman.

Fifteen clerk orderlies, seven of them corporals.

Seven mechanics. A staff-sergeant at Headquarters and six sergeants.

An orderly as driver in charge of a 15-cwt truck.

Other than the truck, transport consisted of one bicycle.

This group did not actually function as by the time the dental hospitals were completed, the camp was not needed. It appears, however, that it was the correct organisation for the purpose. The Mobile Dental Section with all its transport and elaborate establishment was unnecessarily lavish, and the centrally situated hospital was uneconomical in time and personnel. Again it is emphasised that to keep a force dentally fit, the Dental Corps must take the initiative by providing facilities that are accessible and interfere as little as possible with the first duty of a soldier, which is to fight.

This was the basic organisation of the NZDC in New Zealand. The bare bones that had rattled in the pre-war Territorial camps were unrecognisable in the vital body that sought the troops wherever they might be. It was a Corps organisation, able to concentrate its forces quickly where the need was greatest. For example, the main mobilisation camps needed one officer and one orderly for every 200 men of 2 NZEF and one mechanic for every 400, but in Waiouru Camp, where there were men other than 2 NZEF, an officer and orderly for 500 and a mechanic for 600 was enough as there was more time available for treatment. Waiouru, however, was equipped with a dental hospital similar to those at the other camps and, should the classification of the troops in the camp change, dental reinforcements could be sent immediately. Even if this was not the case, the mobile dental sections, or the caravan group, could be used. No man in the New Zealand Forces could be long out of touch with the NZDC.

As a contrast to the ease with which emergencies were met

under the completed organisation, two examples of what happened in the early days of the war are given.

On 10 January 1940 the DDS was notified by the Director of Mobilisation that the Maori Battalion would go into camp at the Show Grounds, Palmerston North, on 26 January. There were no mobile sections or caravan groups in those days, only a handful of NZDC officers and men straining hard to cope with the work of the mobilisation camps. Nevertheless, a tented camp dental hospital was set up and two officers, one mechanic and two orderlies arrived on transfer from Trentham with field dental outfits containing surgical and prosthetic equipment. By 31 January the Senior Dental Officer, Captain H. A'C. G. Fitzgerald, reported that most of the troops had been examined. Only five weeks were available to do the necessary treatment according to the information received, and a request was made for extra staff to the extent of two officers, one mechanic, two orderlies and one clerk. This could not be provided at once but gradually came to hand. By dint of very hard work and long hours, the battalion was made dentally fit by 13 March. This was a remarkable effort, reflecting the greatest credit on all concerned. The Quartermaster-General's branch and the Public Works Department provided a large marquee with duckboard flooring, rise and fall electric lights, power points, running water and drainage at very short notice. The DDS was the driving force, determined to implement his policy of sending every draft overseas dentally fit, and the officers and men of the Corps responded readily to every call made on them. The task was not made easier by the fact that many of the Maoris came from remote districts, some of them having never had any dental treatment before. In the battalion of 691 men, 2029 fillings, 1232 extractions, 416 major scalings and 160 dentures were done. The scalings alone took a long time as this type of work is always to be found among the Maoris, and is much more extensive than among the white population.

The second example occurred while the treatment of the Third Echelon troops was in progress. A group of Railway Survey, Construction

and Operating companies was hurriedly mobilised and went into camp at Ngaruawahia on 24 June 1940. Although they eventually embarked with the Third Echelon, it was expected at the time that they would go at shorter notice. On 26 June the information was sent by telephone from the DDS to Headquarters, Northern Military District, and this was followed by a memorandum from the Adjutant-General:

> Confirming the telephone message of the Director of Dental Services of even date would you please arrange that instructions are issued to the Principal Dental Officer, Papakura, to establish a Dental Hospital at Ngaruawahia immediately with himself in charge, leaving a skeleton staff only at Papakura to attend to any urgent dental treatment presenting.
>
> All work on the 3rd Echelon at Papakura and Fortress Troops at Narrow Neck is to be suspended for this period and all equipment and stores necessary transferred.
>
> Whilst the Dental Hospital is being installed the Dental Officers should be given every facility to have the respective units examined and charted on form NZ 361.
>
> Would you also issue instructions that full co-operation is to be given by Unit Commanders to enable the Dental staff to render as many men dentally fit as possible prior to embarkation.

Following the telephone message, the movement and the preparations for a temporary hospital at Ngaruawahia were immediately ordered by Northern Military District headquarters through the camp commandants at Papakura and Ngaruawahia. At 10 a.m. that day the PDO at Papakura, Major T. V. Anson, received the first intimation of the move. Work on the Third Echelon was immediately stopped, equipment and stores were packed and 11 officers and 23 other ranks left Papakura at 1 p.m., arriving at Ngaruawahia, a distance of 55 miles, late in the afternoon. At half past eight the following morning they were at work examining the men in chairs out in the open air while the brilliant

sunshine dispelled a heavy frost. An ordnance shed was cleared of old vehicles and rapidly prepared as a dental hospital with electric light for the operators. It was bitterly cold and operators and patients were extremely uncomfortable, but after tins full of red-hot coke had been placed between the chairs work went on apace. The condition of the mouths was not as bad as that of the Maori Battalion, but there was a desperate urgency to complete the work because of the uncertainty about the time available.

Eight hundred and seventy-eight were examined, of whom 557 required treatment. One thousand four hundred and forty-four fillings, 552 extractions and 101 dentures were done and, apart from one or two cases, the work was completed by 9 July. One officer and two other ranks were left to mop up and deal with emergencies and the rest returned to Papakura on 10 July to continue with the work on the Third Echelon.

These two examples show that even when the Corps was far from adequately staffed, the organisation was developing along the right lines, forecasting the mobility of the future and refusing to be defeated by the shibboleths of the past. The fight for recognition was over; the NZDC was accepted as essential to the army organisation. The organisation attracted interest in Australia and the New Zealand Liaison Officer was asked by the Australian Senior Dental Officer to secure full particulars and details. As a result Colonel Finn went to Australia in March 1942 for general discussions on dental problems affecting the two forces.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 6 — ORGANISATION IN NEW ZEALAND—AIR FORCE

CHAPTER 6
Organisation in New Zealand— Air Force

BEFORE 1937 there was no organisation for dental service to the Royal New Zealand Air Force, but in April of that year the Director of Dental Services awakened the interest of certain senior Air Force officers by personal interviews and private correspondence. As a result he was asked to forward an account to them of the organisation and regulations governing the dental services to the New Zealand Division of the Royal Navy as a pattern for study. This started the ball rolling, but there was a temporary check because of the opinion expressed by the Principal Medical Officer that the dental services should be organised as part of the medical service under his command. He asked that the Air Board support him in this and postpone any action until his return from Australia some months later.

At this time there were two Air Force stations in the North Island, Hobsonville and Ohakea, and one in the South Island, Wigram. All personnel were permanent members of the Air Force and were not likely to exceed three hundred at each station except for short intervals. The men were inclined to attend the cheapest dentists for their treatment, often with unsatisfactory results. The DDS suggested that part-time dental officers be appointed, one to each station, to work at specified fees. Apart from allocating space for dental surgeries in the plans of the sick quarters to be built on the stations, nothing was done until after war was declared. Then the call for recruits forced the issue, and on 17 September 1939 the DDS of the Army, Lieutenant-Colonel Finn, was gazetted as Director of Dental Services to the Air Force and was faced with the task of building a dental service from nothing.

In October he arranged for all airmen then serving, approximately 1400 of them, to be examined by civilian dentists in the same way as the men for the First Echelon had been examined. The purpose of this was purely to provide some data on which to assess the requirements of an Air Force dental service. No decision was made regarding treatment

until 18 December 1939, when the Air Member for Personnel, the Assistant Air Secretary, the Adjutant-General, the DDS, the Director-General of Medical Services and the Army Secretary met for that purpose.

By this time the strength of the Air Force was approximately 3000, with a monthly entry of about 300, and naturally officers commanding stations were frequently inquiring from Air Headquarters what facilities were available to provide their men with urgent dental treatment. Until some finality could be reached arrangements had to be made to send the men to private practitioners on the authority of the station medical officer and refund to them the cost from the Air Department.

The result of the meeting was that a scheme was approved by Cabinet on 15 January 1940. Dental sections were to be established at the larger Air Force units and travelling dental sections were to deal with the smaller stations. A provisional establishment, based on an estimated ultimate strength of 7000, was authorised as one Assistant Director of Dental Services, twelve dental officers, nineteen orderlies and nine mechanics, a total of forty-one. The cost of the scheme was estimated not to exceed £16,000 per annum and was to be an extension of the Army Dental Service, administered by the DDS, staffed by NZDC personnel at army rates of pay but attached to the Air Force for duty. The £16,000 meant about £2 5s. 8d. per head, which was about half the estimated cost of having the work done by civilian dentists.

Almost immediately it was realised that the scheme was based on a miscalculation of the rate of growth of the Air Force. The British War Cabinet inaugurated an Empire Air Training Scheme to train no fewer than 20,000 pilots and 30,000 other aircrew per annum for the Royal Air Force. An advanced training ground was established in Canada and elementary schools were set up in each Dominion according to its capacity. Under this scheme New Zealand agreed to train 1400 pilots annually. Of these, 520 were to be trained to elementary standard to proceed to Canada for advanced training, and the other 880 were to be fully trained to go direct to the RAF, with the exception of a few to be

retained for duty in New Zealand. In addition, initial ground training was to be given to 546 observers and 936 wireless operators and air gunners who would receive their main training in Canada. This was a heavy commitment and led to considerable expansion of the organisation and a complete change of policy. The NZDC was affected by the change and the original organisation became obsolete before it had even been established. It was therefore decided in April 1940 that every air station should have a permanent dental section and that the original proposal of servicing the smaller stations by travelling sections should be abandoned.

To appreciate the NZDC problem it is necessary to know something of how the RNZAF provided the men for the Empire Training Scheme. On entering the service a recruit was first sent to a Ground Training School to receive initial training in subjects he would meet later in his career and to be introduced to service conditions. There were two of these schools, one at Levin, [1] where the RNZAF had taken over the Government training farm at Weraroa, and the other at Harewood, in the South Island. Air gunners, observers and airmen pilots went to Levin, while flight riggers, flight mechanics, radio mechanics, wireless operators, fitter armourers, armourers and instrument repairers went to Harewood.

From Levin the air gunners and observers, after a course of from four to eight weeks, left for Canada for further training. The airmen pilots, as yet untrained in flying, had a general course of six weeks and then went to one of the four Elementary Flying Training Schools at Harewood, Taieri, Whenuapai or New Plymouth. Here they learned to fly in light aircraft and were either sent to Canada or to one of the Service Flying Training Schools at Wigram, Blenheim or Ohakea to complete their training in more advanced types of aircraft. From the Service Flying Training Schools most of them went to the United Kingdom, a few being kept for operational or instructional duties in New Zealand.

Similarly, those who went to Harewood Ground Training School

received courses of various lengths and then went to such stations as Rongotai, Hobsonville or Wigram according to their classifications. After further instruction they either went overseas or to a New Zealand station for duty.

Hobsonville, Ohakea, Woodbourne and Wigram were operating at the outbreak of war and Levin was established within a month. During 1940, Whenuapai, New Plymouth, Harewood, Taieri and Rongotai were established, and before the end of the year dental sections were operating on all ten stations. They were staffed by officers and other ranks of the NZDC who had received several months' experience of military and Dental Corps routine in army camp dental hospital groups. They remained in army uniform, being merely seconded to the Air Force. This arrangement persisted throughout the war and by it the DDS was able at any time to transfer personnel between the Army and the Air Force.

When considering the ultimate goal of dental fitness for the Air Force, little distinction could be made between classifications as to the quantity of work to be expected. The time available for treatment became the factor to influence the dental organisation. Obviously, air gunners and observers who were undergoing a course of from four to eight weeks before leaving for Canada had to receive priority over men whose training in New Zealand would last several months. Where time was limited more dental personnel had to be concentrated. Also, when the training staff were trying to instil into laymen in a few weeks a mass of technical knowledge and skill that in peacetime would have taken as many months, they were liable to begrudge the time spent at dental parades. The policy therefore was to do as much treatment as possible at the recruit training schools, with a priority always for those leaving for overseas. At the Elementary Flying Training Schools priority was again given to those who would do their advanced training in Canada, leaving the work for the rest to be done at the Service Flying Training Schools. When the men arrived at the Flying Instruction School or the General Reconnaissance Station, the dental officer's duty was that of

maintenance only, except for the station staff and WAAFs.

It can be seen that each station had its own problems, but the general dental organisation was co-ordinated so that at some stage of his career every man was rendered dentally fit. Owing to the delay in authorising a service for the Air Force and in supplying suitable accommodation, even of a temporary nature, it was some time before this object was achieved. It was April 1940 before the first three dental sections were established at Levin, Ohakea and Woodbourne, and the rest of that year was concerned chiefly with establishing further sections and attacking the leeway of work. It was not until 1941 that there was a true correlation of the work of all sections and a culmination of the policy of rendering all recruits dentally fit soon after entry and maintaining them so at all times. From then on the Air Force received a comprehensive service covering recruits, staff at headquarters and on all stations.

Establishments varied on the different stations according to their size and function from time to time. Dental sections or multiples of these were therefore moved from station to station according to the needs of the moment. All control was from the DDS at Headquarters through the RNZAF organisation, which was similar to that of the Army with a Northern, Central and Southern group. The very rapid growth of the Air Force was met by adding more and more dental sections until the dental service became comparable in size to that of the Army in New Zealand. The report of the Chief of the Air Staff for the year ending March 1942 shows that, during that period, 5591 embarked for overseas and at the end of it the total strength in New Zealand was 11,867; and this was before the large-scale reorganisation which took place to meet the Japanese threat had had full time to take effect.

With this reorganisation in 1942 the RNZAF became an operational rather than just a training service. Mostly in the North Island, many new stations were built to accommodate operational squadrons and operational training units and to cater for the American squadrons which were expected in New Zealand. Training was concentrated in the

South Island, particularly at a large group station called the Delta. This station was run in much the same way as the group army camp at Linton, and the dental organisation was much on the same lines. It was bigger than anything previously attached to any Air Force station in New Zealand. Peak expansion of the Air Force in New Zealand was reached in 1943–44, by which time the danger to New Zealand had receded, and from then on there was a gradual closing down of stations.

The service to the Air Force emphasises the advantage of Corps administration. Isolated units of the Navy, Army or Air Force were seldom far from either a static or a mobile dental section. Central control, fully cognisant of concentrations and movements of troops of all services, could deploy with a fluidity unhampered by administrative difficulties. As stated by the DDS in his fifth annual report for the period 1 April 1944 to 31 March 1945:

> It will be appreciated that certain RNZAF Units rely on Army dental sections for their dental treatment as being the most economical method, due either to their location or small establishment. Likewise there are instances where army and navy personnel are reliant upon the RNZAF dental services.

To summarise:

1. Because of its division into groups or stations, the RNZAF was best serviced by the attachment of dental sections or their multiples. The only exception to this was the organisation at the Delta which resembled the organisation of a mobile dental section.
2. The staffing of the Air Force dental sections by NZDC personnel from the army dental service gave a fluidity of movement to the whole Corps, which was of advantage to the three services and made it possible to cope with the rapid changes in Air Force organisation.
3. The dental problems of the three services were identical and could only be controlled by one DDS, unhampered by service jealousies, and using his dental forces with the one aim of establishing and maintaining dental fitness in all the armed forces all the time.
4. All overseas personnel were made dentally fit before embarkation, and the happy relationship between the Air Force and the Dental

Corps which exists today is sufficient tribute to the efficiency of the organisation and the tactful administration of its staff.

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[1] **Later transferred to Rotorua.**

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 7 — ORGANISATION AND TREATMENT OF THE ROYAL NEW ZEALAND NAVY

CHAPTER 7

Organisation and Treatment of the Royal New Zealand Navy

THE dental service for the Royal New Zealand Navy provides a sharp contrast to that for the Army and the Air Force. It is hoped to show that the fault did not lie with the New Zealand Dental Corps, whose every effort was to give the same service to all branches of the armed forces. The fact remains that the Navy was not prepared to accept that service except under conditions of its own making, and the result fell short of the ideal. There was already a dental service in the Royal Navy before the war but, if this was considered sufficient by the Admiralty, it was but a cipher to the needs of the New Zealand Division of that service. The dental needs of that force were identical with those of the other two services, and the spasmodic attention of a handful of dental officers attached to ships or shore stations merely scratched the surface of the problem. The New Zealand Division was suckled on the traditions of the Royal Navy, whose dental service had been in existence since 1915. In support of these statements it is therefore fair and reasonable to examine the position as it existed in New Zealand in 1933.

The only dental examination of candidates for entry into the New Zealand Division of the Royal Navy was carried out by a medical officer. Physical and medical standards were laid down by the Naval Board in July of that year in a pamphlet entitled 'Instructions for Surgeons and Agents'. There was only one reference in that pamphlet to dental matters:

> **Candidates under the age of seventeen should have twenty one teeth present either sound or capable of efficient repair, and those over seventeen should have twenty two. They should have some molars and incisors in good and efficient occlusion on both sides of the mouth. Where teeth are only capable of efficient repair and the candidate does not intend to have the defects made good prior to final examination, acceptance for entry will be subject to his undertaking to have the necessary treatment effected at his own**

expense.

This was meaningless and it is difficult to understand on what grounds the arbitrary assessment of the number of teeth was based. After the age of twelve the full complement of teeth is twenty-eight, and after the eruption of the third molars or wisdom teeth, not normally present at the age of seventeen, the full number would be thirty-two. Granted that a boy of sixteen should have at least twenty-one of his twenty-eight teeth present in good occlusion to qualify, why, when one year older, should he have twenty-two? It must also be remembered that the decision was not made by a dental officer. It was neither fair to the medical officer, nor the candidate, to expect a decision on such false premises.

In 1934 it was recognised that all was not well and the Naval Secretary wrote to the Commodore commanding the New Zealand Station:

> **I am directed to request that the standard of dental fitness required of candidates for entry in the New Zealand Division of the Royal Navy and the routine for the examination of candidates may be reviewed, and a report furnished as to the suitability or otherwise of the present arrangements.**
>
> **It is desired to maintain as high a standard as practicable and consideration of requirements in 'Instructions for Surgeons and Agents' section 11 paragraph 12 (c) should be directed towards determining whether they are fair and reasonable from the point of view of the general standard of dental fitness in New Zealand.**
>
> **The opinion of the Director of Dental Services, Lieutenant-Colonel B. S. Finn, DSO, should prove of value.**

Apart from the excellent suggestion that expert advice be sought from the DDS, there was also a suggestion that the regulations be brought more in line with those dealing with entry into the Royal Navy and the Royal Marines, where no candidate could be rejected for dental

reasons without prior examination by a dental officer.

The New Zealand Division consisted of ships on loan to the Government from the Royal Navy, manned partly by the Royal Navy and partly by New Zealanders. Conservative dental treatment was provided at the public expense to all naval and Royal Marine personnel and to officers and men of the Naval Reserve Forces while training in His Majesty's ships and shore establishments of the New Zealand Division. This was carried out by civilian dentists, who were appointed as Naval Dental Surgeons and Agents. In the various out-ports these agents worked at a standard scale of fees and in Auckland, the Naval Base, they were paid at a flat rate per annum. The system, which incidentally had been in force in England before 1915, was unsatisfactory, so, in 1935, the Naval Board asked the New Zealand Government to co-operate with the Admiralty in maintaining a dental officer with the New Zealand Division. A satisfactory graduate was to be selected and sent to England for commission as Surgeon-Lieutenant (D) in the Royal Navy, with the understanding that he would return for service with the New Zealand Division and come under the direction of the DDS.

This was an important decision. It recognised the need of the New Zealand Division for a dental service but bowed in conciliation to the traditional organisation of the Royal Naval Dental Service, which was hopelessly inadequate to cope with New Zealand conditions. As Surgeon-Lieutenant (D) the officer came under the control of the Royal Naval Medical Service, but while serving with the New Zealand Division he was subject to direction from the Director of Dental Services of the New Zealand Forces. Lieutenant-Colonel Finn was not fully appointed as DDS until 1939 but acted as DDS at the time of the dental officer's appointment. He was an army officer receiving a very small honorarium from the Navy and had little official authority, and what little there was needed the utmost tact to administer in His Majesty's ships. Somewhat naturally, the commanding officer of a ship did not welcome interference with his direction of his dental officer per medium of his medical officer, as was the custom in the Navy. With equal justification,

the DDS, having regard for his responsibility to the Naval Board, felt that he should have some say in the management of the dental service to the Navy. Mutual tolerance and understanding were essential. They were not conspicuous. In justice to the DDS, he had no intention to usurp the powers of the commanding officers and was entirely distinterested in the internal economy of the ship to which his dental officer was attached. 'His control was limited to technical matters. He was, however, vitally interested in the dental health of the ship's company, for which he had a responsibility to the Naval Board. He had to equip the dental officer to establish and maintain dental health, and had a right to expect co-operation from the commanding officer to that end. He made it perfectly clear that for discipline the dental officer was under the sole direction of the commanding officer, but that the DDS expected full reports of the dental health of the ship's company direct through the commanding officer, and not per medium of the medical officer. If this had been borne in mind by all concerned the service would have been happier and more efficient.

To return to the decision to commission a New Zealand graduate in the Royal Navy, there was some delay in finalising the arrangements and in the meantime a New Zealander, Mr A. C. Horne, [1] who had gone to England on his own account, joined the Navy as a Surgeon-Lieutenant (D). It was decided to use this officer, and he came to New Zealand in HMS *Achilles* as Squadron Dental Officer. He was borne in the flagship and was responsible to the DDS for the dental health of the two cruisers, naval base and training depot

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[1] Surg Cdr (D) A. C. Horne, RN (retd); Auckland; born Bluff, 1909; dental surgeon; served in HMS *Achilles* and *Leander*, 1936–40; reverted to RN 1940–49; Senior Naval Dental Surgeon, Devonport.

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of approximately 1300 men. At this time there were two naval sloops on the station, but as they were not part of the New Zealand Division, they made their own arrangements for dental treatment.

This was a decided improvement on past arrangements and worked reasonably well under peace conditions, when the movements of the flagship could be foretold with some accuracy, but there were drawbacks. A dental officer permanently attached to a cruiser was restricted in his activities with other ships or shore establishments. This was recognised by the DDS, as can be seen by his letter to the Royal New Zealand Air Force when a dental service for that force was being considered:

> **Personally I do not favour the establishment of the dental officer on a cruiser permanently for obvious reasons, but circumstances prohibited the installation of a shore dental clinic at the base where the dental officer would normally be stationed, transferring periodically to either of the cruisers for duty. Provision is made in the plans of the new base sick quarters for a modern dental clinic to cope with all classes of dental work and, when erected, it is hoped that perhaps an increase of staff on the station may be effected which will allow all naval personnel to be catered for, having their own prosthetic laboratory and dental mechanic, X-ray plant and facilities for major surgical operations etc. Treatment at the public expense by civilian dental surgeons will be confined to an occasional extraction or repair.**

The naval base was situated at Devonport, Auckland, in the name of HMS *Philomel*, an obsolete vessel moored there for use as accommodation and training. The dental clinic in the sick quarters did not materialise but, some time later, a dental department was established in the entrance hall of the squash courts. The Squadron Dental Officer came ashore in August 1939 into these poorly designed and inadequately lighted quarters to work to the best of his ability. There was no prosthetic laboratory and all dentures had to be processed by the Naval Dental Surgeon Agent in Auckland. This was the only service dental treatment, as in ports other than Auckland civilian dentists were used.

This was the position at the outbreak of war. It was in conformity with the policy of the Royal Navy, where dental officers were carried afloat only in capital ships, aircraft carriers and in one ship in each cruiser squadron. With a high dental standard on enlistment, such a service could only expect to drift with the tide, but with the standard in New Zealand, it was submerged in a torrent. With war came a rapid expansion of the Navy from the only source available, New Zealand citizens, and enough has already been said about them to realise that most of them were dental cripples. The Royal Australian Navy, faced with similar conditions, had already increased its service to one dental officer to each cruiser, but New Zealand continued to drift, with the exception of providing a dental section from the Army for the training station, HMS *Tamaki*, on Motuihi Island in the Auckland harbour.

A serious problem then arose in the two cruisers employed on detached duty far from their base. They were dependent on casual dental attention in such ports as they might visit for fuel. Such visits were of short duration and only the more urgent cases could be treated, with a complete lack of continuity of treatment. A report from HMNZS *Leander* in February 1941, after ten months' detached service, showed that although 336 cases had been attended to in this manner, the work was piling up and routine examinations were out of the question. The commanding officer wrote to the Naval Secretary as follows:

> **The routine under which the cruiser in New Zealand waters now operates is not known but presumably facilities for dental treatment ashore are less frequent than in peace time. Even when lying in a naval base, the presence on board of a dental officer would result in an appreciable reduction in the time lost from training and important ship work. The possibility of the ship being ordered abroad at short notice is a further factor in favour of the proposal, while a dental officer possesses qualifications which would be of real value in action. The necessary accommodation can be made available provided that the ship is not carrying a flag.**

The general dissatisfaction was crystallised into action by the emphasis of this report, and on 17 March 1941 the DDS wrote to the Naval Secretary:

> **With reference to the dental condition of the sea-going personnel I have to report that present arrangements are not efficient nor are they economical.**

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[1] **In other words, the Admiral's sea cabin could be used.**

HMS 'Achilles' and HMS 'Monowai'

> **There is virtually no provision for the dental treatment of the ships' companies of either of the above excepting that which may be provided during their brief visits to the naval base and ports other than Auckland, with the result that the dental condition of the personnel—of HMS 'Achilles' especially—is deteriorating.**

Port and Shore Establishments

> **A considerable amount of money is being paid to Naval Dental Surgeon Agents for dental treatment of ratings from minesweepers, trawlers and shore establishments at Wellington, Christchurch and Dunedin and for denture work carried out by the agent at Auckland.**

The result was a complete reorganisation aimed at bringing the service into line with those operating for the Army and the Air Force. The services of the Naval Dental Surgeon Agents were dispensed with except for urgent relief of pain at Lyttelton or Dunedin, on occasions when a ship's movements did not allow time for treatment at Army or Air Force stations. Examinations for 'continuous service' engagements were still done by them and their sterling service was recognised by an official letter of thanks from the DDS on behalf of the Naval Board.

At HMS *Philomel* new quarters were designed and authorised, and a dental section was seconded from the Army for duty. A full service including prosthetics was then available for Auckland from either the *Philomel* or *Tamaki*. The oral surgery specialist stationed at Papakura was at their service and, in ports other than Auckland, any ship not carrying a dental officer sent its men to the nearest Army or Air Force dental section. The *Monowai*, an armed merchant cruiser, was to have a dental section when she was ready to go to sea at the end of 1941. At long last the Navy was being offered a dental service comparable with that in the other services, but it was not prepared to accept it entirely in that form. The traditions of the Royal Naval Dental Service had to be upheld and a new Corps, however efficient in operation, could not be easily assimilated.

The result was a compromise. HMNZS *Achilles* took the Squadron Dental Officer, Surgeon-Lieutenant (D) D. M. Page, RN, [1] from the *Philomel*, nominally responsible to the DDS in New Zealand but actually reverting to the system in vogue in the Royal Navy. HMNZS *Leander*, at that time away from New Zealand waters, instead of being provided with a dental section under the co-ordinated scheme for the three services, had to have special arrangements made for her. Lieutenant J. C. W. Davies, NZDC, [2] had to resign his commission and be recommissioned as a temporary Surgeon-Lieutenant (D), RNZNVR. He had to be antedated three years in seniority to offset a disparity between naval and army rates of pay, and similarly, Sergeant F. E. Aldridge, NZDC, [3] had to receive the rank of Sick Berth Petty Officer before he could join the ship. To all intents and purposes they became separated from the NZDC organisation and could be used nowhere but in the Navy.

Even this compromise was not effected without considerable opposition from Navy Headquarters. From the comments on the files it is doubtful if the serious dental condition of the Navy in late 1941 would have led to the reorganisation if the attraction of reduced costs had not been thrown into the balance. The estimates are interesting, though only a fraction of what they would be today. Ignoring the pay of the

Squadron Dental Officer and his staff, which was common to whatever scheme was adopted, the cost of treatment by civilian dentists for the year ending 31 March 1941 was:

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[1] Surg Lt-Cdr (D) D. M. Page, RN; Hong Kong; born NZ 1914; dental surgeon.

[2] Surg Lt (D) J. C. W. Davies; Hamilton; born Hawera, 12 Dec 1916; dental surgeon.

[3] Sick Berth Petty Officer F. E. Aldridge; Hastings; born 21 Nov 1917; dental mechanic.

	£
Auckland	443
Wellington	475
Christchurch	161
Dunedin	203
Total	£1282

The Director of Dental Services' estimate was as follows:

	Annual £	*Capital* £
1. To provide dental officers for cruisers on New Zealand Station	Nil	Nil
Transfer of Surgeon-Lieutenant (D) with		
(*a*) Sick Berth rating	Nil	Nil
(*b*) Equipment provided by DDS	60	500
2. To provide dental officer for cruiser operating on detached service		
Transfer of:		
(*a*) Lieutenant NZDC	528	Nil
(*b*) Sergeant NZDC as SBPO	277	Nil

(c) Equipment *ex Philomel*	Nil	Nil
3. To provide a complete NZDC section for Auckland and to undertake prosthetic work		
(a) Personnel	1218	Nil
(b) Equipment	96	550
	2179	1050
4. To provide dental service at ports other than Auckland		
Discontinue Agents and prosthetic service at Auckland and make use of existing NZDC sections		
Saving of	1285	
	£894	£1050

At £1000 capital outlay and £900 per year, the New Zealand Navy was offered a dental service afloat and ashore, more than it had had before. The Navy was by far the smallest of the three services in New Zealand and its dental problem in comparison was negligible under the general Corps organisation. With the obstacles it placed in the way, it created a problem impossible of solution. Admittedly there were some difficulties of accommodation afloat, but the urgency of the dental problem itself, combined with the insistent demands of the medical and dental authorities, forced acknowledgment of the essential nature of the service. In this connection, Surgeon-Commander H. K. Corkill, RNZNR, [1] Director of Naval Medical Services, wrote:

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[1] Surg Capt H. K. Corkill, OBE, VRD; born Wellington, 21 Nov 1897; surgeon; BEF, France (wounded Apr 1918); Director, Naval Medical Services, RNZN, Jun 1941–Feb 1946; died 8 Aug 1954.

All opposition quickly faded when the great value of the service became apparent. The service provided by the Army Dental Department proved thoroughly successful throughout the remainder of the war. Not only did it provide for the needs of the

New Zealand personnel but it rendered extensive service to ships of the British Pacific Fleet. One feature in particular which excited the envy and admiration of the Royal Navy was the provision afloat of competent technicians and equipment for prosthetic work.

The provision of prosthetic facilities was a *sine qua non* in the NZDC wherever it operated, at the base or in the field, so without detracting from the sincerity of the tribute from the Director of Naval Medical Services, it cannot be regarded as anything remarkable. It can only be regarded as a further reason why the NZDC organisation for the three services was so much more efficient than that existing in the Royal Navy. Without the naval compromise it would have been more efficient.

From the end of 1941 to late 1943, only one surgeon-lieutenant (D) was appointed with the exception of the Squadron Dental Officer, who already held a commission in the Royal Navy. All other work was in the hands of dental officers with army rank. This was not acceptable to the Navy, who insisted that all officers in His Majesty's ships should have naval rank. This was against the principles of the NZDC, who worked as Corps troops, but it was felt that it was better to accede to the request rather than cause disharmony. An added argument in favour of the change was the attitude of the dental officers themselves. From conversation with some of them it appears that allegiance to an army command, even of a technical nature only, was not appreciated by commanding officers of the Navy, and 'Toothy', as he was familiarly called, 'Trod a very narrow and sometimes difficult path between the Navy and the Army.' 'Toothy' may have been supersensitive, but there is no doubt that he sometimes was made to feel that as an army officer he was not quite in the picture. His attitude was therefore probably the line of least resistance. The result was that all dental officers seconded to naval units were commissioned as surgeon-lieutenants (D), RNZNVR.

Apart from the disadvantages already mentioned, there were individual disadvantages. The rate of promotion in the Navy was slower

than in the Army. There was an irritating disparity between the pay of a medical and a dental officer, which was inconsistent with the comparative volume of work. The naval medical officer received three shillings more per day and two shillings more deferred pay, a total of five shillings. There was also a reluctance to give suitable recognition to the special qualifications of the dental mechanic. The rank LSBA (D) was not given in the New Zealand Navy until May 1942, although the Royal Australian Navy made use of it. A first-grade dental mechanic was indistinguishable from a dental orderly or a medical orderly with no special qualifications. The Naval Board on 18 July 1942 wrote as follows:

> **As ratings serving in cruisers are only called upon to act in the capacity of dental mechanics on occasions, the institution of the rating DM is not justified, notwithstanding the fact that the ratings borne for dental duties may be qualified for higher duty. It is not in accordance with the Naval Board's policy to allow in complements ratings of a higher grade than those necessitated by Service requirements.**

The reasoning was unsound. The ratings had to be fully qualified even to act as mechanics on occasions. The Navy had not trained them but had received them fully trained as first-grade mechanics, key personnel who could ill be spared from useful work with the other services. The last sentence is the crux of the matter: 'It is not in accordance with the Naval Board's policy to allow in complements ratings of a higher grade than those necessitated by Service requirements.' The assessment of service requirements was entirely that of the Naval Board, and the greatest mistake of the NZDC was that it did not accept this at its face value and provide a service commensurate with the lower standard acceptable by the Board. The other services would not then have been deprived of the excellent mechanics who were not fully appreciated by the Navy. It is hoped that the disadvantages for officers and ratings serving in the Navy were outweighed by the compensation of more harmonious conditions. Whatever their plumage, however, they still were responsible to the DDS for the dental health of

the ship or station to which they were attached.

Despite these difficulties, the dental health of the Navy improved after the NZDC came in in 1941. The description of its somewhat precarious attachment can be conveniently divided into four:

1. **New Zealand.**
2. **The Pacific.**
3. **The cruisers.**
4. **Demobilisation.**

1. New Zealand

Just as there were three military districts in New Zealand, there were three naval ones, although the boundaries were not the same. The dividing lines ran east and west, one at Gisborne and one at Westport. The central district therefore included the lower part of the North Island and the upper part of the South Island. Each district received the name of a ship, the Northern being HMNZS *Philomel*, the Central HMNZS *Cook*, and the Southern HMNZS *Tasman*.

***Philomel* was situated at the naval base in Auckland and was responsible for the treatment of all naval personnel in the Auckland area, with the exception of those under training at HMNZS *Tamaki* on Motuihi Island, where there was a separate dental section. *Cook* was at Shelly Bay, on the shores of the Wellington harbour, and had a similar responsibility in the central district to that of *Philomel*. In addition, the Wellington Dental Section provided treatment for those at Navy Headquarters. *Tasman* was at Lyttelton. There were not enough in this district to support a dental section, so treatment was carried out by either Army or Air Force dental sections or by borrowing from them for a time. Several attempts were made to have a dental section permanently attached to *Tasman* on the grounds that too much time was wasted in travelling to and from the Army and Air Force sections, but the numbers were too small to warrant it.**

This was the nearest that the Navy came to being serviced by a comprehensive Corps dental service. Men at the Base, from minesweepers and motor launches, and at times from visiting units of the British Pacific Fleet, were accepted at any dental section, Navy, Army or Air Force. Ships in any port, as well as scattered radar posts, were always within reasonable distance of dental attention.

2. In the Pacific

The Corps system of treatment was adopted in the Pacific but not without a struggle. There was no difficulty in Fiji, where the naval force was small, consisting of 23 officers and 132 ratings. Some were New Zealanders and others belonged to the Fiji Naval Volunteer Force, of whom 206 were natives. HMS *Viti* was the seagoing ship and the shore personnel belonged to HMS *Venture*. Full treatment for the Europeans and partial treatment for the natives was easily given by existing Army and Air Force dental sections. Details are given in the chapter on Fiji.

In the Solomons, however, there was a flotilla consisting of five ships, the *Arabis, Arbutus, Matai, Tui* and *Kiwi*. The base was situated in the Russell Islands under the name of HMNZS *Kabu*. Operating in the area was the No. 1 Mobile Dental Section of the RNZAF and the DDS intended to use this to treat HMNZS *Kabu*. Again the Navy failed to appreciate that there was a comprehensive dental service for all the New Zealand Armed Forces and attempted to make its own arrangements. What is more, it proposed an archaic and totally inadequate dental service which could not be justified except under conditions of the utmost urgency, and which constituted a definite menace to the health of the men. It was suggested by a surgeon-lieutenant (D) that the Sick Berth Attendants carried in the ships should be given lectures and practical instruction in the relief of dental pain, a supply of instruments and some written instructions. The Director of Naval Medical Services agreed and recorded his approval of the use of the Sick Berth Attendants as dental operators. Fortunately for the men of the Navy, the decision rested with the Director of Dental Services.

The surgeon-lieutenant is entitled to his views as to the capabilities of Sick Berth Attendants to carry out dental work but showed surprising disregard for service procedures. He submitted his scheme to the DDS through the Director of Naval Medical Services, implying that the latter had a right to be an intermediary in such correspondence, whereas his only right was in permitting his Sick Berth Attendants to be used in any other capacity than that in which they were trained. It was not his province to arrange for dental treatment of the flotilla without consultation with the DDS, and the surgeonlieutenant should have known that what he was suggesting was a danger to the men of the ships. Colonel Finn's reply was emphatic and unequivocal:

> **I have to inform you that the well-intentioned and prepared instructions and charts for the purpose of enabling Sick Berth Attendants to render urgent dental treatment to RNZN personnel cannot be approved.**
>
> **It is pointed out to you that such procedure on the part of the rating would render him liable to prosecution for committing a breach of the 'Dental Act' 1937 which prohibits, as do service regulations, anyone other than a registered dental practitioner (or medical practitioner where the services of a dental practitioner are not available) from performing any dental operations in the oral cavity.**
>
> **All Naval Officers in charge and Ships' Commanding Officers concerned are being notified that Number 1 RNZAF Mobile Dental Section NZDC is responsible for the dental treatment of RNZN personnel in the South West Pacific area, and that dental sub-sections are located throughout the New Hebrides, Solomons and Admiralty Islands, and have instructions to give every facility for dental treatment to RNZN personnel.**
>
> **You are to take immediate steps to withdraw the instructions, dental instruments and authority for Sick Berth Attendants to undertake urgent dental treatment.**

3. The Cruisers

HMNZS *Achilles*: Before August 1939 this cruiser carried the Squadron Dental Officer, who was a surgeon-lieutenant (D), RN, but at the outbreak of war and during her glorious action with the *Graf Spee* he was at the Naval Base and the cruiser was without a dental officer. As a result, the dental health of her complement seriously deteriorated. It was not until June 1941 that Surgeon-Lieutenant (D) D. M. Page, RN, returned on board. The Admiral's sea cabin once again became a dental surgery, but not for long. It was more often needed either for a Flag Officer or for sleeping accommodation for other officers near their action stations. The dental surgery was therefore transferred to the gunroom pantry, where the light and ventilation were poor and the outer port propeller throbbed incessantly. Even in harbour the accommodation ladder obscured the scuttle and it was difficult to work in comfort.

Dentistry in a cruiser was often interrupted. Heavy calibre shoots meant that all breakable equipment had to be dismantled, while rough weather and high speed made operation impossible. In action the dental officer had to work with the medical officer in the care of wounded and, in any case, all his equipment was dismantled, as instance the report from the dental officer in January 1943:

> **January 5 (A.M.), the ship was hit by a bomb resulting in casualties. January 5 to 9 inclusive no dentistry was attempted. Sterilizer badly damaged and engine foot-control soaked in water and repaired by ship's staff.**

The *Achilles* went to England in early 1943 for a refit and on 12 April her dental officer left her for a course in the treatment of jaw injuries at East Grimstead, Sussex, being discharged on leave at the end of the course. She was recommissioned in May 1944 and joined by Surgeon-Lieutenant (D) A. De Berry, RNZNVR, [1] who had come to England in HMNZS *Leander*, arriving on 26 January. From 8 February to 13 May this officer also attended at. East Grimstead and from 15 to 19 May had a course in 'damage control' in London.

There is no doubt that at sea there was only a possibility of maintaining dental comfort and the standard of dental fitness had to deteriorate, but there were other factors which influenced the position and accentuated the difference between the naval dental service and that of the other services. The question is, whether as much was done under this system as would have been done under the organisation already proving so successful in other theatres of war.

In the *Achilles* from 1 July 1944 to 28 February 1945, 1160 fillings were found on examination to be required but only 702 were done. Likewise, 539 men needed treatment but only 272 were made dentally fit. The ship's complement was 850, which with one dental officer ashore would be well within his capabilities. Taking fillings as a reasonable basis for comparison of the rate of work afloat and ashore, it was 22 a week as against 63 for a similar period. Having due regard for the handicaps of bad weather and gunnery, the discrepancy was too much. The reason was that the naval assessment of the value of dental fitness was below that of the New Zealand Dental Corps. The dental officer was too often used for duties outside his profession. One dental officer in the *Achilles* reported that he could not avoid being called on for cipher duties, which took up as much as a whole forenoon, until he took the bull by the horns and refused to do any more. In the meantime, while decay was eating into the mouths of the ship's company, the dental officer was frittering away his time as a supernumerary clerk.

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[1] Surg Lt (D) A. De Berry; Auckland; born Hokitika, 25 Feb 1914; dental surgeon.

HMNZS *Leander*: As already described, the report from the commanding officer about the unsatisfactory dental service precipitated the reorganisation of the service to the Navy in 1941. Apart from this, there is little difference in the dental organisation from that in her sister ship *Achilles*. When she was damaged in action in 1943, her dental staff went ashore but rejoined her when she sailed for England on

25 November 1943. They returned to New Zealand in the *Achilles* when the *Leander* ceased to be attached to the New Zealand station, being replaced by HMS *Gambia*.

HMNZS *Gambia*: On 27 September 1943, the DDS received the following communication from the Naval Secretary:

> **I have to inform you that telegraphic advice has been received from the High Commissioner for New Zealand that a Surgeon-Lieutenant (D) RN has been appointed to HMS 'Gambia', on loan to the Royal New Zealand Navy.**
>
> **The Naval Board concur in a proposal that a New Zealand Dental Officer be sent to join HMS 'Gambia' in order to relieve the Royal Naval Dental Officer, and I have to ask you to nominate an officer for this appointment from the dental officers at present seconded to the Royal New Zealand Navy. The officer selected will be required to take passage approximately mid-October next.**

Captain H. C. B. Wycherley, NZDC, [1] was selected. He had been seconded to the Navy since June 1941 but resigned his commission and was recommissioned as Surgeon-Lieutenant (D), RNZNVR, joining the cruiser in England in January 1944. At the same time LSBA (D) J. E. Batten, [2] who had been serving in the *Achilles*, transferred to the *Gambia*. When the cruiser returned to New Zealand in November 1944, Surgeon-Lieutenant (D) E. H. Stephenson [3] took Wycherley's appointment and LSBA (D) T. E. Gill [4] that of Batten.

During Stephenson's appointment certain interesting changes in the equipment and design of the surgery took place. The first concerned lighting. During a 6-inch-gun shoot the lamps vibrated more than was considered safe and were suspended from the bulkhead in a manner that made it difficult to remove them quickly. After removing the inner lining, two iron staples were welded to the deckhead itself, a piece of five-ply wood was fastened to the staples by rubber shock-absorbers and to this were attached the three 'Controlens' panel lamps, each having

two shock-absorbers. The bulbs could then be removed when there was a shoot and damage to the rest of the system was unlikely. The second concerned the water supply to the unit. The cruiser was expected to spend long periods at sea and fresh water was therefore strictly rationed.

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[1] Surg Lt (D) H. C. B. Wycherley; Palmerston North; born 1910; dental surgeon.

[2] Ldg Sick Berth Attendant J. E. Batten; Auckland; born Wellington, 1903.

[3] Surg Lt (D) E. H. Stephenson; Christchurch; born Gisborne, 1916; dental surgeon.

[4] Ldg Sick Berth Attendant T. E. Gill; Auckland; born 1924.

Experience in the Hospital Ship *Maunganui* showed that the unit could function with salt water with only some tarnishing of the bowl, which meant periodical replacement at small cost. The saliva ejector could operate at a pressure of 30 pounds but the circulating system could only provide a pressure of 25 pounds. The answer was to instal a small booster pump, bringing the water to the unit by means of a half-inch pipe. The pump was actually made, but there was trouble in getting a suitable 230-volt DC motor to work it and before the ship went in to refit, hostilities had ceased and the necessity had gone.

Towards the end of the war the NZDC in the New Zealand cruisers had to bow further to the system operating in the Royal Navy. In April 1945 a Fleet Dental Surgeon, Surgeon-Commander (D) S. R. Wallis, RN, was appointed to the British Pacific Fleet. He was on the staff of the Commander-in-Chief and was accommodated in the flagship for fleet administrative and ship's duties. All correspondence relative to dental matters and personnel of the fleet, demands for stores and returns of treatment had to be passed to him. The New Zealand cruiser was part of

this fleet, so the dental officer was in the anomalous position of being subject to direction on policy matters from two sources. There was no friction as it was recognised that the organisation was customary in fleets of that size in the Royal Navy, but it is submitted that the system was less efficient than the Corps system used by the New Zealand Dental Corps for the three services. Regular examination and treatment are necessary if a force is to be maintained in a state of dental health, and this can be done only if dental reinforcements can be readily mustered and as easily transferred. By insisting on the dental service being part of the Navy system the fluidity of movement was lost. The dental service became confined in watertight compartments, not only in the ships it served but in relation to the rest of the Corps. The details of organisation of a service in seagoing ships away from their bases for a long time are, admittedly, more difficult to arrange than in the other services, and the appointment of a Fleet Dental Surgeon was one method of co-ordinating the dental work of the Fleet. If the Navy consisted of ships perpetually at sea, fighting the war as lone rangers, it would be the only system, and the lowering of the dental standard of the officers and ratings would have to be accepted as a service exigency. Such, however, was not the case, and under a Corps organisation embracing the three services dental reinforcements could have been quickly made available to catch up with arrears of work whenever opportunity offered. The main point is that reinforcements must be available immediately, and this is only possible if the dental services are under one command. The insistence that the dental service to the Royal New Zealand Navy be even partly segregated from the main organisation made this impossible. The dental forces at the service of the Fleet Dental Surgeon were puny compared with those that the Director of Dental Services could offer.

HMNZS *Monowai*: In this ship, an armed merchant cruiser, was a modern dental surgery in addition to all facilities for prosthetic work. Much of her work was done at the base, *Philomel*, when she was in Auckland, but at sea she carried a dental section in charge of an officer of the NZDC. She was not at sea for such long periods as the cruisers, so a comparison of the dental health of her complement with that of the

cruisers is inconclusive, the conditions of work being entirely different.

4. Demobilisation

When the time came for men to be discharged from the Navy, the same obligation was undertaken by the Government as with the other two services. The dental condition was to be no worse than it was on entry into the service. The instructions were as follows:

> **Members of the Royal New Zealand Navy will be made 'dentally fit' before release but where a member, on being discharged, has been certified dentally fit within a maximum of six months prior to discharge, this certificate will be accepted for the purpose of dental clearance. No extractions necessitating the provision of artificial dentures will be performed for any member due or liable for discharge at short notice unless the member signs a witnessed declaration that he or she requests extractions and agrees to the insertion of immediate dentures and that the cost of any remake will not be sought from public funds.**
>
> **Where it is possible to anticipate discharge, endeavours will be made to render the officer or rating dentally fit at an early date in order that ultimate discharge will not be unnecessarily delayed.**

As far as the Navy was concerned this was lip service, as the dental service as constituted could not keep abreast of the work already presenting, let alone organise a drive for complete dental fitness before discharge. The watertight compartments into which the Navy confined its dental units were a sufficient barrier to the natural flow of dental reinforcements to cope with such an emergency. Before actual discharge everybody was examined and the necessary treatment was authorised by the Dental Division of the Department of Health to be carried out by civilian dentists, as was the case with the other services. The Government's obligation was fulfilled, but the Navy dental organisation was unable to play the same part in this as did the NZDC for the other two services.

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

THE dental service for the Royal New Zealand Navy provides a sharp contrast to that for the Army and the Air Force. It is hoped to show that the fault did not lie with the New Zealand Dental Corps, whose every effort was to give the same service to all branches of the armed forces. The fact remains that the Navy was not prepared to accept that service except under conditions of its own making, and the result fell short of the ideal. There was already a dental service in the Royal Navy before the war but, if this was considered sufficient by the Admiralty, it was but a cipher to the needs of the New Zealand Division of that service. The dental needs of that force were identical with those of the other two services, and the spasmodic attention of a handful of dental officers attached to ships or shore stations merely scratched the surface of the problem. The New Zealand Division was suckled on the traditions of the Royal Navy, whose dental service had been in existence since 1915. In support of these statements it is therefore fair and reasonable to examine the position as it existed in New Zealand in 1933.

The only dental examination of candidates for entry into the New Zealand Division of the Royal Navy was carried out by a medical officer. Physical and medical standards were laid down by the Naval Board in July of that year in a pamphlet entitled 'Instructions for Surgeons and Agents'. There was only one reference in that pamphlet to dental matters:

> **Candidates under the age of seventeen should have twenty one teeth present either sound or capable of efficient repair, and those over seventeen should have twenty two. They should have some molars and incisors in good and efficient occlusion on both sides of the mouth. Where teeth are only capable of efficient repair and the candidate does not intend to have the defects made good prior to final examination, acceptance for entry will be subject to his**

undertaking to have the necessary treatment effected at his own expense.

This was meaningless and it is difficult to understand on what grounds the arbitrary assessment of the number of teeth was based. After the age of twelve the full complement of teeth is twenty-eight, and after the eruption of the third molars or wisdom teeth, not normally present at the age of seventeen, the full number would be thirty-two. Granted that a boy of sixteen should have at least twenty-one of his twenty-eight teeth present in good occlusion to qualify, why, when one year older, should he have twenty-two? It must also be remembered that the decision was not made by a dental officer. It was neither fair to the medical officer, nor the candidate, to expect a decision on such false premises.

In 1934 it was recognised that all was not well and the Naval Secretary wrote to the Commodore commanding the New Zealand Station:

> **I am directed to request that the standard of dental fitness required of candidates for entry in the New Zealand Division of the Royal Navy and the routine for the examination of candidates may be reviewed, and a report furnished as to the suitability or otherwise of the present arrangements.**
>
> **It is desired to maintain as high a standard as practicable and consideration of requirements in 'Instructions for Surgeons and Agents' section 11 paragraph 12 (c) should be directed towards determining whether they are fair and reasonable from the point of view of the general standard of dental fitness in New Zealand.**
>
> **The opinion of the Director of Dental Services, Lieutenant-Colonel B. S. Finn, DSO, should prove of value.**

Apart from the excellent suggestion that expert advice be sought from the DDS, there was also a suggestion that the regulations be brought more in line with those dealing with entry into the Royal Navy

and the Royal Marines, where no candidate could be rejected for dental reasons without prior examination by a dental officer.

The New Zealand Division consisted of ships on loan to the Government from the Royal Navy, manned partly by the Royal Navy and partly by New Zealanders. Conservative dental treatment was provided at the public expense to all naval and Royal Marine personnel and to officers and men of the Naval Reserve Forces while training in His Majesty's ships and shore establishments of the New Zealand Division. This was carried out by civilian dentists, who were appointed as Naval Dental Surgeons and Agents. In the various out-ports these agents worked at a standard scale of fees and in Auckland, the Naval Base, they were paid at a flat rate per annum. The system, which incidentally had been in force in England before 1915, was unsatisfactory, so, in 1935, the Naval Board asked the New Zealand Government to co-operate with the Admiralty in maintaining a dental officer with the New Zealand Division. A satisfactory graduate was to be selected and sent to England for commission as Surgeon-Lieutenant (D) in the Royal Navy, with the understanding that he would return for service with the New Zealand Division and come under the direction of the DDS.

This was an important decision. It recognised the need of the New Zealand Division for a dental service but bowed in conciliation to the traditional organisation of the Royal Naval Dental Service, which was hopelessly inadequate to cope with New Zealand conditions. As Surgeon-Lieutenant (D) the officer came under the control of the Royal Naval Medical Service, but while serving with the New Zealand Division he was subject to direction from the Director of Dental Services of the New Zealand Forces. Lieutenant-Colonel Finn was not fully appointed as DDS until 1939 but acted as DDS at the time of the dental officer's appointment. He was an army officer receiving a very small honorarium from the Navy and had little official authority, and what little there was needed the utmost tact to administer in His Majesty's ships. Somewhat naturally, the commanding officer of a ship did not welcome interference with his direction of his dental officer per medium of his

medical officer, as was the custom in the Navy. With equal justification, the DDS, having regard for his responsibility to the Naval Board, felt that he should have some say in the management of the dental service to the Navy. Mutual tolerance and understanding were essential. They were not conspicuous. In justice to the DDS, he had no intention to usurp the powers of the commanding officers and was entirely distinterested in the internal economy of the ship to which his dental officer was attached. 'His control was limited to technical matters. He was, however, vitally interested in the dental health of the ship's company, for which he had a responsibility to the Naval Board. He had to equip the dental officer to establish and maintain dental health, and had a right to expect co-operation from the commanding officer to that end. He made it perfectly clear that for discipline the dental officer was under the sole direction of the commanding officer, but that the DDS expected full reports of the dental health of the ship's company direct through the commanding officer, and not per medium of the medical officer. If this had been borne in mind by all concerned the service would have been happier and more efficient.

To return to the decision to commission a New Zealand graduate in the Royal Navy, there was some delay in finalising the arrangements and in the meantime a New Zealander, Mr A. C. Horne, [1] who had gone to England on his own account, joined the Navy as a Surgeon-Lieutenant (D). It was decided to use this officer, and he came to New Zealand in HMS *Achilles* as Squadron Dental Officer. He was borne in the flagship and was responsible to the DDS for the dental health of the two cruisers, naval base and training depot

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[1] Surg Cdr (D) A. C. Horne, RN (retd); Auckland; born Bluff, 1909; dental surgeon; served in HMS *Achilles* and *Leander*, 1936–40; reverted to RN 1940–49; Senior Naval Dental Surgeon, Devonport.

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of approximately 1300 men. At this time there were two naval sloops on the station, but as they were not part of the New Zealand Division,

they made their own arrangements for dental treatment.

This was a decided improvement on past arrangements and worked reasonably well under peace conditions, when the movements of the flagship could be foretold with some accuracy, but there were drawbacks. A dental officer permanently attached to a cruiser was restricted in his activities with other ships or shore establishments. This was recognised by the DDS, as can be seen by his letter to the Royal New Zealand Air Force when a dental service for that force was being considered:

> **Personally I do not favour the establishment of the dental officer on a cruiser permanently for obvious reasons, but circumstances prohibited the installation of a shore dental clinic at the base where the dental officer would normally be stationed, transferring periodically to either of the cruisers for duty. Provision is made in the plans of the new base sick quarters for a modern dental clinic to cope with all classes of dental work and, when erected, it is hoped that perhaps an increase of staff on the station may be effected which will allow all naval personnel to be catered for, having their own prosthetic laboratory and dental mechanic, X-ray plant and facilities for major surgical operations etc. Treatment at the public expense by civilian dental surgeons will be confined to an occasional extraction or repair.**

The naval base was situated at Devonport, Auckland, in the name of HMS *Philomel*, an obsolete vessel moored there for use as accommodation and training. The dental clinic in the sick quarters did not materialise but, some time later, a dental department was established in the entrance hall of the squash courts. The Squadron Dental Officer came ashore in August 1939 into these poorly designed and inadequately lighted quarters to work to the best of his ability. There was no prosthetic laboratory and all dentures had to be processed by the Naval Dental Surgeon Agent in Auckland. This was the only service dental treatment, as in ports other than Auckland civilian dentists were used.

This was the position at the outbreak of war. It was in conformity with the policy of the Royal Navy, where dental officers were carried afloat only in capital ships, aircraft carriers and in one ship in each cruiser squadron. With a high dental standard on enlistment, such a service could only expect to drift with the tide, but with the standard in New Zealand, it was submerged in a torrent. With war came a rapid expansion of the Navy from the only source available, New Zealand citizens, and enough has already been said about them to realise that most of them were dental cripples. The Royal Australian Navy, faced with similar conditions, had already increased its service to one dental officer to each cruiser, but New Zealand continued to drift, with the exception of providing a dental section from the Army for the training station, HMS *Tamaki*, on Motuihi Island in the Auckland harbour.

A serious problem then arose in the two cruisers employed on detached duty far from their base. They were dependent on casual dental attention in such ports as they might visit for fuel. Such visits were of short duration and only the more urgent cases could be treated, with a complete lack of continuity of treatment. A report from HMNZS *Leander* in February 1941, after ten months' detached service, showed that although 336 cases had been attended to in this manner, the work was piling up and routine examinations were out of the question. The commanding officer wrote to the Naval Secretary as follows:

> **The routine under which the cruiser in New Zealand waters now operates is not known but presumably facilities for dental treatment ashore are less frequent than in peace time. Even when lying in a naval base, the presence on board of a dental officer would result in an appreciable reduction in the time lost from training and important ship work. The possibility of the ship being ordered abroad at short notice is a further factor in favour of the proposal, while a dental officer possesses qualifications which would be of real value in action. The necessary accommodation can be made available provided that the ship is not carrying a flag.**

The general dissatisfaction was crystallised into action by the emphasis of this report, and on 17 March 1941 the DDS wrote to the Naval Secretary:

> **With reference to the dental condition of the sea-going personnel I have to report that present arrangements are not efficient nor are they economical.**

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[1] **In other words, the Admiral's sea cabin could be used.**

THE NEW ZEALAND DENTAL SERVICES

HMS ‘ACHILLES’ AND HMS ‘MONOWAI’

HMS ‘Achilles’ and HMS ‘Monowai’

There is virtually no provision for the dental treatment of the ships' companies of either of the above excepting that which may be provided during their brief visits to the naval base and ports other than Auckland, with the result that the dental condition of the personnel—of HMS ‘Achilles’ especially—is deteriorating.

THE NEW ZEALAND DENTAL SERVICES

PORT AND SHORE ESTABLISHMENTS

Port and Shore Establishments

A considerable amount of money is being paid to Naval Dental Surgeon Agents for dental treatment of ratings from minesweepers, trawlers and shore establishments at Wellington, Christchurch and Dunedin and for denture work carried out by the agent at Auckland.

The result was a complete reorganisation aimed at bringing the service into line with those operating for the Army and the Air Force. The services of the Naval Dental Surgeon Agents were dispensed with except for urgent relief of pain at Lyttelton or Dunedin, on occasions when a ship's movements did not allow time for treatment at Army or Air Force stations. Examinations for 'continuous service' engagements were still done by them and their sterling service was recognised by an official letter of thanks from the DDS on behalf of the Naval Board.

At HMS *Philomel* new quarters were designed and authorised, and a dental section was seconded from the Army for duty. A full service including prosthetics was then available for Auckland from either the *Philomel* or *Tamaki*. The oral surgery specialist stationed at Papakura was at their service and, in ports other than Auckland, any ship not carrying a dental officer sent its men to the nearest Army or Air Force dental section. The *Monowai*, an armed merchant cruiser, was to have a dental section when she was ready to go to sea at the end of 1941. At long last the Navy was being offered a dental service comparable with that in the other services, but it was not prepared to accept it entirely in that form. The traditions of the Royal Naval Dental Service had to be upheld and a new Corps, however efficient in operation, could not be easily assimilated.

The result was a compromise. HMNZS *Achilles* took the Squadron

Dental Officer, Surgeon-Lieutenant (D) D. M. Page, RN, [1] from the *Philomel*, nominally responsible to the DDS in New Zealand but actually reverting to the system in vogue in the Royal Navy. HMNZS *Leander*, at that time away from New Zealand waters, instead of being provided with a dental section under the co-ordinated scheme for the three services, had to have special arrangements made for her. Lieutenant J. C. W. Davies, NZDC, [2] had to resign his commission and be recommissioned as a temporary Surgeon-Lieutenant (D), RNZNVR. He had to be antedated three years in seniority to offset a disparity between naval and army rates of pay, and similarly, Sergeant F. E. Aldridge, NZDC, [3] had to receive the rank of Sick Berth Petty Officer before he could join the ship. To all intents and purposes they became separated from the NZDC organisation and could be used nowhere but in the Navy.

Even this compromise was not effected without considerable opposition from Navy Headquarters. From the comments on the files it is doubtful if the serious dental condition of the Navy in late 1941 would have led to the reorganisation if the attraction of reduced costs had not been thrown into the balance. The estimates are interesting, though only a fraction of what they would be today. Ignoring the pay of the Squadron Dental Officer and his staff, which was common to whatever scheme was adopted, the cost of treatment by civilian dentists for the year ending 31 March 1941 was:

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[1] Surg Lt-Cdr (D) D. M. Page, RN; Hong Kong; born NZ 1914; dental surgeon.

[2] Surg Lt (D) J. C. W. Davies; Hamilton; born Hawera, 12 Dec 1916; dental surgeon.

[3] Sick Berth Petty Officer F. E. Aldridge; Hastings; born 21 Nov 1917; dental mechanic.

£

Auckland	443
Wellington	475
Christchurch	161
Dunedin	203
Total	£1282

The Director of Dental Services' estimate was as follows:

	Annual £	*Capital* £
1. To provide dental officers for cruisers on New Zealand Station	Nil	Nil
Transfer of Surgeon-Lieutenant (D) with		
(*a*) Sick Berth rating	Nil	Nil
(*b*) Equipment provided by DDS	60	500
2. To provide dental officer for cruiser operating on detached service		
Transfer of:		
(*a*) Lieutenant NZDC	528	Nil
(*b*) Sergeant NZDC as SBPO	277	Nil
(*c*) Equipment *ex Philomel*	Nil	Nil
3. To provide a complete NZDC section for Auckland and to undertake prosthetic work		
(*a*) Personnel	1218	Nil
(*b*) Equipment	96	550
	2179	1050
4. To provide dental service at ports other than Auckland		
Discontinue Agents and prosthetic service at Auckland and make use of existing NZDC sections		
Saving of	1285	
	£894	£1050

At £1000 capital outlay and £900 per year, the New Zealand Navy

was offered a dental service afloat and ashore, more than it had had before. The Navy was by far the smallest of the three services in New Zealand and its dental problem in comparison was negligible under the general Corps organisation. With the obstacles it placed in the way, it created a problem impossible of solution. Admittedly there were some difficulties of accommodation afloat, but the urgency of the dental problem itself, combined with the insistent demands of the medical and dental authorities, forced acknowledgment of the essential nature of the service. In this connection, Surgeon-Commander H. K. Corkill, RNZNR, [1] Director of Naval Medical Services, wrote:

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[1] Surg Capt H. K. Corkill, OBE, VRD; born Wellington, 21 Nov 1897; surgeon; BEF, France (wounded Apr 1918); Director, Naval Medical Services, RNZN, Jun 1941–Feb 1946; died 8 Aug 1954.

> All opposition quickly faded when the great value of the service became apparent. The service provided by the Army Dental Department proved thoroughly successful throughout the remainder of the war. Not only did it provide for the needs of the New Zealand personnel but it rendered extensive service to ships of the British Pacific Fleet. One feature in particular which excited the envy and admiration of the Royal Navy was the provision afloat of competent technicians and equipment for prosthetic work.

The provision of prosthetic facilities was a *sine qua non* in the NZDC wherever it operated, at the base or in the field, so without detracting from the sincerity of the tribute from the Director of Naval Medical Services, it cannot be regarded as anything remarkable. It can only be regarded as a further reason why the NZDC organisation for the three services was so much more efficient than that existing in the Royal Navy. Without the naval compromise it would have been more efficient.

From the end of 1941 to late 1943, only one surgeon-lieutenant (D) was appointed with the exception of the Squadron Dental Officer, who already held a commission in the Royal Navy. All other work was in the hands of dental officers with army rank. This was not acceptable to the Navy, who insisted that all officers in His Majesty's ships should have naval rank. This was against the principles of the NZDC, who worked as Corps troops, but it was felt that it was better to accede to the request rather than cause disharmony. An added argument in favour of the change was the attitude of the dental officers themselves. From conversation with some of them it appears that allegiance to an army command, even of a technical nature only, was not appreciated by commanding officers of the Navy, and 'Toothy', as he was familiarly called, 'Trod a very narrow and sometimes difficult path between the Navy and the Army.' 'Toothy' may have been supersensitive, but there is no doubt that he sometimes was made to feel that as an army officer he was not quite in the picture. His attitude was therefore probably the line of least resistance. The result was that all dental officers seconded to naval units were commissioned as surgeon-lieutenants (D), RNZNVR.

Apart from the disadvantages already mentioned, there were individual disadvantages. The rate of promotion in the Navy was slower than in the Army. There was an irritating disparity between the pay of a medical and a dental officer, which was inconsistent with the comparative volume of work. The naval medical officer received three shillings more per day and two shillings more deferred pay, a total of five shillings. There was also a reluctance to give suitable recognition to the special qualifications of the dental mechanic. The rank LSBA (D) was not given in the New Zealand Navy until May 1942, although the Royal Australian Navy made use of it. A first-grade dental mechanic was indistinguishable from a dental orderly or a medical orderly with no special qualifications. The Naval Board on 18 July 1942 wrote as follows:

> As ratings serving in cruisers are only called upon to act in the capacity of dental mechanics on occasions, the institution of the rating DM is not justified, notwithstanding the fact that the

ratings borne for dental duties may be qualified for higher duty. It is not in accordance with the Naval Board's policy to allow in complements ratings of a higher grade than those necessitated by Service requirements.

The reasoning was unsound. The ratings had to be fully qualified even to act as mechanics on occasions. The Navy had not trained them but had received them fully trained as first-grade mechanics, key personnel who could ill be spared from useful work with the other services. The last sentence is the crux of the matter: 'It is not in accordance with the Naval Board's policy to allow in complements ratings of a higher grade than those necessitated by Service requirements.' The assessment of service requirements was entirely that of the Naval Board, and the greatest mistake of the NZDC was that it did not accept this at its face value and provide a service commensurate with the lower standard acceptable by the Board. The other services would not then have been deprived of the excellent mechanics who were not fully appreciated by the Navy. It is hoped that the disadvantages for officers and ratings serving in the Navy were outweighed by the compensation of more harmonious conditions. Whatever their plumage, however, they still were responsible to the DDS for the dental health of the ship or station to which they were attached.

Despite these difficulties, the dental health of the Navy improved after the NZDC came in in 1941. The description of its somewhat precarious attachment can be conveniently divided into four:

1. **New Zealand.**
2. **The Pacific.**
3. **The cruisers.**
4. **Demobilisation.**

THE NEW ZEALAND DENTAL SERVICES

1. NEW ZEALAND

1. New Zealand

Just as there were three military districts in New Zealand, there were three naval ones, although the boundaries were not the same. The dividing lines ran east and west, one at Gisborne and one at Westport. The central district therefore included the lower part of the North Island and the upper part of the South Island. Each district received the name of a ship, the Northern being HMNZS *Philomel*, the Central HMNZS *Cook*, and the Southern HMNZS *Tasman*.

***Philomel* was situated at the naval base in Auckland and was responsible for the treatment of all naval personnel in the Auckland area, with the exception of those under training at HMNZS *Tamaki* on Motuihi Island, where there was a separate dental section. *Cook* was at Shelly Bay, on the shores of the Wellington harbour, and had a similar responsibility in the central district to that of *Philomel*. In addition, the Wellington Dental Section provided treatment for those at Navy Headquarters. *Tasman* was at Lyttelton. There were not enough in this district to support a dental section, so treatment was carried out by either Army or Air Force dental sections or by borrowing from them for a time. Several attempts were made to have a dental section permanently attached to *Tasman* on the grounds that too much time was wasted in travelling to and from the Army and Air Force sections, but the numbers were too small to warrant it.**

This was the nearest that the Navy came to being serviced by a comprehensive Corps dental service. Men at the Base, from minesweepers and motor launches, and at times from visiting units of the British Pacific Fleet, were accepted at any dental section, Navy, Army or Air Force. Ships in any port, as well as scattered radar posts, were always within reasonable distance of dental attention.

THE NEW ZEALAND DENTAL SERVICES

2. IN THE PACIFIC

2. In the Pacific

The Corps system of treatment was adopted in the Pacific but not without a struggle. There was no difficulty in Fiji, where the naval force was small, consisting of 23 officers and 132 ratings. Some were New Zealanders and others belonged to the Fiji Naval Volunteer Force, of whom 206 were natives. HMS *Viti* was the seagoing ship and the shore personnel belonged to HMS *Venture*. Full treatment for the Europeans and partial treatment for the natives was easily given by existing Army and Air Force dental sections. Details are given in the chapter on Fiji.

In the Solomons, however, there was a flotilla consisting of five ships, the *Arabis, Arbutus, Matai, Tui* and *Kiwi*. The base was situated in the Russell Islands under the name of HMNZS *Kabu*. Operating in the area was the No. 1 Mobile Dental Section of the RNZAF and the DDS intended to use this to treat HMNZS *Kabu*. Again the Navy failed to appreciate that there was a comprehensive dental service for all the New Zealand Armed Forces and attempted to make its own arrangements. What is more, it proposed an archaic and totally inadequate dental service which could not be justified except under conditions of the utmost urgency, and which constituted a definite menace to the health of the men. It was suggested by a surgeon-lieutenant (D) that the Sick Berth Attendants carried in the ships should be given lectures and practical instruction in the relief of dental pain, a supply of instruments and some written instructions. The Director of Naval Medical Services agreed and recorded his approval of the use of the Sick Berth Attendants as dental operators. Fortunately for the men of the Navy, the decision rested with the Director of Dental Services.

The surgeon-lieutenant is entitled to his views as to the capabilities of Sick Berth Attendants to carry out dental work but showed surprising disregard for service procedures. He submitted his scheme to the DDS

through the Director of Naval Medical Services, implying that the latter had a right to be an intermediary in such correspondence, whereas his only right was in permitting his Sick Berth Attendants to be used in any other capacity than that in which they were trained. It was not his province to arrange for dental treatment of the flotilla without consultation with the DDS, and the surgeonlieutenant should have known that what he was suggesting was a danger to the men of the ships. Colonel Finn's reply was emphatic and unequivocal:

> **I have to inform you that the well-intentioned and prepared instructions and charts for the purpose of enabling Sick Berth Attendants to render urgent dental treatment to RNZN personnel cannot be approved.**
>
> **It is pointed out to you that such procedure on the part of the rating would render him liable to prosecution for committing a breach of the 'Dental Act' 1937 which prohibits, as do service regulations, anyone other than a registered dental practitioner (or medical practitioner where the services of a dental practitioner are not available) from performing any dental operations in the oral cavity.**
>
> **All Naval Officers in charge and Ships' Commanding Officers concerned are being notified that Number 1 RNZAF Mobile Dental Section NZDC is responsible for the dental treatment of RNZN personnel in the South West Pacific area, and that dental sub-sections are located throughout the New Hebrides, Solomons and Admiralty Islands, and have instructions to give every facility for dental treatment to RNZN personnel.**
>
> **You are to take immediate steps to withdraw the instructions, dental instruments and authority for Sick Berth Attendants to undertake urgent dental treatment.**

THE NEW ZEALAND DENTAL SERVICES

3. THE CRUISERS

3. The Cruisers

HMNZS *Achilles*: Before August 1939 this cruiser carried the Squadron Dental Officer, who was a surgeon-lieutenant (D), RN, but at the outbreak of war and during her glorious action with the *Graf Spee* he was at the Naval Base and the cruiser was without a dental officer. As a result, the dental health of her complement seriously deteriorated. It was not until June 1941 that Surgeon-Lieutenant (D) D. M. Page, RN, returned on board. The Admiral's sea cabin once again became a dental surgery, but not for long. It was more often needed either for a Flag Officer or for sleeping accommodation for other officers near their action stations. The dental surgery was therefore transferred to the gunroom pantry, where the light and ventilation were poor and the outer port propeller throbbed incessantly. Even in harbour the accommodation ladder obscured the scuttle and it was difficult to work in comfort.

Dentistry in a cruiser was often interrupted. Heavy calibre shoots meant that all breakable equipment had to be dismantled, while rough weather and high speed made operation impossible. In action the dental officer had to work with the medical officer in the care of wounded and, in any case, all his equipment was dismantled, as instance the report from the dental officer in January 1943:

> **January 5 (A.M.), the ship was hit by a bomb resulting in casualties. January 5 to 9 inclusive no dentistry was attempted. Sterilizer badly damaged and engine foot-control soaked in water and repaired by ship's staff.**

The *Achilles* went to England in early 1943 for a refit and on 12 April her dental officer left her for a course in the treatment of jaw injuries at East Grimstead, Sussex, being discharged on leave at the end of the course. She was recommissioned in May 1944 and joined by

Surgeon-Lieutenant (D) A. De Berry, RNZNVR, [1] who had come to England in HMNZS *Leander*, arriving on 26 January. From 8 February to 13 May this officer also attended at. East Grimstead and from 15 to 19 May had a course in 'damage control' in London.

There is no doubt that at sea there was only a possibility of maintaining dental comfort and the standard of dental fitness had to deteriorate, but there were other factors which influenced the position and accentuated the difference between the naval dental service and that of the other services. The question is, whether as much was done under this system as would have been done under the organisation already proving so successful in other theatres of war.

In the *Achilles* from 1 July 1944 to 28 February 1945, 1160 fillings were found on examination to be required but only 702 were done. Likewise, 539 men needed treatment but only 272 were made dentally fit. The ship's complement was 850, which with one dental officer ashore would be well within his capabilities. Taking fillings as a reasonable basis for comparison of the rate of work afloat and ashore, it was 22 a week as against 63 for a similar period. Having due regard for the handicaps of bad weather and gunnery, the discrepancy was too much. The reason was that the naval assessment of the value of dental fitness was below that of the New Zealand Dental Corps. The dental officer was too often used for duties outside his profession. One dental officer in the *Achilles* reported that he could not avoid being called on for cipher duties, which took up as much as a whole forenoon, until he took the bull by the horns and refused to do any more. In the meantime, while decay was eating into the mouths of the ship's company, the dental officer was frittering away his time as a supernumerary clerk.

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[1] Surg Lt (D) A. De Berry; Auckland; born Hokitika, 25 Feb 1914; dental surgeon.

HMNZS *Leander*: As already described, the report from the commanding officer about the unsatisfactory dental service precipitated

the reorganisation of the service to the Navy in 1941. Apart from this, there is little difference in the dental organisation from that in her sister ship *Achilles*. When she was damaged in action in 1943, her dental staff went ashore but rejoined her when she sailed for England on 25 November 1943. They returned to New Zealand in the *Achilles* when the *Leander* ceased to be attached to the New Zealand station, being replaced by HMS *Gambia*.

HMNZS *Gambia*: On 27 September 1943, the DDS received the following communication from the Naval Secretary:

> **I have to inform you that telegraphic advice has been received from the High Commissioner for New Zealand that a Surgeon-Lieutenant (D) RN has been appointed to HMS 'Gambia', on loan to the Royal New Zealand Navy.**
>
> **The Naval Board concur in a proposal that a New Zealand Dental Officer be sent to join HMS 'Gambia' in order to relieve the Royal Naval Dental Officer, and I have to ask you to nominate an officer for this appointment from the dental officers at present seconded to the Royal New Zealand Navy. The officer selected will be required to take passage approximately mid-October next.**

Captain H. C. B. Wycherley, NZDC, [1] was selected. He had been seconded to the Navy since June 1941 but resigned his commission and was recommissioned as Surgeon-Lieutenant (D), RNZNVR, joining the cruiser in England in January 1944. At the same time LSBA (D) J. E. Batten, [2] who had been serving in the *Achilles*, transferred to the *Gambia*. When the cruiser returned to New Zealand in November 1944, Surgeon-Lieutenant (D) E. H. Stephenson [3] took Wycherley's appointment and LSBA (D) T. E. Gill [4] that of Batten.

During Stephenson's appointment certain interesting changes in the equipment and design of the surgery took place. The first concerned lighting. During a 6-inch-gun shoot the lamps vibrated more than was considered safe and were suspended from the bulkhead in a manner that

made it difficult to remove them quickly. After removing the inner lining, two iron staples were welded to the deckhead itself, a piece of five-ply wood was fastened to the staples by rubber shock-absorbers and to this were attached the three 'Controlens' panel lamps, each having two shock-absorbers. The bulbs could then be removed when there was a shoot and damage to the rest of the system was unlikely. The second concerned the water supply to the unit. The cruiser was expected to spend long periods at sea and fresh water was therefore strictly rationed.

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[1] Surg Lt (D) H. C. B. Wycherley; Palmerston North; born 1910; dental surgeon.

[2] Ldg Sick Berth Attendant J. E. Batten; Auckland; born Wellington, 1903.

[3] Surg Lt (D) E. H. Stephenson; Christchurch; born Gisborne, 1916; dental surgeon.

[4] Ldg Sick Berth Attendant T. E. Gill; Auckland; born 1924.

Experience in the Hospital Ship *Maunganui* showed that the unit could function with salt water with only some tarnishing of the bowl, which meant periodical replacement at small cost. The saliva ejector could operate at a pressure of 30 pounds but the circulating system could only provide a pressure of 25 pounds. The answer was to instal a small booster pump, bringing the water to the unit by means of a half-inch pipe. The pump was actually made, but there was trouble in getting a suitable 230-volt DC motor to work it and before the ship went in to refit, hostilities had ceased and the necessity had gone.

Towards the end of the war the NZDC in the New Zealand cruisers had to bow further to the system operating in the Royal Navy. In April 1945 a Fleet Dental Surgeon, Surgeon-Commander (D) S. R. Wallis, RN, was appointed to the British Pacific Fleet. He was on the staff of the

Commander-in-Chief and was accommodated in the flagship for fleet administrative and ship's duties. All correspondence relative to dental matters and personnel of the fleet, demands for stores and returns of treatment had to be passed to him. The New Zealand cruiser was part of this fleet, so the dental officer was in the anomalous position of being subject to direction on policy matters from two sources. There was no friction as it was recognised that the organisation was customary in fleets of that size in the Royal Navy, but it is submitted that the system was less efficient than the Corps system used by the New Zealand Dental Corps for the three services. Regular examination and treatment are necessary if a force is to be maintained in a state of dental health, and this can be done only if dental reinforcements can be readily mustered and as easily transferred. By insisting on the dental service being part of the Navy system the fluidity of movement was lost. The dental service became confined in watertight compartments, not only in the ships it served but in relation to the rest of the Corps. The details of organisation of a service in seagoing ships away from their bases for a long time are, admittedly, more difficult to arrange than in the other services, and the appointment of a Fleet Dental Surgeon was one method of co-ordinating the dental work of the Fleet. If the Navy consisted of ships perpetually at sea, fighting the war as lone rangers, it would be the only system, and the lowering of the dental standard of the officers and ratings would have to be accepted as a service exigency. Such, however, was not the case, and under a Corps organisation embracing the three services dental reinforcements could have been quickly made available to catch up with arrears of work whenever opportunity offered. The main point is that reinforcements must be available immediately, and this is only possible if the dental services are under one command. The insistence that the dental service to the Royal New Zealand Navy be even partly segregated from the main organisation made this impossible. The dental forces at the service of the Fleet Dental Surgeon were puny compared with those that the Director of Dental Services could offer.

HMNZS *Monowai*: In this ship, an armed merchant cruiser, was a modern dental surgery in addition to all facilities for prosthetic work.

Much of her work was done at the base, *Philomel*, when she was in Auckland, but at sea she carried a dental section in charge of an officer of the NZDC. She was not at sea for such long periods as the cruisers, so a comparison of the dental health of her complement with that of the cruisers is inconclusive, the conditions of work being entirely different.

4. DEMOBILISATION

4. Demobilisation

When the time came for men to be discharged from the Navy, the same obligation was undertaken by the Government as with the other two services. The dental condition was to be no worse than it was on entry into the service. The instructions were as follows:

> **Members of the Royal New Zealand Navy will be made 'dentally fit' before release but where a member, on being discharged, has been certified dentally fit within a maximum of six months prior to discharge, this certificate will be accepted for the purpose of dental clearance. No extractions necessitating the provision of artificial dentures will be performed for any member due or liable for discharge at short notice unless the member signs a witnessed declaration that he or she requests extractions and agrees to the insertion of immediate dentures and that the cost of any remake will not be sought from public funds.**
>
> **Where it is possible to anticipate discharge, endeavours will be made to render the officer or rating dentally fit at an early date in order that ultimate discharge will not be unnecessarily delayed.**

As far as the Navy was concerned this was lip service, as the dental service as constituted could not keep abreast of the work already presenting, let alone organise a drive for complete dental fitness before discharge. The watertight compartments into which the Navy confined its dental units were a sufficient barrier to the natural flow of dental reinforcements to cope with such an emergency. Before actual discharge everybody was examined and the necessary treatment was authorised by the Dental Division of the Department of Health to be carried out by civilian dentists, as was the case with the other services. The Government's obligation was fulfilled, but the Navy dental organisation

was unable to play the same part in this as did the NZDC for the other two services.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 8 — ORGANISATION OF STORES AND EQUIPMENT

CHAPTER 8
Organisation of Stores and Equipment

AT the end of the 1914–18 War all dental stores and equipment were disposed of by tender, with the result that for several years the Defence Department held no stocks at all. This was the position when the Dental Corps was reorganised in 1934, when the Territorial camps were asking for treatment and the Corps was keen to undergo training. An approach to the Department for supplies produced a reply that made it abundantly clear that, unless the Corps could supply its own, it might as well fold up its tents and creep silently away. The Quartermaster-General was emphatic on the subject in a minute to the Under-Secretary of Defence on 17 October 1934:

> **The Department has no dental equipment or stores and Dental Officers will bring their own equipment to the camps they attend. The cost of any expendable stores (Drugs, filling materials and so forth) expended in the camp will be met by the Department. ... As soon as the Department is in a position to do so, dental equipment will be provided as part of the war equipment necessary on mobilization. The equipment necessary for work in peacetime camps will then be provided. In view however of the extensive deficiencies that have to be made good in the war equipment of combatant units, the provision of dental equipment must be relegated to a low priority and will not be possible in the ordinary course of events for some time.**

In the face of this rebuff, the DDS decided to approach the Director of the Division of Dental Hygiene of the Department of Health, who controlled the Government dental clinics for the treatment of school children by dental nurses. The Department's store only carried stocks applicable to this limited scope of treatment but had exceptional purchasing facilities in which the Corps hoped to share. The result was that enough materials were obtained to enable six dental sections to carry out urgent treatment at the Territorial camps and six metal

panniers in which to pack them. The dental officers continued to provide their own instruments, but chairs were lent by private practitioners, dental trading houses and the Otago University Dental School.

In April 1935, through further efforts by the DDS, Cabinet approval was obtained for the expenditure of £140 to provide:

Seven travelling dental engines.

Seven dental students' cabinets.

Seven folding wooden chairs.

Seven spirit sterilisers with stands.

With the exception of the chairs, which were made to order by the Public Works Department, this was all got from the Health Department.

Approval was then obtained to manufacture seven field dental surgical panniers and seven field dental prosthetic panniers. These were made at the Ordnance Workshops at Trentham to the design of the DDS, who had used the same type in the 1914–18 War with marked success. They were ready by December 1935 and were distributed early in 1936.

The pannier is a container for equipment and stock. To facilitate transport, it is of a standard size, standard weight both full and empty and has distinctive markings. The Government Dental Department used metal panniers and these were quite satisfactory where civilian transport was used and weight was a secondary consideration. In the field, however, ease of movement and identification were important so the new ones were made of 3-ply (later 5-ply) wood, covered with canvas for protection and were suitably painted and branded. The prosthetic pannier was a plain box, but the surgical one was ingeniously partitioned to hold a portable dental engine, student's cabinet, and other stores and equipment of specified quantity and weight.

The chair was carried in a canvas case along with miscellaneous

articles such as a folding table, hurricane lamp, canvas basin and blankets.

Until September 1936, the necessary field equipment was gathered from many sources. Dental instruments, however, still had to be supplied by the officers themselves.

Early in 1938 the DDS drew up a Peace Equipment Table which gave full details of the contents of a surgical pannier and chair case. As yet the prosthetic pannier was not to be equipped. Dental sections were then authorised to indent to bring their outfits up to full content. This was accomplished by December.

And so, after four years of great effort, the nucleus of a dental store was built up. But this was for peace requirements and the dove of peace was rapidly moulting. Munich came and went, with none but the most ingenuous believing in its *bona fides*. The next step was to prepare a list of stores that would be required in the event of mobilisation for war. This was submitted to Army Headquarters by the DDS in August 1939 and became the basis of the War Equipment Table. It was too late, however, for in the meantime the Government had severely restricted imports and the supply houses, while holding reasonable stocks for everyday needs, could not place unlimited orders at will, or even any orders except under an import licence. The Assistant Directors of Dental Services each had a schedule of what was required and found out what was avail- able from the supply houses and from private practitioners by gift, loan or purchase, but this was a precarious source of supply as well as being only temporary. It was a wise move, however, as when buying began, the state of the market was thoroughly known.

Mobilisation and the First Year of War

At the outbreak of war the only stores held by the Corps were the seven peacetime outfits described above, and this was the case for over two months. Until stores came to hand, the early volunteers brought their own instruments into camp, and even supplied most of the stock

from their own practices. Later this stock was refunded from army supplies.

The first big requisition, for electric units, chairs and sterilisers to the value of £2409, was placed on 7 October 1939. From the end of November 1939 supplies came to hand in growing quantities, being received at the Main Ordnance Depot at Trentham, where part of the existing medical store was set apart to accommodate them. They were distributed as follows. The dental sections at Papakura, Ngaruawahia, Palmerston North, Trentham and Burnham forwarded monthly indents through their respective camp quartermasters to the DDS. If he approved, he sent the indent to the Chief Ordnance Officer (COO) for action and despatch. The items were then vouchered from the COO to the camp quartermaster concerned. It will be seen that the DDS at that time took no part in the actual accounting and merely controlled the issue in an advisory capacity.

In February 1940 approval was given to purchase the entire stocks of a dental trading firm in Auckland. These stores, valued at about £822, formed the nucleus of a dental store for the Royal New Zealand Air Force established at Rongotai air station in April 1940. The Air Force had a different accounting system from the Army. It used the 'Powers' system in which each item had a reference number. This meant that a new vocabulary of dental stores had to be drawn up, divided into sections such as drugs, dressings, surgical instruments, prosthetic materials, etc. Each section was numbered and each item in the section had a serial number. Indents had to be on a special Air Force form. The channel of communication was from dental section to station equipment officer to DDS for approval, to Rongotai store for action, and back to the station equipment officer and the dental section. The accounting was done by the RNZAF central accounting section in Wellington. The actual receiving, packing and despatch was in the hands of a Dental Corps corporal.

One store for the Army and another for the Air Force, with different accounting officers and different systems, was an unwieldy organisation.

The first steps towards simplification were taken in May 1940, when the DDS suggested to the Quartermaster-General that the two stores should amalgamate into one Army Base Dental Store to cater for both services. His main reasons were:

1. To obviate raising separate purchase requisitions and consequent competition on an already diminishing market.
2. To provide more favourable buying.
3. To promote a more equitable and convenient distribution of stores.
4. To enable the DDS to exercise complete control over their custody, proper use and accounting.

It is unfortunate that he did not mention the disadvantages of having different accounting systems in the two services at that time, as the anomaly might have been removed instead of existing for another three years. The Quartermaster-General and the Air Secretary agreed to the amalgamation. Premises were found in Lambton Quay, Wellington, and became the Army Base Dental Store. There was one large room and two smaller ones with a total area of 1400 square feet. The necessary shelves and other fittings were built in and everything was ready by the first week in July.

By this time Major H. E. Suckling was Assistant Director of Dental Services at headquarters, in charge of stores and equipment. He personally supervised the transfer of the stores held at Trentham to the new premises. Thus the Army Base Dental Store became an accounting unit and the DDS assumed the responsibilities of accounting officer. He also became purchasing officer and supervisor of all payments by the Treasury for dental stores.

In August the RNZAF stores at Rongotai, valued at £3777, were also transferred to the Lambton Quay premises and vouchered from the Air Department to the DDS. All stores for use of the dental sections attached to RNZAF stations were now supplied from the Army Base Dental Store and charged to the Air Force—a little trouble but worth it.

The original staff of the store consisted of a Warrant Officer second

class as accountant and two storemen packers.

The Dental Corps was expanding quickly and by the end of August 1940 it was becoming increasingly difficult to get enough supplies from New Zealand sources, so indents, to the value of £4125, were placed with the New Zealand Supply Liaison Officer in Melbourne. These supplies came to hand promptly and in full, giving the new store enough to satisfy demands until the end of the financial year on 31 March 1941.

The camp dental hospitals at Papakura, Trentham and Burnham had each been provided with rock-gas installations, X-ray machines, compressed air units and nitrous oxide and oxygen anaesthetic machines, as well as dental units, chairs and cabinets, and good instruments and stocks. Unfortunately the electric motors for the dental engines to be attached to the units were unprocurable in New Zealand and those that arrived from Canada in early 1941 were unsatisfactory. Fifty motors had then to be ordered from the United Kingdom, but it was February 1942 before they arrived. In the meantime every secondhand electric engine which could be bought or borrowed was welcomed into the Corps and coaxed into service, often by prodigies of mechanical wizardry. The foot engine, scorned by the modern graduate as an emblem of obsolescence, recaptured some of its former glory and spelt the difference between failure and success.

The first year of the war was a race against time to get enough stores and equipment to make every man dentally fit before embarkation for overseas. The race was won, the task completed, and much of the credit must go to those who overcame a very real problem in producing supplies continuously in the face of a host of difficulties.

In January 1941 a dental section was attached to HMNZS *Tamaki*, the naval training station on Motuihi Island, Auckland, and the Navy began its association with the Army Base Dental Store.

The Second Year, 1 April 1941 to 31 March 1942

During this year the three services grew to such an extent that the problem of supply assumed great importance. Prior to 1941 the only dental stores and equipment used by the Royal New Zealand Navy were supplied by the Admiralty, but in June of that year the DDS took these over. New dental sections for the Navy were established at the Naval Base, HMNZS *Philomel*, in the two cruisers *Achilles* and *Leander* and in the auxiliary cruiser *Monowai*. These now drew supplies from the Army Base Dental Store. At the same time the first changes in unit accounting began as the ship's dental officers were made accounting officers working under the army system.

For some time the army camp quartermasters had been having difficulty in accounting for dental stores because of unfamiliarity with technical nomenclature and usage. They had been asked to take the responsibility for a large amount of expensive stock and equipment which they could not check without expert advice. They had no knowledge of what constituted a reasonable rate at which expendable material should be consumed and, without some idea of the nature of the stock, no method of judging with any certainty whether it was expendable or non-expendable. Who but a dentist for instance would know that, while the handle of a mouth mirror is obviously non-expendable stock, the mirror which screws into it is just as obviously expendable because of the ease with which it is made unserviceable by scratching? Technical stores are better and more easily handled by those who understand their uses. The main mobilisation camps and the Air Force made no change as yet, but in the case of all other dental sections the stores were vouchered direct to the dental officer, who became the accounting officer.

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As a comparison with the previous year, 22 dental establishments besides the mobile sections were supplied, 1055 issues were made and stores to the value of £17,280 were received. Requisitions were placed overseas amounting to £19,000, made up of £18,740 from the United States of America and £250 from Australia.

The Third Year, 1 April 1942 to 31 March 1943

During this year there was continued expansion of the armed forces with more and more dental sections to supply. For instance, the twelve caravan trailers had to be equipped and stocked both surgically and prosthetically. Further Air Force stations were opened and troops were scattered over the length and breadth of the islands.

The increasing danger of enemy action made it inadvisable to have all the stores concentrated in the same building. Bulk stores were therefore established in Rutland Street, Auckland, and at Burnham Mobilisation Camp. It was not proposed to use these stores except in the case of emergency, so everything remained on charge to the DDS at Wellington. It is indicative of the healthy state of the supply position at that time that, in the busiest year experienced by the store, it was possible to hold stocks in reserve without interfering with normal distribution.

During 1942, overseas requisitions were placed to the value of £40,924, made up of £17,628 in the United Kingdom, £22,500 in Australia and £796 in India, or what was known as the Eastern Group. Stores bought in New Zealand reached the record figure of £44,783 and

1504 issues were made. The staff under the control of Lieutenant-Colonel H. E. Suckling numbered eleven.

The Fourth Year, 1 April 1943 to 31 March 1944

This year saw the beginning of retrenchment of the armed forces as the threat of enemy action diminished. Consequently, many of the dental sections were disbanded. The effect of this on the store was an *embarras de richesses*. The equipment and stock held by the disbanded sections were returned to the store. At the same time the influx of stores already ordered from overseas gathered momentum and seriously taxed the accommodation available. As a last straw, stores began to arrive from the United States of America against an indent placed by the Rt. Hon. J. G. Coates when on a mission to that country in 1941. This equipment from lend-lease sources was unexpected. An attempt was made to cancel the order, but the New Zealand Joint Staff Mission replied that, as the items had already either been shipped or assigned to New Zealand, delivery must be accepted. Stores to the value of £17,440 duly arrived. To cope with this flood it was necessary to find bigger premises and a building was provided by the Government Accommodation Board in Molesworth Street, Wellington. It was conveniently situated, and was 3000 square feet as against the 1400 feet of the old store. The new store began operations on 18 September 1943.

Two important changes in the administration and distribution of the dental stores for the RNZAF took place at this time. Firstly, the station equipment officers handed over their accounting responsibilities to the dental officers, and secondly, the army system of accounting was adopted in place of the 'Powers system'. This simplified the work of the store as well as making the interchange of officers between the Army and the Air Force easier.

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responsibility by the officers of the Corps made it incumbent on the stores staff to see that they were fully instructed in accounting procedure. Everything was laid down in 'Instructions to Officers NZDC', a copy of which was in every officer's possession, but, in addition, regular visits were made to each accounting unit by an expert from the store. There is no doubt that this was the right policy for from then on the efficiency and simplicity with which the system worked were remarkable. Stores were being handled by people familiar with their uses. Clerical duties were standardised, were quickly and easily mastered and were by no means onerous. The change did not, however, reduce the debt of gratitude the Corps owes to the quartermasters and station equipment officers who administered the supplies for so long, who bore with infinite patience the puzzled and sometimes indignant inquiries of the fledgling resenting the inflexibility of service procedure, extricated the over-confident from costly mistakes, taught those willing to learn and, having taught, retired with grace and, it is suspected, with some measure of relief.

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In May 1943 a curious suggestion was made by the New Zealand Medical Corps that the Army Optical Service should incorporate its supplies with those of the Dental Corps, and should be administered by the dental quartermaster. The reason for the suggestion is somewhat obscure, for the dental staff knew no more about optical equipment than the general QM branch or the Medical Corps knew about the dental. The DDS wisely refused.

The organisation continued in this form until the end of the war and for two years afterwards, when the store moved to Trentham in charge

of a Warrant Officer first class, with the Ordnance Department once more as accounting official. It was well stocked, in fact overstocked, from the Molesworth Street store. Some of the more perishable stock was sold through the War Assets organisation and some, such as rubber for vulcanisation, and the vulcanisers themselves, is obsolete. The nucleus though is still there and, unless the apathy of 1918 to 1939 is repeated, the NZDC of the future should not be embarrassed by short supplies.

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

AT the end of the 1914–18 War all dental stores and equipment were disposed of by tender, with the result that for several years the Defence Department held no stocks at all. This was the position when the Dental Corps was reorganised in 1934, when the Territorial camps were asking for treatment and the Corps was keen to undergo training. An approach to the Department for supplies produced a reply that made it abundantly clear that, unless the Corps could supply its own, it might as well fold up its tents and creep silently away. The Quartermaster-General was emphatic on the subject in a minute to the Under-Secretary of Defence on 17 October 1934:

> **The Department has no dental equipment or stores and Dental Officers will bring their own equipment to the camps they attend. The cost of any expendable stores (Drugs, filling materials and so forth) expended in the camp will be met by the Department. ... As soon as the Department is in a position to do so, dental equipment will be provided as part of the war equipment necessary on mobilization. The equipment necessary for work in peacetime camps will then be provided. In view however of the extensive deficiencies that have to be made good in the war equipment of combatant units, the provision of dental equipment must be relegated to a low priority and will not be possible in the ordinary course of events for some time.**

In the face of this rebuff, the DDS decided to approach the Director of the Division of Dental Hygiene of the Department of Health, who controlled the Government dental clinics for the treatment of school children by dental nurses. The Department's store only carried stocks applicable to this limited scope of treatment but had exceptional purchasing facilities in which the Corps hoped to share. The result was that enough materials were obtained to enable six dental sections to

carry out urgent treatment at the Territorial camps and six metal panniers in which to pack them. The dental officers continued to provide their own instruments, but chairs were lent by private practitioners, dental trading houses and the Otago University Dental School.

In April 1935, through further efforts by the DDS, Cabinet approval was obtained for the expenditure of £140 to provide:

Seven travelling dental engines.

Seven dental students' cabinets.

Seven folding wooden chairs.

Seven spirit sterilisers with stands.

With the exception of the chairs, which were made to order by the Public Works Department, this was all got from the Health Department.

Approval was then obtained to manufacture seven field dental surgical panniers and seven field dental prosthetic panniers. These were made at the Ordnance Workshops at Trentham to the design of the DDS, who had used the same type in the 1914–18 War with marked success. They were ready by December 1935 and were distributed early in 1936.

The pannier is a container for equipment and stock. To facilitate transport, it is of a standard size, standard weight both full and empty and has distinctive markings. The Government Dental Department used metal panniers and these were quite satisfactory where civilian transport was used and weight was a secondary consideration. In the field, however, ease of movement and identification were important so the new ones were made of 3-ply (later 5-ply) wood, covered with canvas for protection and were suitably painted and branded. The prosthetic pannier was a plain box, but the surgical one was ingeniously partitioned to hold a portable dental engine, student's cabinet, and other stores and equipment of specified quantity and weight.

The chair was carried in a canvas case along with miscellaneous articles such as a folding table, hurricane lamp, canvas basin and blankets.

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THE NEW ZEALAND DENTAL SERVICES

MOBILISATION AND THE FIRST YEAR OF WAR

Mobilisation and the First Year of War

At the outbreak of war the only stores held by the Corps were the seven peacetime outfits described above, and this was the case for over two months. Until stores came to hand, the early volunteers brought their own instruments into camp, and even supplied most of the stock from their own practices. Later this stock was refunded from army supplies.

The first big requisition, for electric units, chairs and sterilisers to the value of £2409, was placed on 7 October 1939. From the end of November 1939 supplies came to hand in growing quantities, being received at the Main Ordnance Depot at Trentham, where part of the existing medical store was set apart to accommodate them. They were distributed as follows. The dental sections at Papakura, Ngaruawahia, Palmerston North, Trentham and Burnham forwarded monthly indents through their respective camp quartermasters to the DDS. If he approved, he sent the indent to the Chief Ordnance Officer (COO) for action and despatch. The items were then vouchered from the COO to the camp quartermaster concerned. It will be seen that the DDS at that time took no part in the actual accounting and merely controlled the issue in an advisory capacity.

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One store for the Army and another for the Air Force, with different accounting officers and different systems, was an unwieldy organisation. The first steps towards simplification were taken in May 1940, when the DDS suggested to the Quartermaster-General that the two stores should amalgamate into one Army Base Dental Store to cater for both services. His main reasons were:

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THE NEW ZEALAND DENTAL SERVICES

THE SECOND YEAR, 1 APRIL 1941 TO 31 MARCH 1942

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THE NEW ZEALAND DENTAL SERVICES

THE THIRD YEAR, 1 APRIL 1942 TO 31 MARCH 1943

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The increasing danger of enemy action made it inadvisable to have all the stores concentrated in the same building. Bulk stores were therefore established in Rutland Street, Auckland, and at Burnham Mobilisation Camp. It was not proposed to use these stores except in the case of emergency, so everything remained on charge to the DDS at Wellington. It is indicative of the healthy state of the supply position at that time that, in the busiest year experienced by the store, it was possible to hold stocks in reserve without interfering with normal distribution.

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THE NEW ZEALAND DENTAL SERVICES

THE FOURTH YEAR, 1 APRIL 1943 TO 31 MARCH 1944

The Fourth Year, 1 April 1943 to 31 March 1944

This year saw the beginning of retrenchment of the armed forces as the threat of enemy action diminished. Consequently, many of the dental sections were disbanded. The effect of this on the store was an *embarras de richesses*. The equipment and stock held by the disbanded sections were returned to the store. At the same time the influx of stores already ordered from overseas gathered momentum and seriously taxed the accommodation available. As a last straw, stores began to arrive from the United States of America against an indent placed by the Rt. Hon. J. G. Coates when on a mission to that country in 1941. This equipment from lend-lease sources was unexpected. An attempt was made to cancel the order, but the New Zealand Joint Staff Mission replied that, as the items had already either been shipped or assigned to New Zealand, delivery must be accepted. Stores to the value of £17,440 duly arrived. To cope with this flood it was necessary to find bigger premises and a building was provided by the Government Accommodation Board in Molesworth Street, Wellington. It was conveniently situated, and was 3000 square feet as against the 1400 feet of the old store. The new store began operations on 18 September 1943.

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THE NEW ZEALAND DENTAL SERVICES

CHAPTER 9 — THE TRAINING OF STAFF

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The Training of Staff

THERE were two types of training required in the Dental Corps, technical and general. The officers and mechanics already had the technical training but, apart from the few who had served in the Territorial Dental Corps before the war, none of them knew anything about military matters, nor was it possible, because of the amount of dental treatment demanding attention, to give them all an immediate and comprehensive course of general training. In the very early days of the war, therefore, much had to be learned by individual observation and inquiry. This was inevitable in a young Corps with its meagre administrative facilities, but it was not intended to allow this haphazard method to continue and definite steps were taken to standardise the work and make every officer and man familiar with his technical and general duties.

Training of Dental Officers

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already been mentioned.

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The NZDC took part in these exercises with both these objects as well as a third, which was to provide urgent treatment to the troops in the field. The exercises occupied fourteen days and, in each district, the number of troops involved was in the vicinity of 6000, nearly all belonging to the Territorial Force and therefore not dentally fit.

The Principal Dental Officer of each camp dental hospital group was appointed ADDS for the respective field force. Although NZDC war establishments were taken as a basis, he had to make his own appreciation after conferring with the General Staff of the field force, taking into consideration the composition of the force, the operations planned and the details of the terrain. He had to make all arrangements to provide dental service to the 'Enemy' and the 'Home' forces, and on the completion of the exercise forward a report to the DDS with recommendations and lessons learned. The exercise to be of any value to the dental officers had to be organised on a skeletal divisional scale, which made the object of providing treatment easy of achievement, but the deployment of dental forces had, to a certain extent, to rely on a conception of larger manoeuvres than actually took place. If this had not been the case there would have been little reason to move the sections or sub-sections, and the value of the exercise would have been lost. For this reason also, there was a certain amount of criticism of dental forces being farther forward than was considered wise, and this was undoubtedly true, but the front was so shallow that in actual warfare the base would have been as far forward as the dental sections would have gone and there would have been no exercise for the NZDC. As it was, by the use of imagination, the organisation had a practice run and the officers had an opportunity to learn something about movement in the field and co-operation with other units.

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A large number of mechanics were required in the Corps, not only for the large amount of work to be done in New Zealand but to accompany the troops overseas. First-class mechanics were difficult to get and, before the National Service Department took action to prevent it, several were lost to the Corps by having volunteered for service in combatant units. The result was that the Corps in the early part of the war was always short of mechanics. It therefore decided to augment the supply by training some of its own. A few men who were mechanically minded and keen to be trained were selected and classified as dental mechanic's orderlies to work in the prosthetic laboratories of the mobilisation camp dental hospitals.

PDO Papakura Mobilisation Camp to DDS, 9 September 1940:

> **A course of lectures and demonstrations has been arranged starting tomorrow, 10 September, for mechanic's orderlies. The four at Papakura are showing considerable aptitude for the work and I feel confident that with extra tuition it will not be long before at least two of them will be in a position to be used as junior mechanics.**

In six months two of them were so appointed. They were not by any

manner of means dental mechanics, but they had a working knowledge of all branches of denture construction as carried out in the army prosthetic laboratories and the opportunity to learn more. Of those trained in this way some fell by the wayside, but others served as dental mechanics in New Zealand and overseas.

This method of training was somewhat haphazard as it was not always possible to get dental officers and senior mechanics willing, or even competent, to act as satisfactory teachers. In 1943, therefore, schools were started for the specific purpose of training mechanics and dental officers appointed to devote their whole time to it. On 1 March 1943, Captains P. B. Sutcliffe and C. H. M. Brander [1] and Lieutenant K. P. Tompkins [2] became prosthetic officers and instructors at the mobilisation camps at Papakura, Trentham and Burnham respectively. Similar action was taken in the RNZAF when Captain O. M. Paulin was appointed on 18 March to Whenuapai Air Station.

Men and women were given a course of approximately twelve months and then sat an examination. An exception was made for trainees with previous experience who were allowed, on the recommendation of the officer commanding the school, to sit the trade test without completing the syllabus.

The candidate had to get 70 per cent marks in the technical syllabus and produce a certificate from the officer commanding the school as to his readiness for examination before being allowed to sit the test. Those not recommended were either deferred for six months or transferred to other duties as unsuitable and unlikely to qualify. There were two examiners, one being the PDO of the camp dental hospital to which the school was attached and the other was appointed by the DDS.

On passing, the successful candidates were given provisional standing as ‘B’ grade dental mechanics, NZDC, and were sent to other camp dental hospitals for a further three to six months' training. At the end of this probationary period they were given the full status of ‘B’ grade dental mechanics, NZDC, without further examination, providing

the report of the officer commanding the prosthetic school was satisfactory.

There was one danger in the scheme of which the DDS was fully aware. After the 1914–18 War, dental mechanics who had served with His Majesty's Forces were given the opportunity by the Government, in the face of expert advice to the contrary, to qualify and register as dentists by a shorter and less arduous route than that of the customary dental degree or certificate. This precedent was used as a lever to persuade the Government to take similar action in this war. Certain mechanics in the NZDC in New Zealand and the Middle East were misguided enough to avoid the usual channels of communication and write direct to two Cabinet ministers on the subject. Their unorthodox approach was unfortunate for their cause, as it invited disciplinary reprisals, alienated any sympathy their officers might have had for them and sharpened the inevitable refusal. The Corps, while urgently needing mechanics and willing to train them as such, did not intend to allow them to make similar mistakes through lack of a proper understanding of the limitation of their qualifications.

A statement to the press from the annual conference of the New Zealand Dental Association held in Dunedin in September 1946, although made for the purpose of informing the public of the dangers contained in a petition to Parliament from dental mechanics seeking the right to practise prosthetic dentistry without proper training, so aptly sums up the situation that it is quoted here:

The construction of dentures for the replacement of the natural teeth demands an intricate knowledge of many basic medical and dental subjects other than technical procedures and we wish to correct any public misunderstanding which may exist regarding the capability of anyone other than a fully-qualified dental surgeon to undertake the work.

The scheme of training appeared to be satisfactory, but unfortunately it was started so late in the war that by the time the first

trainees gained their full status as 'B' grade mechanics, there were signs of a general retrenchment and the fledglings were never tested in full flight. Judging by the comprehensive nature of the course and the interest shown in it, the scheme was of sufficient value to recommend its adoption early in a future war. Even with the advances made and being made in preventive dentistry, it is difficult to visualise a force of New Zealand troops with less than half wearing artificial dentures of some kind.

Training of Dental Orderlies

The men and women engaged as dental orderlies were selected more for their intelligence and general suitability than for their previous knowledge of dental work. Their training as dental assistants was primarily in the hands of the officers of the Corps, who varied in their capabilities as teachers and, in the very early part of the war, were in military knowledge little more than a page ahead of their pupils. With the advent of the officer's *vade-mecum* in 1941 there was a standardisation of training, but before that each officer taught his orderly the fundamentals of chairside assistance, care and sterilisation of instruments, mixing of amalgam and cements and recording of examinations and treatment according to his own ideas on the subjects. Training in military matters was in the hands of the Principal Dental Officers or officers commanding sections, as also was the training in specialist branches such as administration, clerical or stores NCOs. It was not the best type of training but it was all that could be done at the time, and many excellent orderlies were produced by these methods.

It was not until 1942 that a scheme was submitted whereby WAAFs were trained and examined for trade testing to classify them as Group 'D' (dental). A syllabus was prepared and lectures and practical tuition were given by the officers commanding the dental sections at the various Air Force stations. By this time the officers were better equipped to teach and knew much more of service procedure and Corps organisation. Trade testing was held twice a year or at the discretion of

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[2] **Capt K. P. Tompkins; New Plymouth; born Takapuna, 1905; dental surgeon.**

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

CHAPTER 10 — THE BUILDING OF DENTAL HOSPITALS

CHAPTER 10
The Building of Dental Hospitals

WHEN the New Zealand Dental Corps assumed the responsibility for treatment of the armed forces in the Dominion and overseas, one of the first considerations was the provision of suitable accommodation. The use of tents or converted huts was only excusable under field conditions or when time precluded the building of permanent hospitals. Costly, delicate and complicated equipment is used in the practice of dentistry, and this has to be suitably housed and readily available if treatment is to be of the high standard the forces have a right to expect. In addition to this, there is a considerable strain on an operator working long hours in an exacting profession which demands the best conditions to produce the best results. Suitable hospitals, however, cost money, and enough has been said of the official reluctance at the beginning of the war to recognise the value of the Dental Corps in the general scheme of things, to show that getting authority for the necessary expenditure was not easy. Eventually, good hospitals were built in every permanent camp or station.

An example of tented accommodation in the early part of the war was when the Maori Battalion was in the Manawatu Agricultural and Pastoral Association's showground at Palmerston North. Major L. P. Davies, OBE, [1] ADDS of the Central Military District, reported on 14 March 1940:

> **The dental staff comprised the Principal Dental Officer and four other dental officers, one administrative sergeant, four dental orderlies, three mechanics and one mechanic's orderly. I found the dental quarters to comprise one large marquee and one bell tent.**
>
> 1. **The marquee was approximately 15' × 30' and here the mechanical work, office work and surgical work were carried out.... There was a duck-board flooring in the mechanical portion but in the surgical part there was no flooring at all.... Conditions were not altogether favourable in wet and rough**

weather. There was an electric light above each chair and also in the mechanical room and the lighting conditions generally were as satisfactory as could be expected under the circumstances. Electric power was used for an electric vulcaniser and for electric engines. Primuses were used for other heating requirements. On questioning the PDO I found that the dental plant, including the electric plant, stood up to the weather very well. Drainage was ... by means of a septic tank. Water was laid on and facilities for washing were provided by means of canvas basins. I might also state that space was provided in the marquee for sleeping one member of the staff to act as caretaker.

2. **The bell tent accommodated one officer and one orderly. I found here a close wooden flooring with no provision for lighting or drainage. As this was only a make-shift tent it answered the purpose for which it was intended....**

It must have been difficult to maintain reasonable asepsis under these conditions, and even more difficult to impress the patients that the standard of service received was not in some measure commensurate with the surroundings.

Dental hospitals, whether large as in a mobilisation camp where up to nineteen officers were operating, or small as for a single section, have certain essential requirements, and all are constructed on the same principles. A study of these essentials will give some idea of the general layout of all dental hospitals without the need for describing the details of the many different designs, although it must not be forgotten that the numerous designs were the result of much thought and effort by Dental Headquarters and the Public Works Department.

In general, the building had to be so situated as to be easily accessible to the patients. It had to be orientated to provide the best operating light, big enough to accommodate staff and patients, yet small enough to allow hospital cleanliness to be observed. It had to have water, electricity, sewerage, gas, compressed air and heating, as well as having specialised apparatus installed and suitable fittings designed and constructed. There had to be a surgery, office, workroom, waiting room

and lavatory. In the case of the larger hospitals, a store, X-ray room, darkroom, and a room for extractions and oral surgery had to be provided.

The Surgery

The centrepiece of the surgery was the chair. While in some cases hydraulic pump chairs were provided, most of them were of the folding type made of wood with adjustable headpiece and back. They were reasonably adequate, though lacking in strength and range of movement in comparison with the pump chairs. On the left of the chair was a unit complete with spittoon, saliva ejector, bracket, electric engine and compressed air atomiser. They were made in New Zealand and proved to be very satisfactory. On the right of the chair was a cabinet for instruments and drugs, with its top designed for use as a writing desk.

The chair, unit and cabinet required a width of 7 ft 6 in. to 8 ft and at least 12 ft from the window to the back wall. When a series of chairs were placed alongside each other as in the larger hospitals, 8 ft from the centre of one chair to the centre of the next was allotted.

Makeshift workshop in old storehouse, Ngaruawahia

Makeshift workshop in old storehouse, Nagaruawahia

Camp Dental Hospital surgery, Trentham, 1943

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No. 2 Mobile Dental Section at Whangarei

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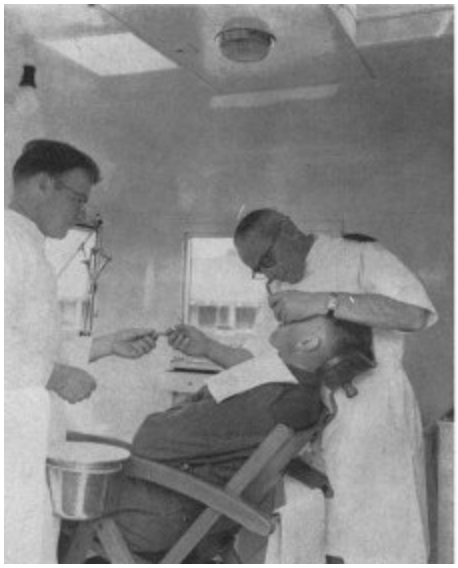
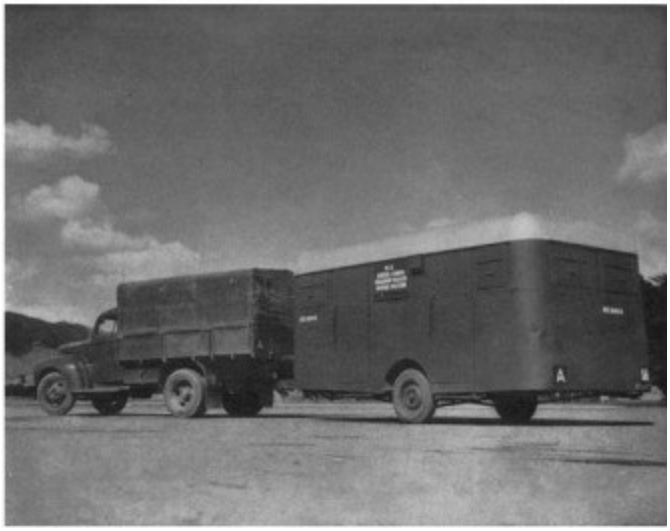


At work in a caravan trailer, Trentham

At work in a carvan trailer, Trentham

New Zealand Dental Corps caravan trailer



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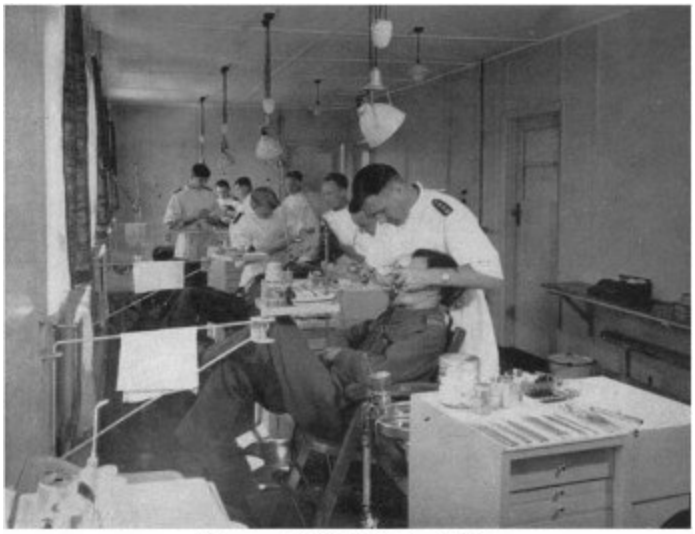

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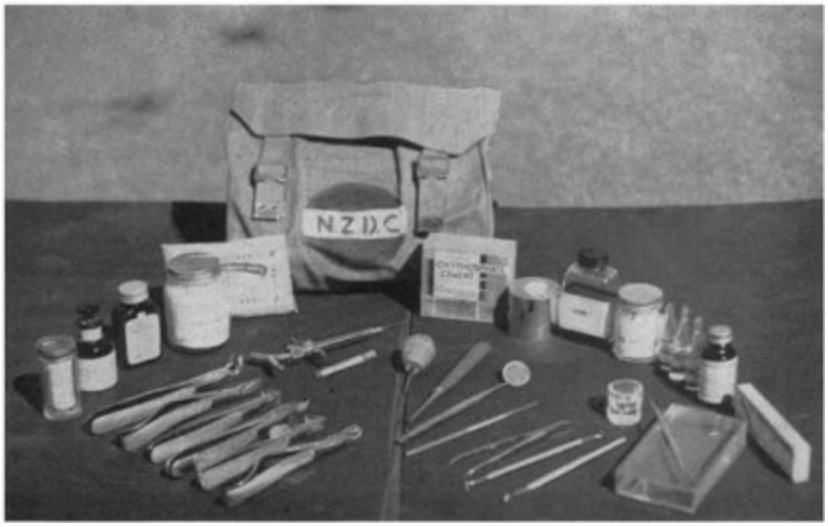

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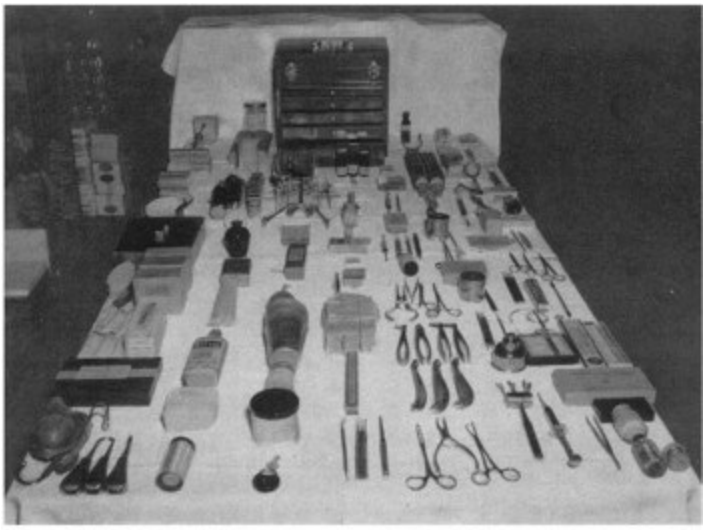

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[1] **Maj L. P. Davies, OBE; born 1883; dental surgeon; NZDC 1916–19 (Capt); died Wellington, Nov 1950.**

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

WHEN the New Zealand Dental Corps assumed the responsibility for treatment of the armed forces in the Dominion and overseas, one of the first considerations was the provision of suitable accommodation. The use of tents or converted huts was only excusable under field conditions or when time precluded the building of permanent hospitals. Costly, delicate and complicated equipment is used in the practice of dentistry, and this has to be suitably housed and readily available if treatment is to be of the high standard the forces have a right to expect. In addition to this, there is a considerable strain on an operator working long hours in an exacting profession which demands the best conditions to produce the best results. Suitable hospitals, however, cost money, and enough has been said of the official reluctance at the beginning of the war to recognise the value of the Dental Corps in the general scheme of things, to show that getting authority for the necessary expenditure was not easy. Eventually, good hospitals were built in every permanent camp or station.

An example of tented accommodation in the early part of the war was when the Maori Battalion was in the Manawatu Agricultural and Pastoral Association's showground at Palmerston North. Major L. P. Davies, OBE, [1] ADDS of the Central Military District, reported on 14 March 1940:

> **The dental staff comprised the Principal Dental Officer and four other dental officers, one administrative sergeant, four dental orderlies, three mechanics and one mechanic's orderly. I found the dental quarters to comprise one large marquee and one bell tent.**
>
> 1. **The marquee was approximately 15' × 30' and here the mechanical work, office work and surgical work were carried out.... There was a duck-board flooring in the mechanical portion but in the surgical part there was no flooring at all.... Conditions were not altogether favourable in wet and rough**

weather. There was an electric light above each chair and also in the mechanical room and the lighting conditions generally were as satisfactory as could be expected under the circumstances. Electric power was used for an electric vulcaniser and for electric engines. Primuses were used for other heating requirements. On questioning the PDO I found that the dental plant, including the electric plant, stood up to the weather very well. Drainage was ... by means of a septic tank. Water was laid on and facilities for washing were provided by means of canvas basins. I might also state that space was provided in the marquee for sleeping one member of the staff to act as caretaker.

2. **The bell tent accommodated one officer and one orderly. I found here a close wooden flooring with no provision for lighting or drainage. As this was only a make-shift tent it answered the purpose for which it was intended....**

It must have been difficult to maintain reasonable asepsis under these conditions, and even more difficult to impress the patients that the standard of service received was not in some measure commensurate with the surroundings.

Dental hospitals, whether large as in a mobilisation camp where up to nineteen officers were operating, or small as for a single section, have certain essential requirements, and all are constructed on the same principles. A study of these essentials will give some idea of the general layout of all dental hospitals without the need for describing the details of the many different designs, although it must not be forgotten that the numerous designs were the result of much thought and effort by Dental Headquarters and the Public Works Department.

In general, the building had to be so situated as to be easily accessible to the patients. It had to be orientated to provide the best operating light, big enough to accommodate staff and patients, yet small enough to allow hospital cleanliness to be observed. It had to have water, electricity, sewerage, gas, compressed air and heating, as well as having specialised apparatus installed and suitable fittings designed and constructed. There had to be a surgery, office, workroom, waiting room

and lavatory. In the case of the larger hospitals, a store, X-ray room, darkroom, and a room for extractions and oral surgery had to be provided.

THE NEW ZEALAND DENTAL SERVICES

THE SURGERY

The Surgery

The centrepiece of the surgery was the chair. While in some cases hydraulic pump chairs were provided, most of them were of the folding type made of wood with adjustable headpiece and back. They were reasonably adequate, though lacking in strength and range of movement in comparison with the pump chairs. On the left of the chair was a unit complete with spittoon, saliva ejector, bracket, electric engine and compressed air atomiser. They were made in New Zealand and proved to be very satisfactory. On the right of the chair was a cabinet for instruments and drugs, with its top designed for use as a writing desk.

The chair, unit and cabinet required a width of 7 ft 6 in. to 8 ft and at least 12 ft from the window to the back wall. When a series of chairs were placed alongside each other as in the larger hospitals, 8 ft from the centre of one chair to the centre of the next was allotted.

Makeshift workshop in old storehouse, Ngaruawahia

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Camp Dental Hospital surgery, Trentham, 1943

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No. 2 Mobile Dental Section at Whangarei

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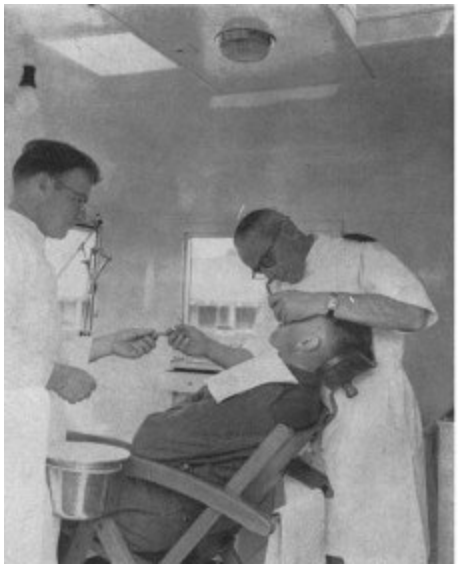

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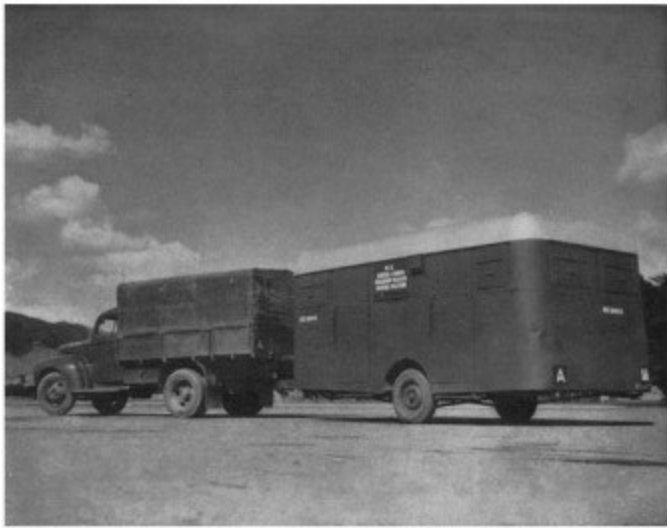

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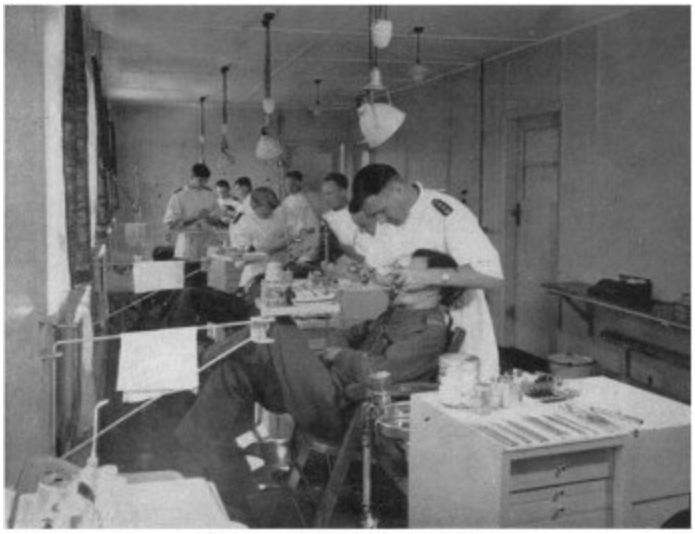

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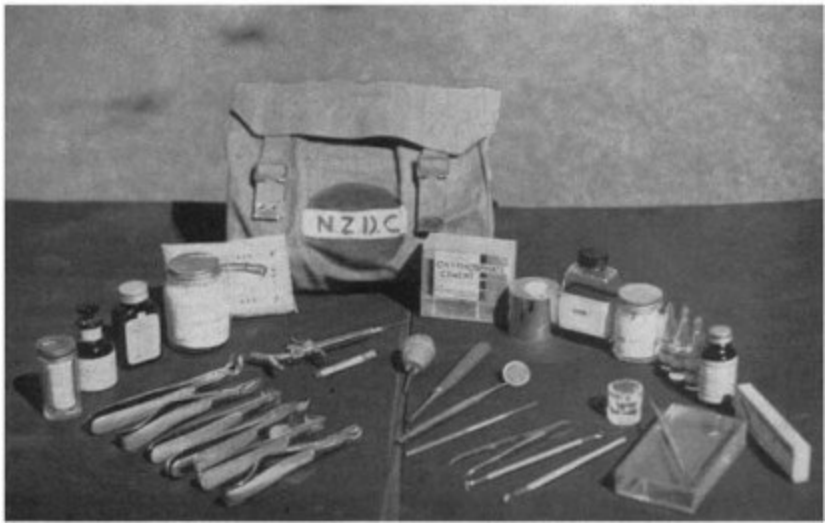

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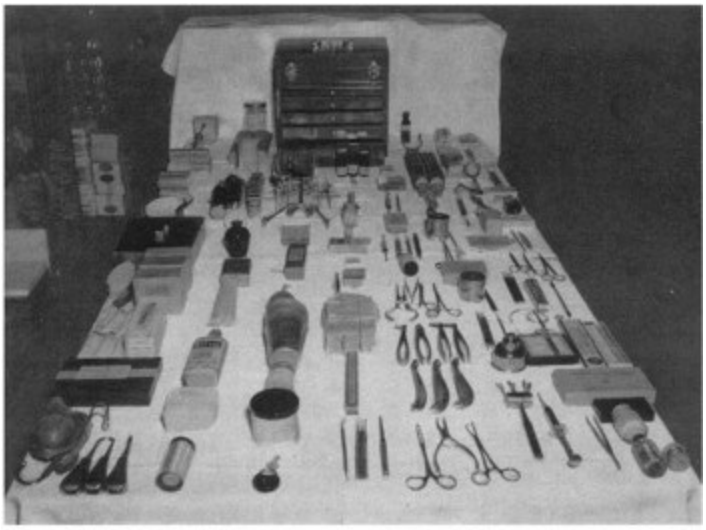

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THE NEW ZEALAND DENTAL SERVICES

CHAPTER 11 — TREATMENT

Contents

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

THE general organisation of the Dental Corps, the provision and training of staff, the purchase and distribution of supplies and the standard of dental health to be achieved have been described. Consideration must now be given to the main function of the Corps, its *raison d'être*, treatment. Practically every man of military age in New Zealand either had some degree of dental disease or was a potential casualty as a wearer of artificial dentures. The perfect natural dentition was so rare as to be an object for demonstration to other dentists. It is safe to state that the number of men possessing their own teeth who did not require some treatment from the NZDC during their term of service was negligible, and very few of those wearing artificial dentures completed the course without trouble of some sort. As the DDS wrote in his 'Instructions to Dental Officers' regarding the duties of the Corps:

> **This is to promote the highest order of dental fitness attainable for the fighting forces and to ensure that they are maintained in such a state. The quality of the fighting soldier depends on the basic factor of his degree of physical fitness in which the state of his oral cavity plays no small part. Experience in the last war and in this has proved that after troops have been engaged in battle, quite a considerable amount of dental treatment is required, particularly in replacing lost and broken dentures. This constitutes a vital problem with New Zealand troops, 50% to 60% of whom are denture wearers.**

The New Zealand Dental Corps was not so much concerned with patching up the battle casualties as with reducing the number of those casualties by 'promoting the highest order of dental fitness' and 'maintaining such a state'. This could not be achieved haphazardly and demanded a definite plan of campaign. Every man had to be dentally examined as soon as possible after his entry into the forces, firstly to

assess the amount of treatment required, and secondly to provide a permanent record of his dental condition at that time.

THE NEW ZEALAND DENTAL SERVICES

EXAMINATION

Examination

The first examinations were carried out by civilian dentists as members of medical boards using a special form (NZ War 360) on which to record the result. The dental condition was recorded on this form but the amount of treatment was more especially assessed as to whether the recruit could qualify, under the limited standard of dental health, for entry into the forces at all. When, however, the Dental Corps accepted full responsibility for the treatment of all mobilised forces, this form was abolished and Form NZ361 was used for the Army and the Navy. The Air Force, whose dental service was the last to start, first used the standard RAF Form 48, which was a combined medical and dental history sheet. There was, however, so much confusion and waste of time in the necessary exchange of these forms backwards and forwards between the medical and dental officers, that a separate dental history sheet, Form AF129, identical with Form 361, was adopted in September 1940.

It was important that there should be a standard method of recording the results of examinations in the three services so that they would be intelligible to every officer of the Corps, so not only were the same forms used but the same symbolism was used. There is room for criticism of the symbolism adopted in New Zealand, and this took active form in the adoption of a different system in the Middle East, but the New Zealand system had the merit of being identical with that in use by the majority of dentists in the country and, if not perfect for use in a field force, was easily understood and a convenient basic standard.

The instructions were that all ranks must be examined within forty-eight hours of entering camp. It was considered that one dental officer with an orderly, assisted by a clerk or the NCO in charge of the party, could examine on an average thirty men an hour. This may appear excessive and, without a full knowledge of the circumstances, the

criticism that the examination must have been perfunctory is reasonable. It must be borne in mind that the figure is an average and that many of the men were wearing full artificial dentures and did not take long to examine. The cases that took the longest were those with good natural dentitions, when it was important that no lesion should be missed before accepting the responsibility of signing the patient as dentally fit. For those men who had some treatment to be done, it was more important to find out the approximate amount of work required to a reasonable degree of accuracy than to delay the beginning of treatment for the whole force by attempting to diagnose the more obscure cavities. When that man returned for treatment the occasional cavity that had been missed would be found. A completely accurate diagnosis in any case is impossible without the use of X-rays, and it would be difficult to use these at the time of examination of a large body of troops. In practice the examinations were extremely accurate.

If it could be certain that once a man was in camp he would stay there until his treatment was completed, the system outlined above would be reasonably satisfactory. Unfortunately this was not so and, although theoretically his Form 361 accompanied him on his personal file wherever he moved, in practice this was not the case. Forms had a habit of going astray for many reasons. Sometimes routine orders were inaccurate or late in publishing details of movements. Sometimes the dental clerical staff, who were more often than not trying to handle business details beyond their capacity, failed to take the necessary action. Often there appeared to be a lack of co-ordination between units and a failure to appreciate that movement of personnel affected a large number of organisations. In this respect the Dental Corps had to fight hard for a place on the distribution list of important memoranda which vitally affected it, and this added considerably to its difficulties. As the war progressed the position improved, but in the early stages it was not appreciated how many apparently remote instructions had an effect on the organisation of dental treatment.

Whatever the reasons, Form 361 was often late in accompanying the

personal file, which usually meant that a diligent dental officer carried out his instructions and made out a new one, with the result that the records of examinations and treatments were spread over several forms. Even if this was not the case, the original record of examination was subjected to the risk of loss or damage by being continuously handled and transferred from place to place.

THE NEW ZEALAND DENTAL SERVICES

APPOINTMENTS FOR TREATMENT

Appointments for Treatment

Appointments could not be made haphazardly and a number of factors that had not concerned the dental officer in private practice had to be considered. These were:

1. **The training syllabus and camp routine orders had to be consulted. For example, it was inadvisable to make appointments for men whose companies were needed for rifle practice on the range or who were 'Duty Company'.**
2. **The total time for treatment had to be estimated. Those needing multiple extractions had to receive priority so that as long as possible could be allowed for the mouth to heal before fitting artificial dentures.**
3. **It was necessary to estimate how long each course of treatment would take. Except in special circumstances, it was inadvisable to keep a man in the chair longer than an hour at a time. On the other hand, the greater number of times the man had to attend the more time he was away from his training, and the more time he wasted in going to and from the hospital and in waiting his turn for treatment. Also, time was wasted in the hospital in sterilisation of instruments. As much work as possible had to be done at each appointment consistent with a high standard of operative work and the patient's welfare.**
4. **Enough of different classes of work had to be called up to keep all departments of the hospital fully occupied.**
5. **Considerable tact was needed in convincing unit commanders that the time spent in the promotion of oral health in their men was not wasted in comparison with their general training. When it was seen that the Corps policy was to interfere as little as possible with training and duty, there was seldom any friction and most unit commanders became valuable allies.**
6. **In every body of men there was the 'old soldier' who welcomed the dental parade as an excuse to evade unpleasant duties. Appointments therefore were all made through the unit orderly room and an appointment and dismissal form, stating time of arrival and departure, was used.**

7. Appointments were not made with individual dental officers except in such cases as 'Trench mouth', when continuity of treatment was desirable.

In the bigger hospitals it was customary to use one officer to do most of the extractions in the early stages and another to specialise in the prosthetic work so as to keep the mechanical staff fully occupied. The remaining officers would then concentrate on the filling work, which constituted the bulk of the work.

In the Air Force there were other factors to be considered. The officer in charge of each dental section had to evolve his own system to get a steady flow of patients without interfering with training or duties. This was not easy and called for careful arrangement of work by the dental officer and willing co-operation from officers commanding flights and sections on the station. In the mobilisation camps soldiers were made available in groups, but on air stations individual appointments had to be made. Fortunately all dental sections had telephones. Where extractions were necessary the weather had to be considered, so that an interval in the flying programme could be used to advantage. Unfortunately the medical officer was often working to the same plan and wanted the same period for his inoculations. On the other hand the extractions were few, most of them having been done during the period of preliminary training at Levin or Harewood. Another factor was that it was found that, while the average soldier tolerated dental treatment better than the average patient in civilian life, in the Air Force the reverse was the case. Men undergoing intensive courses of technical or flying training, or engaged for long hours on aircraft maintenance, did not tolerate dental treatment with the same equanimity. Filling operations took longer, local anaesthesia was more often necessary and appointments had to be shorter.

On the average the treatment required by the aircrew trainees involved about 400 fillings per hundred men, which was practically the same as in 2 NZEF, but the number of extractions and dentures was lower. Only young men of a comparatively high educational standard

were accepted for aircrew and most of these had received continuous and complete dental treatment during adolescence. On the other hand, as has already been pointed out, the examination of these mouths demanded more care and the conservative treatment took longer. It was also more important to detect and eliminate root infection in men who were destined to fly at high altitudes, when those defects, dormant under normal conditions, were likely to show up. The men were also at the most susceptible age for caries and for complications from impaction or incomplete eruption of the third molars. It was extremely important that men who would shortly be engaged in operational flying in Europe should be free from all dental complications.

Before going into details as to how the treatment was carried out, it is well to state what was offered and how it was received. The DDS in his instructions to all dental officers stated:

> The same care and attention to patients and the same high standard of dental treatment should be observed as would normally be expected in a high class dental practice.

This was the highest standard that could be set and in most cases it was fully appreciated, but there were some cases where it was looked on with suspicion. The cases were remarkably few but, as they constituted a problem which must inevitably occur, however high a standard is offered in the future, they must be considered.

THE NEW ZEALAND DENTAL SERVICES

REFUSAL OF TREATMENT

Refusal of Treatment

In dealing with the large number of sailors, soldiers and airmen it is not surprising that there were some who, for various reasons, refused to submit themselves to the treatment prescribed. In many cases, by tactful handling, the dental officer managed to overcome these prejudices, especially where the cause was apprehension, but he could go no further than persuasion and, if the refusal was persisted in, had to refer the case to the man's commanding officer. To the commanding officer of the old school the answer appeared simple. An order was an order, and if it was disobeyed there were enough unpleasant penalties to see that it did not happen again. This view, however, was founded more on custom than on sound law, and the old soldier's philosophical observation that there was only one thing that could not happen to him in the Army was proved to be inaccurate. The history of the dispute is interesting.

In April 1940 the dental officers' instructions were:

> **Any soldier refusing treatment will sign a declaration to this effect on NZ War 361 (overseas 361A) dated and countersigned by the dental officer concerned. Refusal to undergo treatment will not be regarded as sufficient cause for discharge although as a result of such a refusal he may not be up to the required standard unless a Medical Board, which will include a dental officer, be of the opinion that without such treatment the soldier is, or may become, physically unfit to carry out his duties.**

The Deputy Adjutant-General summed up the position at the time in commenting on a specific case on 8 March 1940:

> **There does not appear to be any disciplinary action which can**

be taken in this case as it does not appear to be an offence. In future, provision could be made to ask the recruit if he is willing to undergo treatment before accepting him. In this case the alternatives are to let him go overseas as he is (probably unfit) or have him declared unfit by a board and discharged.

This was most unsatisfactory as it was bad policy to send unfit men overseas, where they might become unfit for duty and have to be sent back to New Zealand, and the alternative of discharge by a medical board in New Zealand eased the path of the obstructionist and malingerer. An attempt was therefore made to increase the authority of commanding officers.

In 1941, Regulation 41 of the National Service Emergency Regulations 1940 was invoked. This made it an offence for a man to refuse to submit to treatment by a medical or dental practitioner on being required to do so by an officer having authority over him, if that treatment was deemed necessary for the purpose of rendering him fit for service. Before going into camp the offence was tried in the civil courts, and after entering camp, in military courts under Article 1417 of *King's Regulations and Admiralty Instructions*, Section 18 of the Army Act or Section 18 of the Air Force Act (Imperial). Everything then rested with the man's commanding officer, and the dental officer, apart from taking a signed and witnessed declaration and entering it in the paybook and on the dental history sheet, had no further worry about it, or so it seemed. In practice it was found that commanding officers were chary of using their powers under the Act, with the result that men who refused treatment in some cases apparently had their refusal backed by authority. This put the dental officer in an awkward position. To quote the DDS:

> **There is the straight out malingerer who definitely refuses treatment. He willingly signs a statement on his dental history sheet that he refuses necessary dental treatment and this fact is reported to his commanding officer. Nothing happens. Hours are wasted in many instances endeavouring to persuade these men,**

but they are conscripts and do not want to be made fit for service, though the dental officers persuade a few. This is a tragic waste of valuable time which is a big factor when so much dental treatment is required and I regret to say that territorial officers in a few cases have encouraged them. Prior to this period men were anxious to go overseas and knew that they had to be dentally fit, but this incentive is gone and evasion is increasing, which is causing grave concern.

Obviously something had to be done. To invoke a law without sanctions was to undermine discipline and invite ridicule. There was much legal argument which it is not proposed to analyse as it is outside the scope of this history, but the position may well be crystallised in the words of the Assistant Adjutant-General of the Southern Military District:

> **To allow the refusal to go unpunished would undoubtedly be prejudicial to discipline but so also would a trial by Court Martial if it failed to result in a conviction.**

A strategic withdrawal from an untenable position was carried out and on 7 August 1942 the provisions of the National Service Emergency Regulations as affecting refusal to submit to treatment by a medical or dental practitioner, with the exception of the section dealing with vaccination and inoculation, were suspended. Nobody was to be prosecuted or charged and no proceedings or other steps were to be taken to require submission or to punish for not submitting. Any prosecutions already started in the civil courts were to be withdrawn, or if the magistrate refused permission for them to be withdrawn, no evidence was to be offered.

It speaks well for the tact of the dental officers and the good reputation of the NZDC as a whole that the number of men and women who persisted in their refusal to undergo treatment was very small. Those who did persist were no longer any concern of the Corps, except that certified copies of their signed refusals were kept at Headquarters to

refute any claims they might make in the future to have dental work done for them at the public expense, and to exonerate the Corps from responsibility for their dental condition.

It is now proposed to discuss some aspects of dental treatment as they were affected by service conditions and requirements.

THE NEW ZEALAND DENTAL SERVICES

EXTRACTIONS

Extractions

Most of the extractions were carried out under local anaesthesia, except such cases as acute alveolar abscesses and similar conditions where this type of anaesthesia was contra-indicated. In cases of multiple extractions it was customary to admit the patient to the camp medical hospital for a day after operation for observation, nursing and special feeding. In other cases the co-operation of the Regimental Medical Officer and the unit quartermaster was sought to get special diet and easy duty. Occasionally the patient was either sent home on sick leave or to a field ambulance, military hospital or public hospital, but this only occurred if there were no facilities for hospitalisation in the camp. Where general anaesthesia was indicated, and this was limited to cases involving six or more teeth except in special circumstances, most of the main dental hospitals had machines for the administration of nitrous oxide and oxygen.

Where no machine was available the services of the medical officer were available to administer other anaesthetics. Intravenous evipan was a popular choice.

Although cases were admitted to the camp hospital, the dental officer continued to be responsible for them except for rations, discipline and nursing.

The services of dental officers with experience in oral surgery were available at the main mobilisation camps and to them could be referred cases of major oral surgery from sections where there were not the same facilities for diagnosis, hospitalisation and postoperative treatment. It must not be thought that they alone did all the oral surgery in their districts. The dividing line between the general practitioner and the specialist was no more clearly defined in the Army than it was in

civilian life. The individual officer's judgment was the deciding factor as to whether the specialist was to be used or not. All dental officers were supplied with the necessary armamentarium for any class of lesion they might meet, but all of them did not have X-ray or hospital facilities, which were usually essential for successful oral surgery.

THE NEW ZEALAND DENTAL SERVICES

FILLINGS

Fillings

The establishment of masticatory efficiency of long duration in the least time was the primary consideration in the choice of filling materials. Most were of silver amalgam with a protective lining of cement. Where aesthetic demands precluded the use of amalgam, as in the case of anterior teeth, synthetic porcelain was used. The malleted gold filling and the gold inlay had no place in army practice, but inlays of acolite and of a gold-coloured metal called 'Allcast' were used occasionally.

THE NEW ZEALAND DENTAL SERVICES

PULP TREATMENTS AND ROOT FILLINGS

Pulp Treatments and Root Fillings

The ill favour with which the pulpless tooth is regarded by the dental profession is reflected in the very small amount of this work which was done by the NZDC. With full permission to do this type of work at their own discretion, the dental officers in New Zealand decided that only 14 in every 10,000 fillings should be root fillings.

THE NEW ZEALAND DENTAL SERVICES

ULCERO-MEMBRANOUS STOMATITIS

Ulcero-membranous Stomatitis

This disease is also known as Vincent's Stomatitis or trench mouth, and, when it attacks the fauces, tonsils and pharynx, as Vincent's Angina. It is contagious and community life provides ideal conditions for it to become epidemic. A state of lowered vitality such as that following influenza, overwork, severe cold or lack of essential vitamins in the diet is a general predisposing cause, while a septic mouth, calculus, overhanging fillings, food traps or impacted teeth provide ideal local conditions.

The etiology being both general and local, combined with its epidemic possibilities, put the disease in the no-man's-land between medicine and dentistry. Its importance as a potential incapacitator of large bodies of troops demanded a clear decision as to whose responsibility it was to treat it and prevent it spreading. As the general health of the troops was the responsibility of the Medical Corps, some medical officers considered it was in their department. As the disease was an oral one, usually diagnosed by the dental officer, and as treatment was mostly local, the dental officers considered it was in theirs.

The instructions from the DDS to his officers were quite clear. They were to treat all cases and were given implicit instructions how to do it. They were warned to be continually on their guard to prevent the spread of the disease. They had to notify the DDS by telegram of every case diagnosed, in addition to notifying the medical officer and unit commander. Apparently the instructions from the Director-General of Medical Services to his officers were not so specific and the medical officers were left to form their own opinions as to who should treat the disease. There was justification for both views but no justification for the lack of co-operation between the two Corps when it came to

treatment.

Matters came to a head in 1941 when the Senior Medical Officer at Papakura Mobilisation Camp refused to admit cases sent to his camp hospital for isolation and evacuated them to the Auckland Public Hospital for treatment, thus taking them out of the control of the Principal Dental Officer of the camp. Under these circumstances the Principal Dental Officer had no option but to inform the DDS that he was unable to accept responsibility unless allowed to carry out the implicit instructions given to him on his appointment. He asked that a ruling be given to settle once and for all where the responsibility for treatment of the disease laid. As a result the Director-General of Medical Services gave the following instructions to the Assistant Director of Medical Services at Auckland:

> **During normal periods, namely when there is no epidemic or other unusual sickness rate in the mobilization camp, the Senior Medical Officer should retain all mild cases of disease whether contagious or otherwise, or accidents which can be effectively treated, in the camp hospital. This includes measles, mumps etc. As regards Trench Mouth in particular, there is no reason why this disability should not be retained in the camp hospital under the treatment of the Senior Dental Officer. The patient will of course be under the general control of the Senior Medical Officer for discipline etc. and the nursing personnel, but will carry out the treatment ordered by the Dental Officer. I may say in passing that the camp hospital at Papakura has a staff of three trained NZANS personnel with NZMC personnel, and the equipment, sterilisation etc., [which] is quite sufficient for dealing with all classes of minor disabilities including contagious diseases.**

As you are aware the one great principle in the Army Medical Service is conservation of manpower and it should be the aim of the medical staff not to evacuate patients who can be equally well treated within the camp area. I do not in any way minimise the importance of Trench

Mouth as a highly contagious disease, but at the same time I do feel that the camp hospital should be prepared to take cases of this nature under normal conditions. Will you please instruct the Senior Medical Officer accordingly.

Apart from treatment which was on standard lines, the most important consideration was to prevent the spread of the disease throughout the camp. The patient's eating and drinking utensils were kept away from the others and each patient received a printed card of instructions.

Most of the cases in New Zealand were of the mild sporadic type and nothing in the form of a serious epidemic occurred. In March 1944 there was a scare when an unusually large number of men, newly arrived from Middle East service, reported at Trentham Camp with the disease. Again in February 1945 there was a slight outbreak at Waiouru Camp. Neither of these was a serious epidemic, although without thorough precautions they might have become so. No case was considered cured until three negative bacteriological tests at weekly intervals had been obtained.

THE NEW ZEALAND DENTAL SERVICES

ARTIFICIAL DENTURES

Artificial Dentures

It has already been pointed out that 50 to 60 per cent of New Zealand troops were wearers of artificial dentures of some kind. These were easily lost or broken and in some cases were a convenient excuse for malingering. With all these men potential casualties, it can be seen that the prosthetic department of the Dental Corps was highly important in the service organisation. Apart from dealing with the casualties when they occurred, the policy of the Corps was to keep the supply of artificial dentures to a minimum. This, of course, applied chiefly to partial dentures which, with certain exceptions, were only supplied where there was a definite masticatory insufficiency without them. Too many partial dentures were worn in the kitbag as it was, so unless the patient was cooperative or a dental cripple, it was a waste of time making them. A rule was therefore laid down which allowed wide discretionary powers but protected the dental officer from the odium engendered by his refusal to make luxury partial dentures. No denture of fewer than six teeth was to be made except on the express instruction of the Principal Dental Officer or officer commanding a dental section. While fully realising that the psychological aspect had to be con- sidered to keep a man healthy in mind as well as body, and that appearance played a big part in this, essential treatment could not be sacrificed on the altar of aesthetics. On the other hand, an officer or NCO would be in serious difficulty on the parade ground with even one of his front teeth missing. In practice, therefore, no man was left with unsightly gaps unless he was quite satisfied to remain that way or had been in that condition in civilian life and had not thought fit to provide himself with a partial denture. Also, so obvious a dental defect was a poor advertisement for the Corps, even if its correction did little to increase masticatory efficiency. The discretionary powers were therefore usually used, even if they elicited an audibly gruff but secretly sympathetic

reprimand from the DDS. [1]

All dentures were made for utility under hard conditions and the aesthetic considerations, while being far from neglected, had to be secondary to this. They were all made of vulcanite, although a certain amount of acrylic resin was available for repairs to dentures of other materials. To produce efficiency and conserve time, the workroom staff in the larger hospitals worked on the chain system. One or two prosthetic officers were appointed and the calling up of denture patients and organisation of the workroom were the result of consultation between them and the senior dental mechanic.

One of the greatest prosthetic difficulties was provided by those men who came into camp with septic mouths requiring extensive extractions. In the early stages of the war, when every man was urgently needed to build up the Division in the Middle East, the Dental Corps was instructed that no member of the forces who was otherwise medically fit was to be debarred from going overseas or withdrawn from a reinforcement because of a dental disability. The average time that an echelon or reinforcement would be in camp, i.e., from date of mobilisation to embarkation for overseas, was two months. It was quite impossible to extract all the teeth and expect the mouth to be healed sufficiently for the construction of dentures of any degree of permanence in so short a time. It was also undesirable that men should go overseas without any teeth or with their mouths in a septic condition. The instructions to dental members of medical boards examining recruits did not anticipate any but the dentally fit being allowed to leave the country and, even then, were sufficiently contradictory to be confusing. (See

Chapter 3.)

The situation was met by a compromise. The teeth were extracted as soon as possible after arrival in camp, as long a time as possible being left for absorption to take place. Before embarkation dentures were made on the understanding that they would have to be remade overseas when further bone absorption had taken place. Many of these were made under extremely difficult circumstances on bulbous, irregular alveolar ridges, but some degree of masticatory efficiency was obtained. A list of all men in this category was sent with the draft so that they could be examined on arrival. Although a modification of this technique might have been more satisfactory, many excellent results were got by this method, and it is certain that even this temporary standard of dental fitness was preferable to the septic conditions on arrival in camp.

Taking everything into consideration, the results obtained in New Zealand for the men going overseas were very good and the highest standard of dental fitness was produced in the time available. There was, however, another problem connected with men who required multiple extractions. Some of them, after having had their extractions, were discharged from the forces instead of going overseas. The Army recognised a liability to provide these men with dentures. Sometimes it was not possible to do this before discharge; for example, the man might be transferred to a public hospital. In these cases the Officer in Charge of Sick and Wounded made the necessary arrangements for him to be treated when available. In most cases the work was done at a camp dental hospital, but occasionally a man had been sent home, perhaps to an isolated district, before the work could be done for him. To bring him to camp, feed and board him and return him home was a considerable expense, and it was recommended that in these cases the work should be done by a civilian dentist at the public expense. The suggested fees were lower than those agreed upon when civilian dentists were treating First Echelon troops. They were:

Full upper or lower denture, £5.

Partial (including first tooth), £1 10s.

Each additional tooth, 7s. 6d.

Unexpected opposition was encountered from the Ministers of Defence and Finance who considered the fees too high. The Minister of Defence suggested that the hospital boards might do the work more cheaply, but on consulting the Minister of Health was told that all the hospitals were too fully occupied with their own work. Apparently the fact that the man would have to be brought from his home to the hospital, fed, boarded and returned home was omitted from the calculation of the cost. Fortunately the argument, which lasted from March to December 1940, ended without the necessity for a decision, as every relevant case was meanwhile attended to in a camp dental hospital and great care was taken that no future case could possibly fall into that category. There is no evidence that the private practitioner was consulted as to whether his patriotism would have prompted him to undertake the work at a financial loss, or at least at a nominal fee.

With so many dentures made for the troops, precautions had to be taken to see that proper care was taken of them. The following was therefore put in camp and routine orders on frequent occasions:

> **All ranks are warned that they are liable to be charged with the cost of replacements of artificial dentures lost through neglect. Dentures must always be removed and put in a safe place before going swimming or when sickness from any cause is likely. Particular care must also be taken during respirator drill and night exercises. Failure to carry out the above is the direct responsibility of the soldier concerned.**

Where the loss or irreparable breakage of a denture originally supplied to an officer, soldier, airman or rating, either at his own or at the public expense, could be shown to have been due to any culpable act or omission on his part, he was placed under deductions of pay for the cost of the new denture. Under service conditions these costs were

assessed at:

Each full upper or lower denture, £2 10s.

Each partial upper or lower including first tooth, 10s.

Each additional tooth up to twelve teeth, 3s.

Each case was referred by the dental officer to the relevant commanding officer, together with all information for his decision regarding liability. There was always the right of trial by court martial. Deductions were entered in the paybook and published in orders.

From the amount of emphasis laid on the provision and maintenance of artificial dentures, it can be seen that New Zealand troops are to a large extent dependent on an adequate dental service. It is doubtful if before the war this fact was fully appreciated and it is hoped that the experience of the war will not allow it to be forgotten. There is much truth in the statement by Bernard Shaw towards the end of the last century: 'When you have the toothache the one happiness you desire is not to have it. When it is gone you never dream of including its absence in your assets.'

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[1] Confirmed by personal conversation between the DDS and author, 5 January 1949.

THE NEW ZEALAND DENTAL SERVICES

ORAL HYGIENE AND CARE OF THE TEETH

Oral Hygiene and Care of the Teeth

Among the instructions issued to dental officers was one relating to the arrangement of lectures to be given to the troops at regular intervals on oral hygiene and the care of the teeth. This most important subject was sadly neglected. The emphasis was on repair rather than prevention, for dental disease was firmly established, and popular opinion was that it was an inevitable companion of civilisation. The subject of preventive dentistry was therefore difficult to teach with any degree of interest. The enthusiast was regarded with polite tolerance of his idealism but with a firm conviction that his panacea would be irksome and probably of doubtful value.

That dental disease can be reduced by proper attention to diet and prophylaxis is beyond doubt. That a series of lectures on the subject can effect this reduction is no more likely in the Army than in civilian life. The man who can stand up in front of a crowd of his fellows, neutralise their apathy, interest them in a technical subject, win their co-operation and fire their enthusiasm must have an exceptional personality. The average dental officer regarded lecturing as a formidable ordeal and, however well versed in his subject, was seldom impressive. A sample lecturette was included in the appendix to 'Instructions to Officers' but could not be repeated too often and, even though it contained excellent material, needed a trained delivery to carry conviction.

Why not therefore appoint a dental officer with the technical qualifications and lecturing ability to carry out this important duty? Specialists were appointed as oral surgeons, others as teachers of prosthetics, but the most important subject was given an ancillary role. The dental officer was busy mopping up an ocean of dental caries. Dry land was a chimera, even then consisting in his fancy of quicksand. It is small wonder that he doubted his ability to stem this mighty tide with

his puny strength and begrudged the time from his well-earned recreation for the necessary effort. The duty was not neglected and many lectures were given. The point is that it is very doubtful if they did any good.

A better approach to the subject might have been to have concentrated on insinuating the postulates of a correct diet into the army rations. Dental disease is a concomitance with improper feeding. Our diet is impoverished by over-refinement of sugars and starches and provides ideal conditions for the growth of mouth bacteria. The lack of detergent foods removes the safeguard of automatic cleaning with its attendant gum massage, as well as depriving us of adequate exercise of the jaws. These and other dietary matters seriously affect the maintenance of dental health and should be given proper emphasis in the policy of the Dental Corps.

Under service conditions diet can be controlled and, with a fighting force largely depending for its efficiency on physical fitness, it should be controlled. The incidence of dental disease could be greatly reduced by the co-operation of dentists, producers, manufacturers, retailers and consumers, but the gap between the first and the last is too great to be bridged by idealistic propaganda while the fleshpots beckon so temptingly. Control could go a long way towards bridging this gap and still provide a satisfying and sapid diet beneficial to dental health and acceptable to the men. The Dental Corps has a duty to assist in this control and might well achieve better results by devoting some of the energy previously spent on trying to reform the individual, to insisting on being represented at the conclaves of the commissariat. With improved diet and an organised campaign of education by competent lecturers, the Dental Corps could give inestimable service to the Army and indirectly to the nation. A word of explanation is necessary here lest it be thought that this is an attack on the army caterers. It is not suggested that the standard of catering in the Army lost any thing in comparison with that in civilian life. It was excellent, judged by that standard. What it is intended to convey is that the diet of our time is

responsible for many of our dental troubles and that service conditions of community living offer a priceless opportunity for the correction of some of its faults.

What success would attend the Corps in this direction is problematical. A previous attempt by the DDS to encourage prophylaxis in the Army met with a rebuff from high authority and it was not nearly so controversial as the regulation of diet. In May 1941 the DDS recommended that every officer and other rank in 2 NZEF entering a district mobilisation camp should be issued with a free toothbrush or denture brush, and that replacements should be available at a cost well below that ruling at the time. The Navy had already been doing this with a brush made in New Zealand from first-grade pig bristles. The canteen boards were prepared to co-operate. The brushes were to be of standard design and quality and could have been sold for about seven pence a toothbrush and ten pence a denture brush as against the ruling price in mobilisation camps of 1s. 6d. for an inferior article. To provide these brushes free for two years to the 2 NZEF was estimated to cost £1141 9s. 9d. The DDS had made full inquiries from suitable firms and had their assurance that the brushes could be made at this cost and delivered to date. The necessary authority was refused but the adoption of standard NZDC tooth and denture brushes for purchase from the various canteens at a nominal cost was commended. The Canteen Board and the NAAFI sold them at a price below one shilling.

The concession was something achieved, but as nobody could compel the troops to buy, there were probably many who went without. Admittedly nobody could compel the troops to use a brush regularly, even if it was issued free, but it is still felt that the decision was an unfortunate one and that an opportunity to educate the troops in at least one method of improving their health was neglected.

THE NEW ZEALAND DENTAL SERVICES

DENTAL CARE OF ISOLATED GROUPS

Dental Care of Isolated Groups

It is interesting to analyse the problems arising when troops are employed for any length of time where dental treatment is not available. This occurred with certain New Zealand troops during the war and as it led to the issue of specific instructions which not only met the situation with ingenuity but removed anomalies affecting the policy as a whole, the story will be told in full.

New Zealand entered into an obligation before the war that, in the event of hostilities, she would be responsible for guarding the cable station on Fanning Island. It was therefore decided to send a platoon from the New Zealand Regular Force to the island. In peacetime the Regular Forces did not receive free dental treatment so no arrangements had been made to treat these men, known as 'A' Company. There was no dentist at Fanning Island and, as the first party was to leave New Zealand in August 1939 before war was declared, there were no dental officers enlisted in the NZDC. The possibility of dental casualties was recognised, as can be seen from the memorandum from the Army Secretary to the Secretary of the Treasury of 22 August 1939:

Re Fanning Island Platoon—Dental Treatment

> **In peace the regular military forces do not receive free dental treatment although this is granted to the Navy and the Air Force.** [1] **In the NZEF all ranks were provided with free dental treatment and no distinction was made regarding the small percentage of regular soldiers serving with the NZEF. There is a resident medical officer at Fanning Island but no dental officer and without considerable expense it would be difficult to make any provision for dental treatment for the platoon. The men will be on the island for at least six months and it is desirable that there should be no trouble**

from the dental side while they are there.

The only, but not entirely satisfactory, solution is to ensure that every man is made dentally sound before he leaves New Zealand and where possible the work to be carried out for a period of six months ahead. As the soldier cannot be compelled to have this treatment carried out at his own expense, it is recommended that the platoon should be treated on the same basis as a force for overseas service and dental treatment provided by the Government. Until the teeth of the men have been examined it is not possible to give an estimate of the cost, but as these men were required to reach a certain dental standard before they were accepted for the Regular Force, it is not anticipated a large amount will be involved.

As the platoon will be sailing at an early date it will take some time to arrange treatment at the most economical rates and it would be helpful if you could treat this as an urgent matter.

This was recommended by Treasury and approved by the Minister. Twenty-six men were treated at a total cost of £95. This concession led to the removal of the anomaly whereby different classifications of fully mobilised troops received different dental privileges. On 6 March 1940 free dental treatment was authorised for recruits to the New Zealand Regular Force.

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[1] The Army Secretary was not accurate in this statement as the Air Force did not receive free dental treatment until January 1940. (Author.)

The platoon left for Fanning Island dentally fit. No dental officer went with it, but the first relief was accompanied by a medical officer, Captain M. Kronfeld, NZMC, [1] who was provided with a dental syringe, needles, local anaesthetic and extracting forceps, as well as facilities for inserting palliative dressings for the relief of pain. He was on the island

from February to October 1940 and reported that there were no cases of either toothache or denture trouble during this period, for which he gave credit to the thoroughness of the treatment in New Zealand before embarkation. It cannot be denied, however, that there was an element of luck in this and the situation was not entirely satisfactory. The chief worry was over those wearing artificial dentures. Of thirty-eight men, ten were wearing full upper and lower dentures, three were wearing full upper or lower dentures and two had partial dentures. That is, approximately 40 per cent were denture wearers.

In April 1941 an attempt was made to give the medical officer some method of doing more for the dental casualty. The DDS wrote to him as follows:

> **Herewith dental equipment and materials contained in a Dental Emergency Haversack ... for your use and to supplement the dental syringe, needles, local anaesthetic and extracting forceps previously supplied.**
>
> **The bradawl and floss silk are for the purpose of temporarily repairing broken artificial dentures, the method being to drill holes with the bradawl close to the line of fracture and lace the parts together with the floss silk....**

This was only an emergency measure and the DDS was not happy about accepting responsibility for the force without further reducing the prospect of dental accidents. He wrote to the Adjutant-General on 23 April 1941:

Re 'A' Company—Dental Standard and Treatment for

1. **With reference to the above force and the existing methods of selection for and despatch of reliefs, it is submitted that where it affects the dental condition of these soldiers, the position is unsatisfactory and resulting in 50% of this force being made up of men who are wearing artificial dentures. They were rendered dentally fit before embarkation on standard**

2NZEF lines and an emergency surgical dental haversack with full technical instructions was issued with the first relief for the use of the medical officer and was replenished whenever it was discovered a relief was embarking, but no provision has or can be made for renewal or repair of artificial dentures without the provision of a full dental section NZDC.

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[1] **Lt-Col M. Kronfeld; Wellington; born Auckland, 25 Jan 1899; medical practitioner; MO Fanning Island, 1940; RMO 28 (Maori) Bn Jun 1941–Jan 1942; Senior Medical Administrative Officer, 2 NZEF, Oct 1943–Aug 1944; Port Health Officer, Wellington.**

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2. The following is submitted for your consideration and approval please:

(1) That as the Director of Dental Services is responsible for the dental treatment and maintenance of the dental health of the armed forces, it is requested that he be placed on the circulation list by General Staff when reliefs for 'A' Company and other special forces are being organised, in order that the question of their dental requirements may be met and arrangements made, where possible, for their dental maintenance.

(2) That in the instance of 'A' Company the following dental standard of fitness be laid down.

'A' Company Dental Standard of Fitness

The dental classification will be:

Dentally fit.

Dentally unfit.

Dentally fit means: No man who is otherwise medically fit will be rejected for dental reasons who has

(*a*) Normal dental occlusion which may include soundly restored teeth or teeth capable of being rendered sound.

(*b*) A masticatory efficiency of not less than nine points, [1] the distribution of the points being left to the judgement of the

Principal Dental Officer who will take into consideration the physical condition of the soldier and the length of time the loss of masticatory efficiency has been existent. If a soldier has been able to stand up to the training in a mobilization camp or a heavy regiment of the NZ Artillery, eat three meals a day and be physically fit with only six incisors, a molar on one side and a premolar on the other side, all occluding, he can continue to carry out the duties involved with this force.

Dentally unfit means: Those wearing or requiring the supply of artificial dentures to remedy a deficiency of masticatory efficiency, taking an absolute minimum of nine points efficiency, or presenting with an oral condition that is considered detrimental to his general health and a menace to his fellow soldiers.

This memorandum had two important results. Firstly, the DDS received the vital information to which he was justly entitled, and secondly, wearers of artificial dentures were debarred from service in places where full dental treatment was not available.

There were men in isolated places other than Fanning Island affected by this new standard of dental fitness, notably the Chatham Islands and the Kermadecs. Both these stations had coastwatchers but, as they were reasonably close to New Zealand (the Kermadecs could be reached in one and a half days by ship), the position was somewhat easier. Therefore, at the request of the Director of Mobilisation, who was having difficulty in getting suitable volunteers who conformed to this rigid standard, the DDS agreed to allow denture wearers to be accepted, provided that new dentures were made for them and the old ones kept as spares in case of loss or breakage.

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[1] **See Appendix II.**

THE NEW ZEALAND DENTAL SERVICES

TREATMENT OF ENEMY ALIENS

Treatment of Enemy Aliens

On the outbreak of war enemy aliens were interned on Somes Island in the middle of Wellington harbour. The New Zealand Government immediately authorised free dental treatment for all internees, the work to be carried out by the NZDC. A dental officer visited the island at regular intervals doing fillings, extractions and prophylactic work, and sending the dentures to Trentham Mobilisation Camp for processing. The policy was to examine all internees every three months. It is interesting to note that reciprocity from the German Government for our nationals interned there was not given until September 1943. The following cable was received from the High Commissioner for New Zealand in London on 5 September 1943:

> **2067. German Government propose on reciprocal basis dental treatment for civilian internees be provided at the expense of the interning power same as for prisoners of war. United Kingdom Government agree on behalf of their own internees. Please advise whether you agree for New Zealand.**
>
> **JORDAN**

The Minister of External Affairs replied on 7 September:

> **No. 616. Your telegram No. 2067. We are agreeable on basis of reciprocity to provide dental treatment for civilian internees of German nationality detained in New Zealand. Indeed we would point out that this free service has been given to German nationals during the whole period of their internment.**
>
> **EXTERNAL**

When it is realised that the New Zealand soldiers who were guarding

the internees at the beginning of the war were members of the Regular Force, and as such ineligible for free dental treatment, the Government's interpretation of its obligation to enemy aliens was generous indeed. This gratuitous concession put the Government in a strong position when it came to dealing with all the petty complaints which they expected and received. Most of the internees accepted the benefits and appeared grateful, but some refused treatment from the dental officer, demanding attention from civilians, and others considered they were entitled to and demanded dental luxuries. As far as the Dental Corps was concerned, the standard of dental fitness and the treatment offered were identical with those for the mobilised New Zealand Forces.

Among the internees was a German who had been practising as a dentist in New Zealand before the war. He asked the Camp Commandant to allow him to have his dental engine with him so that he could work in the camp. At first sight this appeared reasonable and the Commandant granted it, providing no liability was incurred against the Army. It is unfortunate that the request was not more carefully examined as it led to arguments and incidents which might have been avoided. At the instigation of the DDS the permission was withdrawn for reasons given in the following memorandum from the Adjutant-General to the Minister of Defence:

> **The policy at present is for dental attention to be provided by the Army dental section to all internees who require it, on the same scale and up to the same standard as that given to personnel of the armed forces.**
>
> **If permission were granted for the use of this dental engine, it would lead to requests for further equipment, instruments and stores which would involve the Government in an expense which is not justified. The amount of extra equipment which would be involved before an adequate service could be provided would be considerably more than the dental engine now asked for.**
>
> **It is understood that there are other dentists on the island and**

there may conceivably be more in the future, all of whom would have equal claims to consideration, which, if not granted, would lead to a plea of favouritism.

Lastly, if the use of private equipment were allowed, a claim for deterioration on account of wear and tear would undoubtedly be made against the Government at a later date.

It is therefore recommended that the application be declined. The DGMS and the DDS are in agreement.

This was written in May 1941 but did not finish the matter as a further application was made in March 1942 through the consul for Switzerland, quoting an extract from Article 14 (Prisoners of War) of the Geneva Convention:

It shall be permissible for belligerents mutually to authorise each other, by means of special agreements, to retain in the camps doctors and medical orderlies for the purpose of caring for their prisoner compatriots.

Legal advice was sought on this point. The legal opinion was that, considering there was a very complete service provided by the NZDC, this Article did not create any duty to allow the applicant to treat German internees, who incidentally were only in a bare majority. Apart from the legal opinion, an incident had already occurred which showed the inadvisability of granting the application. Just before being deprived of his instruments, the German dentist had extracted all the upper teeth from an Italian internee who had complained of a vague pain in the incisor region. The dental officer had seen the Italian a month before and had signed him as dentally fit. Apart from being a breach of customary ethics, which mattered little under the circumstances, the dentist's action placed the Army under an obligation to provide a full upper denture where one should not have been needed. Permission was therefore again refused. A further offer of assistance from the same source in May 1943 was declined with thanks, the applicant being told

that the NZDC was fully organised and adequate to carry out all necessary treatment.

In February 1943 the internees, about 180 in number, were moved to a camp on the Pahiatua Racecourse in the Wairarapa district because, with the possibility of enemy attack on New Zealand, Somes Island would probably come under fire. An NZDC section was deployed for their use. Occasional visits from this section should have been enough to satisfy any reasonable demands but the internees decided to be difficult. Representations were made by both the delegate of the International Red Cross and Dr Schmid, representative of the protecting power, that a local dentist should attend the camp to undertake special work, such as gold fillings, at the internees' expense. This class of work was not authorised for the New Zealand Forces, but in this case the request was granted on the understanding that the private practitioner should do only that work recommended by the officer commanding the dental section. The privilege was abused and unauthorised work was done.

It was therefore decided that the NZDC section should remain permanently in the camp and undertake all classes of work, which could be done with equal skill and much more expeditiously. The decision as to whether special work was necessary was left to the dental officer, with the right of appeal to the DDS.

This was a considerable concession and placed the internees on a better footing than our own men, who had to pay for special work, as it was considered impossible to implement the decision without providing all materials free. There were still some grumblers but, after explanation by the consul for Switzerland and the German camp leader, nothing further was heard of the matter.

In late 1944 the internees were returned to Somes Island as it was considered by the Chiefs of Staff that the danger of attack had sufficiently diminished. The responsibility for treatment then rested with the officer commanding the dental section at Fort Dorset who visited the island once a month.

In the various reports from the dental officers who examined and treated the internees are some interesting observations on dental conditions and peculiarities. They are insufficient to form scientific conclusions but are worthy of study.

14 February 1941: I personally carried out a dental examination of internees and in no instance was it considered that dental treatment was urgent. A number of chronic conditions was found, being, it is estimated of some years standing. The general cleanliness of the mouths was bad, the Italians on the whole worse than the Germans.

8 January 1942: The oral condition of the Japanese was very bad and apparently no attempt had ever been made at mouth hygiene. Practically everyone who did not require full extractions, required very extensive scaling and prophylactic treatment.

13 May 1942: The oral condition of the Japanese, while showing improvement, still leaves much to be desired.

30 August 1942: ... the oral hygiene of the Italians is not as good as it should be. Nearly half the fillings were for the Germans of the older age group while the percentage of fillings required by the Japanese is small. The Italians without exception dislike dentures and every endeavour has been made to save teeth so that dentures can be avoided. Local anaesthesia is used extensively for conservative work.

Racial characteristics have to be taken into consideration when doing prosthetic work. In particular the best results have been obtained with Germans when the setting up is such that a sliding protrusive movement of the lower jaw is easily made. These internees appear to make that movement the test of comfort in a denture, even though better aesthetic, and just as good functional results, could be obtained with a slight overbite.

All the internees who have had dentures inserted express satisfaction with the results.

8 December 1942: It would appear that oral hygiene of German and Italian internees leaves much to be desired but that of the Japanese is quite good.

The improvement in the oral condition of the Japanese may have been due to the instructions given by the dental officer to their leader, who spoke fluent English. The philosopher might draw conclusions from these reports. The German with his practical outlook demanding mechanical efficiency even at the expense of aesthetic design. The mimicry of the Japanese in his ready adaptation to new conditions, exemplified by his effort to improve his oral hygiene. The *laissez faire* of the Latin, or should it be *status quo*?

When Japanese prisoners of war began to arrive in New Zealand they were given the same generous treatment. They were in camp at Featherson in the Wairarapa and were provided with an NZDC dental section as a matter of course, which is in marked contrast to the service received by our prisoners of war in Germany, Italy and Japan. (See

Chapter 32.)

THE NEW ZEALAND DENTAL SERVICES

TREATMENT FOR OUR ALLIES

Treatment for our Allies

When the first troops arrived in New Zealand from the United States of America, they brought their own dental officers with them. The NZDC offered full co-operation, such as extending the facilities of its hospitals, lending equipment and replenishing stores or acting as *locum tenens*.

New Zealand, however, was not the front line for the American troops and most of them soon moved up into the Pacific, taking their dental organisation with them. Those who remained were not in sufficient numbers to warrant the provision of the United States Dental Corps to treat them.

The DDS arranged that those men attached to the United States Joint Purchasing Board should receive full dental treatment at the Wellington Dental Section by appointment through their own headquarters with the dental officer in charge.

In 1945 the DDS was asked by the United States Government representative in New Zealand to give dental treatment to the men of American ships calling at New Zealand ports. By this time the NZDC was not so widely distributed in New Zealand as previously so dentists in each port were nominated to carry out the work at the scale of fees then operating for the Government National Dental Service Scheme for adolescents. Between the NZDC and the civilian dentists a considerable amount of work was carried out for ships of the United States.

A ship that received regular attention from the NZDC was the No. 1 Netherlands Hospital Ship *Oranje*. She carried an NZDC section which, in addition to being responsible for the 2 NZEF men for whom it was primarily put on board, carried out the necessary treatment for the Australian, English, American and Canadian troops, and the ship's staff

and German internees. On at least one occasion the Royal Netherlands Navy also received treatment from the NZDC.

THE NEW ZEALAND DENTAL SERVICES

RECORDING AND REPORTING

Recording and Reporting

The life of the Corps depended to a large extent on accurate information being individually recorded and collectively analysed. Most of the recording was standardised by the use of printed forms. Reports were daily, weekly, monthly and sometimes annually, each with its definite destination through rigid channels of communication.

Anything not covered in this way was embodied in a written report by the dental officer commanding the section. This report was not compulsory and was often omitted. It may not have appeared, either to the dental officers or to the DDS, to have been of vital importance at the time, but the value to the historian cannot be too strongly stressed. It represented the thoughts and problems of the officers most intimately connected with the details of the NZDC organisation which can never be recaptured by studying impersonal official reports. In this respect the war diaries of commanding officers overseas varied from the bare record of daily routine duties to vital human documents providing richly coloured miniatures to enrich the finished canvas. It should be borne in mind that apparently unimportant details when connected together often produce an answer of the utmost importance. The progress of the Corps in the future might well depend on the faithful recording of every detail, however unimportant it might seem at the time.

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CHAPTER 12 — ORGANISATION AND ESTABLISHMENT

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[SECTION]

THE first commitment of any size made by New Zealand in this war was to send a force of approximately divisional strength to the Middle East. The men were to be initially trained in mobilisation camps and sent overseas in three echelons, to assemble in Egypt to complete their training. The policy was to send the echelons and all reinforcements overseas in a 'dentally fit' condition, and with them a sufficient number of the New Zealand Dental Corps to maintain a high standard of dental health.

The general framework of the dental organisation overseas was envisaged in the light of experience in the First World War. This was a convenient, in fact the only, framework on which to build. That it had to be pulled to pieces and rebuilt could not reasonably be foreseen at the time, any more than that the type of warfare would be so different from that of twenty years before. The Director of Dental Services, a veteran of the First World War, laid down the framework and faced the decision of selecting an Assistant Director to build the new organisation.

He needed someone with some knowledge of past organisation and administration. Someone with initiative and organising ability; fit enough to withstand the rigours of a campaign in a difficult climate; strong enough to pioneer an efficient service and impress on all concerned its necessity; tactful, if known and unknown antipathies were to be overcome; young enough for a young man's war but sufficiently mature to have his judgment respected and his authority unquestioned. He chose wisely from among the dentists who volunteered for service at the beginning of the war.

James Ferris Fuller, BDS, had graduated at the Otago University in 1935 and was practising his profession in Masterton. He had interested himself in the work of the Dental Corps, holding a Territorial commission as a lieutenant and had passed the examination for

promotion to captain. Enlisting at the outbreak of war, he was posted to Trentham Mobilisation Camp in the rank of lieutenant in October 1939 at the age of 26. His promotion to captain followed almost immediately and, although he was the youngest of the four officers selected to sail with the First Echelon, he was appointed as ADDS. He fully justified the choice by the excellence of his organisation.

The story of the NZDC with 2 NZEF in the Middle East and Central Mediterranean is his saga and reflects the greatest credit on him personally. He had a flair for reducing intricacies to a common denominator and always a clear view of the objective. He redesigned the foundations on which the organisation was built and vigorously defended them against all opposition. His reward was a dental service second to none, covering all contingencies and running as on oiled wheels.

Captain Fuller's appointment to ADDS was gazetted on 5 January 1940 but was not clearly defined. Much of the business of the Dental Corps at this time was conducted orally, as indeed it had to be with an almost complete absence of clerical staff. The most diligent search has failed to produce written instructions from the DDS to the new ADDS. The only instruction that can be found is one to all officers of the NZDC proceeding overseas, which is in general terms:

> **You are privileged in being included in the Second New Zealand Expeditionary Force and you were chosen with the knowledge that you would uphold the honour and tradition of your Corps and conduct yourselves as officers and gentlemen. This is also an opportune moment to thank you for the loyal and strenuous service you have rendered under adverse conditions, the least being inadequate equipment and accommodation....**
>
> **Overseas you will be responsible to the Assistant Director of Dental Services for the dental treatment of the troops. He will issue his 'Instructions to Dental Officers'.**
>
> **With the strictest observance of Service Regulations and**

Procedures, the continuance of the loyalty and co-operation you have shown, so will that essential *Esprit de Corps* be built up and the traditions of the New Zealand Dental Corps and your profession upheld.

B. S. Finn,
Lieutenant-Colonel,
Director of Dental Services,
Army and Air

Army Headquarters,
1 January 1940

The lack of written instructions in itself was not serious as it was certain that much of the organisation would have to be left to the initiative of the ADDS. There was, however, a looseness of definition in the appointment which added to his administrative difficulties. It is presumed that it was intended that Captain Fuller was to be ADDS of the 2nd New Zealand Expeditionary Force about to assemble in the Middle East, as indeed he eventually became. To this end his correct attachment was to the Headquarters of that force, which would be at the Base as distinct from the Division in the field. When the First Echelon assembled in Egypt the base units were small and the Division was not ready for the field. The divi- sional establishment was patterned on that of a British division, which did not include an ADDS, and as Divisional Headquarters acted at that time as Force Headquarters, the ADDS found himself outside the administrative circle. The tail was trying to wag the dog. It was difficult to administer from this position as vital information, automatically distributed to those in official appointments, had to be garnered from personal interviews or received secondhand, possibly edited and mostly late.

Central and Eastern Mediterranean

The First Echelon embarked on six transports at Wellington and Lyttelton on 5 January 1940. There was an air of gala about the embarkation, tinged with sadness and not a little envy. Fourteen of the NZDC, consisting of four officers, a staff-sergeant, six clerk orderlies and three mechanics, sailed with the echelon. Equipment was limited to a dental emergency haversack for each transport. As there were only four dental officers, two of the transports had to be without a dentist, but it was expected that on these the medical officer would be able to deal with emergencies. With a few exceptions, all the men had been made dentally fit at the mobilisation camps and the haversacks contained equipment for extractions under local anaesthetic, hand instruments and medicaments for the alleviation of pain, and a vulcanite scraper and file for easing dentures.

For the purpose for which they were issued, the haversacks were a success, but in the light of experience they fell short of the ideal. On the other hand, it must be remembered that there was an acute shortage of dental equipment in New Zealand, where the bulk of the dental work at this time had to be done. A comparison between the instructions issued by the DDS and the report by the ADDS on arrival in Egypt shows the intention, the practice, and the degree of success of the dental service on these first transports to leave New Zealand.

THE NEW ZEALAND DENTAL SERVICES

D.D.S. TO OFFICERS N.Z.D.C. PROCEEDING OVERSEAS. 1 JANUARY 1940

D.D.S. to Officers N.Z.D.C. Proceeding Overseas. 1 January 1940

Your duties on board H.M. Transports are of necessity limited to the alleviation of pain and dental treatment of an urgent nature as dental equipment is not being sent out of New Zealand. However, an emergency outfit has been fitted in a Dental Emergency Haversack and has been placed on Stock Ledger Charge to the Ship's Quartermaster for your use on the voyage. You will be responsible that this haversack is handed over to the quartermaster prior to disembarkation accompanied by an indent for any shortages.

You will attend at all sick parades on board and co-operate with the Medical Officer in giving necessary dental attention and keep a record on Form N.Z.D. 3 (to be entered in the same form in your Day Book which you will receive at the N.Z. Base Depot).

You will strictly observe 'Ship's Standing Orders', be responsible for the discipline and supervision of the ship-board duties and training of your other ranks and also take your part in the ordinary routine of duties.

THE NEW ZEALAND DENTAL SERVICES

DENTAL ARRANGEMENTS ON H.M. TRANSPORTS, 1ST ECHELON, 2 NZEF BY CAPTAIN J. F. FULLER, A.D.D.S

Dental Arrangements on H.M. Transports, 1st Echelon, 2 NZEF by Captain J. F. Fuller, A.D.D.S.

The dental emergency haversacks in themselves were excellent and satisfied all demands for the purposes for which they were issued, i.e., dental treatment of an emergency nature. It is felt, however, that for a voyage of practically six weeks duration there should be facilities available for treatment of a more comprehensive and permanent nature. The main dental problem on all transports is that of broken dentures; tiled bathroom floors and similar conditions increase the number of broken dentures and with a force in which 50% of all ranks are wearing artificial dentures, the percentage of denture casualties must inevitably be high. It is considered then that in a voyage such as this, equipment should be carried sufficient to enable repairs to dentures to be carried out.

Again, there were patients presenting with toothache where extraction was the only treatment for the reason that facilities were not available to enable old amalgam fillings to be removed and a dressing inserted. In the absence of more detailed equipment there should at least be foot engines and necessary other items on transports to enable these cases to be dealt with satisfactorily.

In instances where soldiers present for treatment and will require further treatment on arrival at the overseas destination it is essential that dental officers note details of work required and number, rank, name and unit of patient. From these lists it is possible to organise a satisfactory system of calling up patients. Urgency should also be noted.

As a guide to the future the recommendations of the ADDS were of value, but with the equipment position as it was in New Zealand at that time, vulcanisers for denture repairs and foot engines were in the shortest supply. At this time nearly all dentures were made of vulcanite.

The work done on the four transports carrying dental officers was:

Patients seen	300
Denture cases (easing or repairs or remodels required)	146
Dressings	52
Extractions	34
Other operations	66

Perversely, the largest number of dental casualties was on the two ships not carrying dental officers.

The convoy stopped at Fremantle and Colombo and arrived at Port Tewfik on 12 February 1940.

There were two camps under construction near Cairo. One was at Maadi and the other some distance away at Helwan. The ADDS arrived at Maadi on 12 February, full of enthusiasm and anxious to begin work. He was sadly disillusioned. The dental equipment ordered from the United Kingdom by Army Headquarters in Wellington, which should have been there before him, had not arrived. There was no information as to what plans had been made to provide equipment for the future, except the verbal assurance from the DDS that everything had been arranged. No provision had been made for a camp dental hospital and there was no reference to one in the finalised plan for Maadi Camp, nor for Helwan. Neither site nor accommodation had been selected for the Dental Corps, whose existence might well have been overlooked except for an ever-growing queue of men with broken dentures.

One of Captain Fuller's first calls was on Lieutenant-Colonel O'Connor, ADDS of the British Troops in Egypt (BTE), and in this he was fortunate. Colonel O'Connor lent him two complete field dental outfits and one prosthetic one, withdrawing them from his own units for the

purpose.

The accommodation question was not so easily settled. On discussing the matter with the British DCRE (Deputy Commander Royal Engineers) he was told that after submitting a plan for a hospital it would be about two months before the building would be ready for occupation as the application would be at the bottom of the list of priorities. He then tried the New Zealand CRE (Commander Royal Engineers), whom he had met on the voyage, apparently approaching him at a propitious moment for it was arranged that his sappers, as an exercise, would erect the building immediately, provided timber could be supplied. With Colonel O'Connor's assistance a plan was drawn, based on a simple standard living hut, timber was forthcoming, and the ADMS (Assistant Director of Medical Services) gave his approval for camp dental hospitals to be built at Maadi and Helwan camps. Both these camps were spread over a wide area, so the dental hospitals were sited as centrally as possible in each camp. Meanwhile, urgent casualties were being treated by the dental sections attached to 4 Field Ambulance, using private equipment.

The dental officers with the First Echelon had been appointed to specific units according to the plan of the DDS at Army Headquarters. They were, apart from the ADDS:

Captain E. B. Reilly, attached to New Zealand Base Depot.

Lieutenant W. McD. Ford, attached to 4 Field Ambulance.

Lieutenant C. C. S. Loeber, [1] Mobile Field Dental Section, also attached to 4 Field Ambulance.

This rigidity of allocation was in line with past policy, when it was usual for dental sections to be attached only to medical units. It was at variance with the ADDS's conception of the organisation, which was one of fluidity of movement throughout the whole force. It should be explained here that, although the ADDS was appointed on the advice of the DDS and was dependent on him for his reinforcements, he was not

answerable direct to him for the conduct of his organisation. He was answerable to the General Officer Commanding the Force, who himself was responsible only to the New Zealand Government and not to Army Headquarters in Wellington.

It is possible that if the equipment had arrived on schedule from the United Kingdom, the ADDS would have been hesitant to alter the allocation of his dental officers quite so early as such a move was inviting criticism, not only from the DDS but from the ADMS, who also held conservative views. The decision, however, was forced on him as he had three officers but only one prosthetic and two surgical outfits, with patients clamouring for treatment, especially with broken and uncomfortable dentures. The obvious course was to concentrate his forces where the greatest amount of work could be done with the least interference with training programmes. The troops were concentrated in Maadi Camp under conditions similar to that in mobilisation camps in New Zealand.

He therefore set up a temporary camp dental hospital in the general Base Depot area consisting of two marquees, one surgical and one prosthetic. The two dental sections were withdrawn from 4 Field Ambulance and transferred to the Base Depot, allowing each officer to concentrate on a particular branch of his profession as well as to train his men in general and specialist duties.

This decision can be regarded as the birth of the new organisation, slightly premature by force of circumstances and consequently to be carefully nurtured. The DDS had to be told of the change so that reinforcements would feed, not poison, the infant. Official channels of communication were too slow so Captain Fuller, with the sanction of the ADMS, wrote unofficially by airmail asking that all officers in future reinforcements be sent without rigid allocation, 'so that I can concentrate them without any movement difficulties according to units and work presenting in the respective camps.' With the establishment of a service capable of satisfying all immediate demands of the force, there

was time to examine the general position in more detail.

Accommodation had already been arranged in the shape of two camp dental hospitals, each capable of providing nine chairs. Short of supervision of the construction, which actually proved to be very necessary, this problem could be temporarily forgotten. The chief worry was over equipment. It was intended to draw supplies from England on the lines of those used by the Royal Army Dental Corps. Supplies from New Zealand were uncertain in selection and amount as the DDS was hard pressed even to provide enough for the Corps at home. The whole situation was extremely confused by lack of information as to how much had been ordered, what it consisted of, when it would arrive and what would be available in the future. Cables and letters sped to New Zealand in an attempt to find a basis for negotiation. The British panniers on loan were scrutinised with a critical eye. Medical stores were investigated and found to hold only small stocks of dental equipment, insufficient to fill panniers. The DDS was sympathetic and said he would make a move to obtain more if definite requirements could be stated. At this stage this was impossible. He also said that medical equipment for either one or two general hospitals, three field ambulances and a convalescent hospital had been ordered, and that dental equipment might be included in this, but he was not sure. Local sources of supply were meagre and required special authority from the GOC to purchase, such authority being sparingly given. There was, in fact, a general confusion, not made easier of solution by the vagueness of the ADDS's appointment, necessitating tortuous channels of communication. The best results seem to have been obtained by short-circuiting these channels, achieving the objective and apologising afterwards.

Already it was becoming apparent that the final solution to the problem was going to be a pooling of equipment from all sources and a re-issue on standard lines to an original and new design. Before reaching the smooth waters of standardisation, however, many tributaries had to be explored, all of which added their quota of interest and played their part in the simplification of a bewildering problem. Comment made at

the time, when the mind was unbiassed by a knowledge of the solution, gives the only true picture and is reproduced for that reason, shorn only of tedious repetition and occasional picturesque phrases incompatible with an official history.

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[1] **Capt C. C. S. Loeber; Wellington; born NZ 2 Jul 1913; dental surgeon.**

THE NEW ZEALAND DENTAL SERVICES

FULLER TO FINN:

Fuller to Finn:

We have been able to realise the limitation of the R.A.D.C. Dental Outfits. I like their chair and case which is both light and extremely efficient regarding attachments and movements etc., and also the type of pannier with the collapsible front and removable metal cabinets of instrument trays. However your outfit, even though it is so much smaller and lighter, is infinitely better equipped, more practical and far more use in the Field. It is not possible to open out these outfits in the Desert for example and begin work, in five minutes. Tables, kidney bowls, dishes, primuses, buckets etc., have to be borrowed or stolen (Mostly the latter at the moment) before one can commence. In other words it is obviously designed for use in units where such items can be easily supplied, e.g., Field Ambulance, General Hospital etc. I was gathering further information from Colonel O'Connor today and, as he points out, they have no one in advanced positions in the field, they are at the moment very worried about the denture question in the field, examination of dental cases etc., and are looking for the solution —their solution, as he realises, is in your scheme.

THE NEW ZEALAND DENTAL SERVICES

FULLER TO FINN:

Fuller to Finn:

The dental engine in the R.A.D.C. pannier is contained in a special metal case and will not fit the compartment in the New Zealand type. If you are sending our panniers you will have to send them with engines— otherwise let me know and I will see if they can possibly be procured from England. You will need to include both engine and cabinet. An engine cannot be fitted into the R.A.D.C. pannier so that if you are not sending our panniers I will either have to use two panniers or design a new one based on available B.T.E. dental equipment. The R.A.D.C. equipment should be ideal for Base units and for equipping the Divisional Dental Hospital.

THE NEW ZEALAND DENTAL SERVICES

FINN TO FULLER:

Finn to Fuller:

Your cable for list of equipment that is being sent may be answered in one word. 'None.'

I am sending you eight surgical panniers with engines (Straight Hand-piece and Contra-angle Handpiece, at great sacrifice so don't expect any more handpieces), cabinets, and not one other article.

The stores panniers will have nothing in but basins, eight chair cases, chairs, collapsible wash basins, dental officer and oral hygiene signs, pendant and pole, two blankets and any other darned thing we can spare and that is not saying much.

THE NEW ZEALAND DENTAL SERVICES

WAR DIARY ADDS, 25 MARCH 1940:

War Diary ADDS, 25 March 1940:

The list of equipment being forwarded from New Zealand with the Contingent (Second) is given. A list is given of the total equipment (Dental) requested from 'Liaison' [1] London for the Dental Services with the 2 NZEF. This latter list does not agree with previous information from New Zealand. The equipment issue is becoming confused and after discussing the matter with the A.D.M.S. it has been decided to write to 'Liaison' stating the position and asking for verification of the information in the above cable and elucidation of other doubtful points.

The problem can be summarised:

Royal Army Dental Corps panniers, while possessing some advantages over the New Zealand ones, such as the collapsible front and sliding instrument trays, were insufficiently equipped for the service visualised by the NZDC. They were impracticable for field work unless the section was attached to a medical unit, and even then were short of essential instruments for oral surgery and certain stocks without which the New Zealand dental officer considered his conservative dentistry would suffer. The prosthetic pannier was bulky and heavy, being designed for work at a base, the policy of the RADC being not to process or repair dentures at sections in the field.

Owing to differences in design between British and New Zealand panniers, certain essential equipment such as engines and instrument containers were not interchangeable.

Sources of supply would be mainly British, supplemented by selected items from New Zealand, if and when procurable.

Very little was available from local purchase but some articles such

as folding tables and similar furnishings could be made when time permitted the drawing of designs.

The urgent need was to collect equipment from every source, break bulk and re-issue to a new standard more closely related to the needs of the New Zealand Dental Corps. It was an attempt to simplify the issue by viewing the dental treatment of mobile and static troops as one problem from the professional angle, establishing a standard minimum scale of issue for every section wherever employed, and regarding specialist equipment as something to be added to this when circumstances so demanded.

This was the appreciation of the situation at the time and was, of necessity, theoretical, although in the light of experience in the Western Desert some few months later it was remarkably accurate.

Apart from the equipment problem, there were daily questions affecting the general organisation requiring careful answers if the proposed service was to reach maturity in anything like the form in which it was visualised by the ADDS. Heads of all units were busy with their own problems and it was difficult for a junior captain in charge of a service on the outer fringe of the administrative circle to demand attention from brigadiers and colonels. Energy and perseverance, combined with idealism and a clarity of perception, broke these barriers and won respect and acknowledgment. Some of the early problems are of interest.

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[1] **Code word for New Zealand Military Liaison Officer, London.**

THE NEW ZEALAND DENTAL SERVICES

WAR DIARY, 6 MARCH 1940:

War Diary, 6 March 1940:

Discussed the artificial denture problem with the A.D.M.S., in particular the steps that might be taken to reduce the number of broken dentures presenting daily. It is felt that many of these are being wilfully broken and that steps should be taken to make it clear to soldiers that in cases of this nature repairs and renewals will not be undertaken at the public expense. Also discussed the position regarding oral hygiene and the uncared-for condition of the mouths of the majority of soldiers presenting for treatment.

As a result orders were promulgated by the GOC on both subjects similar to those existing in New Zealand. (See

Chapter 11.)

THE NEW ZEALAND DENTAL SERVICES

WAR DIARY, 6 MARCH 1940:

War Diary, 6 March 1940:

A.D.M.S. will not authorise the use of the standard Oral Hygiene bench as used in New Zealand and objects, in particular, to the uncovered buckets.

A standard bench was designed, capable of being erected by sections where other facilities were not available and sufficiently small to be carried in the panniers.

THE NEW ZEALAND DENTAL SERVICES

WAR DIARY, 6 MARCH 1940:

War Diary, 6 March 1940:

Ascertained that new paybooks (AB64) are to be issued and that the finalised copy is already about to be printed. No provision has been made for space to insert particulars of artificial dentures supplied and steps had not been taken to replace N.Z. 361A, at present in the New Zealand paybooks. Discussed the position with the Paymaster and finally with the Assistant Adjutant and Quarter-Master-General. The latter is not prepared to print a page similar to N.Z. 361A but will insert a space similar to that in the British paybook and headed 'Particulars of new dentures supplied'.

This emphasises the administrative wilderness in which the ADDS was wandering. It is remarkable that anything affecting the Dental Corps was not first referred to the head of the service for comment, and inconceivable that, had the ADDS been included in the ordinary distribution list, such an oversight could have occurred.

THE NEW ZEALAND DENTAL SERVICES

WAR DIARY, 19 MARCH 1940:

War Diary, 19 March 1940:

Letter received from D.D.S. to the effect that twelve officers, twelve orderlies and four mechanics are being sent with the second echelon. The dental condition of the force in relation to examinations in Egypt does not warrant this number of officers as filling work will obviously be of little concern for some time. The denture problem on the other hand necessitates a greater number of mechanics. The A.D.M.S. agrees with this opinion and A.H.Q. [1] has been cabled to the effect that six officers and six mechanics are recommended for the second contingent.

The result of this cable was that seven officers, seven orderlies and two mechanics sailed with the Second Echelon. The DDS had very definite ideas as to the requirements of the overseas force and, according to his letters to Captain Fuller, a limited faith in that officer's appreciation of the situation.

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[1] **Army Headquarters.**

THE NEW ZEALAND DENTAL SERVICES

FULLER TO FINN:

Fuller to Finn:

I still think, sir, that the number of dental officers should be kept down, both on account of the excellent dental condition (of the Force) and also as a matter of policy, otherwise the axe will go through something....

Dentures are a different matter—in fact alarming—and we cannot reduce a tremendous waiting list. It was for this reason that I recommended six mechanics with the six officers....

To me here it is a matter of tactics since I have the impression that the Division think we are going well over requirements. It seems to me better to be able to say that we cannot cope with the work than to have them think that we are overstaffed.

THE NEW ZEALAND DENTAL SERVICES

FINN TO FULLER:

Finn to Fuller:

I notice your remarks regarding the amount of work presenting and am worried that you will let this influence you—as is evident by your last cable asking me to reduce my quota of 12 officers, 16 other ranks. It is too late thank God for I assure you in three months' time you will be very grateful for them....

You talk of officers not being able to find work. What is the matter with their doing prosthetic work? It had to be done in the last war and certainly can be this time.

There was a noticeable disinclination on the part of the DDS to relinquish control, possibly from anxiety to shield the fledgling from familiar potholes of the past. Most of the potholes had been filled with the sands of time, while the wheels of progress had carved new ruts for only the present to see.

One of the main lessons learned in administration of the Dental Corps in this war was the folly of prejudging a situation without proper allowance for changing circumstances. This was borne out on many occasions, with the result that too many square pegs were designed for round holes. An example of this was the New Zealand Mobile Divisional Dental Hospital which the DDS proposed to establish, design, staff and train in New Zealand for attachment to 2 New Zealand Division. More will be said later about this unit, but as it was the subject of considerable correspondence and helped by its very incompatibility to publicise the Corps in Egypt, some account of its origin and intent belongs in this context.

The unit was based on one that came into existence in the First World War to operate within the Division in addition to the orthodox

establishment of the dental sections attached to the field ambulances. It was to be a self-contained unit and was to be trained in New Zealand. The intention of the DDS was that it should operate with the Division and have its own commanding officer separate from the ADDS. It was expected to arrive in Egypt with the Third Echelon. All the ADDS knew about it was that it was coming, and as far as he understood the terms of his appointment, anything of a dental nature connected with the force came under his direct control. Somewhat naturally, he was expected by Force Headquarters to include in his appreciation of the dental situation details of the Divisional Dental Hospital. This he was unable to do accurately as the DDS had given him no information regarding transport, weight of equipment, or proposed attachment of headquarters or sub-sections. Eventually, in response to urgent requests, the information was sent by the DDS, but the ADDS had to summarise his arrangements for the dental treatment of the force for the information of Force Headquarters before these details arrived.

Headquarters' request for a report was the end of the first stage in the establishment of the Corps with 2 NZEF. In April 1940 it was evident that the Base was to be reorganised and formed into Headquarters 2 NZEF, in which the ADDS would hold his rightful position. He was asked to forward to Headquarters all details of his proposed organisation and he replied as follows:

THE NEW ZEALAND DENTAL SERVICES

PRÉCIS OF DENTAL ARRANGEMENTS AND PROPOSED DISTRIBUTION OF DENTAL SECTIONS WITH 2 NZEF

Précis of Dental Arrangements and Proposed Distribution of Dental Sections with 2 NZEF

All ranks are being rendered dentally fit before leaving for Egypt and to achieve this there is one dental officer to every 200 men in camp in New Zealand.

The object of the Dental Corps overseas is to maintain all ranks dentally fit, to prevent a return to the uneconomical condition that mouths were in on enlistment, and to justify the ... expenditure in New Zealand.

With the first contingent the basis is one dental officer to every 2,000 men. (Three dental officers apart from the A.D.D.S.)

With the second contingent the basis will become one dental officer to every 1,000 men overseas. (Arrival of seven dental officers.)

With the third contingent the basis will become one dental officer to every 600 men overseas. (Arrival of twelve dental officers.)

Thereafter the dental personnel will be such that there will be a basis of one dental officer to 600 and one mechanic to 1,200 men. [This ratio was changed later.]

This figure is an international one and is considered by the profession to be that necessary to maintain dental fitness.

The allocation of personnel will probably be as follows:

Convalescent Depot	1 dental officer
Inf. and Gen. Base Depot	1 dental officer
General Hospital	1 dental officer
Field Ambulance	3 dental officers
Divisional Dental Hospital	8 dental officers
Total	14 dental officers

This will leave a surplus of eight dental officers to be used as a 'Pool' and to be used in training camps etc., to augment units requiring additional dental personnel, e.g., should there be 700 men at Base, one dental officer will be attached. Should there be 3,000 it may be necessary to attach five dental officers.

1. Training Camps. The policy is to establish camp dental blocks in training camp areas, NZDC personnel being temporarily detached from their units such as Field Ambulance etc., this arrangement not only enabling the maximum number of dental officers to use the minimum equipment but also enabling the maximum volume of work to be done with the least interference with unit training programmes.
2. Convalescent Depot. One dental officer, one orderly and two mechanics. This section is fully equipped and it is proposed that all ranks be examined on arrival at the depot and rendered dentally fit before returning to their unit or other formation, i.e., the soldier returns dentally as well as medically fit. The attached personnel can be augmented depending on the work presenting.
3. Infantry and General Base Depot. One dental officer, two orderlies and one mechanic. As above it is proposed that all ranks be examined on being taken on the strength of this unit and, as far as practicable, rendered dentally fit before proceeding to the Field. The attached personnel can be augmented depending on the amount of work presenting.
4. Reserve Depot, Command Depot, etc. If and when these are established, dental sections will be attached and a procedure similar to the above adopted.
5. Discharge Depot. (When established.) It is submitted that all ranks to be discharged should be returned to New Zealand dentally fit and to this end, and when work warrants it, a dental section will be attached to the depot. In the meantime the section attached to Headquarters 2 NZEF Base will render these

men dentally fit.

6. General Hospital (600 beds). One dental officer, one orderly and one mechanic.
7. Dental Arrangements with the Division.
   (*a*) Field Ambulance Sections. One dental officer and one orderly. The dental outfit with the Field Ambulance equipment has no provision for repair or replacement of broken or lost dentures. A van, 12 cwt., 4-wheeled, is provided for the dental officer and his equipment. The above is in accordance with RAMC establishment.
   (*b*) Mobile Divisional Dental Hospital. 50% of our troops are wearing artificial dentures, a feature peculiar to New Zealand troops. Denture casualties were a problem in the last war, and already more denture cases are presenting in a month with 6,000 men than present in three months with two Divisions of British troops in Egypt. It is obvious that the Field Ambulance Sections are unable to deal with this problem, neither can they cope with the bulk of surgical and filling work that is present with troops. Without some other arrangement the evacuation of dental casualties is inevitable. For this reason the Mobile Divisional Dental Hospital is once again being established. I have to admit that as yet I am not familiar with the details of this unit but expect details to arrive from New Zealand at any moment. The establishment is eight officers and twenty-six other ranks including cook, batmen and drivers. According to a communication from Colonel Finn the unit is completely self-contained with its own transport. The fully equipped body and personnel are arriving with the third contingent. The chassis for a 3-ton Leyland Lynx lorry is due to arrive from the United Kingdom in June. All available information is contained in notes written by Colonel Finn. I have revised these and enclose a copy.

J. F. Fuller,
Captain, NZDC,
ADDS

2 NZEF Base,
Egypt.
14 April 40

Colonel Finn's notes are included later when the details of the formation of the Mobile Divisional Dental hospital are discussed.

This report was well received and undoubtedly helped the Corps to gain a foothold on the administrative ladder. It received the following reply:

Memorandum for:

ADMS

The statement produced by the ADDS covering the distribution of the dental sections has been perused by the Comd. NZ Div., who wishes to express his appreciation of the clear manner in which it was set out.

The following comments are made:

1. **Only one General Hospital appears to be allowed for but there appear to be ample officers in the 'Pool'.**
2. **The ' Mobile Divisional Dental Hospital' while an excellent idea in principle, cannot in fact be either 'Mobile' or 'Divisional', in the true sense of the words. With a highly mechanized fast moving Division it would be very difficult for such a hospital to function as a real integral part of the Division. What would, in fact, happen would be that the hospital would proceed to the Overseas Base and there would wait until the Division came out for a period of rest. The hospital would then move up and commence operating. I gather that, in fact, it cannot function efficiently without remaining in one place for at least a week. The memo. from the DDS New Zealand is clearly based on memories of Trench Warfare in France. I think the term 'Divisional' must be dropped. 'Mobile' could be retained and the hospital be known as the 'Mobile Dental Hospital'.**

W. G. Stevens, [1]

Lieut.-Col.

AA & QMG

19 April 40.

With the formation of a Headquarters 2 NZEF Base imminent, the time was ripe for a stabilisation of the equipment position by the establishment of a dental store and the ADDS made detailed submissions accordingly, concluding with the statement:

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[1] **Maj-Gen W. G. Stevens, CB, CBE, m.i.d.; England; born London, 11 Dec 1893; Regular soldier; NZ Fd Arty 1915–19 (Maj); AA & QMG, NZ Div, 1940; Officer in Charge of Administration, 2 NZEF, 1940–45; GOC 2 NZEF, 22 Nov 1945–6 Jul 1946.**

THE NEW ZEALAND DENTAL SERVICES

DENTAL ARRANGEMENTS—DIVISIONAL AND NON-DIVISIONAL

Dental Arrangements—Divisional and Non-Divisional

All recommendations regarding dental arrangements and treatment with the 2 NZEF will, as at present, be referred to the ADMS or the Senior Administrative Medical Officer for his approval.

It can be seen that the ADDS was working on definite lines to establish a dental service for the whole force of extreme mobility, without any rigidity of allocation of personnel to any one unit. His views were receiving a sympathetic hearing from Force Headquarters and he was writing long letters to the DDS in New Zealand keeping him informed of progress. It soon became obvious that these letters, written from a sense of moral obligation to keep the DDS fully acquainted with the situation and to solicit his support, were adding to his difficulties. The DDS apparently regarded the radical alteration of his organisation as revolutionary and retrograde and attempted to influence the position by enforcing the rigidity of attachment originally suggested. Radical and revolutionary it was, and it created problems for the DDS in the provision of personnel and equipment, bound, as he was, to the shibboleths of the past and under an obligation to justify the quantities of his selection. His long experience and profound study of warfare made him hesitant to acquiesce in the demolition of an organisation that had won admiration in the past, but it could not be disguised that the possibility of changing circumstances might make it inevitable.

THE NEW ZEALAND DENTAL SERVICES

FINN TO FULLER, 29 APRIL 1940:

Finn to Fuller, 29 April 1940:

I note you say 'Don't allot the personnel, but leave it free' and I agree and will when the Division is formed, but have to allot personnel to Field Ambulance, General Hospital, Convalescent Depot and, of course, the Mobile Dental Section, but the balance I have marked as Base Depot and will [include] in the reinforcements. The Mobile Unit will not be broken up as they will all be selected and trained and MacKenzie will command not you as I stated in the original notes to ADDS and GOC. You have got your own job and cannot handle a unit like this.... you of course must see that you are at Base for no move has apparently been made to provide the ADDS Division as I asked. MacKenzie will have to be advisor to ADMS as OC Mobile Unit. The Unit (Mobile) as a whole can always be moved in its entirety and always be ready to divide up when war conditions admit and should never have to be left out of the movements of the Division and I see no reason why it should ever leave the Divisional area.

Keep to the figures you quote as necessary to maintain dental fitness (one officer to 600) which I agree with and was working to until your cable came. Don't forget that you cannot draw on the Mobile Unit for any personnel nor the Medical Units. If you want officers or mechanics in addition to what is already on the stocks, be definite in your demand and I will get them away, but I should be warned in plenty of time if possible.

The Officer Commanding the Mobile Section is the link with ADMS and responsible to you through him.

There was no advantage to be gained by attempting to reconcile such fundamental differences of opinion and the ADDS had to content

himself by relying on the security of his appointment within the 2 NZEF to establish his organisation in accordance with his convictions. That the DDS did not support him was unfortunate and, as will be seen later, led to disharmony in the Corps in the Middle East, fortunately of short duration. The goal was clearly defined, and if obstacles could not be avoided they had to be surmounted, even at the cost of strained relations. In the meantime it was necessary to convince Headquarters 2 NZEF beyond all doubt of the correctness of the proposed organisation, and accept reinforcements in whatever form they arrived and rely on the full support of Headquarters 2 NZEF for changing that form. In his war diary of 13 May 1940 the ADDS wrote:

> A decision has been made regarding movement and distribution of dental personnel in conditions such as this where the Force is concentrated in two training camps and where the General Hospital, Convalescent Depot and Field Ambulances do not function in their normal manner. All Dental Corps personnel will be concentrated in dental blocks, one in each camp; the distribution of the personnel in the respective camp dental hospitals will be dependent upon personalities, ability etc. Dental Sections as shown on embarkation from N.Z. will not necessarily remain intact but may be reformed according to the ability either of the officers or other ranks. Thus it is essential that the NZDC be established as a separate unit to facilitate movements in particular and administration in general. To this end all NZDC personnel will be transferred from their present units to HQ 2 NZEF Base on arrival. They will then be attached to Camp Dental Hospitals (or units requiring dental services) for duties and to neighbouring units for pay, discipline, rations etc. Dental sections with medical units will be reformed at a later date depending on requirements.

Already a decision had been made that, on the arrival of the Second Echelon which was then at sea, the NZDC personnel would be concentrated at the camp dental hospital at Helwan to the number of six officers, seven orderlies and three mechanics. The course of the war,

however, was changing. The Germans were driving all before them in Belgium and France and threatening Britain's very existence.

On 22 May 1940 the ADMS called Captain Fuller to Divisional Headquarters to meet Brigadier N. S. Falla, CMG, DSO, VD, [1] who gave him the information that the Second Echelon had been diverted to England and would not arrive in Egypt as expected. Brigadier Falla was the newly appointed Commandant 2 NZEF Base and was leaving for England immediately, to be followed in about forty-eight hours by the ADMS. The first essential was to outline a dental organisation for the Second Echelon, amplifying the written instructions by as much verbal information to these two officers as time would permit. This meant a stocktaking of the dental condition of both echelons on which to base the allocation of personnel and equipment, the appointment of a dental command in England to function within the 2 NZEF organisation, and a temporary cancellation of many arrangements in the Middle East.

The position can be summarised under four headings:

1. Dental condition.
2. Equipment.
3. Administration.
4. Reallocation of personnel.

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[1] Brig N. S. Falla, CMG, DSO, m.i.d.; born Westport, 3 May 1883; managing director Union Steam Ship Coy; NZ Fd Arty 1914–19 (Lt-Col comd 2 and 3 NZ FA Bdes); comd 2 NZEF Base, Feb 1940–Jun 1941; NZ representative on Ministry of Transport, London, 1941–45; died 6 Nov 1945.

THE NEW ZEALAND DENTAL SERVICES

DENTAL CONDITION

Dental Condition

The Second Echelon had been treated by the NZDC in the mobilisation camps in New Zealand and could be presumed to be dentally fit, requiring little but maintenance with the exception of the denture casualties inseparable from a force of New Zealand troops. With the First Echelon, however, the position was not so satisfactory. On 10 May 1940 the ADDS reported as follows:

> **The dental condition of the Force in regard to tooth cavities appears to be very good, although it will be realised that in the absence of an examination of all ranks, the only gauge is the rate at which the soldiers present voluntarily either with toothache or with the subjective knowledge that cavities are present.**
>
> **It is now five months since they were rendered dentally fit. It is a conservative estimate that all members of a community require examination and treatment half-yearly and with New Zealanders in particular, cavities will develop in a shorter period.**
>
> **It should be assumed therefore that although soldiers are presenting voluntarily for treatment there must, in addition, be an increasing number of men with dental decay that has developed since embarkation.**
>
> **The number of daily patients, either with toothache or for fillings has increased since the last report [25 March 1940].**
>
> **Dentures continue to be a problem and unaccountably continue to present at the rate of 6 to 8 per day. It has not been possible to reduce a waiting list that has been present since arrival in Egypt.**

The most striking difference between the mouths of the Force when in New Zealand and their condition in Egypt is the unhealthy condition of the gingival tissues (gums) and it may be stated that this feature is the most noticeable impression received by the NZDC officers in the course of their daily duties and in reference to which they feel concerned.

The percentage of men presenting with inflammation of the gingival tissues is large and on the increase. They invariably show complete neglect of the toothbrush and inattention to the principles of oral hygiene.

The causative factors may be:

(*a*) Inattention to oral hygiene measures, in particular, the toothbrush.

(*b*) An infectious condition conveyed by drinking vessels, utensils, etc.

(*c*) A general lowered resistance as a result of the sudden change in climatic conditions, environment, etc.

Whatever the cause may be it is evident that this septic condition must inevitably result in a general lowering of the resistance and increase the susceptibility towards alimentary and respiratory infections.... Cases of ulcerative stomatitis (Trench Mouth) have not developed although, as pointed out in my last report, most predisposing factors are present. If it should commence, there is every reason to expect that it would become prevalent to a marked degree.

Since my last report it has been increasingly difficult to maintain a regular attendance of patients. With the intensification of training this is, of course, unavoidable and in this respect, Brigade exercises in particular resulted in two quiet periods. Extended leave at Easter has also to be taken into account.

Captain Fuller's predictions were based on sound principles but fortunately were not substantiated, and the dental condition of the First

Echelon remained remarkably good, despite the fact that a deterioration in the war situation in the Mediterranean precluded the early fulfilment of his plans.

THE NEW ZEALAND DENTAL SERVICES

EQUIPMENT

Equipment

There was sufficient equipment in Egypt for the existing personnel but more was on order from England in anticipation of the arrival of the Second Echelon in the Middle East. It was therefore decided that, until more detailed plans were known, further equipment should not be sent to Egypt but should be held in England for the use of the Second Echelon. In the event of dental reinforcements being sent from England to Egypt, equipment could then accompany them. Brigadier Falla was asked to convey this information to the War Office. It was unfortunate that the bottleneck in the supply of equipment from the War Office to Egypt, which had just been successfully dilated at the cost of much anxiety, had again to be restricted, but it is probable that the chaos of Dunkirk would have achieved the same result. At all events there was a good friend of the NZDC firmly ensconced in the War Office as Deputy Assistant Director of the Army Dental Service in the person of Colonel O'Connor, whose kind offices as ADDS of BTE have already been mentioned. His knowledge of the problems of the NZDC and his willingness to assist were valuable assets.

THE NEW ZEALAND DENTAL SERVICES

ADMINISTRATION

Administration

When the Second Echelon left New Zealand the dental personnel were chosen with the understanding that they would join those already in the Middle East so the question of seniority was not seriously considered beyond the appointment of an officer in charge for the voyage. Seven dental officers were included in the contingent and, according to the policy of the DDS, were given definite allocations, one to a general hospital, one to 5 Field Ambulance, one to the Convalescent Depot and four to the Base Depot. Of these seven officers, only two had had any Territorial experience with the Dental Corps, one of these being on the active list and one on the retired list at the time of enlistment. Without questioning their ability as dental surgeons, it was obvious to both the DDS and the ADDS that they were inexperienced as officers and were not sufficiently qualified to organise the dental services with the contingent. The ADDS was unable to leave Egypt and the DDS was prevented, first by lack of accommodation and then by changes in plans, from sending a senior officer to take over the command.

The ADDS nominated the senior officer, Lieutenant J. R. H. Hefford, to act as his deputy and to be responsible to him through the ADMS for all arrangements. He sent by the hand of the ADMS full details of the organisation of the dental services with 2 NZEF, 'Instructions to Dental Officers', memoranda on policy and equipment, and suggestions calculated to produce an organisation as near to his own as possible. It was a critical decision as his new-born organisation was as yet untested and needed careful guidance to reach maturity. To entrust the tiller to the hand of the tyro conjured up visions of shipwreck with difficult and tedious salvage. His apprehension is clearly shown by an entry in the war diary of 24 May 1940:

> **Nominated the senior officer to act as my deputy and to be**

responsible through the ADMS to me for all arrangements. Have indicated that his responsibilities should be limited and that in so far as they are relevant 'Instructions to Dental Officers 2 NZEF' must be strictly adhered to.

His apprehension was well founded, as will be seen when the account of the dental service with the contingent is given later. At the time nothing could be done about it.

THE NEW ZEALAND DENTAL SERVICES

REALLOCATION OF PERSONNEL

Reallocation of Personnel

The Second Echelon being dentally fit, or virtually so, one dental officer to 2000 men was a fair allocation to maintain fitness for three to six months. Three or four officers would be required at this ratio. With the First Echelon developing dental troubles, however, the three executive officers at the ratio of one to 2000 were not enough. The suggestion, therefore, was to transfer three of the seven officers, at that time with the Second Echelon, to Egypt, increasing the ratio with the First Echelon to one to 1000. That would mean an allocation of six dental officers to the First Echelon and four to the second.

This reallocation was dependent on two factors:

1. **That the disposition of the contingents remained static.**
2. **That the war situation allowed communication of men and equipment between England and the Middle East.**

At the time, it appeared as if the Second Echelon could be considered as part of the Division in the field, with a long line of communication between it and the Base. When the Mediterranean was open, France our ally and airmail to England took only two days, this was so and the ADDS could have remained as mentor and ultimate controller of the service as part of his existing organisation. The precedent of his advocacy for autonomy of control could have been used in the scales to counterbalance the inexperience of his deputy. The unequal level of distribution of his forces would have been adjusted by the natural flow in a linked organisation dependent only on the patency of the channel of communication. The fortunes of war decreed otherwise. Communication with England became a lengthy matter and the two forces were virtually isolated. Apart from arming his deputy with full information on the organisation of the dental services in Egypt and directing him to work on those lines, the ADDS had to leave all administrative details to be

decided in England. The result was not a success.

Although full instructions were sent to the Senior Dental Officer by the ADDS, he was not given the opportunity to implement them or to overcome opposition. The result was that matters were taken out of his hands and the dental services became subservient to the medical, whose preoccupation with their own affairs is reflected in the relegation of the importance of dental treatment to a lower level than that in any New Zealand Army force in this war.

The Second Echelon did not join the Middle East Force until early in March 1941 although two units, the Convalescent Depot and 1 General Hospital, were despatched in September and November 1940 respectively. These two units took their own dental sections with them, leaving five dental officers in England. With the standard of dental fitness attained in New Zealand for the troops, this number should have been ample to maintain dental health and this could well have been achieved under the organisation proposed by the ADDS. Equipment was available, as that originally ordered from the War Office for Egypt was still in England. After studying the files from the office of the Senior Dental Officer in England, the ADDS summed up the situation in his war diary of 18 March 1941:

> **A ... scheme of dental attention was put forward by the Senior Dental Officer.... The NZMC Administrative Officers dismissed the scheme and the NZDC personnel were left in localities completely out of touch with the troops.**
>
> **It was not until practically six months later that the dental sections were placed with the troops where they carried out yeoman service, worked strenuously and rendered Units reasonably fit. A good example of the lack of assistance given to the NZDC was the fact that during the whole time the troops were in England, dental officers operated without gowns and for the most part without towels and soap.... The following extract from a report on the Service in the United Kingdom by the Senior Dental**

Officer illustrates the atmosphere which prevailed.

The Army Dental Corps has extended to the NZDC every facility it could possibly offer us, has explained to us its system of operation and on many occasions their laboratory has done urgent repairs or vulcanisations for us.

Most units of the NZEF have done their best to assist us and have been very tolerant in the matter of having to carry their men considerable distances for treatment.

The attitude of certain officers of the NZMC however has been consistently hostile....

It is obvious that the dental officers were working under unhappy conditions and [that] one and all realised that given the necessary authority they could be of more service to the troops. Under conditions such as this, the service could only be efficient either by being separated from the NZMC or, if responsible to the NZMC, then only in the matters of policy affecting the health of the troops.

Despite the above remarks, it must be realised that, as far as their specialist duties were concerned, the officers worked to capacity and individually carried out a good deal of treatment under adverse conditions. In the United Kingdom, Units were dentally examined and made fit. On board transports, between the United Kingdom and Egypt, all Units were dentally examined and an appreciable amount of routine treatment was completed.

The original intention to attach dental sections to units in the United Kingdom was announced in June 1940 but was not approved by the ADMS until 23 September. Only makeshift surgeries were available, with poor lighting and primitive facilities for hot water and heating. Despite the assistance of the Army Dental Corps in the provision of mechanics, the transport of dentures to the laboratory was so cumbersome as to outweigh many of the advantages. Prosthetic cases,

after being packed in makeshift containers, were sent to the laboratory by ration truck—supply point—supply depot—Field Post Office—Base Post Office, and back by the same channel. It is to the credit of all in this long chain of transport that only one model was broken in some hundred cases, but there was a needless waste of time. The Senior Dental Officer eventually managed to improve the position by instituting a daily service round the scattered sections and back to the laboratory.

The delay in implementing a satisfactory dental service was fatal to the hopes of landing a 'dentally fit' force in Egypt. Even when the echelon was on the transport from England to Egypt, a journey of over nine weeks, the leeway was too great to be overcome under the difficult conditions on board. Excerpts from Captain Hefford's report on the voyage give some idea of the conditions of work and the dental state of the force:

> **The ship carried approximately 2,800 troops. There were three dental officers with three outfits and a kerosene vulcaniser. Accommodation was provided in two cabins with one porthole in each. The light was supplemented by extension electric lights. Being close to the side of the ship, the deck in these cabins had a considerable slope on it, making work in the field chairs difficult when the ship rolled, as it did in fairly moderate seas, being built with a flat bottom for the St. Lawrence River.**
>
> **As no cards were available, the findings at examination were added on the side of specially prepared nominal company rolls. The amount of work required for each man was noted. Also whether he had artificial denture or dentures.**
>
> **In addition natural dentures were classified as:**
>
> **'A' Teeth with a reasonable prospect of being retained for some years.**
> **'B' Mouths which, generally because of advancing 'Gum' degeneration, would probably require total extractions in the next two years.**

'C' Those cases where immediate extractions were indicated. The examination was carried out on deck. It was not considered necessary to 'Mop up' those men who were not examined on the original days as the prospect of getting all the work done was never entertained.

The filling work showed a preponderance of interproximal fillings largely in lower premolars and upper molars.

Work required at 23 January 1941

Number examined	**2265**
Number fit	**1178**
Number requiring treatment	**1087**
Number of fillings	**1127 (Add 250 which will be found on treatment)**
Number of scalings	**460**
Number of extractions	**99**
Number of new dentures	**34**
Number of remodels	**199 (Not all very urgent)**
Number of repairs	**87 (Not sufficiently urgent to warrant immediate work)**

Work done

Number made fit	**252**
Number of fillings	**456**
Number of scalings	**163**
Number of extractions	**109**
Number of denture repairs	**41**

Taking into consideration that the force was dentally fit on embarkation from New Zealand and had never been without a generous proportion of dental officers, the dental condition should have been better. It emphasises the danger of allowing work to accumulate. With the large number of artificial dentures, in this case 2185 single dentures in 2265 men examined, there will always be repairs and remodels as well as replacements of those lost. A soldier dependent on artificial dentures will obviously be less efficient without them and any delay in remedying

that loss must react on the efficiency of the force as a whole. Dental caries is a progressive disease and the preponderance of interproximal cavities in the mouths of those examined above shows that the progression had advanced to a stage when a proportion of those teeth might have to be extracted. The ground was being prepared for more denture-wearers.

It is now necessary to return to the Egyptian scene of May 1940, when the diversion of the Second Echelon to England forced a reconsideration of all plans of the 2 NZEF. There was a feeling of anti-climax; an enforced respite due to uncertainty as to the future and, in the Dental Corps, a strangely coincidental abatement in the flow of work. The time was opportune to look searchingly into the organisation, to test its efficacy for every imagined contingency, to shore up its weaknesses and prune its dead wood.

At the beginning of June the troops were still in Maadi Camp, so the arrangement that all dental personnel remain with the Camp Dental Hospital was eminently satisfactory. Should movement orders be received, it was simple to attach a section to a field ambulance as transport was available for that purpose. There was one weakness here regarding the equipment of a dental mechanic. In the British field ambulance a mechanic was not included and the only mechanics' outfits supplied were on the basis of a field laboratory, where two mechanics would be working together. These outfits could only be divided into two by the addition of quite a number of essential items of equipment. Arrangements were therefore made with the Field Park Company to reinforce three packing cases, converting them into temporary prosthetic panniers. These were to contain equipment and one month's supplies to enable denture work in the field to be begun at a moment's notice. The field mechanics' outfit for two mechanics, with the addition of supplies and equipment purchased locally and items such as hammer, nails, small saw and scrubbing brush, would equip two such panniers. Should they be required in the field, the camp dental hospital could draw another field mechanics' outfit from the medical stores for use in the

meantime. The principle of pooling equipment and re-issuing according to changing circumstances was ready for testing.

The ADDS was anxious to try out the field organisation as soon as possible, and when two battalions and other troops moved to the region of Mersa Matruh in late June 1940 he immediately suggested that a dental officer should accompany them. At this stage, however, the AA & QMG would not agree, as the troops were being relieved every two or three weeks and could be treated each time they returned to Base. It was nearly two months before the opportunity occurred.

A certain amount of confusion was evident between Egypt and New Zealand regarding the amount and nature of equipment received from England, as well as of the number and status of reinforcement personnel required. There were several factors responsible for this. The exact nature of the War Office issue of equipment was not understood by the DDS, which made the cables from the ADDS, based on a presumption of this knowledge, unintelligible. The destination of the Third Echelon was unknown, which made the assessment of reinforcement requirements difficult. In addition to this there was a conflict of opinion between the ADDS and the DDS, already mentioned, as to the number of dental officers and mechanics necessary to maintain fitness in the troops then in Egypt.

The opportunity was now approaching to try out the organisation in the field. At the end of August the Division, as yet only of brigade strength, moved to the Western Desert. This meant that only 700 to 900 men would remain at the Base. The ADDS suggested that one dental section should remain at the Base to service these men and that two dental sections, one with a mechanic, should be attached to a field ambulance with the Division. He also proposed to attach himself with staff and dental equipment to Divisional Headquarters, but this was not approved by the AA & QMG, who thought it better for the ADDS to remain at Maadi and make occasional visits to the troops in the field.

Field dental outfits were measured and weighed to give information

for loading tables. Mechanics practised packing and unpacking panniers. The dental sections to be attached to the field ambulance practised loading and unloading the 15-cwt lorry, which was to carry one complete section with surgical and prosthetic panniers, tent RD (Ridge, Double), personal kits, etc.

It was not possible to organise anything but a temporary service in the field at this stage but valuable information could be got as to the future role of dental sections, both with the field ambulances and as part of a mobile section. It immediately became obvious that preconceived ideas as to the character of mechanised desert warfare would have to be changed. The degree of mobility and the amount of dispersion had been underestimated. As an example, at this time Divisional Headquarters was at El Daba, some 190 miles from the Base. The Main Dressing Station was about 60 miles from El Daba and the Advanced Dressing Station another 150 miles away. It was no use therefore having a centrally situated mechanical laboratory to which denture cases were to be sent from the various sections. It was also essential that the sections attached to the field ambulance should have the mechanic restored to their establishments. One dental section would not be able to cover even a field ambulance whose Main and Advanced Dressing Stations were so far apart. There were no troops on foot. Everyone was motorised and this meant that every unit, sub-unit or section had to have its own transport with it at all times. Sudden moves might occur at any time, so a sub-section could not be attached and left with a unit while its transport returned to headquarters to pick up another section. More vehicles would be required for the Mobile Section than were included in the proposed establishment, and experience in the field pointed to the 15-cwt truck as being the best for the purpose. Already it was becoming apparent that standardisation of transport as well as equipment was of fundamental importance. Specially designed vehicles, such as the mobile laboratory included in the Mobile Dental Section due to arrive shortly in Egypt, were peacetime luxuries of possible service in the Base but white elephants in the field. Apart from enemy activity, the rough terrain of the desert and big mileage exacted a heavy toll on all vehicles, making

those which were difficult to replace a liability rather than an asset.

The orthodox British dental establishment was found to be insufficient under field conditions, lacking flexibility and mobility. The break away from the traditional organisation was already paying dividends and attracting attention.

On 30 September 1940 Major Fuller wrote in his war diary:

> **Reports from the Dental Sections attached to the 4th Field Ambulance in the Western Desert indicate that the two dental officers are being of invaluable service to all troops in their area. The sections were carrying out routine treatment within the first twenty-four hours of arrival at the camp site and have since been very busy. Reports from outside sources relate that Senior British Officers tend to be impressed by the fact that the Field Dental Section is carrying out routine denture work in the Field with little or no difficulty. It seems essential that facilities be available for doing denture work in the Field and I cannot understand why on such a long line of communication, the British Dental Sections do not carry prosthetic equipment. The Dental Officer attached to Headquarters Company, 4th Field Ambulance (Lieut. W. McD. Ford) reports 'British Army equipment (is) quite satisfactory for a Standing Camp but in my opinion has to be augmented by too great an extent from QM Stores and then becomes too bulky for rapid movement. This is an unsatisfactory factor.... The New Zealand outfit would be ideal with its two panniers containing a minimum of essential equipment; especially the chair case with the collapsible table, canvas buckets and canvas wash basins.... This would eliminate having to rely on the Field Ambulance quartermaster for equipment.... The prosthetic outfit we have here is working very satisfactorily; the lathe head works very well with the treadle of the foot engine.'**

In regard to the lathe head working well with the treadle of the foot engine, this was later found to be incorrect as there were frequent

fractures of the treadle through overstrain. This was overcome by buying locally some hand-operated mechanical grinding machines. The emery wheel was removed and replaced by lathe chucks. These were included in the mobile field panniers. The gearing was such as to produce enough speed for polishing.

One of the difficulties of pioneering is to gain recognition of the new order by others. No dental scheme, however soundly conceived, could be put into practice unless it was recognised as part of the general organisation of the force. Hitherto, dental sections were attached to medical units and moved only with those units. Movement orders therefore only affected Mary and not the lamb. When it was realised that the dental task could not be accomplished under the limitations of this rigid attachment, it was not immediately appreciated that another unit had to be considered when movements were taking place. The Administrative Instructions No. 1, 'Action in event of move of Division from Maadi', issued on 13 August 1940, were sent to Major Fuller but they contained no mention whatsoever of dental matters. Admittedly the dental sections were moving with 4 Field Ambulance, but the dental problem belonged to the ADDS and he had fully outlined his plan of campaign to the ADMS. The facilities for dental treatment in the field were a part of the general organisation that should have been familiar to all unit commanders. The field ambulance had for some time been without its dental section while all work was being done at the Maadi Camp dental hospital. There was therefore no official intimation that dental sections had again been attached to the field ambulance or even if there were to be any facilities at all for dental treatment in the field.

On 31 August 1940 information was received that the First Echelon was not to remain isolated for much longer as the Third Echelon from New Zealand and the Convalescent Depot from England were expected within a month. It was known that the Convalescent Depot had a dental section attached, but the exact number of dental personnel to arrive with the Third Echelon was still in doubt. The ADDS was continuing his policy of writing at length and often to the DDS, but his

recommendations were not always accepted and the answers to his letters were infrequent. He knew that the Mobile Dental Section with 8 officers and 26 other ranks would be arriving, as also would a field ambulance and general hospital, each with a dental section, but it was not until the echelon disembarked that he realised that there were in addition 3 officers and 9 other ranks for attachment to the Base.

However, the exact number did not affect the general arrangements and he was able to outline his proposals at a conference of heads of services with the AA & QMG on 1 September. His diary of that date reads:

Submitted scheme as follows which was approved:

(*a*) Present Camp Dental Hospital at Base to become Base Dental Hospital, to be responsible for rendering all reinforcements and ex-hospital patients dentally fit before proceeding to the Field and that all personnel returning to New Zealand are also rendered dentally fit.

(*b*) The Divisional Mobile Dental Section which is a self-contained unit to be located in a central camp area, to establish a tented Camp Dental Hospital and be responsible for the dental fitness of the third contingent in addition to carrying out a training programme.

(*c*) The ADDS's office and store to be transferred to Administrative Headquarters 2 NZEF located in a new building which will have accommodation for dental officers. This building would be used as a dental hospital when the camp is filled with reinforcements and the Mobile Section is in the Field.

The Base was to be at the extreme end of the camp area while the new office and the tented camp dental hospital were to be centrally situated. The ADDS was unable to advise about equipment as he was still in the dark as to what was being forwarded from New Zealand with the echelon, or if that originally ordered from England was coming soon. He could only assume that these matters had been satisfactorily arranged between Army Headquarters in New Zealand and the representative in England. The broth was being stirred by many cooks.

His plan for Dental Headquarters consisting of ADDS's office, NZEF store and reinforcements camp dental hospital, as well as the site, were approved. For the Mobile Dental Section he was able to get three buildings in the Engineers' area, one for a store, one for an office and hospital, and one for a dining room. The section would share a cookhouse with an Army Troops Company and the officers would mess with the same company.

The Convalescent Depot, detached from the Second Echelon in England, arrived in Egypt on 17 September and its dental section was absorbed into the Base until accommodation became available with the Depot itself. As there were administrative difficulties associated with the shortage of equipment, the ADMS agreed to release the dental equipment brought to Egypt by the Convalescent Depot for use in Maadi Camp. Later it will be seen that the system of pooling personnel and equipment, with subsequent reallotment, of which this was the harbinger, became universal in the New Zealand Dental Corps with this force. A similar situation already existed in respect of No. 4 General Hospital at Helwan, which was at this time without a dental officer, being visited once a week by one from Maadi. It must be remembered that neither the General Hospital nor the Convalescent Depot was functioning as such, and therefore did not require the undivided attention of a dental section.

On 29 September, in company with the ADMS, the ADDS went to Suez to meet the long-awaited Third Echelon. Everything possible had been done to prepare for its arrival. The body for the Mobile Dental Laboratory was to be transhipped to the Vehicle Reception Station at Abbassia, pending arrangements to mount it on a 4-ton vehicle; the personnel were allotted in theory; the plan was complete to cope with the expected inrush of dental treatment and the hungry coffers were ready to receive equipment.

As already stated, there were more reinforcements than the ADDS expected, but this was not all. The echelon had brought no dental equipment with it, with the exception of the mobile laboratory, and even that had been left in Bombay in the charge of an officer from the Mobile

Section. Sixth Field Ambulance had also remained at Bombay. Even with full equipment available, there were more men than could be employed for some time to come and the ADDS felt the embarrassment of being over-staffed at a time when he was trying hard to impress all concerned with the necessity of building a comprehensive dental organisation against future contingencies. The shadow of the axe lay over his schemes, haunting him with possibilities fatal to achievement of the type of service he knew would be required when the Division went into action. In the meantime it was essential to find something for everyone to do. On 30 September he wrote in his diary:

> **Dental officers with third contingent attached Base marched in. Equipment from the Convalescent Depot is to be drawn and this will be issued to the Base Dental Hospital. Pending the arrival of equipment from England for the Mobile Dental Section the Base Dental Hospital will have to work to capacity to cater for the requirements of the Third Contingent in addition to its normal routine duties. General Hospital, Convalescent Depot and 6th Field Ambulance will have to remain without equipment in the meantime. The Mobile Dental Section will occupy time with Field Training.**

The Mobile Dental Section, under the command of Major J. A. S. Mackenzie, disembarked on 1 October and on 3 October the ADDS arranged a meeting of all dental officers of the Third Echelon and gave them his standing instructions and an outline of what was expected of them overseas.

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WAR DIARY, 3 OCTOBER 1940:

War Diary, 3 October 1940:

Informed all officers very frankly what was expected of them overseas as regards discipline, general demeanour and standards of dental treatment. It was very clearly emphasised that as much time and trouble must be given to treatment overseas as would be given to treatment in private practice. That when at the chairside they must consider themselves 'Civilians in uniform' and treat the men with all sympathy and understanding. When away from the chairside they must lose that self-consciousness associated with specialist officers in uniform and make every endeavour by the observance of military procedure to give their rank a military status at least comparable with that of other units.

There was nothing new in these remarks as they were impressed on all dental officers in New Zealand, but they are repeated in this context to show the importance attached to them in every sphere of operation. They also showed very definitely that the ADDS was determined to uphold the good name of the Corps and that defaulters from the strict code would be answerable to him. There were some defaulters, almost entirely in this transition period when work was not arduous, but on the whole there was little trouble and it can safely be said that eventually there was no happier service in the force.

The arrival of the Third Echelon, and especially of the Mobile Dental Section, provided an example of the result of differences of opinion at a high level. There were misunderstandings between the DDS in New Zealand and the ADDS in the Middle East concerning the function of the Mobile Section which, as already pointed out, produced a stalemate. Such irreconcilable views could not be confined to discussions between respective commanders and were reflected in the body of the corps. What began as a simple difference of opinion sowed the seed of

partisanship which might easily have led to schism. A looseness in definition of the appointments of the ADDS and the Officer Commanding the Mobile Dental Section led to conflict between them, and in turn this conflict was reflected in the Corps as a spirit of uncooperation. Deep down the co-operation was there, but it was not until after brisk exchanges of correspondence backed by higher authority in the Middle East that harmony was restored. The conception of the Mobile Dental Section was so obviously in good faith that nothing is gained by recrimination. The lesson for the future is to point out the faults in execution and later to trace the evolution of a vastly different mobile section.

THE NEW ZEALAND DENTAL SERVICES

THE FIRST MOBILE DENTAL SECTION

The First Mobile Dental Section

In May 1940 the DDS decided to form and train a Divisional Mobile Dental Section for use in the Middle East, based on experience in the 1914–18 War. Although there were certain modifications in personnel and equipment before the section was sent overseas with the Third Echelon, his original notes explain his intentions:

> **The unit has an establishment of 8 officers and 36 other ranks.**
>
> **In the Field the main function of the NZDC is to maintain the dental health of the soldier and the orthodox establishment of one section attached to a Field Ambulance cannot cope with the work, especially as in any Force we are likely to raise for an expeditionary force, there will be, at a low estimate, 50% of artificial dentures worn. Knowing that in front line troops the fear complex will always exist, that dentures are readily broken and as easily lost, and that dental pain weakens a soldier's morale, it is acknowledged that there is a wide field for malingering, also that a soldier wearing an artificial denture is a potential casualty unless some provision is made to provide dental service as close as possible to the line. Experience has proved that once a soldier was evacuated from the fighting zone for dental defects, it was problematical when his company commander would see him again. In the last war the solution was the NZ Divisional Dental Hospital which was almost continually located in the Divisional Headquarters area with its surgical sub-sections detached to various unit headquarters and diverting the denture work back to the Main Hospital Group. Dental pain was eliminated, dentures replaced and repaired in a few hours whilst the soldier was kept on the strength of his unit.**

The unit is self-contained, carrying its own reserve stock of materials and water, a fully equipped surgical and prosthetic dental outfit, tent operating and ridge tents, operating its own motive power, light and a Bottled Gas installation for heat in connection with prosthetic work. It accommodates five dental mechanics and two mechanics' orderlies. Two officers carry out their duties in tents which are pitched alongside the lorry—tent (operating) being available and as accommodation for troops under treatment. The remaining officers with a surgical pannier and chair case are attached to various unit headquarters and work in tents.

With its mobility, the personnel and plant are ready at all times to be utilised for any class of dental work and can be attached temporarily to any unit of the Force close up to their war stations, including the Non-Divisional units. It can augment the personnel of the Field Ambulance Section if necessary and the two in conjunction should assist materially in maintaining the rifle strength of the line.

THE NEW ZEALAND DENTAL SERVICES

THE MOBILE PROSTHETIC LABORATORY

The Mobile Prosthetic Laboratory

The order has been placed in England for a Leyland 'Lynx' DXI chassis of special design which will be shipped to the 2 NZEF in June or July [1940] and the body which is a specially designed dental laboratory is practically completed at the NZ Railway Workshops. The steel frame of this body was designed to fit the Chassis ordered and is provided with hooks and slings for handling on land and shipboard. The interior will be completely equipped as a prosthetic laboratory for the provision and repair of dentures, with the exception of the expendable tools and materials which the War Office has been asked to provide.

Eight NZDC light field dental outfits for the Divisional Mobile Dental Section, consisting of surgical panniers equipped with dental engines, instrument cabinets, sterilisers, etc., but no instruments, drugs or materials, were already shipped but were diverted with the Second Echelon to England. In addition there were eight prosthetic panniers partially equipped, eight empty stores panniers and eight fully equipped canvas chair cases.

The unit was concentrated in Trentham Military Camp for training, great stress being laid on its self-sufficiency. The men were trained in the use of the rifle and Lewis gun, taught to transport their own personnel, equipment and stores, and to attend to their own internal economy and feeding. The whole trend of the training was to make them something unique in the Dental Corps, destined for a special service and not to be disintegrated except at peril. The DDS took a personal interest in their progress, even to the extent of having a 16-mm motion picture taken of the unit carrying out field exercises. He saw the unit as primarily part of the Division and, secondly, as part of the dental service to the Middle East Force. This conception was in line with his previous

policy of rigid allocation and, as already noted, was in conflict with the view held by the ADDS. He stated in a memorandum sent to the ADDS on 27 August 1940:

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LOCATION

Location

The normal location to be Divisional Headquarters Area, but the six 15 cwt trucks which are also self-contained and fully equipped to act as sub-sections are intended to be distributed about the Division as required and attached to units in Infantry, Field Artillery, Brigade Headquarters Areas for duty and rations. The specially equipped dental laboratory, the Officer Commanding and one officer will comprise Dental Headquarters with the remaining vehicles and those of the six sub-sections not allocated in outside areas, the whole being parked and distributed in the Area in accordance with the conditions prevailing. The Dental Laboratory, as equipped and staffed, is capable of an average of 175 dentures per week. It is proposed that the sub-section should send the work back to the Dental Laboratory, the motor cyclists acting as carriers. Provision is made for the addition of a prosthetic pannier and dental mechanic to any sub-section if found expedient.

THE NEW ZEALAND DENTAL SERVICES

LOCAL ADMINISTRATION

Local Administration

The Officer Commanding will Command all NZDC personnel in the Field and is responsible through the ADMS Division to the ADDS 2 NZEF for the dental health of the troops in the Division. He will act as adviser to the ADMS on dental subjects and will submit all reports and proposed movements of NZDC personnel to him. He may communicate direct with the ADDS on technical subjects only.

THE NEW ZEALAND DENTAL SERVICES

THE PROPOSED ESTABLISHMENT OF THE UNIT WAS:

The proposed establishment of the unit was:

Personnel

Officers	**One Major and seven Captains or Subalterns.**
Staff QMS	**One Warrant Officer (Second Class).**
Dental Clerk	**One Staff-Sergeant or Sergeant.**
Dental Orderlies	**Three Staff-Sergeants or Sergeants and five rank and file of whom two might be corporals.**
Dental Mechanics	**Three Staff-Sergeants or Sergeants and two rank and file.**
Mechanics' Orderlies	**Two rank and file.**
Motor Cyclist	**One rank and file.**
Batman	**Two rank and file.**
Drivers I.C. [1]	
Cooks	**One rank and file.**

Attached personnel from the NZASC were ten drivers for first-line transport, of whom one could be a corporal.

Transport

Motor Car, Heavy	**One.**
Trucks 15-cwt	**Six.**
Lorries 30-cwt 4-wheeled	**Two.**
Lorry 4-ton for use as Mobile Laboratory, fitted	**One.**
Trailer, Water tank	**One.**
Motor Cycles	**Two.**

Equipment

Field Surgical Panniers	**Eight.**
Field Chair Cases	**Eight.**
Field Prosthetic Panniers	**Eight.**
Field Store Panniers	**Eight.**
Mobile Prosthetic Laboratory outfits	**One.**
Tents Operating	**One.**
Tents, Ridge Double (RD)	**Eight.**

Tents R.D. were to be used as operating tents for the dental officers with the sub-section.

The unit was founded on theory based on conditions of trench warfare existing in the First World War. Mobility was added to its assets without knowledge of the degree of mobility possible in a motorised division. None of the personnel had been in action before, so they could only base their opinion of modern warfare on exercises in the field in New Zealand, which they were led to believe were true to type. On arrival in Egypt, therefore, believing themselves earmarked as a specially trained unit, destined to work only within the Division, they were inclined to be intolerant of

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[1] **In charge.**

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interference with their organisation. Even with the limited experience gained by the 2 NZEF at this early stage it was obvious that, as constituted, the unit could not function in the field with any success. The ADDS wrote in his diary on 7 October:

> **Outlined my ideas on the Mobile Dental Section to its Commanding Officer, viz., the section will need to consist of a Headquarters and six completely self-contained detachments, each detachment carrying surgical and prosthetic equipment and a mechanic being included in the personnel. They will in effect become dental detachments attached to units in the Field and will have little or nothing to do with the Mobile Section Headquarters. It will not be satisfactory sending denture work back to the Mobile Laboratory except in tactical situations where the Force is static and where either the units or the Mobile Section can readily be found. The Mobile Laboratory will not necessarily be able to be used in the Field. This will depend on the degree of mobility and the condition and number of roads. It will be most satisfactory on the Lines of Communication. It will probably be the tendency to**

carry portable prosthetic equipment with the Headquarters, this equipment to be such that a mobile prosthetic laboratory can be improvised away from the vehicles and on the ground. The detachments will return to the self-contained Head-quarters when not wanted in their respective units, e.g., before a prospective advancement or retirement.

It must not be thought that the ADDS was not in favour of a Mobile Dental Section for he realised that it was the only satisfactory dental service to the force in the field. His view, however, was that it should be part and parcel of the general organisation, under his direction and with its personnel interchangeable with those in other units if desired. Major Fuller tried to iron out the difficulties by pointing out to Major Mackenzie that there were two situations in which the Mobile Section was expected to work, i.e., in the field and at the base, and that while at the latter it was necessary that the unit be deployed by the ADDS in the same way as other Dental Corps units. No agreement was reached between them and it was obvious that convictions on both sides were deeply rooted. Not only was a clash inevitable but the whole question of command had to be settled if the dental services in the 2 NZEF were to function smoothly. The climax occurred when Major Mackenzie wrote to the ADMS asking for a ruling about the channels of communication to be used by the unit. The answer by the ADMS, if agreed to by the ADDS, would have retarded the progress already made towards autonomy of control of the Corps. The challenge had to be accepted. The ADMS's ruling was as follows:

To O.C. Mobile Dental Section.

Reference your memo of even date on the subject (Channels of Communication) after discussion with Officer in charge Administration and AA and QMG it appears that the Mobile Dental Section may at times be employed with the Division in the Field and at other times at the Base.

(1) When with the Division the channels of communication are

O.C. Mobile Dental Section – ADMS (and if necessary – DDMS, who might ask advice of ADDS).

(2) When at the Base the channel of communication is O.C. Mobile Dental Section – ADDS – DDMS.

HQ NZ Div. 10 October 40.

This ruling would have placed the dental services in the field completely under medical control. It was indefinite in proclaiming the status of the OC Mobile Dental Section but assertive in lowering the status of the ADDS, weakening his control over NZDC units and personnel. Fortunately the subject was still open for amicable discussion, as instanced by an entry in Major Fuller's war diary of 10 October:

> Interviewed DDMS and ADMS and discussed the question of channels of communication, powers of O.C. Mobile Dental Section, his relation to the ADDS; in general the relationship between the Medical and Dental Services and in particular the relationship of the ADDS to the DDMS.
>
> The DDMS realises that the ruling of the ADMS will require modification. He has made me believe that my feeling that the service was becoming under the complete control of the NZMC was an inference from the unfortunate choice of words in the ADMS's memo and that they had not intended any such policy. It was pointed out to the DDMS that the ADDS will be held responsible by the DDS for any shortcomings and that he will also be held responsible by the Dental Profession for general policy. Accordingly there can be only one authority – the ADDS. The DDMS has undertaken to have the whole question reconsidered by the Officer in charge Administration.

This sympathetic attitude of the DDMS brought excellent results and went a long way towards establishing a happier relationship between the medical and dental services. Colonel W. G. Stevens, Officer in Charge of Administration, became arbitrator and, after hearing both sides of the

dispute, gave a clear and concise ruling:

> **... The situation has changed in the interval between the sailing of the Mobile Dental Section and its arrival in Egypt. The present situation is as follows:**
>
> **(1) 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.**
> **(2) The ADMS is the deputy of the DDMS within the Division.**
> **(3) The ADDS commands the Dental Corps in the NZEF. The Mobile Dental Section is therefore under his command as far as personnel and technical work is concerned and at all times [will] be at liberty to communicate with the ADDS direct on technical matters.**
> **(4) 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 with the ADDS, a copy of such correspondence going to the DDMS.**
> **(5) The Officer Commanding the Mobile Dental Section will presumably be the senior Dental Officer with the Division in the field and is therefore the principal adviser of the ADMS on dental matters.**
> **(6) 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 as in (1) above.**
>
> **Headquarters 2 NZEF, 14 October 40**

This was in effect practically identical with the instructions given by the ADDS to the Officer Commanding the Mobile Dental Section on arrival in Egypt. A memorandum from Colonel Stevens to the ADDS on 18 October further established his position:

> **Establishment – Headquarters Dental Services 2 NZEF.**
>
> **Ref your DD 4/1/349 dated 27 Sept. 40, the establishment**

drawn up therein is approved.

> In order to clear up any misunderstandings, it has been arranged that a notification of the appointment of Major Fuller as ADDS 2 NZEF will appear in a future issue of NZEF orders.

To the ADDS and the Corps in Egypt the importance of this controversy lay in the success of the solution. To the historian, however, falls the duty to probe more deeply in order that the reasons for the controversy shall be exposed as a lesson for the commander of the future.

There is no doubt that the commander of the Mobile Dental Section honestly believed that his unit was to be apart from the general organisation under the ADDS and that the DDS had fathered this belief. The DDS's 'Notes on the N.Z. Divisional Mobile Dental Section' stated that the OC in the field would be responsible through the ADMS to the ADDS for the dental health of the Division. Two days later, on 29 April 1940, in a letter to Major Fuller he contradicted this:

> The Mobile Unit will not be broken up as they will all be selected and trained and MacKenzie will command not you as I stated in the original notes to ADDS and GOC. You have got your own job and cannot handle a unit like this.

This was tantamount to a vote of no confidence by the DDS in the ability of the ADDS to carry out the command delegated to him. It meant that the ADDS was expected to accept full responsibility but was to be deprived of full authority. The attempt to influence the organisation of the dental service to the 2 NZEF from Army Headquarters, Wellington, placed both the ADDS and the OC Mobile Dental Section in an invidious position and should be accepted as the real cause of the friction. If this is accepted as a reasonable deduction, the corollary is that, once there is decentralisation of command, there should be no interference from the higher authority except in the case of inefficiency or a similar reason. The principle, applied to the dental

services with the 2 NZEF, would place the ADDS in command of all NZDC personnel, enabling him to delegate his command to units such as the Mobile Dental Section when circumstances warranted it. The main point is that the delegation of command must come from no other source than the ADDS, who should have not only this power but the power to change the personnel of any unit should he deem it necessary. Only under these circumstances could he be expected to accept responsibility. The responsibility of the ADDS to the DDMS for the dental health of the force has never been questioned either in New Zealand or in Egypt.

Having fitted the Mobile Dental Section into place in the general scheme, it is now possible to return to a consideration of some of the events which influenced the development of the final organisation. Some of these are possibly only of historical interest, but others are worthy of close study if the mistakes of this experimental period are not to be repeated.

The embarrassment of too much staff and too little equipment was temporarily relieved by the Australian division at Helwan Camp. It was so short of dental officers that even all the urgent treatment could not be undertaken. As the division had some equipment, four officers, four orderlies and four mechanics were lent to it from the Mobile Dental Section. This suited everyone. The ADDS was relieved of surplus staff, the OC Mobile Dental Section found employment for his men and, as the loan was entirely unofficial, the Australians received dental treatment at no other cost than rations for twelve. A strange contrast to this co-operative gesture occurred at the same time at El Daba, where the headquarters of 4 NZ Infantry Brigade was situated. The British dental officer at the Casualty Clearing Station there refused to treat New Zealand troops, so as the NZDC officers were with the field ambulance many miles away, arrangements had to be made to bring someone from Maadi. Had this occurred before the arrival of the Third Echelon it might have proved embarrassing.

The ADDS paid a visit to the field ambulance dental officer, whose

experience in the field helped to crystallise his thoughts on methods of packing equipment. It appeared that the British outfits ought to be condensed, each pannier providing equipment for a definite task. By the rearrangement of the contents, one pannier could become surgical, one stores and supply, and the foot engine could be carried in a small, flat, specially designed 'suitcase'. (It will be remembered that in the New Zealand surgical pannier the foot engine was included but that there was no room in the British pannier for it.) This would mean that the Dental Officer could move with surgical equipment only, or with equipment and engine, leaving excess stores behind at his headquarters.

On his return to Maadi the ADDS received Colonel Stevens's memorandum mentioned above. The satisfactory ending to this unpleasant interlude was, however, only a milestone on a rocky road.

A subject demanding immediate attention was the appointment and promotion of officers, which under the rules promulgated by the DDS for the NZDC was producing some awkward anomalies. The search for a just solution to this problem required a consideration of many intricate details more of legal than of historical interest. The issue would only be clouded by including them so the description will be kept on broad lines, with more emphasis on policy than on ingenuity of solution.

Fundamentally, the anomalies were caused by a scheme of promotion of officers in the Dental Corps initiated by Headquarters in New Zealand, which was adhered to in that country but was unacceptable to the 2 NZEF. The result was that officers of the First Echelon found themselves superseded by later arrivals in Egypt. The desire of the DDS to secure adequate rank for his officers, which found expression in his successful advocacy in New Zealand, unwittingly produced injustices which his inability to force acceptance of his scheme overseas made him powerless to correct. A rigid adherance to this scheme by the DDS must lead to further injustices unless the 2 NZEF could be persuaded to adopt it too, and there were difficulties with this. There were only two courses open to the ADDS. One was to see that

suitable antedated substantive rank was given to the officers of the first and second contingents who would be entitled to it under Dental Corps rules. The other was to see that in future only lieutenants or temporary captains arrived from New Zealand, so that substantive rank could be conferred according to merit and ability and without prejudice to existing seniorities.

The first course received a sympathetic hearing from the Military Secretary but met with strong opposition from the DDMS, who considered it unfair to some medical officers. The obvious suggestion that the discrepancy might be better adjusted by an improvement in Medical Corps facilities rather than a curtailment of those in the Dental Corps produced a deadlock while Army Headquarters in Wellington was asked for elucidation. The ADDS continued energetically to stress the importance of remedying the injustice, pointing out that the personal feelings of medical officers were being allowed to exert an improper influence in a Corps outside their own.

The justice of the cause triumphed and, in spite of having complained by airmail letter to the DGMS about the Dental Corps rules for promotion, the DDMS did not wait for an answer but gave his approval. The necessary adjustment between the New Zealand and 2 NZEF rules was made and it was agreed that in future promotion would not be automatic but would rest entirely on the recommendation of the ADDS.

It will be noted that the DDMS still acted on the assumption that the Dental Corps was under his direction as part of the Medical Corps, and this attitude permeated all the developmental stages of the Dental Corps. There were constant battles over channels of communication and innumerable conferences between the DDMS and the ADDS in which widely different opinions gradually became reconciled under a mantle of mutual respect and confidence.

At the end of October the Mobile Dental Section, seeking the solution to a small problem, became instrumental in deciding a matter

of major policy in the Middle East. The ADDS forwarded a memorandum to the DDMS and ADMS asking:

1. Should the unit be armed with weapons and trained in their use?
2. Should they be issued temporarily with weapons, trained in their use and later, in the field, issued with arms should conditions demand it?
3. Should the unit receive neither arms nor weapon training?

This brought up the whole question of the personal defence of medical and dental personnel, which apparently had not been fully considered before. The copy sent to the ADMS went on to the AA & QMG and from there to HQ 2 NZEF, to the GSO I and the GOC. The DDMS's copy went on to the DDMS BTE and then to the DMS Middle East (General Tomlinson). The final decision was that the Mobile Dental Section was to be considered in all respects similar to a field ambulance, i.e., officers could be armed with revolvers but no arms were to be carried by other personnel of the New Zealand Dental Corps.

As a change from the navigation of the uncharted seas of administration, the appearance of a purely dental problem presented little difficulty of solution. Two patients from the Australian camp at Helwan were admitted to 2 General Hospital suffering from osteomyelitis. [1] It was considered that this infection had arisen from posterior superior dental nerve blocking for dental extractions. It was not reported whether Australian or New Zealand dental officers were the operators. Although recognised as a legitimate technique in local anaesthesia of the maxilla, this type of injection is seldom necessary for other than extensive surgical operations which would be performed under hospital conditions. In the dust-laden atmosphere of Egypt the observance of rigid asepsis, so essential to avoid post-operative complications, was difficult and what might have been perfectly justifiable in Australia or New Zealand became a surgical risk in Egypt. The ADDS therefore gave instructions that neither the infra-orbital nor the posterior superior dental nerve blocks would be used in Egypt by the New Zealand Dental Corps.

In November 1940 the first of the reinforcements, known as the 4th

Reinforcements, was ready to leave New Zealand for Egypt. The DDS took advantage of this to implement a scheme for dental reinforcements which, while providing a dental service for the voyage, gave the ADDS the opportunity to maintain his force at its fullest energy. Apart from dental personnel attached to such medical units as general hospitals, etc., he decided to allot in future to each transport one officer, one orderly and one mechanic for duty on the voyage and return to New Zealand. These were seconded to the 2 NZEF and if required by the ADDS could be retained in the Middle East, allowing unsatisfactory or burnt-out personnel to return in their stead. To overcome possible embarrassments an NCO being retained overseas was liable to revert one step in rank.

It was becoming apparent that the Mobile Dental Section in the form in which it was trained and established would need further modifications before being ready for work under field conditions. Already the limitations of the mobile dental laboratory have been mentioned, and this meant that more mechanics would be needed if sub-sections were to take over some of its duties. It was

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[1] A serious bone infection.

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also considered that the number of batmen should be increased. The training which had previously laid stress on so many combatant duties could now, by reason of the decision not to carry arms, give more attention to the promotion of efficiency in dental matters. What brought things to a head was the intimation from the CRASC [1] that the number of ASC personnel attached was insufficient for the number of vehicles. He stated that all heavy vehicles must have two drivers, one being a relief, and also that there should be relief drivers for the 15-cwt trucks. In addition to this he strongly recommended that all ASC vehicles should be driven by ASC personnel only. The establishment was changed to meet these requirements. Instead of a corporal and ten drivers of the ASC, there were a corporal, lance-corporal, driver-mechanic and twelve

drivers. Two mechanics and two batmen-orderlies (not batmen-drivers) were added to the previous establishment and the motor-cyclist ceased to be listed under that heading.

On 13 December the unit moved to Helwan Camp. Its first task was to be the re-examination of the entire First Echelon as soon as it arrived in the camp and the establishment of dental fitness. In addition it was responsible for attending to all urgent cases at the prisoner-of-war camp at Helwan. Later a captured Italian dental surgeon worked at this camp.

The Mobile Dental Section was to be used, as it should be, as part of the general organisation working as a camp dental hospital under the direction of the ADDS, but still under the command of its own OC. At the same time, the dental sections attached to 4 and 6 Field Ambulances were operating a tented dental hospital at Helwan to take care of the Third Echelon and had borrowed two mechanics from the Base for this purpose. No. 1 Camp Dental Hospital was open in Maadi for all routine treatment and the Base Dental Hospital was attending to all patients from the Discharge Depot and Reception Depot.

Two other matters concerning the Mobile Dental Section and its function in the field were settled at this time. The full significance of the decision to drop the word 'Divisional' from the title had not been realised. It meant that the unit became classified as 'non-divisional', although it would carry out most of its duties within the Division. The Division was to enter active operations entirely in accordance with the British war establishment, in which a Mobile Dental Section did not appear. Before an advance or retirement, road congestion would become one of the greatest problems and, as non-divisional troops, the Mobile Dental Section could relieve some of this by being withdrawn from the divisional

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[1] Commander Royal Army Service Corps.

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area. Although mobile, it could only render service during static

periods, like the ambulance man at a football match, always on the sideline ready for immediate action on the field. The other matter concerned the mobile laboratory, which was damaged when being unloaded from the ship and was at Abbassia for repair and to await the arrival of the chassis from England. Safety glass was unprocurable in Egypt and observation of the effect on windscreens of bomb blast precluded the use of ordinary glass. Under these conditions the only safe course was to dispense with glass windows altogether.

The NZDC organisation was not only beginning to take shape but was attracting attention from other dental corps in the Middle East. As a fitting conclusion to 1940 an extract from a letter written by Major Fuller on New Year's Eve to Colonel Finn is quoted:

> **Colonel McCallum [newly appointed DDS of the Army Dental Corps] rang me yesterday from Middle East [Headquarters] and has come to realise that they have been working along the wrong lines as far as dental treatment in the field is concerned. Largely as a result of the publicity given to us by Ford [Captain W. McD. Ford, NZDC] up in the desert and from conversations with him he now intends putting mechanics with British Field Ambulances. War Office are showing signs of similar opinion. As McCallum says their policy has been centralisation; he now realises that it should be decentralisation. That is my opinion too, even within the Division. The small sections are the only solution in modern warfare.**
>
> **Lieutenant-Colonel Downs, the Australian ADDS is interested in the organisation we have developed. Colonel McCallum who is also keenly interested met him in Palestine and discussed some of our ideas with him. Downs is coming down from Palestine on the quest for details and McCallum has asked me if I would meet the two of them and take part in a three party discussion.**

At the close of the year it appeared as if smooth waters had been reached but in the second week of 1941 another stone was flung into the

pool. Further differences of opinion arose between the ADDS and the ADMS of the Division regarding the control of the dental personnel in Helwan Camp. On the dental units being posted to Helwan the ADMS had agreed that such communications as returns of work, parade states and indents on the dental store could be sent direct to the ADDS, a copy only being sent to him for information. Movements, on the other hand, were all to go through the ADMS. This, however, did not suit certain medical officers who gave contrary instructions to the dental officers attached to them. They objected to the ADDS writing direct to the dental officers and insisted that all correspondence without exception should go to the ADMS. It appeared that the question was developing into a major issue which might eventually need discussion between HQ 2 NZEF and HQ NZ Division. The entry in the war diary of the ADDS of 14 January expresses his opinion at the time:

> Interviewed ADMS at Helwan in reference to the question of administration and command of dental units in the Division; discussed all angles of the case at some length and we were unable to come to an agreement or decision. The ADMS feels that the Division should be considered as being in the field and that now all dental personnel within the Division for all purposes are part of his command; that their function and duties are no concern of the ADDS; that the ADDS may not communicate with the dental officers direct and that in effect the Dental Corps personnel within the Division are lost to their Corps. On the surface, this dispute would appear of minor importance; the details of the case concern channels of communication, in particular to indents, weekly returns, etc. and arguments over these apparently minor details created the impression that the complaint is petty. But actually the whole question, built up on minor details, becomes a major issue. It is not the details to which one objects as the service will run no less efficiently if all correspondence without exception passes through the ADMS but it is the spirit of the matter, the attitude of the Medical Service as expressed by the ADMS who states that the dental sections in the Division are his concern

entirely; who states that their ultimate responsibility is not to the ADDS. Thus it is a question of the principle involved.

The ADMS states that since the ADDS is responsible to the DDMS so are the dental personnel in the Division responsible to the ADMS entirely. This attitude in practice will not create inefficiency where we have as at present an ADMS who actually will not obstruct the work of the NZDC but on the other hand the appointment could quite easily be filled by an officer with no understanding of dental service problems and who, without dental intervention, would obstruct the work of the NZDC.

Difficulties such as this always arise where personnel of one arm of the service are attached for duty to another arm of the service but in our instance the position is made considerably worse by the fact that in an indefinite manner the ADDS is responsible to the DDMS and by the fact that the Medical Services consider that the dental services are part of them. In other words the dental service has independence only when it suits the other party. Normally there is no friction; it is even possible to state that there should be no friction but yet, to the detriment of the dental services, in each instance where the senior administrative Dental Officer proposes a policy which will conflict with medical opinion, the proposal, instead of being considered by an outside and unbiassed opinion, is invariably quashed in the early stages through having to pass through medical channels. The liability for this to happen always exists.

In the case of the NZDC there would appear to be only one solution—an independent service with the head of the service directly responsible to the Adjutant-General's branch. It then follows that within the Division the administrative arrangements may be either:

(*a*) A DADDS to be on Divisional Headquarters Staff when the Mobile Section is within the Division, to be responsible for the

dental arrangements within the Division and to co-operate and work in conjunction with the ADMS.

or (b) the ADMS to act within the Division on behalf of the ADDS as regards dental matters.

These comments written at the time reveal a depth of feeling probably engendered by a fear that further encroachment was imminent and that the carefully laid plans for a dental organisation for the whole force would be adversely affected. The important fact was that the troops in Helwan, especially those of the First Echelon who had need of extensive dental treatment, should have as much work done for them while in camp as possible. The problem was a dental one and the ADDS was near at hand to assist in its solution. It is unlikely that the ADMS would have the requisite knowledge to tackle this problem without advice. Admittedly, in professional units such as the Medical and Dental Corps it must be extremely difficult to state what is and what is not a technical subject. Although the OC Mobile Dental Section was senior dental officer with the force in Helwan and, as such, the adviser to the ADMS on dental matters, it must be remembered that the troops were concentrated in camp and the disposition of the dental personnel had been by direction of the ADDS.

As an example of this attitude the following two extracts from reports are quoted:

THE NEW ZEALAND DENTAL SERVICES

REPORT ON DENTAL SERVICES WITH THE 2 NZEF FROM ADDS TO DDMS, 1 FEBRUARY 1941:

Report on Dental Services with the 2 NZEF from ADDS to DDMS, 1 February 1941:

Paragraph 7. The examination of units of the first contingent indicates that extensive treatment would be necessary to render these troops TOTALLY dentally fit and that it would take 3 to 4 months to produce a contingent requiring no further dental attention. But it is now 14 months since organised treatment was carried out, such treatment being directed towards rendering the contingent completely dentally fit, and therefore this present position came as no surprise. It was never anticipated that the present opportunity of 'reservicing' the contingent would become available, so that actually the position might have been worse.

Therefore from a broad outlook and considering the effect of the present dental conditions on their efficiency as healthy soldiers, one can only state that the dental health of the first contingent is satisfactory, providing that all cases which may otherwise give trouble in the near future are attended to while in Helwan Camp, i.e., a practical rather than a total dental fitness might need to be aimed at as regards the first contingent.

THE NEW ZEALAND DENTAL SERVICES

WAR DIARY ADDS, 28 FEBRUARY 1941:

War Diary ADDS, 28 February 1941:

Under the direction of the ADMS the attempt has been made at Helwan to achieve TOTAL dental fitness with the result that the Division will be moving to the field with one third of the units totally dentally fit and two thirds who have had no treatment whatsoever. It would have been better to have made an attempt to achieve a practical dental fitness throughout the contingent and to have completed the urgent and important treatment in the mouths of all men requiring attention and to have left the minor cavities etc. untreated.

This was advised in paragraph 7 'Report on Dental Services' dated 1 Feb. 41.

The reasoning was sound and the advice of the ADDS to this end was given to the only quarter available to him, the DDMS. Had there been closer co-operation between the ADMS and the ADDS this advice could have been given direct and the mistake would not have occurred.

There was one branch of treatment where the very closest cooperation existed between the Medical and Dental Corps. Maxillo-facial injuries produced problems requiring specialised medical and dental knowledge closely knit as a team, each part dependent on the other. The training of these specialists was being undertaken in England by Sir Harold Gillies, well known as a plastic surgeon and himself a New Zealander. Details of this training are given in the chapter on maxillo-facial injuries. In the early stages of the 2 NZEF in Egypt the dental part of this work was carried out by Captain E. B. Reilly, NZDC, with conspicuous success.

The number of maxillo-facial injury cases to be expected in modern

warfare is difficult to assess. For example, in the First World War there was a very large number of cases attributable to shell fragments and rifle bullets. In this war there were fewer from this cause, probably due in some measure to the increased lethal power of the weapons which killed rather than maimed. On the other hand, the greater use of motor transport increased the accident rate and produced the bulk of this type of injury. Fortunately, simple cases, such as jaw fractures without undue complications, can be handled by the average surgeon and dental surgeon, leaving the specialist free to concentrate on the complicated ones. Again, the big cases are not treated in a hurry and one surgical team can cope with a large number. The emergency treatment for these cases such as arrest of haemorrhage, maintenance of respiration and treatment of shock is carried out before the patient reaches the hands of the specialists.

In February the ADDS received from the DDMS a file relating to the appointment of medical and dental officers for the course in treatment and containing recommendations from Sir Harold Gillies as to the control and treatment of these injuries in the NZEF service.

In March 1941 the Second Echelon arrived from England, bringing the force in the Middle East up to establishment. With the assembly of the Division in Egypt the organisation of the dental services was able to settle into place under the direction of an ADDS properly situated at a fully functioning headquarters. The experimental period was not quite over but the NZDC had won a recognised place in the 2 NZEF and a large measure of independence. This was further cemented by a fuller definition of the powers of NZDC officers in command of the larger units.

THE NEW ZEALAND DENTAL SERVICES

WAR DIARY ADDS, 8 MARCH 1941:

War Diary ADDS, 8 March 1941:

Discussed with AA & QMG, 2 NZEF Base the question of command of NZDC Officers and the procedure to be adopted in instances where breaches of discipline occur. He assumes that the ADDS commands NZDC personnel in the 2 NZEF and accordingly in all instances where breaches of discipline are reported as regards officers the papers will be sent to the ADDS who will either discipline the officer himself or decide that the case requires investigation by higher authority. (In the case of 1 Camp Dental Hospital, Base Depot Dental Hospital and Mobile Dental Section when at Base the ADDS in the latter instance would direct the officer commanding the unit to frame a charge, prepare a summary of evidence and make application through him for a Court Martial.)

The powers of Officers in command of 1 Camp Dental Hospital and Base Depot Dental Hospital have never been sufficiently defined and at present these officers appear only to have the powers of Company Commanders. NZDC personnel who have committed offences which cannot be dealt with by a Company Commander are tried before Officer Commanding Headquarters Company in the case of the Camp Dental Hospital and Officer Commanding Reception Depot in the case of Base Depot Dental Hospital. The dental units are formed as Units of the 2 NZEF and now it is felt that NZDC personnel where possible should be disciplined by NZDC Officers. Accordingly application will be made to Headquarters 2 NZEF Base for these Officers to be granted the powers of Officers Commanding Detachments in accordance with Para 577 K.R. (1935) [1] while acting as Officers Commanding their units.

This was a distinct advance as the powers of a company commander are strictly limited in comparison with those of an Officer Commanding a detachment. Discipline within the units was more easily maintained and the Corps spirit was enhanced.

Meanwhile, Maadi Camp was expanding, and although it depended on the fortunes or misfortunes of the Division whether the extra area would always be occupied, it became necessary to consider building a second Camp Dental Hospital. In early April 1941 it was decided to establish No. 2 Camp Dental Hospital of the same size as the existing one, to be ready for occupation by the time of arrival of the 5th Reinforcements.

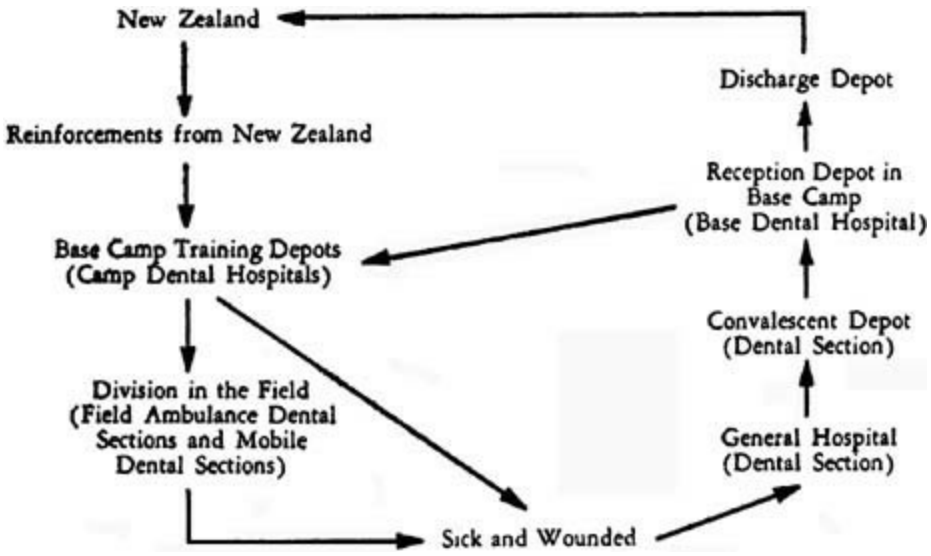
At the same time, further consideration was given to the provision of dental reinforcements. The scheme whereby dental staff attached to transports could be retained was not entirely satisfactory. There was apparently a mental attitude of dissatisfaction in personnel unexpectedly retained for service in the 2 NZEF. With so many of the Corps in New Zealand clamouring for the opportunity to serve overseas, this attitude is inexplicable and it is probable that, if there had not been other factors influencing the position, little notice would have been taken of it. Later it was not evident. The ADDS estimated that through sickness, one officer was off duty each week, and that, with extended leave every six months, one officer was absent on leave each week. He suggested that reinforcements be provided on the basis of a six-monthly wastage rate of 17½ per cent.

The establishment of the general organisation having been described in some detail, it is now convenient to study how that organisation fitted into the 2 NZEF plan. It has already been seen that it was flexible and capable of immediate modification and expansion to meet special circumstances, but notwithstanding this, there was a well defined blueprint to which the service had to be built.

For the purposes of dental treatment, the Expeditionary Force was divided into three groups, each with its own dental problems:

1. Reinforcements entering training units in Base Camps. Also, office and administrative personnel in these camps.
2. Troops in the field, i.e., Advanced Base, Lines of Communication units, non-divisional units and the New Zealand Division.
3. Sick and wounded passing through General Hospitals, Convalescent Depot and Discharge Depot.

To understand the dental problems connected with these groups it is first necessary to study the flow of troops between the groups. The following diagram will help the reader to visualise this:



On arrival in Egypt all reinforcements entered a training depot in a Base Camp before being posted to units in the field. Although they had all been made 'dentally fit' before leaving New Zealand, they were immediately examined again and treated if necessary. This was in accordance with Dental Corps policy, which was not to allow anyone who was not dentally fit to proceed to the field. The two Camp Dental Hospitals carried out this work in addition to attending to the regular six-monthly examination and treatment of the base administrative staff. They were dealing with fit men of a static force undergoing training and were working under much the same conditions as existed in the mobilisation camps in New Zealand. One small difference between the camp dental hospitals in Egypt and New Zealand was in the keeping of records. In New Zealand records were of the utmost importance as an indication of the state of the mouth on entry into the force for comparison with the condition on discharge. As Colonel Fuller wrote in the *New Zealand Dental Journal* of July 1942:

Records are not retained in this group when the treatment of the soldier has been completed. The objects are to examine men, to complete all treatment and to see that no man proceeds to the Field unless completely dentally fit. Since this object is attained in every case there is no point in forwarding records to the Field with the soldier. Should he return eventually to the Base Camp it will be through a General Hospital and/or Base Reception Depot, where he will be examined and treated, and from which he will enter the Base Camp dentally fit.

A simplified method of charting is used which records, not so much the condition of the mouth, but rather the work actually requiring' attention. Throughout the entire service, in point of fact, the emphasis is on the practical, and any procedures found to be merely of academic use are discarded immediately. Our responsibility is the creation of an efficient Army Dental Service of war-time use and duration only.

With the exception of a few men who through sickness were sent to hospital, the troops left the training camp for service in the field, entering this second group dentally fit. Dental treatment then became governed and limited by general conditions and military circumstances. The moment for which the soldier had been trained had arrived and the Dental Corps had played its part in producing him as a physically fit member of a fighting force. Everything had been done to reduce to an absolute minimum the occurrence of dental pain and to prevent his loss from his unit because of dental lesions. The responsibility of the Corps, however, did not end at this point, nor did the soldier have to await his return to Base or hospital for future dental attention. Within the Division each of the three brigades had a field ambulance, to which was attached a dental section consisting of dental officer, clerk-orderly and, later, a mechanic. The dental health of the troops in the Division was primarily the responsibility of these dental officers, each of whom was responsible to the brigade to which his ambulance was attached. In addition to this there was the Mobile Dental Section with its 8 officers

and 39 other ranks, self-contained with its own transport and capable of dividing into sub-sections for attachment to any unit requiring its services. This Mobile Dental Section was non-divisional but could be used within the Division, co-operating with the field ambulance sections. When, however, the Division was in action, the Mobile Dental Section would on most occasions reassemble and either wait for more suitable conditions to rejoin the Division or join other New Zealand units. The ADDS, in his 'Notes and Instructions', writes:

> **No organised attempt will be made on every occasion (in the Field) to render every man dentally fit. This is neither necessary nor desirable if troops have been sent forward dentally fit, for, if attempted under all circumstances, it would be out of proportion to other needs.**
>
> **Therefore it is the duty of dental units in the Field to ensure primarily that the standard of dental fitness attained in base areas does not deteriorate unduly. Their duties are thus concerned mostly with maintenance and with attention to work of an urgent nature. For example, in the open, highly mobile warfare of the Western Desert (North Africa) in 1941 and 1942, it was the duty of dental units in the field to ensure primarily that the standard of dental fitness attained in base areas did not deteriorate unduly during those phases when the Force was actively engaged and in consequence mostly on the move.**
>
> **The position is entirely different however when field units are resting or reforming and training or performing duties outside active areas of operations or occupying static (or virtually static) forward defended localities, etc. Under these circumstances the treatment carried out is the same as that undertaken in Base Camps and is organised with a view to rendering each unit dentally fit once every six months.**

In this group, which can be conveniently called the 'Action circuit', it can be seen that the aim was to promote practical rather than actual

dental fitness and that the Corps, in attempting the former, in many cases achieved the latter. Before leaving this group it is timely to quote the words of the ADDS:

> The size of the Service must be in balanced proportion to the other needs of a force whose purpose is primarily to fight. The Service must never be organised and expanded to such an extent that some of its operations, when measured in relation to the purpose of the force, are unnecessary; nor should they ever hinder essential military activities of units of the force but, on the other hand, their effect should be continually to contribute towards and act as a stimulus to general fitness and efficiency.

The third group was the 'Hospital circuit'. Soldiers in the field, either divisional or non-divisional, who became casualties through sickness or enemy action, were evacuated to a General Hospital and from that moment were struck off the strength of their unit. Once in the hospital circuit they had to follow a definite course and their future destination was decided on medical grounds. From the hospital they went to a Convalescent Depot to recuperate. The next step was to a Reception Depot, where they were medically examined and, if fit, sent on to the Training Depot, whence they returned to the field when reinforcements were needed. If found unfit for further service they were medically boarded for return to New Zealand and were posted to the Discharge Depot to await a return passage. Similarly, those men evacuated to hospital from the training camp could only leave the hospital circuit through the same channels.

This compulsory immobilisation of men afforded a good opportunity for the Dental Corps to establish complete dental fitness and the group was organised to ensure that no man left the circuit until this was accomplished. Dental sections were attached to the general hospitals and to the Convalescent Depot, and a Camp Dental Hospital, termed the New Zealand Base Depot Dental Hospital, was responsible for the Reception and Discharge Depots, which were close to each other. Dental charts were used in this circuit to provide a check that no man should

leave the circuit unless dentally fit. Each man's chart followed him in his progress through the circuit.

The ADDS at his headquarters kept in touch with every dental unit and could interchange or augment personnel to achieve the objective of each group. Especially was this of value with dental units in the field, for, knowing the dental condition of every unit of the force, he could notify dental officers of those units which became due for organised treatment.

Just as there was a regular progression of men in the 2 NZEF, there was a system of training and reinforcement of dental personnel within the framework of the Corps organisation. The No. 1 Camp Dental Hospital was considered the training unit of the Corps and reinforcements and personnel surplus to establishments were posted to the strength of that unit. All dental personnel, irrespective of any allocation to a specific unit in New Zealand, were, without exception, posted to No. 1 Camp Dental Hospital in Maadi Camp. As an example, Lieutenant A. B., who left New Zealand as dental officer attached to X Field Ambulance, arrives in Egypt. No. 1 Camp Dental Hospital renders a casualty return placing him on the strength of the dental hospital, quoting a letter from the ADDS initiating the posting as authority. Although posted to the Camp Dental Hospital he is still nominally attached to the Field Ambulance, but this does not mean that in the event of the ambulance requiring dental reinforcements in the field, Lieutenant A. B. will automatically be chosen for this duty. The demand for reinforcements is made on the Camp Dental Hospital, whose Officer Commanding selects, under the supervision of the ADDS, a suitable officer for attachment to the Field Ambulance. Similarly, should the Division suffer a large number of casualties and the Base Depot Dental Hospital find difficulty in establishing dental fitness in the hospital circuit, extra personnel could be sent from the Camp Dental Hospital. As this would bring the Base Depot Dental Hospital above its establishment, the surplus personnel would be shown on the strength of the Camp Dental Hospital and as being temporarily detached to the Base Depot

Dental Hospital for duty.

Dental Corps casualties, that is those who were evacuated beyond a Regimental Aid Post, would enter the hospital circuit in the same way as any other casualties, but on reaching the Base Reception Depot and being graded fit for duty, would join the strength of No. 1 Camp Dental Hospital. They would then be either posted to a unit at Base or in the field, or remain as unposted reinforcements until demands were received for further personnel.

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[1] **King's Regulations.**

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 13 — GREECE AND CRETE

CHAPTER 13
Greece and Crete

THE story of the campaign in Greece and Crete in which the New Zealand Division fought in 1941 is a jewel of many facets polished into brilliance by military historians, political apologists, moralists, strategists and tacticians. So much sparkle is blinding and misleading when it is intended, as in this history, to polish one small facet only, so little reference will be made to the campaign in detail. All that it is necessary to know before beginning the story is that the New Zealand Division was sent to Greece, fought there, was driven off to Crete, fought again, and thence was evacuated to Egypt with inevitable losses in men and equipment. The whole campaign was extremely mobile and as such offered no facilities for organised dental treatment, but it is reasonable to assume that nobody guessed how fast modern warfare could move. Had they done so the lesson to the Dental Corps might have been less costly but, on the other hand, many prisoners of war in Germany would have been deprived of much expert dental attention.

The decision to send the Division to Greece provided the Dental Corps, in the first instance, with a clear-cut issue according to the blueprint organisation so recently adopted. The men were leaving the training camp and entering the 'Action circuit' where maintenance and the treatment of urgent dental casualties became the first consideration. There were three Field Ambulances, the 4th, 5th, and 6th, to each of which a dental section was attached. The 'Hospital circuit' was represented by No. 1 General Hospital, which had a dental section with it. Nothing less than this could give a reasonable coverage. Until there was reason to expect some stability in the military operations, nothing more could be used with certainty. Dental units surplus to requirements in the 'Action circuit' could only be regarded as a potential hindrance to essential military operations and an unjustifiable risk of trained personnel. Unfortunately, more were sent. On 1 April 1941, after the main body had sailed, eight officers and twenty-four other ranks, with fifteen Army Service Corps drivers attached, left Egypt as a Mobile

Dental Section, complete with elaborate equipment. Of this number, one NZDC other rank and one ASC driver were evacuated from Greece to Egypt; two NZDC other ranks and four ASC drivers escaped to Crete; all the others were taken prisoners of war and all equipment was lost.

It is easy to be wise after the event, and easier still to level criticism and apportion blame, but not quite so easy to recapture the spirit of the moment or to analyse dispassionately the decisions born in immaturity. Many of the records were lost in Greece; the capabilities and limitations of a Mobile Dental Section had not been fully tested; there were differences of opinion over the channels of command and teething troubles in the assimilation of a new unit into an old-established organisation.

The decision to send dental sections with the field ambulances and the General Hospital was in accordance with established custom and needs no comment. It is from an analysis of the movements and activities of the Mobile Dental Section in this campaign that valuable lessons can be learned. Who sent the section to Greece? Why was it sent there? Did it perform any useful function? Having arrived in Greece, was it used correctly? Could it have been saved from capture? To answer these questions with complete accuracy is impossible as there is little conclusive written evidence. It is, however, possible to piece together the fragments into a story, bridging the gaps with deduction as distinct from conjecture.

Before the departure for Greece the New Zealand Division was in Helwan Camp under the dental care of the Mobile Dental Section. It was here that the first confusion in regard to the command of the Mobile Dental Section became apparent. The ADDS considered that Helwan was a base camp and that the complete dental arrangements for troops in such a camp were his responsibility. As such the Mobile Dental Section would come under his command. He based his opinion on the instructions of the Officer in Charge of Administration (OICA) already quoted:

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.

On the other hand, the ADMS (Division) apparently regarded the concentration of the Division in Helwan Camp as analagous to field conditions, in which case the Mobile Dental Section would be under his command. His opinion was based on another section of the instructions from OICA:

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 with the ADDS, a copy of such correspondence going to the DDMS.

At first sight it may appear of little consequence who was in command of the section, especially as much bigger issues were occupying everybody's minds. Had free use been made of the consultative clauses in the administrative instructions it would have mattered little to whom the Mobile Dental Section was immediately responsible. Unfortunately the ADMS and the ADDS each still held different opinions, with the ADMS in actual command, having as his adviser on dental matters the OC Mobile Dental Section, whose affiliation with the ADDS has already been the subject of comment. The ADDS was unwilling to begin a major administrative battle at this time to assert his authority and was discouraged in his attempts at co-operation. The results of this with respect to the dental condition of the Division have already been described. It also gives us material on which to base the answer to the first question, 'Who sent the Mobile Dental Section to Greece?' The ADDS states categorically that he was neither consulted as to where the section was going nor as to how it was to be used, so it would appear that the section could only move on the authority of the ADMS. The war diary of the ADDS bears out his

statement as there are only three entries at the date of the movement of the section from Helwan, and it would be strange if, in a diary as full as his in which every discussion was entered in detail, this was the only one omitted. The entries are:

> **20 March 41. Notified of date of movement of Mobile Dental Section.**
>
> **21 March 41. Mobile Dental Section will remain at Helwan Camp until date of departure. They are the sole occupants of the camp.**
>
> **26 March 41. Mobile Dental Section moved to Field.**

Unfortunately there is no trace of the movement order for the section to leave Helwan and go to the transit camp at Alexandria, the only information being a report from Major Mackenzie that no provision had been made for its arrival. It is inconceivable that had the movement originated from the ADDS at Headquarters 2 NZEF there would have been no advice of arrival, as it would have been an isolated move rather than one of many.

At the time of the move from Helwan to Alexandria the ADMS was already in Greece and would have had time to see something of the conditions under which his units would be working. There could have been few signs of an impending static period of operations in which a Mobile Dental Section could successfully operate. Under normal conditions the four dental sections in Greece should have been able to deal with casualties during intensive warfare and the Mobile Dental Section could have been called over when the situation became stabilised. The conditions, however, were not normal, as can be seen from an extract from the war diary of the ADMS NZ Division of 31 March 1941:

> **Since arrival of troops in Greece, and up to date, rations have been largely M & V [meat and vegetable stew], no supplies of fresh meat, bread or vegetables being available until 1 April. Many cases**

of broken dentures due to hard biscuits have occurred and as these can only be repaired by Mobile Dental Section it is apparent that this unit should be retained and function with the Division.

The biscuits were of the dog-biscuit type and, according to reports, were a test for the strongest teeth. In the New Zealand Division with its high proportion of artificial dentures the results were serious. At one time there were something like 800 broken dentures [1] and little prospect of soft rations for the unfortunate owners. The soldier could not eat, and a man who cannot eat cannot fight. This fact alone gives some justification for sending the Mobile Dental Section to Greece in the hope that there would be time for the dentures to be repaired. It is quite certain that the task was beyond the resources of the dental sections already there. It is also difficult to see any other solution to this urgent problem. Whether it was used correctly will be discussed later, but enough has been said to show why it went to Greece.

Having discussed why and by whom the section was sent to Greece, it is necessary to know what happened to it, and this is best told in the words of some who were part of it in the campaign.

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[1] War Diary ADMS, 12 April 1941.

Major J. A. S. Mackenzie, NZDC (OC Mobile Dental Section), to DDS Wellington, 14 June 1945:

The 2nd Mobile Dental Section, shortly after its arrival in Egypt, was altered on the orders of the ADDS Middle East, Lt-Col Fuller, from a divisional unit to a non-divisional one. From the section OC's point of view, this was a serious change for it greatly increased the difficulties in such things as obtaining the unit's motor transport and various other items of equipment. To some extent this change was responsible for the loss of the unit in Greece owing to it being separated from the Division. This meant

that, until such time as the Division could be contacted in the Field, the section operated as an independent command, entirely cut off from divisional intelligence. In the type of warfare that characterised this campaign, this proved to be a great disadvantage. Being attached to a Division is a very different thing from being part of a Division and especially is this the case during an evacuation scheme.

Before continuing with Major Mackenzie's story, certain comment is called for on his statements and deductions. In the first place, the change from divisional to non-divisional status was not on the orders of the ADDS but of Headquarters 2 NZEF (see page 142). In the second place, it is difficult to see how this change in status could have been responsible for the loss of the unit in Greece as the Mobile Dental Section was not the only non-divisional unit in the campaign. No doubt, as will be seen later, there was not the firmness of attachment that there might have been, but there is no reason to believe that if the section had been attached to the Division it would have been other than an encumbrance to that highly mobile and busy fighting machine, with much the same chance of being captured by the enemy. To continue:

Great difficulty was experienced in Egypt in obtaining the necessary motor transport. Finally it was obtained by going outside the 2 NZEF (organisation) and dealing direct with Headquarters Middle East. The end justified the means and the unit left for Greece with:

One 5-ton Albion, reconditioned by Italian Prisoners of War and fitted with the Mobile Dental Laboratory.

Two 3-ton Bedfords.

Seven 15 cwt. Ford trucks.

Two Motor cycles.

One Humber Snipe car.

One Water Tank trailer.

All the 15 cwt. trucks were fitted with adjustable covers by the unit's carpenter and plumber. This allowed for easy packing and bigger loads. All the transport was satisfactory in Greece.

The Mobile Dental Section moved as an independent unit to Greece as the Division had been there for some time. Helwan Camp was left at 0700 hours on 27 March 41 and the transit camp on the outskirts of Alexandria was reached that evening. Although all orders received for the move to Greece had been carried out, no provision had been made in this camp for the unit. The same difficulty again arose in regard to transporting the unit to Greece but, after much arguing and many interviews, the drivers and transport went on one ship and the remainder of the unit on another.

Alexandria was left on 1 April 41 and the personnel reached Greece 36 hours later. The drivers on the transport ship took four days and received numerous air attacks, two men being slightly wounded when a bomb hit the ship. Only minor damage was done to the unit transport.

In Greece nobody seemed to know much about us. Finally, Colonel Gentry [1] (AA & QMG NZ Div. Hqs. in Athens) instructed the NZ Liaison officer, Major Rattray, [2] in Athens to send us to Katerine. The unit left Athens on 7 April and reached Larissa on the morning of 9 April. Here the Area Commander, Brigadier Parrington, [3] ordered the unit back to Athens. The unit was accordingly withdrawn 15 miles back to Pharsala,

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[1] Maj-Gen Sir William Gentry, KBE, CB, DSO and bar, m.i.d., MC (Gk), 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 & QMG 1940–41; GSO I May 1941, Oct 1941–Sep 1942; comd 6 Bde Sep 1942–Apr

1943; Deputy Chief of General Staff 1943–44; comd NZ Troops in Egypt, 6 NZ Div, and NZ Maadi Camp, Aug 1944–Feb 1945; 9 Bde (Italy) 1945; Deputy Chief of General Staff 1946–47; Adjutant-General 1949–52; Chief of General Staff Apr 1952–Aug 1955.

[2] Maj N. A. Rattray, MBE, m.i.d., Croix de Guerre (Fr); MLC; Waimate; born Dunedin, 7 Nov 1896; soldier and farmer; Royal Irish Fusiliers (Capt) 1915–22 (twice wounded); p.w. 25 Apr 1941.

[3] Sub-area commander at Larisa.

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where the Number 1 NZ General Hospital was located. Colonel McKillop [1] (OC 1 NZGH) gave us permission to work in his area. The following day the unit was working and a sub-section under the command of Captain J. Dodgshun [2] was sent to the NZ Reserve Motor Transport at Larissa continuing to work there until that unit withdrew.

On 11 April the ADMS, Colonel Kenrick, [3] visited the area and expressed surprise at the unit being there and gave written orders for it to proceed to the slopes of Mount Olympus. These orders were countermanded again by Brigadier Parrington. He again ordered the unit back to Athens but Colonel McKillop was in need of help in the evacuation of the hospital, and the NZ and Australian nurses were evacuated by the unit to Athens. This meant leaving some of the equipment behind. Headquarters in Athens refused us permission to return to Pharsala to collect the remainder of the equipment but, bearing in mind its value and the difficulty in replacing it, Captain Noakes [4] and four drivers were sent back as a salvage party. Unfortunately they were unable to proceed further than Lamia and returned to Athens empty handed.

The unit rested for a day and then went to Voulas, [5] the Advanced NZ base. It was decided to establish the unit

headquarters in this area. Accordingly a German doctor's house and surgery were commandeered for this purpose and Captain Greenslade [6] and three officers, Captains Crawford, Noakes and Spencer, [7] with their orderlies, set up their sub-section with the Mobile Dental Laboratory. The remainder of the unit intended to return to Thebes.

The night before we were due to leave we were ordered to evacuate Greece and hand over the unit transport to NZ Base. The drivers volunteered to stay behind with their trucks. Sergeant Reilly [8] and Private Tippett, [9] against orders, joined the rearguard party who were to cover the evacuation.

Each officer of the Mobile Dental Section was put in charge of 50 men (wounded and convalescent) with orders to evacuate them from the beaches around Athens. Owing to the shipping losses this could not be done. When the last party had left for the ships, I collected the unit together and intended making for the Peleponnese where further evacuation was taking place.

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[1] Col A. C. McKillop, m.i.d.; born Scotland, 9 Mar 1885; Superintendent, Sunnyside Hospital, Christchurch; medical officer, 1 NZEF, 1914–16; CO 1 Gen Hosp Jan 1940–Jun 1941; ADMS Pacific Section, 2 NZEF (Fiji), Aug 1941–Jul 1942; ADMS 1 Div (NZ) Aug 1942–Mar 1943; died Christchurch, 5 Aug 1958.

[2] Capt J. T. Dodgshun, MBE; Gisborne; born Gisborne, 26 Apr 1915; dental surgeon; p.w. 27 Apr 1941.

[3] Brig H. S. Kenrick, CB, CBE, ED, m.i.d., MC (Gk); Auckland; born Paeroa, 7 Aug 1898; consulting obstetrician; Otago Regt 1916–19 (Capt); wounded Apr 1918; CO 5 Fd Amb Dec 1939–May 1940; acting ADMS 2 NZEF, Jun–Sep 1940; ADMS NZ Div Oct 1940–May 1942; DMS 2 NZEF May–Sep 1942, Apr 1943–May 1945; Superintendent-in-Chief, Auckland Hospital Board.

[4] **Capt P. Noakes; Auckland; born Waihi, 20 Jun 1914; dental surgeon; p.w. 27 Apr 1941; repatriated Sep 1944.**

[5] **Near Athens.**

[6] **Maj D. A. Greenslade, m.i.d.; Dunedin; born NZ 15 May 1908; dental surgeon; p.w. 21 Apr 1941.**

[7] **Capt R. D. Spencer; Wanganui; born Palmerston North, 25 Sep 1914; dental surgeon; p.w. Apr 1941.**

[8] **Sgt W. D. Reilly; Auckland; born Timaru, 22 Aug 1903; chemist; p.w. Apr 1941.**

[9] **Pte G. C. Tippett; Whakatane; born Opotiki, 5 Oct 1916; dental mechanic; p.w. Apr 1941.**

Captain Ritchie [1] (Medical) asked me if I would take the walking wounded with me. We set out for Corinth about 300 strong but, unfortunately, walked right into the lines of the German Parachute Division and were taken prisoners. Some evaded the parachutists but next day ran into the supporting motorised division.

It would appear from this report that there was no definite policy as to how the Mobile Dental Section should be used in Greece. The unit's commanding officer obviously considered that it should be with the Division; others, such as Brigader Parrington, that it should remain at the Base. There were no regular channels of communication and the unit received orders from whomsoever happened to be the senior officer in the area. Even the ADMS, officially in charge of the unit, was surprised to find it at Pharsala. No doubt there was general confusion everywhere, but in view of the fact that the unit was needed primarily to repair a large number of broken dentures, it is surprising that it was

considered necessary to send it to Katerini, where two brigades were holding a line. The unit had a mobile laboratory which could have been established somewhere on the lines of communication, and to which the dentures could have been brought. A scheme was actually suggested by Colonel Gentry whereby broken dentures would be collected in labelled tins and sent back for repair, but by this time it was too late. The decision of the ADMS to send the unit to Mount Olympus where the third brigade was in reserve was sounder, but again this was too late. It is significant that in the available reports from dental sources the subject of the large number of broken dentures was not mentioned, which invites speculation as to whether the OC Mobile Dental Section had been fully acquainted with the true dental position.

There is room for argument that the rapidity with which the war situation changed precluded the use of the unit as a dental hospital even on the lines of communication or at the Base. The same argument, however, can be used to produce a strong case for keeping the unit well out of the way until conditions were such that it could operate as it was designed to do. It must have been obvious that there was little chance of a static position arising when routine dental treatment could be undertaken. The urgent need was for a laboratory to repair broken dentures, and for this work all that was wanted was the dentures not the men. The unit could not work while travelling but, when fully established, was capable of handling a large number of dentures. To be fully productive the periods of mobility must be reduced to a minimum, and for this reason the unit could be of little value while the Division was in action of

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[1] Maj A. W. S. Ritchie; Christchurch; born NZ 12 Aug 1915; medical practitioner.

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this type. This was probably the most important lesson learned by the Dental Corps from the Greek campaign. The lesson was a costly one, especially in view of the fact that the principle had been stated as early

as April 1940 by the AA & QMG:

> **The ' Mobile Divisional Dental Hospital' while an excellent idea in principle, cannot in fact be either 'Mobile' or 'Divisional', in the true sense of the words. With a highly mechanised fast moving Division it would be very difficult for such a hospital to function as a real integral part of the Division. What would, in fact, happen would be that the hospital would proceed to the Overseas Base and there would wait until the Division came out for a period of rest. The hospital would then move up and commence operating. I gather that, in fact, it cannot function efficiently without remaining in one place for at least a week.**

For the purpose of repairing broken dentures, the section could have been ready to begin operations as soon as the dentures arrived from the Division.

It would appear, therefore, that the section was not used correctly in Greece and that from a dental point of view was of little value. Probably the most valuable contribution made by the section in Greece was by making its transport available to No. 1 General Hospital to take sixty New Zealand nursing sisters from Pharsala to Athens. Without this additional transport it is quite possible that the hospital might have been captured. Colonel A. C. McKillop, Officer Commanding the hospital, wrote:

> **I wish to record my appreciation of the assistance rendered by Major MacKenzie and the Mobile Dental Section. Had it not been for their help it would have been impossible to evacuate the hospital and to get the sisters safely to Athens. During the last few days he was with us he placed his transport entirely at our disposal and by its help we were able to send fit men to rejoin their units and to send lying cases to the railway at Phaleo-Pharsalas to the ambulance trains.**

The story of the capture of the personnel of the section has already

been told by Major Mackenzie, but some further light is thrown on the conditions at the time by a report from Staff-Sergeant J. Russell, NZDC: [1]

The Mobile Dental Section stationed at Voulas Camp, 7 miles East of Athens received orders to evacuate immediately at 0200 hours on 22 April 41. We arrived at dawn at the evacuation beach, Megara, 35 miles West of Athens. We stayed under the olive trees until the evening of 25th when we filed down to the beach to await lighters from the ships. At 0300 hours Saturday 26th we were told to go back to the road as the ship had a full load and could take no more that night. In the dark I lost contact with some of the unit but made the road where several Greek ambulances were pulled in beside the road. With 13 men aboard an ambulance we drove off to report to the next evacuation beach over the Corinth canal. Our

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[1] S-Sgt J. Russell, m.i.d.; Auckland; born England, 30 Jun 1918; salesman; p.w. 9 May 1941.

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ambulance was first away and by dawn we had crossed the canal but had not reached the evacuation beach. We hid for the day and then went on to Argos. The ambulance was then taken over for wounded so we attached ourselves to an Australian convoy. We reached the beach that night but had to return along the road as a guard to watch for German paratroops. On arriving back at the beach we discovered the ship had left, so we hid through the next day and came down to T beach, Naplion. The next evening, Sunday 27th, no ships arrived so we hid again. At 0900 hours on Monday the Germans cut us off on a point by the beach. We escaped by swimming off this small peninsula back to the mainland north of the Germans. We then marched for two days and two nights to a village called Helles, furthest point East, South of Corinth canal. We then rowed to the island of Spetsai and paid a Greek fisherman to take us to Crete. We left Greece the next night and made a small island by dawn. Here owing to rough

weather, we stayed two days and on Saturday 3 May at midnight reached Melos Island. Our party consisted of 4 officers and about 60 other ranks.

On Melos island there were already 50 men awaiting the Navy from Crete. We were told that cables had been sent to Crete asking the Navy to call and pick us up. The Commander of the island was a Greek fifth columnist and we were lulled into security and held until the Germans arrived on 8 May and took us prisoners on the night of 9 May as we were trying to get away in a hurriedly patched up schooner.

The loss of the men and equipment was serious for the Dental Corps. Under the conditions of the evacuation it was inevitable that the equipment and transport would have to be abandoned, but the loss of the men appears to have been just bad luck.

There are certain salient points that can well be emphasised in regard to the use of the Mobile Dental Section in modern warfare:

1. **It is extremely important that it be clearly understood how the section is attached to the Force and to whom it is responsible. There is no place for an individual commander cut off from vital intelligence reports. The channels of communication should be so firmly and rigidly established as to be unshaken by the confusion of battle. They should be so deeply ingrained as to become second nature.**
2. **The Mobile Dental Section can only operate when static and its mobility should be regarded rather as a means of moving from one position to another than as a challenge to compete with a fast-moving fighting force.**
3. **There is no advantage in keeping the Mobile Dental Section as a unit apart from the general dental organisation; in fact there is a distinct danger that by attempting this there will be a breakdown in the continuity of dental treatment with the Force. There is therefore the greatest necessity for the closest liaison between every unit of the Dental Corps and the ADDS, who alone can see the complete dental picture.**

It now remains to account for the four dental sections attached to

the General Hospital and the three field ambulances.

At the time of the evacuation the dental section attached to the General Hospital was well established at Pharsala under the command of Captain N. M. Gleeson. [1] Normal routine dental treatment was being carried out. This section was evacuated to Egypt with the hospital staff, with the exception of one other rank who was left behind on special duty and who was captured by the Germans.

The three field ambulance sections were kept fully occupied on dental treatment until the time of the withdrawal. From this moment treatment became an impossibility and the officers were employed on various field ambulance duties. The 4th Field Ambulance section under the command of Captain C. C. S. Loeber was evacuated to Egypt. According to a report received by the ADDS, Captain Loeber was made full use of in other capacities when dentistry became impracticable and carried out these duties with distinction. He was in the rearguard action from Olympus down through Greece to the southern tip of the Peloponnese and was among the last to be evacuated by destroyer. He sometimes acted as a medical officer, sometimes commanded troops and was liaison officer to each brigade in turn.

The 5th Field Ambulance section (Captain J. R. H. Hefford) and the 6th Field Ambulance section (Captain C. C. Cook [2]) were evacuated to Crete. They had to leave their panniers on the evacuation beaches but each officer filled his pockets with essential instruments such as forceps, syringes, etc., which meant that urgent work for the relief of pain could be carried out.

On Crete the two officers carried out dental duties each day at No. 7 British General Hospital at Galatas, but when the main attack was launched they returned to their units and performed general field ambulance duties. The 5th Field Ambulance section was evacuated to Egypt, but Captain Cook and three other ranks were captured.

There is an interesting account of the dental condition of the troops

in Crete in a report from Captain Cook:

On arrival in Crete on 25th April 41, it was found that the English 7th General Hospital near Canea was without the services of a dental officer, who had met with an accident. Captain Cook, with Colonel Bull's [3]

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[1] Maj N. M. Gleeson, ED; Auckland; born Auckland, 27 Dec 1909; dental surgeon; CO (Lt-Col) 1 Mobile Dental Unit, RNZDC, 1950–56.

[2] Maj C. C. Cook, m.i.d.; Masterton; born Invercargill, 10 Oct 1909; dental surgeon; p.w. 1 Jun 1941.

[3] Brig W. H. B. Bull, CBE, ED; Wellington; born Napier, 19 May 1897; surgeon; CO 6 Fd Amb Feb 1940-May 1941; ADMS NZ Div May 1941; p.w. 28 May 1941; DGMS, Army HQ, 1947–57.

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sion

, volunteered to help with Captain Cooper A.D.C., [1] who had also arrived with remnants of the 26th General Hospital from Greece. From reports all over the island, the 7th General Hospital was the only one which functioned as a complete dental centre. Men came from everywhere and it was usual to be seeing up to 100 persons daily for treatment.

Vincent's angina was rampant. Fortunately ... a satisfactory treatment was mastered early. It was impossible to hospitalise any Vincent's cases unless the patient's general condition demanded it; it was impossible to get men daily for treatment when they lived any distance away and unfortunately there was a limited supply of chromic acid.

The routine treatment was as follows: initial application of chromic acid followed with hydrogen peroxide. At the same visit the inter-dental spaces were packed with well-teased packs of cotton wool impregnated with zinc oxide, oil of cloves and powdered sulphanilamide stiffly mixed. Anyone from a distance was dismissed for five to seven days and, according to Captain Cook, almost every case was free from infection on return. Penicillin was not on issue at this time and did not become universally used in the treatment of Vincent's angina until the end of the war.

Dental officers with the field ambulance in action had little time for reports, which were usually given verbally on return to Base and, as they wrote no war diaries, there is no documentary evidence of this campaign on the files to include in a history. The vividness of their experiences, however, is sufficient excuse for accepting as reliable the following account from Captain Hefford of 5 Field Ambulance, written almost ten years after the campaign. From it can be gathered some impression of the conditions under which these sections had to work and the extent to which modern mobile warfare limited their activities:

> **The equipment and Motor Transport were embarked on one ship and we were sent aboard the 2,400 ton Greek ship 'Corinthia' ahead of most of the unit to act as liaison with other NZ units and to arrange embarkation. French of a sort was our medium of expression. Five minutes before we started I extracted an abscessed lateral incisor for our unit grave-digger with a pair of artery forceps gripped by a pair of pliers borrowed from a truck driver on the quay. No anaesthetic of course.**
>
> **Having been used to carry mules and troops to Albania, the ship was full of fleas with the result that my neck swelled to such an extent that my collar would not come within 2 and a half inches of buttoning up and I spent 3 days in a British Hospital in Athens getting deflated.**
>
> **The passage to the Piraeus took four days as our convoy was**

diverted after being spotted by Italian Air Reconnaissance. This was an unfortunate encounter for the Italians as our place was taken by the Mediterranean Fleet who mauled their Navy at the Battle of Matapan.

Two days after leaving hospital I took a train to Katerine and scrounged a car to drive south over the Olympus Pass to join the unit which was establishing Main and Advanced Dressing Stations later to be used by the

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[1] Army Dental Corps.

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4 Field Ambulance to evacuate casualties from the fighting in the Olympus Pass. Here the MDS [1] adopted the policy of dispersal and concealment as distinct from that of displaying the Red Cross. I got my dental centre under the steepest part of a hill and spent some days there during which time Germany became at war with Yugoslavia and Greece.

Following the decision to abandon the line Aliakmon River-Katerine we handed over to the 4 Field Ambulance and moved in snow to the Servia Pass area, again digging in and camouflaging. Here we received unwelcome treatment from Stukas until some wounded Austrian prisoners we were treating persuaded us to show the Red Cross which proved highly effective. From then on 5 Field Ambulance, unless attempting to hide for security reasons, moving in convoy or situated near Bofors guns abandoned digging and dispersal and was never attacked from the air. We were able to do some urgent work for British Artillery and Royal Army Service Corps units here as well as treating six to ten cases of Vincents among the Australians. Here we also found there were a number of broken dentures among N.Z. troops. The ADMS ordered these to be sent to the Mobile Dental Section located with the No. 1 General Hospital at Pharsala. These dentures were never seen again as the Hospital and the Mobile Dental Section evacuated Pharsala.

One night here an alarm that parachutists were landing behind us, although proving to be false, cured me of wearing pyjamas to sleep in.

Our next withdrawal was to the Thermopylae position. During this our truck broke its front axle by Lake Xymas near Domokos village. The replacement involved me in a 120 mile drive through Lamia Pass and back under heavy air attack for 12 hours. We had not long been established in a luxurious Bath House building at Kamina Vola when the ADMS sent us into concealment under some trees where we set up the section under a tarpaulin and got to work on some fillings and extractions.

Almost immediately we were ordered to destroy all war equipment, leaving medical equipment intact, and withdraw to the South-East of Athens where we were to remain concealed and await evacuation with 5 Brigade. We went by night convoy with full headlamps and hid in the olive groves all day. On arrival at the beach we destroyed all Motor Transport and tyres and went aboard H.M.S. ' Glengyle' in the ship's landing craft without even getting wet feet. Before abandoning my dental equipment I put a hypodermic syringe, some local anaesthetic and two pairs of extraction forceps in my respirator haversack. These were very useful later for emergency extractions.

A feature of the 5 Field Ambulance operations in Greece was the very full information we were given of the situation most of the time and the fact that except for occasional accidents to vehicles such as mine, every move was made as planned. We handled about three quarters of the total casualties of the NZ Division and this precision would not have been possible but for the tremendous activity and efficient organisation of our Commanding Officer, Colonel J. Twhigg, N.Z.M.C. [2]

[1] Main Dressing Station.

[2] Brig J. M. Twhigg, DSO, ED, m.i.d.; Wellington; born Dunedin, 13 Sep 1900; physician; CO 5 Fd Amb Jul 1940-Nov 1941; p.w. Nov 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.

H.M.S. ' Glengyle' arrived at Suda Bay in Crete on Anzac Day in the afternoon. We had a meal at the Suda Bay Field Kitchen and set off on a long weary march to the Transit Camp, a big olive grove at the back of Canea.

During our stay in Crete from 25 April to 1 June there was no rain, nor was any expected until September. Water was scarce and came from village wells, being unsafe to drink unless first boiled. Purification tablets could not be issued although it is believed that a good supply of these had been amongst the equipment in Greece. This was probably a factor in the incidence of dysentery among the troops after the action period when the water could not be boiled. We kept reasonably clean by sea bathing and by clipping our hair short and I kept myself and the section fit by cross country running over the hillside tracks, an exercise about which the men had mixed feelings.

There was eventually a demand for dentistry and as the only dental equipment was at No. 7 General Hospital (British), I was detached for duty with that unit. I joined it in the afternoon of 19 May, the day before the attack. Captain C. C. Cook, Dental Officer with 6 Field Ambulance (NZ), the Dental Officer from 26 General Hospital evacuated from Athens, the Dental Officer, mechanic and orderly of 7 General Hospital with Cook's and my orderlies and a stray mechanic from the NZ Mobile Dental Section were the dental personnel.

Next day we were driven into our slit trenches by enemy planes towing gliders and low-flying aircraft machine gunning and dropping bombs. Parachutists and gliders had landed and occasionally we heard Huns with Tommy Guns patrolling near us. Fortunately they were mopped up by a patrol of the 19 NZ Battalion who told us to go down to the beach and disperse among the rocks. Some of the ward tents, the dispensary and the Medical Stores tent caught fire, destroying most of the morphine and a lot of splints and dressings.

I joined up with an Australian Medical Officer, a gynaecologist from Melbourne, and, having collected some rations, we found a sheltered ledge about ten feet above the shore in the Western promontory. On top of the point was a ruined church supposed to have been started by St. Paul. I climbed up there every hour to see what was happening inland but could see little except a few mortar bursts. At dusk we went over to the operating tent and casualties started to arrive. All night the Australian gave the anaesthetics, Captain Gorovitch [1] of the 7 GH did the surgery, I was his assistant and the Quartermaster acted as theatre sister. The cases were all transported to a limestone cave in the Eastern promontory. We had 4 gallons of water for all our scrubbing so had to rely on lots of soap for antisepsis. Most of the work was excision of damaged tissue and the application of plastic bandage slabs but there were some amputations and even the removal of an acute appendix.

The next day we transferred the operating theatre to the big cave ready for the night's work which was much the same as on the previous one. Much of the work had to be improvised in the absence of special equipment. Most of the Thomas splints, for example had been destroyed in the fire so we merely put a clove hitch round the ankle and tied the foot to the handle of the stretcher putting the foot end about 18 inches higher than the head. We managed to evacuate some cases to destroyers in Suda

Bay

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[1] Capt Gourevitch, RAMC.

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but most of the lying cases had to stay behind until the Germans took over the island.

The War Artist missed an eerie and striking picture of our nightly operations. A huge cave with the floor on several levels; rows of stretchers; a couple of Medical Officers doing dressings by torch light; tea being made over primus stoves with biscuits being spread with margarine and marmalade and the operating table under an acetylene flare.

During this period I was seldom called on for dental troubles but took out two teeth. One NZ infantry man came in, still with fixed bayonet, sat down, had the tooth out, thanked me and, grabbing his rifle walked out.

Meantime the 5 Field Ambulance had withdrawn from Maleme to a building on top of the middle point previously used as the hospital officers mess. I rejoined them and the following night moved to a position in a village church in the foothills. We pitched half a dozen tents on an open paddock nearby and with plenty of red crosses in evidence were not molested by the Germans although the neighbouring olive groves were regularly plastered by the tail gunners.

The next move was at night. The unit had acquired a few trucks as, except for red cross vehicles, nothing could move in daylight without being shot up. I was commanding Headquarters Company for the march and was leading but had to get the sergeants to march on each side as I kept going to sleep and walking into the ditch. When we got to Stylos, the Australian Medical Officer and I had a good day's sleep hidden under the

foliage of a fig tree.

We moved on next night but made slow progress as the column was very ragged, being overtaken by trucks and stragglers. Finally we abandoned the road which seemed to be metalled with round stones the size and shape of cricket balls and took to an old mule track under the trees in the bottom of a gully. After crossing the Askipho Plain, lying flat on our faces every time a plane appeared, we reached the village of Imvros where unit headquarters had already arrived by truck, establishing themselves in the church. We worked hard on casualties that night and all next day, unmolested under our red crosses.

The Division had by this time lost so many of its Medical Officers, who had stayed behind with the wounded, that the Commanding Officer decided to take the remaining MOs and medical key personnel by truck to as near Sphakia as possible. I persuaded him to take my orderly with him and I was left with the Quartermaster to march out the cooks etc., about 20 men. The CO and main body embarked in the ' Glengyle' on the night of 29–30 May. Dawn on 30 May found me with my marching party high on the hillside overlooking the sea near a few scattered cyprus trees. We broke up into groups of three or four for some sleep under the trees but were soon disturbed by marines looking for sites for rifle pits and were told that they were going to hold that position that day. I could only find about ten of my party, the others evidently having decided to move on. We made our way across country down the hill and arrived at Force Headquarters about a mile from Sphakia at 10 a.m. immediately setting to work to assist a British MO in a nearby Aid Post. He rewarded me by showing me how to slice up chocolate iron rations into cubes in a mug of hot water, making, on account of the salt in the ration, a much better cure for thirst than plain water. Later in the afternoon Captain Cook NZDC arrived looking a lot thinner.

I then reported to Major Kennedy Elliott [1] who as DADMS Crete

Force was the senior medical officer, the ADMS having left the previous night. I was instructed to collect about ten men and establish a beach-head aid post as the previous night Sphakia had been heavily bombed and the same was expected this night. Two destroyers were expected but could not take seriously wounded men. We got down fairly close to the beach under a big boulder having gathered up a couple of men who had been hit the previous night. One of these had both legs paralysed by a blow in the back. During the next day we gathered up more wounded and by improvising sticks and crutches got them all mobile, even the man with the paralysed legs whose condition was evidently due to severe bruising, the effects of which were beginning to wear off. I was getting worried about not being allowed on the beach with my team but fortunately a message I sent to Brigadier Hargest [2] bore fruit. I was instructed to see Lt. Col. Andrew [3] of the 22 Bn. and received from him a written order instructing the guard to allow my party onto the beach at dusk. Dusk found us sitting in a corner of the beach with about 120 sailors, soldiers and airmen in various states of disrepair and we were all taken off in the first few landing craft and ferried out to H.M.S. ' Abdiel' a minelaying cruiser. Again no wet feet.

We arrived at Alexandria in the afternoon of 1 June and next day I reported to the ADDS at the Base. My dysentery here caught up with me, having been kept under control with Tincture Opii for long enough, and I landed up in No. 3 General Hospital remembering very little of the next few days.

It would appear from this account that the dental officer with the Field Ambulance was chiefly engaged in duties other than dentistry and that these duties were very imperfectly defined. Like every other unit, the Field Ambulance was undergoing a baptism of mobile warfare of a degree of intensity never before experienced. Captain Hefford's conduct throughout the ordeal is deserving of the highest praise and consistent with what would be expected of a dental officer in similar

circumstances. On the other hand, they were not the duties for which a dental officer was placed in the field, being the outcome of exceptional conditions at the time but nevertheless conditions that could be expected in future campaigns. It became obvious to the ADDS that there should be a clearer definition of the duties of a dental officer with field ambulances and, as will be seen later, this was done after the Libyan battle. Captain Hefford was fortunate in escaping from Crete with his band of casualties

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

[2] Brig J. Hargest, CBE, DSO and bar, MC, m.i.d., MC (Gk); born Gore, 4 Sep 1891; farmer; Member of Parliament, 1931–44; Otago Mtd Rifles, 1914–20 (CO 2 Bn, Otago Regt); comd 5 Bde May 1940-Nov 1941; p.w. 27 Nov 1941; escaped Italy, Mar 1943; killed in action, France, 12 Aug 1944.

[3] Brig L. W. Andrew, VC, DSO, m.i.d.; Wellington; born Ashhurst, 23 Mar 1897; Regular soldier; Wellington Regt, 1915–19; CO 22 Bn Jan 1940-Feb 1942; comd 5 Bde 27 Nov-6 Dec 1941; Area Commander, Wellington, Nov 1943-Dec 1946; Commander, Central Military District, Apr 1948-Mar 1952.

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and probably would not have done so but for his initiative in securing a written order allowing him to get on to the beach. Captain Cook of 6 Field Ambulance was not so fortunate, being captured by the enemy, liberated by New Zealand troops and again captured, spending the rest of the war as prisoner.

Although the loss to the Dental Corps was a bitter blow, there were compensations arising out of the Greece and Crete campaigns. Apart from the valuable lessons learned in the administrative and organisation fields, the accident of capture of so many dentists, mechanics and

orderlies was a boon to our prisoners of war.

Major Mackenzie wrote:

It is probably no exaggeration to say that the dental officers captured in Greece and North Africa were of more value to the health of our troops as Prisoners of War than on the other side of the wire. The majority of the men caught at Dunkirk had had no dental treatment at all before being sent to France. Prisoners coming in later were in a better condition but it was never possible to keep pace with the amount of work presenting. Generally speaking the German authorities were not interested in the health of the Prisoner of War. There were one or two exceptions to this rule....

As far as I know, the bulk of the dental work done in Germany was carried out by New Zealand Dental Corps Officers and men. They all worked under most unfavourable conditions and carried out their duties in a manner most fitting to the traditions of the New Zealand Dental Corps.

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

THE story of the campaign in Greece and Crete in which the New Zealand Division fought in 1941 is a jewel of many facets polished into brilliance by military historians, political apologists, moralists, strategists and tacticians. So much sparkle is blinding and misleading when it is intended, as in this history, to polish one small facet only, so little reference will be made to the campaign in detail. All that it is necessary to know before beginning the story is that the New Zealand Division was sent to Greece, fought there, was driven off to Crete, fought again, and thence was evacuated to Egypt with inevitable losses in men and equipment. The whole campaign was extremely mobile and as such offered no facilities for organised dental treatment, but it is reasonable to assume that nobody guessed how fast modern warfare could move. Had they done so the lesson to the Dental Corps might have been less costly but, on the other hand, many prisoners of war in Germany would have been deprived of much expert dental attention.

The decision to send the Division to Greece provided the Dental Corps, in the first instance, with a clear-cut issue according to the blueprint organisation so recently adopted. The men were leaving the training camp and entering the 'Action circuit' where maintenance and the treatment of urgent dental casualties became the first consideration. There were three Field Ambulances, the 4th, 5th, and 6th, to each of which a dental section was attached. The 'Hospital circuit' was represented by No. 1 General Hospital, which had a dental section with it. Nothing less than this could give a reasonable coverage. Until there was reason to expect some stability in the military operations, nothing more could be used with certainty. Dental units surplus to requirements in the 'Action circuit' could only be regarded as a potential hindrance to essential military operations and an unjustifiable risk of trained personnel. Unfortunately, more were sent. On 1 April 1941, after the main body had sailed, eight officers and twenty-four other ranks, with

fifteen Army Service Corps drivers attached, left Egypt as a Mobile Dental Section, complete with elaborate equipment. Of this number, one NZDC other rank and one ASC driver were evacuated from Greece to Egypt; two NZDC other ranks and four ASC drivers escaped to Crete; all the others were taken prisoners of war and all equipment was lost.

It is easy to be wise after the event, and easier still to level criticism and apportion blame, but not quite so easy to recapture the spirit of the moment or to analyse dispassionately the decisions born in immaturity. Many of the records were lost in Greece; the capabilities and limitations of a Mobile Dental Section had not been fully tested; there were differences of opinion over the channels of command and teething troubles in the assimilation of a new unit into an old-established organisation.

The decision to send dental sections with the field ambulances and the General Hospital was in accordance with established custom and needs no comment. It is from an analysis of the movements and activities of the Mobile Dental Section in this campaign that valuable lessons can be learned. Who sent the section to Greece? Why was it sent there? Did it perform any useful function? Having arrived in Greece, was it used correctly? Could it have been saved from capture? To answer these questions with complete accuracy is impossible as there is little conclusive written evidence. It is, however, possible to piece together the fragments into a story, bridging the gaps with deduction as distinct from conjecture.

Before the departure for Greece the New Zealand Division was in Helwan Camp under the dental care of the Mobile Dental Section. It was here that the first confusion in regard to the command of the Mobile Dental Section became apparent. The ADDS considered that Helwan was a base camp and that the complete dental arrangements for troops in such a camp were his responsibility. As such the Mobile Dental Section would come under his command. He based his opinion on the instructions of the Officer in Charge of Administration (OICA) already quoted:

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.

On the other hand, the ADMS (Division) apparently regarded the concentration of the Division in Helwan Camp as analagous to field conditions, in which case the Mobile Dental Section would be under his command. His opinion was based on another section of the instructions from OICA:

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 with the ADDS, a copy of such correspondence going to the DDMS.

At first sight it may appear of little consequence who was in command of the section, especially as much bigger issues were occupying everybody's minds. Had free use been made of the consultative clauses in the administrative instructions it would have mattered little to whom the Mobile Dental Section was immediately responsible. Unfortunately the ADMS and the ADDS each still held different opinions, with the ADMS in actual command, having as his adviser on dental matters the OC Mobile Dental Section, whose affiliation with the ADDS has already been the subject of comment. The ADDS was unwilling to begin a major administrative battle at this time to assert his authority and was discouraged in his attempts at co-operation. The results of this with respect to the dental condition of the Division have already been described. It also gives us material on which to base the answer to the first question, 'Who sent the Mobile Dental Section to Greece?' The ADDS states categorically that he was neither consulted as to where the section was going nor as to how it was to be used, so it would appear that the section could only move on the authority of the ADMS. The war diary of the ADDS bears out his

statement as there are only three entries at the date of the movement of the section from Helwan, and it would be strange if, in a diary as full as his in which every discussion was entered in detail, this was the only one omitted. The entries are:

> **20 March 41. Notified of date of movement of Mobile Dental Section.**
>
> **21 March 41. Mobile Dental Section will remain at Helwan Camp until date of departure. They are the sole occupants of the camp.**
>
> **26 March 41. Mobile Dental Section moved to Field.**

Unfortunately there is no trace of the movement order for the section to leave Helwan and go to the transit camp at Alexandria, the only information being a report from Major Mackenzie that no provision had been made for its arrival. It is inconceivable that had the movement originated from the ADDS at Headquarters 2 NZEF there would have been no advice of arrival, as it would have been an isolated move rather than one of many.

At the time of the move from Helwan to Alexandria the ADMS was already in Greece and would have had time to see something of the conditions under which his units would be working. There could have been few signs of an impending static period of operations in which a Mobile Dental Section could successfully operate. Under normal conditions the four dental sections in Greece should have been able to deal with casualties during intensive warfare and the Mobile Dental Section could have been called over when the situation became stabilised. The conditions, however, were not normal, as can be seen from an extract from the war diary of the ADMS NZ Division of 31 March 1941:

> **Since arrival of troops in Greece, and up to date, rations have been largely M & V [meat and vegetable stew], no supplies of fresh**

meat, bread or vegetables being available until 1 April. Many cases of broken dentures due to hard biscuits have occurred and as these can only be repaired by Mobile Dental Section it is apparent that this unit should be retained and function with the Division.

The biscuits were of the dog-biscuit type and, according to reports, were a test for the strongest teeth. In the New Zealand Division with its high proportion of artificial dentures the results were serious. At one time there were something like 800 broken dentures [1] and little prospect of soft rations for the unfortunate owners. The soldier could not eat, and a man who cannot eat cannot fight. This fact alone gives some justification for sending the Mobile Dental Section to Greece in the hope that there would be time for the dentures to be repaired. It is quite certain that the task was beyond the resources of the dental sections already there. It is also difficult to see any other solution to this urgent problem. Whether it was used correctly will be discussed later, but enough has been said to show why it went to Greece.

Having discussed why and by whom the section was sent to Greece, it is necessary to know what happened to it, and this is best told in the words of some who were part of it in the campaign.

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[1] War Diary ADMS, 12 April 1941.

MAJOR J. A. S. MACKENZIE, NZDC (OC MOBILE DENTAL SECTION), TO DDS WELLINGTON, 14 JUNE 1945:

Major J. A. S. Mackenzie, NZDC (OC Mobile Dental Section), to DDS Wellington, 14 June 1945:

The 2nd Mobile Dental Section, shortly after its arrival in Egypt, was altered on the orders of the ADDS Middle East, Lt-Col Fuller, from a divisional unit to a non-divisional one. From the section OC's point of view, this was a serious change for it greatly increased the difficulties in such things as obtaining the unit's motor transport and various other items of equipment. To some extent this change was responsible for the loss of the unit in Greece owing to it being separated from the Division. This meant that, until such time as the Division could be contacted in the Field, the section operated as an independent command, entirely cut off from divisional intelligence. In the type of warfare that characterised this campaign, this proved to be a great disadvantage. Being attached to a Division is a very different thing from being part of a Division and especially is this the case during an evacuation scheme.

Before continuing with Major Mackenzie's story, certain comment is called for on his statements and deductions. In the first place, the change from divisional to non-divisional status was not on the orders of the ADDS but of Headquarters 2 NZEF (see page 142). In the second place, it is difficult to see how this change in status could have been responsible for the loss of the unit in Greece as the Mobile Dental Section was not the only non-divisional unit in the campaign. No doubt, as will be seen later, there was not the firmness of attachment that there might have been, but there is no reason to believe that if the section had been attached to the Division it would have been other than an encumbrance to that highly mobile and busy fighting machine, with

much the same chance of being captured by the enemy. To continue:

Great difficulty was experienced in Egypt in obtaining the necessary motor transport. Finally it was obtained by going outside the 2 NZEF (organisation) and dealing direct with Headquarters Middle East. The end justified the means and the unit left for Greece with:

One 5-ton Albion, reconditioned by Italian Prisoners of War and fitted with the Mobile Dental Laboratory.

Two 3-ton Bedfords.

Seven 15 cwt. Ford trucks.

Two Motor cycles.

One Humber Snipe car.

One Water Tank trailer.

All the 15 cwt. trucks were fitted with adjustable covers by the unit's carpenter and plumber. This allowed for easy packing and bigger loads. All the transport was satisfactory in Greece.

The Mobile Dental Section moved as an independent unit to Greece as the Division had been there for some time. Helwan Camp was left at 0700 hours on 27 March 41 and the transit camp on the outskirts of Alexandria was reached that evening. Although all orders received for the move to Greece had been carried out, no provision had been made in this camp for the unit. The same difficulty again arose in regard to transporting the unit to Greece but, after much arguing and many interviews, the drivers and transport went on one ship and the remainder of the unit on another.

Alexandria was left on 1 April 41 and the personnel reached Greece 36 hours later. The drivers on the transport ship took four

days and received numerous air attacks, two men being slightly wounded when a bomb hit the ship. Only minor damage was done to the unit transport.

In Greece nobody seemed to know much about us. Finally, Colonel Gentry [1] (AA & QMG NZ Div. Hqs. in Athens) instructed the NZ Liaison officer, Major Rattray, [2] in Athens to send us to Katerine. The unit left Athens on 7 April and reached Larissa on the morning of 9 April. Here the Area Commander, Brigadier Parrington, [3] ordered the unit back to Athens. The unit was accordingly withdrawn 15 miles back to Pharsala,

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[1] Maj-Gen Sir William Gentry, KBE, CB, DSO and bar, m.i.d., MC (Gk), 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 & QMG 1940–41; GSO I May 1941, Oct 1941–Sep 1942; comd 6 Bde Sep 1942–Apr 1943; Deputy Chief of General Staff 1943–44; comd NZ Troops in Egypt, 6 NZ Div, and NZ Maadi Camp, Aug 1944–Feb 1945; 9 Bde (Italy) 1945; Deputy Chief of General Staff 1946–47; Adjutant-General 1949–52; Chief of General Staff Apr 1952–Aug 1955.

[2] Maj N. A. Rattray, MBE, m.i.d., Croix de Guerre (Fr); MLC; Waimate; born Dunedin, 7 Nov 1896; soldier and farmer; Royal Irish Fusiliers (Capt) 1915–22 (twice wounded); p.w. 25 Apr 1941.

[3] Sub-area commander at Larisa.

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where the Number 1 NZ General Hospital was located. Colonel McKillop [1] (OC 1 NZGH) gave us permission to work in his area. The following day the unit was working and a sub-section under the command of Captain J. Dodgshun [2] was sent to the NZ Reserve Motor Transport at Larissa continuing to work there until that unit withdrew.

On 11 April the ADMS, Colonel Kenrick, [3] visited the area and expressed surprise at the unit being there and gave written orders for it to proceed to the slopes of Mount Olympus. These orders were countermanded again by Brigadier Parrington. He again ordered the unit back to Athens but Colonel McKillop was in need of help in the evacuation of the hospital, and the NZ and Australian nurses were evacuated by the unit to Athens. This meant leaving some of the equipment behind. Headquarters in Athens refused us permission to return to Pharsala to collect the remainder of the equipment but, bearing in mind its value and the difficulty in replacing it, Captain Noakes [4] and four drivers were sent back as a salvage party. Unfortunately they were unable to proceed further than Lamia and returned to Athens empty handed.

The unit rested for a day and then went to Voulas, [5] the Advanced NZ base. It was decided to establish the unit headquarters in this area. Accordingly a German doctor's house and surgery were commandeered for this purpose and Captain Greenslade [6] and three officers, Captains Crawford, Noakes and Spencer, [7] with their orderlies, set up their sub-section with the Mobile Dental Laboratory. The remainder of the unit intended to return to Thebes.

The night before we were due to leave we were ordered to evacuate Greece and hand over the unit transport to NZ Base. The drivers volunteered to stay behind with their trucks. Sergeant Reilly [8] and Private Tippett, [9] against orders, joined the rearguard party who were to cover the evacuation.

Each officer of the Mobile Dental Section was put in charge of 50 men (wounded and convalescent) with orders to evacuate them from the beaches around Athens. Owing to the shipping losses this could not be done. When the last party had left for the ships, I collected the unit together and intended making for the Peleponnese where further evacuation was taking place.

[1] **Col A. C. McKillop, m.i.d.; born Scotland, 9 Mar 1885; Superintendent, Sunnyside Hospital, Christchurch; medical officer, 1 NZEF, 1914–16; CO 1 Gen Hosp Jan 1940–Jun 1941; ADMS Pacific Section, 2 NZEF (Fiji), Aug 1941–Jul 1942; ADMS 1 Div (NZ) Aug 1942–Mar 1943; died Christchurch, 5 Aug 1958.**

[2] **Capt J. T. Dodgshun, MBE; Gisborne; born Gisborne, 26 Apr 1915; dental surgeon; p.w. 27 Apr 1941.**

[3] **Brig H. S. Kenrick, CB, CBE, ED, m.i.d., MC (Gk); Auckland; born Paeroa, 7 Aug 1898; consulting obstetrician; Otago Regt 1916–19 (Capt); wounded Apr 1918; CO 5 Fd Amb Dec 1939–May 1940; acting ADMS 2 NZEF, Jun–Sep 1940; ADMS NZ Div Oct 1940–May 1942; DMS 2 NZEF May–Sep 1942, Apr 1943–May 1945; Superintendent-in-Chief, Auckland Hospital Board.**

[4] **Capt P. Noakes; Auckland; born Waihi, 20 Jun 1914; dental surgeon; p.w. 27 Apr 1941; repatriated Sep 1944.**

[5] **Near Athens.**

[6] **Maj D. A. Greenslade, m.i.d.; Dunedin; born NZ 15 May 1908; dental surgeon; p.w. 21 Apr 1941.**

[7] **Capt R. D. Spencer; Wanganui; born Palmerston North, 25 Sep 1914; dental surgeon; p.w. Apr 1941.**

[8] **Sgt W. D. Reilly; Auckland; born Timaru, 22 Aug 1903; chemist; p.w. Apr 1941.**

[9] **Pte G. C. Tippett; Whakatane; born Opotiki, 5 Oct 1916; dental mechanic; p.w. Apr 1941.**

Captain Ritchie [1] (Medical) asked me if I would take the walking wounded with me. We set out for Corinth about 300 strong but, unfortunately, walked right into the lines of the German Parachute Division and were taken prisoners. Some evaded the parachutists but next day ran into the supporting motorised division.

It would appear from this report that there was no definite policy as to how the Mobile Dental Section should be used in Greece. The unit's commanding officer obviously considered that it should be with the Division; others, such as Brigader Parrington, that it should remain at the Base. There were no regular channels of communication and the unit received orders from whomsoever happened to be the senior officer in the area. Even the ADMS, officially in charge of the unit, was surprised to find it at Pharsala. No doubt there was general confusion everywhere, but in view of the fact that the unit was needed primarily to repair a large number of broken dentures, it is surprising that it was considered necessary to send it to Katerini, where two brigades were holding a line. The unit had a mobile laboratory which could have been established somewhere on the lines of communication, and to which the dentures could have been brought. A scheme was actually suggested by Colonel Gentry whereby broken dentures would be collected in labelled tins and sent back for repair, but by this time it was too late. The decision of the ADMS to send the unit to Mount Olympus where the third brigade was in reserve was sounder, but again this was too late. It is significant that in the available reports from dental sources the subject of the large number of broken dentures was not mentioned, which invites speculation as to whether the OC Mobile Dental Section had been fully acquainted with the true dental position.

There is room for argument that the rapidity with which the war situation changed precluded the use of the unit as a dental hospital even on the lines of communication or at the Base. The same argument, however, can be used to produce a strong case for keeping the unit well out of the way until conditions were such that it could operate as it was

designed to do. It must have been obvious that there was little chance of a static position arising when routine dental treatment could be undertaken. The urgent need was for a laboratory to repair broken dentures, and for this work all that was wanted was the dentures not the men. The unit could not work while travelling but, when fully established, was capable of handling a large number of dentures. To be fully productive the periods of mobility must be reduced to a minimum, and for this reason the unit could be of little value while the Division was in action of

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[1] **Maj A. W. S. Ritchie; Christchurch; born NZ 12 Aug 1915; medical practitioner.**

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this type. This was probably the most important lesson learned by the Dental Corps from the Greek campaign. The lesson was a costly one, especially in view of the fact that the principle had been stated as early as April 1940 by the AA & QMG:

> **The ' Mobile Divisional Dental Hospital' while an excellent idea in principle, cannot in fact be either 'Mobile' or 'Divisional', in the true sense of the words. With a highly mechanised fast moving Division it would be very difficult for such a hospital to function as a real integral part of the Division. What would, in fact, happen would be that the hospital would proceed to the Overseas Base and there would wait until the Division came out for a period of rest. The hospital would then move up and commence operating. I gather that, in fact, it cannot function efficiently without remaining in one place for at least a week.**

For the purpose of repairing broken dentures, the section could have been ready to begin operations as soon as the dentures arrived from the Division.

It would appear, therefore, that the section was not used correctly in Greece and that from a dental point of view was of little value. Probably

the most valuable contribution made by the section in Greece was by making its transport available to No. 1 General Hospital to take sixty New Zealand nursing sisters from Pharsala to Athens. Without this additional transport it is quite possible that the hospital might have been captured. Colonel A. C. McKillop, Officer Commanding the hospital, wrote:

> **I wish to record my appreciation of the assistance rendered by Major MacKenzie and the Mobile Dental Section. Had it not been for their help it would have been impossible to evacuate the hospital and to get the sisters safely to Athens. During the last few days he was with us he placed his transport entirely at our disposal and by its help we were able to send fit men to rejoin their units and to send lying cases to the railway at Phaleo-Pharsalas to the ambulance trains.**

The story of the capture of the personnel of the section has already been told by Major Mackenzie, but some further light is thrown on the conditions at the time by a report from Staff-Sergeant J. Russell, NZDC: [1]

> **The Mobile Dental Section stationed at Voulas Camp, 7 miles East of Athens received orders to evacuate immediately at 0200 hours on 22 April 41. We arrived at dawn at the evacuation beach, Megara, 35 miles West of Athens. We stayed under the olive trees until the evening of 25th when we filed down to the beach to await lighters from the ships. At 0300 hours Saturday 26th we were told to go back to the road as the ship had a full load and could take no more that night. In the dark I lost contact with some of the unit but made the road where several Greek ambulances were pulled in beside the road. With 13 men aboard an ambulance we drove off to report to the next evacuation beach over the Corinth canal. Our**

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[1] **S-Sgt J. Russell, m.i.d.; Auckland; born England, 30 Jun 1918; salesman; p.w. 9 May 1941.**

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ambulance was first away and by dawn we had crossed the canal but had not reached the evacuation beach. We hid for the day and then went on to Argos. The ambulance was then taken over for wounded so we attached ourselves to an Australian convoy. We reached the beach that night but had to return along the road as a guard to watch for German paratroops. On arriving back at the beach we discovered the ship had left, so we hid through the next day and came down to T beach, Naplion. The next evening, Sunday 27th, no ships arrived so we hid again. At 0900 hours on Monday the Germans cut us off on a point by the beach. We escaped by swimming off this small peninsula back to the mainland north of the Germans. We then marched for two days and two nights to a village called Helles, furthest point East, South of Corinth canal. We then rowed to the island of Spetsai and paid a Greek fisherman to take us to Crete. We left Greece the next night and made a small island by dawn. Here owing to rough weather, we stayed two days and on Saturday 3 May at midnight reached Melos Island. Our party consisted of 4 officers and about 60 other ranks.

On Melos island there were already 50 men awaiting the Navy from Crete. We were told that cables had been sent to Crete asking the Navy to call and pick us up. The Commander of the island was a Greek fifth columnist and we were lulled into security and held until the Germans arrived on 8 May and took us prisoners on the night of 9 May as we were trying to get away in a hurriedly patched up schooner.

The loss of the men and equipment was serious for the Dental Corps. Under the conditions of the evacuation it was inevitable that the equipment and transport would have to be abandoned, but the loss of the men appears to have been just bad luck.

There are certain salient points that can well be emphasised in regard to the use of the Mobile Dental Section in modern warfare:

1. It is extremely important that it be clearly understood how the

section is attached to the Force and to whom it is responsible. There is no place for an individual commander cut off from vital intelligence reports. The channels of communication should be so firmly and rigidly established as to be unshaken by the confusion of battle. They should be so deeply ingrained as to become second nature.

2. The Mobile Dental Section can only operate when static and its mobility should be regarded rather as a means of moving from one position to another than as a challenge to compete with a fast-moving fighting force.

3. There is no advantage in keeping the Mobile Dental Section as a unit apart from the general dental organisation; in fact there is a distinct danger that by attempting this there will be a breakdown in the continuity of dental treatment with the Force. There is therefore the greatest necessity for the closest liaison between every unit of the Dental Corps and the ADDS, who alone can see the complete dental picture.

It now remains to account for the four dental sections attached to the General Hospital and the three field ambulances.

At the time of the evacuation the dental section attached to the General Hospital was well established at Pharsala under the command of Captain N. M. Gleeson. [1] Normal routine dental treatment was being carried out. This section was evacuated to Egypt with the hospital staff, with the exception of one other rank who was left behind on special duty and who was captured by the Germans.

The three field ambulance sections were kept fully occupied on dental treatment until the time of the withdrawal. From this moment treatment became an impossibility and the officers were employed on various field ambulance duties. The 4th Field Ambulance section under the command of Captain C. C. S. Loeber was evacuated to Egypt. According to a report received by the ADDS, Captain Loeber was made full use of in other capacities when dentistry became impracticable and carried out these duties with distinction. He was in the rearguard action from Olympus down through Greece to the southern tip of the Peloponnese and was among the last to be evacuated by destroyer. He

sometimes acted as a medical officer, sometimes commanded troops and was liaison officer to each brigade in turn.

The 5th Field Ambulance section (Captain J. R. H. Hefford) and the 6th Field Ambulance section (Captain C. C. Cook [2]) were evacuated to Crete. They had to leave their panniers on the evacuation beaches but each officer filled his pockets with essential instruments such as forceps, syringes, etc., which meant that urgent work for the relief of pain could be carried out.

On Crete the two officers carried out dental duties each day at No. 7 British General Hospital at Galatas, but when the main attack was launched they returned to their units and performed general field ambulance duties. The 5th Field Ambulance section was evacuated to Egypt, but Captain Cook and three other ranks were captured.

There is an interesting account of the dental condition of the troops in Crete in a report from Captain Cook:

> On arrival in Crete on 25th April 41, it was found that the English 7th General Hospital near Canea was without the services of a dental officer, who had met with an accident. Captain Cook, with Colonel Bull's [3]
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> permis-

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[1] Maj N. M. Gleeson, ED; Auckland; born Auckland, 27 Dec 1909; dental surgeon; CO (Lt-Col) 1 Mobile Dental Unit, RNZDC, 1950–56.

[2] Maj C. C. Cook, m.i.d.; Masterton; born Invercargill, 10 Oct 1909; dental surgeon; p.w. 1 Jun 1941.

[3] Brig W. H. B. Bull, CBE, ED; Wellington; born Napier, 19 May 1897; surgeon; CO 6 Fd Amb Feb 1940-May 1941; ADMS NZ Div May 1941; p.w. 28 May 1941; DGMS, Army HQ, 1947–57.

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, volunteered to help with Captain Cooper A.D.C., [1] who had also arrived with remnants of the 26th General Hospital from Greece. From reports all over the island, the 7th General Hospital was the only one which functioned as a complete dental centre. Men came from everywhere and it was usual to be seeing up to 100 persons daily for treatment.

Vincent's angina was rampant. Fortunately ... a satisfactory treatment was mastered early. It was impossible to hospitalise any Vincent's cases unless the patient's general condition demanded it; it was impossible to get men daily for treatment when they lived any distance away and unfortunately there was a limited supply of chromic acid.

The routine treatment was as follows: initial application of chromic acid followed with hydrogen peroxide. At the same visit the inter-dental spaces were packed with well-teased packs of cotton wool impregnated with zinc oxide, oil of cloves and powdered sulphanilamide stiffly mixed. Anyone from a distance was dismissed for five to seven days and, according to Captain Cook, almost every case was free from infection on return. Penicillin was not on issue at this time and did not become universally used in the treatment of Vincent's angina until the end of the war.

Dental officers with the field ambulance in action had little time for reports, which were usually given verbally on return to Base and, as they wrote no war diaries, there is no documentary evidence of this campaign on the files to include in a history. The vividness of their experiences, however, is sufficient excuse for accepting as reliable the following account from Captain Hefford of 5 Field Ambulance, written almost ten years after the campaign. From it can be gathered some impression of the conditions under which these sections had to work and the extent to which modern mobile warfare limited their activities:

The equipment and Motor Transport were embarked on one ship and we were sent aboard the 2,400 ton Greek ship 'Corinthia' ahead of most of the unit to act as liaison with other NZ units and to arrange embarkation. French of a sort was our medium of expression. Five minutes before we started I extracted an abscessed lateral incisor for our unit grave-digger with a pair of artery forceps gripped by a pair of pliers borrowed from a truck driver on the quay. No anaesthetic of course.

Having been used to carry mules and troops to Albania, the ship was full of fleas with the result that my neck swelled to such an extent that my collar would not come within 2 and a half inches of buttoning up and I spent 3 days in a British Hospital in Athens getting deflated.

The passage to the Piraeus took four days as our convoy was diverted after being spotted by Italian Air Reconnaissance. This was an unfortunate encounter for the Italians as our place was taken by the Mediterranean Fleet who mauled their Navy at the Battle of Matapan.

Two days after leaving hospital I took a train to Katerine and scrounged a car to drive south over the Olympus Pass to join the unit which was establishing Main and Advanced Dressing Stations later to be used by the

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[1] Army Dental Corps.

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4 Field Ambulance to evacuate casualties from the fighting in the Olympus Pass. Here the MDS [1] adopted the policy of dispersal and concealment as distinct from that of displaying the Red Cross. I got my dental centre under the steepest part of a hill and spent some days there during which time Germany became at war with Yugoslavia and Greece.

Following the decision to abandon the line Aliakmon River-Katerine we handed over to the 4 Field Ambulance and moved in snow to the Servia Pass area, again digging in and camouflaging. Here we received unwelcome treatment from Stukas until some wounded Austrian prisoners we were treating persuaded us to show the Red Cross which proved highly effective. From then on 5 Field Ambulance, unless attempting to hide for security reasons, moving in convoy or situated near Bofors guns abandoned digging and dispersal and was never attacked from the air. We were able to do some urgent work for British Artillery and Royal Army Service Corps units here as well as treating six to ten cases of Vincents among the Australians. Here we also found there were a number of broken dentures among N.Z. troops. The ADMS ordered these to be sent to the Mobile Dental Section located with the No. 1 General Hospital at Pharsala. These dentures were never seen again as the Hospital and the Mobile Dental Section evacuated Pharsala.

One night here an alarm that parachutists were landing behind us, although proving to be false, cured me of wearing pyjamas to sleep in.

Our next withdrawal was to the Thermopylae position. During this our truck broke its front axle by Lake Xymas near Domokos village. The replacement involved me in a 120 mile drive through Lamia Pass and back under heavy air attack for 12 hours. We had not long been established in a luxurious Bath House building at Kamina Vola when the ADMS sent us into concealment under some trees where we set up the section under a tarpaulin and got to work on some fillings and extractions.

Almost immediately we were ordered to destroy all war equipment, leaving medical equipment intact, and withdraw to the South-East of Athens where we were to remain concealed and await evacuation with 5 Brigade. We went by night convoy with full headlamps and hid in the olive groves all day. On arrival at the

beach we destroyed all Motor Transport and tyres and went aboard H.M.S. ' Glengyle' in the ship's landing craft without even getting wet feet. Before abandoning my dental equipment I put a hypodermic syringe, some local anaesthetic and two pairs of extraction forceps in my respirator haversack. These were very useful later for emergency extractions.

A feature of the 5 Field Ambulance operations in Greece was the very full information we were given of the situation most of the time and the fact that except for occasional accidents to vehicles such as mine, every move was made as planned. We handled about three quarters of the total casualties of the NZ Division and this precision would not have been possible but for the tremendous activity and efficient organisation of our Commanding Officer, Colonel J. Twhigg, N.Z.M.C. [2]

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[1] Main Dressing Station.

[2] Brig J. M. Twhigg, DSO, ED, m.i.d.; Wellington; born Dunedin, 13 Sep 1900; physician; CO 5 Fd Amb Jul 1940-Nov 1941; p.w. Nov 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.

H.M.S. ' Glengyle' arrived at Suda Bay in Crete on Anzac Day in the afternoon. We had a meal at the Suda Bay Field Kitchen and set off on a long weary march to the Transit Camp, a big olive grove at the back of Canea.

During our stay in Crete from 25 April to 1 June there was no rain, nor was any expected until September. Water was scarce and came from village wells, being unsafe to drink unless first boiled. Purification tablets could not be issued although it is believed that a good supply of these had been amongst the equipment in Greece. This was probably a factor in the incidence of dysentery among

the troops after the action period when the water could not be boiled. We kept reasonably clean by sea bathing and by clipping our hair short and I kept myself and the section fit by cross country running over the hillside tracks, an exercise about which the men had mixed feelings.

There was eventually a demand for dentistry and as the only dental equipment was at No. 7 General Hospital (British), I was detached for duty with that unit. I joined it in the afternoon of 19 May, the day before the attack. Captain C. C. Cook, Dental Officer with 6 Field Ambulance (NZ), the Dental Officer from 26 General Hospital evacuated from Athens, the Dental Officer, mechanic and orderly of 7 General Hospital with Cook's and my orderlies and a stray mechanic from the NZ Mobile Dental Section were the dental personnel.

Next day we were driven into our slit trenches by enemy planes towing gliders and low-flying aircraft machine gunning and dropping bombs. Parachutists and gliders had landed and occasionally we heard Huns with Tommy Guns patrolling near us. Fortunately they were mopped up by a patrol of the 19 NZ Battalion who told us to go down to the beach and disperse among the rocks. Some of the ward tents, the dispensary and the Medical Stores tent caught fire, destroying most of the morphine and a lot of splints and dressings.

I joined up with an Australian Medical Officer, a gynaecologist from Melbourne, and, having collected some rations, we found a sheltered ledge about ten feet above the shore in the Western promontory. On top of the point was a ruined church supposed to have been started by St. Paul. I climbed up there every hour to see what was happening inland but could see little except a few mortar bursts. At dusk we went over to the operating tent and casualties started to arrive. All night the Australian gave the anaesthetics, Captain Gorovitch [1] of the 7 GH did the surgery, I was his assistant and the Quartermaster acted as theatre sister. The cases

were all transported to a limestone cave in the Eastern promontory. We had 4 gallons of water for all our scrubbing so had to rely on lots of soap for antisepsis. Most of the work was excision of damaged tissue and the application of plastic bandage slabs but there were some amputations and even the removal of an acute appendix.

The next day we transferred the operating theatre to the big cave ready for the night's work which was much the same as on the previous one. Much of the work had to be improvised in the absence of special equipment. Most of the Thomas splints, for example had been destroyed in the fire so we merely put a clove hitch round the ankle and tied the foot to the handle of the stretcher putting the foot end about 18 inches higher than the head. We managed to evacuate some cases to destroyers in Suda Bay

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[1] Capt Gourevitch, RAMC.

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but most of the lying cases had to stay behind until the Germans took over the island.

The War Artist missed an eerie and striking picture of our nightly operations. A huge cave with the floor on several levels; rows of stretchers; a couple of Medical Officers doing dressings by torch light; tea being made over primus stoves with biscuits being spread with margarine and marmalade and the operating table under an acetylene flare.

During this period I was seldom called on for dental troubles but took out two teeth. One NZ infantry man came in, still with fixed bayonet, sat down, had the tooth out, thanked me and, grabbing his rifle walked out.

Meantime the 5 Field Ambulance had withdrawn from Maleme

to a building on top of the middle point previously used as the hospital officers mess. I rejoined them and the following night moved to a position in a village church in the foothills. We pitched half a dozen tents on an open paddock nearby and with plenty of red crosses in evidence were not molested by the Germans although the neighbouring olive groves were regularly plastered by the tail gunners.

The next move was at night. The unit had acquired a few trucks as, except for red cross vehicles, nothing could move in daylight without being shot up. I was commanding Headquarters Company for the march and was leading but had to get the sergeants to march on each side as I kept going to sleep and walking into the ditch. When we got to Stylos, the Australian Medical Officer and I had a good day's sleep hidden under the foliage of a fig tree.

We moved on next night but made slow progress as the column was very ragged, being overtaken by trucks and stragglers. Finally we abandoned the road which seemed to be metalled with round stones the size and shape of cricket balls and took to an old mule track under the trees in the bottom of a gully. After crossing the Askipho Plain, lying flat on our faces every time a plane appeared, we reached the village of Imvros where unit headquarters had already arrived by truck, establishing themselves in the church. We worked hard on casualties that night and all next day, unmolested under our red crosses.

The Division had by this time lost so many of its Medical Officers, who had stayed behind with the wounded, that the Commanding Officer decided to take the remaining MOs and medical key personnel by truck to as near Sphakia as possible. I persuaded him to take my orderly with him and I was left with the Quartermaster to march out the cooks etc., about 20 men. The CO and main body embarked in the ' Glengyle' on the night of 29–30 May. Dawn on 30 May found me with my marching party high on

the hillside overlooking the sea near a few scattered cyprus trees. We broke up into groups of three or four for some sleep under the trees but were soon disturbed by marines looking for sites for rifle pits and were told that they were going to hold that position that day. I could only find about ten of my party, the others evidently having decided to move on. We made our way across country down the hill and arrived at Force Headquarters about a mile from Sphakia at 10 a.m. immediately setting to work to assist a British MO in a nearby Aid Post. He rewarded me by showing me how to slice up chocolate iron rations into cubes in a mug of hot water, making, on account of the salt in the ration, a much better cure for thirst than plain water. Later in the afternoon Captain Cook NZDC arrived looking a lot thinner.

I then reported to Major Kennedy Elliott [1] who as DADMS Crete Force was the senior medical officer, the ADMS having left the previous night. I was instructed to collect about ten men and establish a beach-head aid post as the previous night Sphakia had been heavily bombed and the same was expected this night. Two destroyers were expected but could not take seriously wounded men. We got down fairly close to the beach under a big boulder having gathered up a couple of men who had been hit the previous night. One of these had both legs paralysed by a blow in the back. During the next day we gathered up more wounded and by improvising sticks and crutches got them all mobile, even the man with the paralysed legs whose condition was evidently due to severe bruising, the effects of which were beginning to wear off. I was getting worried about not being allowed on the beach with my team but fortunately a message I sent to Brigadier Hargest [2] bore fruit. I was instructed to see Lt. Col. Andrew [3] of the 22 Bn. and received from him a written order instructing the guard to allow my party onto the beach at dusk. Dusk found us sitting in a corner of the beach with about 120 sailors, soldiers and airmen in various states of disrepair and we were all taken off in the first few landing craft and ferried out to H.M.S. ' Abdiel' a minelaying cruiser. Again

no wet feet.

We arrived at Alexandria in the afternoon of 1 June and next day I reported to the ADDS at the Base. My dysentery here caught up with me, having been kept under control with Tincture Opii for long enough, and I landed up in No. 3 General Hospital remembering very little of the next few days.

It would appear from this account that the dental officer with the Field Ambulance was chiefly engaged in duties other than dentistry and that these duties were very imperfectly defined. Like every other unit, the Field Ambulance was undergoing a baptism of mobile warfare of a degree of intensity never before experienced. Captain Hefford's conduct throughout the ordeal is deserving of the highest praise and consistent with what would be expected of a dental officer in similar circumstances. On the other hand, they were not the duties for which a dental officer was placed in the field, being the outcome of exceptional conditions at the time but nevertheless conditions that could be expected in future campaigns. It became obvious to the ADDS that there should be a clearer definition of the duties of a dental officer with field ambulances and, as will be seen later, this was done after the Libyan battle. Captain Hefford was fortunate in escaping from Crete with his band of casualties

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

[2] **Brig J. Hargest, CBE, DSO and bar, MC, m.i.d., MC (Gk); born Gore, 4 Sep 1891; farmer; Member of Parliament, 1931–44; Otago Mtd Rifles, 1914–20 (CO 2 Bn, Otago Regt); comd 5 Bde May 1940-Nov 1941; p.w. 27 Nov 1941; escaped Italy, Mar 1943; killed in action, France, 12 Aug 1944.**

[3] **Brig L. W. Andrew, VC, DSO, m.i.d.; Wellington; born**

Ashhurst, 23 Mar 1897; Regular soldier; Wellington Regt, 1915–19; CO 22 Bn Jan 1940-Feb 1942; comd 5 Bde 27 Nov-6 Dec 1941; Area Commander, Wellington, Nov 1943-Dec 1946; Commander, Central Military District, Apr 1948-Mar 1952.

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and probably would not have done so but for his initiative in securing a written order allowing him to get on to the beach. Captain Cook of 6 Field Ambulance was not so fortunate, being captured by the enemy, liberated by New Zealand troops and again captured, spending the rest of the war as prisoner.

Although the loss to the Dental Corps was a bitter blow, there were compensations arising out of the Greece and Crete campaigns. Apart from the valuable lessons learned in the administrative and organisation fields, the accident of capture of so many dentists, mechanics and orderlies was a boon to our prisoners of war.

Major Mackenzie wrote:

> **It is probably no exaggeration to say that the dental officers captured in Greece and North Africa were of more value to the health of our troops as Prisoners of War than on the other side of the wire. The majority of the men caught at Dunkirk had had no dental treatment at all before being sent to France. Prisoners coming in later were in a better condition but it was never possible to keep pace with the amount of work presenting. Generally speaking the German authorities were not interested in the health of the Prisoner of War. There were one or two exceptions to this rule....**
>
> **As far as I know, the bulk of the dental work done in Germany was carried out by New Zealand Dental Corps Officers and men. They all worked under most unfavourable conditions and carried out their duties in a manner most fitting to the traditions of the New Zealand Dental Corps.**

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 14 — REPAIR AND REORGANISATION

CHAPTER 14
Repair and Reorganisation

Treatment of the Division After Greece and Crete

ON returning to Egypt the Division moved into the Helwan- Garawi area and the indications were that it would remain there during June and July before being sent again to the field. This was a short period in which to establish complete dental fitness even if the Dental Corps had been at full strength, but 36 per cent of the dental officers had been lost in Greece and Crete. The extent and type of treatment had to be limited to meet the situation. A reasonable standard of dental fitness for the whole Division was preferable to complete dental fitness for some and no treatment for others.

As there was now no Mobile Dental Section to do this work, No. 2 Camp Dental Hospital under the command of Captain B. Dallas [1] moved to Helwan Camp. Its first task was to make a general survey with the object of finding out what work was urgent and what could safely be left for a time. The men were charted and graded T1, T2 or T3 according to the degree of urgency of the work to be done. The T1 patients were called up first and the important work was completed. They could then be regraded T2 or T3 and dismissed until those classes were being called for treatment. T2 or T3 patients could be regarded as reasonably fit and unlikely to be serious dental casualties should the Division move suddenly to the field. This system worked very well and by the end of July all urgent treatment had been completed and the Camp Dental Hospital was busy treating T2 and T3 cases, this time aiming at complete dental fitness.

Meanwhile, in Maadi Camp, No. 1 Camp Dental Hospital under Captain H. C. Colson [2] was examining and treating the reinforcements as fast as possible so as to establish a high degree of dental fitness before they were sent to join the Division. All this meant very long hours for the depleted Dental Corps.

Apart from these two concentrations of troops, 6 Infantry Brigade was stationed in the Canal area, Brigade Headquarters and one battalion were at Ismailia, one battalion was at Kantara and the third at Suez. The Convalescent Depot was near Ismailia and the dental officer reported that patients coming in from the brigade were interfering with his regular work. In consequence a dental section was sent to work at the Convalescent Depot on the brigade patients and another one to Suez. Their work was completed by 16 August and they returned to Maadi Camp.

As was to be expected after the Greece and Crete campaigns, artificial dentures caused the most concern. The ADDS's report of 1 August 1941 is interesting as, being founded on information gleaned at the time, his deductions on the causes of this loss of dentures are probably as close to the facts as any deductions could be.

> The number of artificial dentures lost or broken during the operations in Greece and Crete was considerable and when the troops returned to Egypt the position was alarming. A relatively large percentage of men returned to this country without their dentures and in each instance it was stated that they were lost either during operations on land or during one of the two evacuations.
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> The loss of dentures can be attributed to many causes some of which are unavoidable, others indicate either negligence or wilful intent to lose them, but whatever the reason may be, the fact remains that the loss of dentures under active conditions does occur to an abnormal extent and no doubt will occur in future campaigns.
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> It was found that the hard biscuits which form a large portion of the rations played havoc with artificial dentures and from all units breakages were reported in large numbers. Many of these broken dentures either had to be, or were, removed and placed in kit bags, haversacks or pockets and thus were lost or left behind at

the evacuation.

It is of interest to compare the returns for denture work during the period February, March and April with the corresponding figures for May, June and July. The first period covers the interval before the Division moved to Greece and the second the period when those evacuated from Greece and Crete were being treated.

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Another difficulty which faced the Corps immediately after the Greece and Crete campaigns was the shortage of equipment. The dental outfits sent to Greece with both the Mobile Dental Section and the field medical units were lost. The surgical and mechanical outfits ordered from the United Kingdom in 1940 had, according to a War Office cable, been despatched on 22 February 1941 but no trace of them could be found. Fortunately, the DDS in Wellington offered to replace the bulk of the lost equipment, an offer which was speedily accepted, but this could not arrive until the 6th Reinforcements came to Egypt somewhere about the end of July. The Middle East Dental Headquarters agreed to share its equipment with the NZDC, but at that time could not even re-equip the medical units. By careful stocktaking in every unit and a pooling of resources, with judicious borrowing and local buying, the gap was bridged and the work went on.

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Rebuilding the New Zealand Dental Corps in the Middle East

The first step in the re-formation of the Corps was to replace the lost personnel and equipment; the second was to turn to profit the lessons learned. There was no reason to doubt the correctness of the policy already laid down, but there was a need to ensure that all components of the organisation should be so constituted as to guarantee its successful fulfilment. The opportunity had arisen through misfortune to design the tools for the work rather than adapt the work to the tools available.

Eight dental officers, eight mechanics and four clerk orderlies arrived with the 6th Reinforcements at the end of July 1941 and it was arranged that ten suitable other ranks should be transferred to the NZDC from the training battalions. The general framework of the organisation was as before: two Camp Dental Hospitals, a Base Depot Dental Hospital, a Mobile Dental Section and dental sections attached to each of the three field ambulances, each of the three general hospitals, and to the Convalescent Depot and a Mobile Casualty Clearing Station. All of these were staffed and directed in the first place by the ADDS at Headquarters 2 NZEF. Changes were made in the establishments of existing units and the Mobile Dental Section was completely re-formed. There was no rigidity of attachment to any of these units and the ADDS reserved the right to interchange staff at will.

Certain anomalies regarding rank in the Dental Corps needed adjustment before new establishments were finalised. The three dental hospitals, i.e., the two Camp Dental Hospitals and the Base Depot Dental Hospital, were very important units in the service. Together with the Mobile Dental Section, they were commanded by the ablest and highest qualified dental officers overseas. They were the training ground for dental officers, mostly of the rank of captain, and yet there was no provision for their commanding officers to hold field rank. The war establishment for field ambulances, general hospitals and the Convalescent Depot allowed the dental officer to hold the rank of major,

and the duties and responsibilities could not be compared with those of the commanding officers of the dental hospitals. The senior dental officers would be wasted in these units, as the hospitals, both from the technical and professional points of view, were more responsible commands. The ADDS's request for field rank for their commanding officers was not granted as such but he was given authority to recommend a specific number of officers for field rank on a Corps basis, which left him free to place them where he wished. This was a distinct advance on the old system of rigid appointment according to units. The memorandum from the Military Secretary to Headquarters 2 NZEF on the subject read:

> **... in my view the ranks of members of the Dental Corps should be settled on a Corps basis. At the present time the establishments for General Hospitals provide for the dental officers attached being Majors or under whereas in point of practice the appointment will normally be filled by a captain (except for one existing specialist appointment—and possibly an additional one to be made on arrival of an officer from England).**
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> **The appointments of Majors to Dental Hospitals is probably sound: but liberty of action for the Dental Corps might well be preserved here so long as the total Corps Establishment is not exceeded.**
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> **Suggested establishment therefore is:**
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> **Lt-Cols. 1**
> **Majors 5 (if the specialist from England proves to be sufficiently highly qualified, one more Major then wanted, to make 6).**

The Officer in Charge of Administration, with whom the ADDS was chiefly concerned, considered this a reasonable allocation on the grounds that it should be a balance between the number in a battalion and the percentage in the Medical Corps, i.e., about one-sixth the total number of dental officers. He sanctioned it as such and agreed to reopen

the subject should the establishment of the Corps be increased in the future. The ADDS was promoted to the rank of lieutenant-colonel on 26 July 1941.

The establishments of the Camp Dental Hospitals were then altered to permit the commanding officers to be either major or captain, the senior dental clerk orderly was given the rank of WO II, and the number of orderlies was increased by two. The same status was given the commanding officer of the Base Dental Hospital and the establishment was increased by one officer, three orderlies and three mechanics.

In the field ambulances the important change was that a dental mechanic was included in the establishment. This was a natural corollary to the experiences of the Division in Greece and Crete, where the majority of the casualties concerned artificial dentures.

The new Mobile Dental Section was formed in Egypt to the formula of the ADDS. The only assistance asked from the DDS was the provision of equipment and enough men from whom to choose the staff. Captain W. G. Middlemass [1] was selected as the commanding officer and promoted to the rank of major. The nucleus of the section was re-formed and preparations were made to receive reinforcements, which being effected, the section moved to Maadi Camp, entering the School of Instruction for a special course on 7 August 1941. The purpose of this course was not so much to learn extraneous subjects which could be of little use in the field, but to mould it into a unit. The new establishment differed in minor details only from the establishment of the section lost in Greece and, as at this stage the alterations could only be based on theory after a limited and unsuccessful experience in the field, it is of little value to examine it in any detail. There were, however, some radical alterations in the method of equipping the section, based on the experiences of the section which worked in the Western Desert in 1940, and also some changes in administration.

The equipment began to arrive from New Zealand in early August on a generous scale and of a type and quality leaving little to be desired.

There were, however, certain items not suitable for use in the field and some deficiencies which experience had shown should be included. Consequently, it was decided to receive it into the dental store, not as complete outfits but as individual items, and to build up entirely new field outfits. The deficiencies were to be made up either from Medical Stores or by buying from local supply houses.

For example, the equipment for a complete Field Dental Section had hitherto consisted of chair case, prosthetic pannier, surgical pannier and store pannier. The foot engine had been carried in a compartment in the surgical pannier and items which could not be packed in the surgical or prosthetic panniers had been carried in the store pannier. The first change was to remove the foot engine from the surgical pannier and place it in a specially constructed case, which could either be carried independently or in the chair case. All the surgical equipment could now be carried in the surgical pannier and the prosthetic in the prosthetic pannier, allowing the store pannier to be dispensed with. Each section was provided with a portable mechanic's bench, complete with trestles and with screw holes and bolts in the correct positions for assembly. The fitted mobile dental laboratory, so prominent a feature of the previous section, became a Field Dental Laboratory, consisting of a 4-ton lorry of standard design carrying equipment in panniers and two portable laboratory benches specially fitted and designed on which the equipment could be assembled. The trend was towards standardisation and simplification, leaving out all luxury equipment or specialised apparatus difficult to replace. The section could operate either as a complete unit similar to a camp dental hospital or it could break up into sub-sections. Some of these sub-sections were both surgical and prosthetic and some only surgical. All ambiguity in respect of command was removed. As far as personnel and policy matters were concerned, the ADDS was to be in full control and, except when the section was actually attached to the Division, he would control the movements and even the distribution of dental officers among units. When the section came under divisional control its commanding officer would be responsible to the ADMS of the Division for location, duties and discipline and would make his

movements and attachments in consultation with that officer. At all times the ADDS was to receive returns of work and reports of the location of each unit, even when the attachment was to the Division, but in addition to and not to the exclusion of the ADMS.

The Mobile Dental Section thus became an integral part of the Dental Corps in the Middle East, a non-divisional unit to be used anywhere within the 2 NZEF but primarily to maintain the dental fitness of all units in the field. As the Division was then in the field undergoing training at Baggush, the section moved from Maadi on 30 September 1941 and immediately began systematic examination and treatment.

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THE NEW ZEALAND DENTAL SERVICES

TREATMENT OF THE DIVISION AFTER GREECE AND CRETE

Treatment of the Division After Greece and Crete

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THE NEW ZEALAND DENTAL SERVICES

REBUILDING THE NEW ZEALAND DENTAL CORPS IN THE MIDDLE EAST

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THE NEW ZEALAND DENTAL SERVICES

CHAPTER 15 — THE BATTLE OF LIBYA, NOVEMBER 1941

CHAPTER 15
The Battle of Libya, November 1941

FROM the point of view of the Dental Corps, the Second Libyan Campaign started on 1 October 1941, when the Mobile Dental Section joined the Division at Baggush as, apart from the casualty work of the dental sections attached to medical units, this was the moment when the full dental field organisation went into action. This campaign provided the arena where the organisation could put into practice what had been developed in theory and justify its existence in the field of modern warfare. The loss of the Mobile Section in Greece was an inauspicious beginning and it remained to be seen if the phoenix that arose from the ashes was truly a better bird.

Baggush, or ' Baggush Box' as the area was called, was an advanced base some 200 miles behind the forward positions, and the Mobile Dental Section was allotted space close to Divisional Headquarters centrally placed within the Division. The sea was close at hand with pleasant prospects of swimming, but so was the *Luftwaffe* and the orders were that all ranks should live in dugouts. A wholesome respect for the *Luftwaffe* delayed the start of full treatment. Four sub-sections were immediately sent to surrounding units, but the remainder had to set to work to establish headquarters and to erect the marquee as a dental hospital. It was then considered necessary to have the marquee dug down and sandbagged to a depth of three feet. As it covered an area of 38 feet by 19 feet, the amount of work to do this, even with the help of the Divisional Headquarters Defence Platoon, was enormous and resulted in the loss of at least a week. This extensive digging was later considered unnecessary and neither hospital nor sections were again dug down. All that was considered necessary was to prepare slit trenches and to dig down beds in areas where bombs were likely to be dropped.

At Baggush, all the units of the Division were within a radius of three miles and were receiving casualty treatment from the dental sections attached to the field ambulances. The responsibility in the first

instance for the dental health of the troops lay with these sections, which held nominal rolls for these troops. When, however, the Mobile Dental Section was available, more extensive treatment was possible and the responsibility for dental health shifted to the Officer Commanding this section, but the field ambulance section still had charge of any records, merely supplying those requisite to the section or sub-section concerned.

The original intention at Baggush was for the Mobile Dental Section to render fit every man who presented himself for treatment, but it soon became apparent that the units wanted more than this. They were anxious to parade all their men for examination so that the whole unit could be made fit. At Baggush this could be done and the policy was initiated at that time of examining and rendering fit units in rotation whenever the tactical situation permitted. It was a policy that worked well, and it was found later that under the infinite variety of conditions of the North African campaign each unit received a dental examination and treatment at least once in twelve months.

The field ambulances continued, therefore, to treat all casualties and the Mobile Dental Section concentrated on routine treatment. The hospital marquee, dug down and divided by partitions of sandbags, was excellent under normal weather conditions, when the side could be let down to give light. When sandstorms blew, however, everything had to be closed and the absence of electric light made all but emergency work almost impossible. Still, the headquarters and two sub-sections worked there as a field dental hospital; sub-sections were distributed to various units with instructions to make them dentally fit but, while not refusing to see casualties, to refer as many as possible of these interruptions to the field ambulance sections. It may be mentioned here that the most efficient unit was found to be the section consisting of the officer, orderly and mechanic, with the driver and his truck. More work was done in proportion than when two or more sections were combined to work as a hospital.

On 12 November 1941 the period of training came to an end and the

Division moved forward to play its part in the Libyan campaign. According to plan, the dental sections with the field ambulances moved with them but, on strict instructions from the ADDS, the Mobile Dental Section gathered in its sub-sections and remained in Baggush with 'Left out of Battle' (LOB) personnel, whom they continued to treat. Looking at this decision in the light of present knowledge, there is little doubt that if the Mobile Section had moved with the Division it would probably have shared the fate of its predecessor in Greece, and certainly would have been of little value to the Division. This is more easily seen after reading the account of the experiences of the sections with the field ambulances.

The three field ambulances and the Mobile Surgical Unit eventually came together and formed a large Main Dressing Station or Medical Centre, with the exception that one company from each ambulance remained with the brigade groups. Captain C. C. S. Loeber, NZDC, of 4 Field Ambulance, was with one of the Advanced Dressing Stations on liaison duties and maintained contact with the Medical Centre and with Brigade Headquarters. His party had a bad time and was heavily shelled, one of the medical officers being seriously wounded. Captain Loeber took over many of his duties and came out of battle with the company. Captain A. D. Aitken, NZDC, [1] of 5 Field Ambulance, was liaison officer between the ADMS at Divisional Headquarters and the ambulance group. Unfortunately he was at the MDS when it fell into enemy hands. Captain W. P. Skegg, NZDC, [2] of 6 Field Ambulance, was for three days the Ambulance Convoy Officer for the Medical Centre and each day took his ambulances out in the Capuzzo- Sidi Rezegh areas to collect wounded from widely scattered units who were constantly on the move. All his movements were by map, compass and speedometer mileage. On one trip he ran into an enemy camp and came under fire from both sides. After making two attempts to get through with his convoy he stumbled across a British column which, at his request, tried to clear a way for him, but eventually he had to return to the Medical Centre. The last part of his trip was in darkness and navigation was by dead reckoning.

When the field ambulances were captured, Captain Loeber's orderly and mechanic, Sergeant C. H. Constable [3] and Corporal W. W. McDonald, [4] who had remained with the main group, volunteered to take the news to Divisional Headquarters. They escaped at night, managed to get through the enemy lines, evaded the patrols and eventually ran into a picket from Divisional Headquarters.

The results of the campaign can be conveniently summarised:

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2. Captains Aitken and Skegg, Sergeant Taylor [1] and Corporals Eagan, [2] Smith [3] and Moore [4] were taken prisoners of war. Of these Smith and Moore were mechanics.
3. All field ambulance equipment was lost, Captain Loeber's by shellfire and the rest by capture.
4. The Mobile Dental Section, remaining behind when the Division went into action, was not only saved from probable capture but was ready, fully equipped and soundly established, to start treatment on the Division as soon as it returned from action. It could have done no dental work on the Division in the battle area.

Most units of the Division returned after the battles of Belhamed and Sidi Rezegh and established themselves once more in Baggush about the

middle of December 1941. While the Mobile Dental Section was searching out the battle casualties, the ADDS took stock of the situation and analysed the results of the campaign as they affected the dental organisation.

Firstly, there was the use made of the sections attached to the field ambulances. Here was a specialist officer, deprived of the opportunity of practising his specialty, being used for work for which he had an imperfect training and which would have been better done by a trained officer. Without in any way belittling the services rendered by these officers or questioning their willingness to help in every way, it is pertinent to ask why they were even in the locality where such services were needed. It would appear that they would have been more correctly sited with the headquarters of the field ambulances during battle, a position from which they could have been sent wherever their professional services were required and when these services could be used. This was a view endorsed by one of the officers commanding a field ambulance. It is poor policy to train a racehorse for use in a plough. Both the horse and the ploughing will suffer.

The same argument applies to exposing valuable equipment to unnecessary risk. Unless conditions are reasonably static the dental section has little use for anything other than an emergency haversack. Equipment could therefore be kept at a reasonable distance and produced only when there was a chance of it being used.

Secondly, it would appear that the Mobile Dental Section was correctly used and was able to perform useful service. It also

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appeared, however, that this was only due to the fact that the ADDS so firmly insisted that it should be used in this way and had convinced the ADMS of the Division and the Officer Commanding the section of the correctness of his views. Actually the section had become attached to the Division at Baggush but was withdrawn and placed directly under Eighth Army when the Division moved to the forward area. It is therefore possible that in the absence of specific instructions to the contrary the section might have moved with the Division. This is borne out by the fact that when the Division was moving from the Western Desert area in January 1942, the Mobile Dental Section was included in the movement order contrary to the agreement made with the ADDS. This move was countermanded by the ADDS but it showed that the ADMS still considered the section to be part of the Division. It also shows why the ADDS was so keen that the section should be non-divisional, at least until such time as its capabilities and limitations were fully understood.

Divisional attachment had certain advantages, as also did non-divisional, and only experience in the field could adjust the balance. The pros and cons are stated by the ADDS and Major Middlemass:

War Diary ADDS, 30 December 1941:

Nothing would appear to be gained by attaching the unit to the N.Z. Division, particularly in the present indefinite, half-hearted manner. Actually when the unit moved originally from Maadi Camp to the Western Desert it was not intended that it should become attached to the Division. The unit was moved under a GHQ

[1] order from Maadi Camp to HQ 13 Corps, but on arrival at Baggush was claimed and annexed by N.Z. Division.

When the Division moved forward to a concentration area, the Mobile Section marched out to attachment to Eighth Army. Subsequently when Eighth Army moved, the section became attached to HQ 83 L of C. [2] When the Division returned to Baggush it became attached to them again, more or less. During the period when the unit was attached to the Division, all Divisional orders had to be complied with, many of which did not concern the unit. Also, the section was considered by the A.D.M.S. to be one of his Medical Units. Numerous irrelevant returns had to be sent to him, returns which concerned medical units but which were not applicable to a dental unit. The Mobile Dental Section became one of the A.D.M.S.'s five medical units and became tacked on to the end of the other four. Naturally the unit was the last to receive consideration. There was no friction nor sign of it, but nevertheless the position generally was one in which the unit was attached to the Division without receiving any of the advantages of such a position.

N.Z. Division is always either moving or about to move, and, when it does, Mobile Dental Section remains behind until conditions become reasonably stable. When Division moves, the unit has to become attached to the Headquarters of the area or sub-area in which the Force is situated. It seems logical to conclude that in the first instance the section should move to the vicinity of the Division but, being a non-Divisional unit operating on all units of the 2 NZEF, it should be attached to the Headquarters of the area or sub-area in which the Division is located. Then it would be dealt with and controlled in the same manner as other 2 NZEF non-Divisional units. When Division moved there would be no disorganisation. The unit would be under the local control of the senior Medical Officer of the area concerned. It is felt that the unit would operate more smoothly

and efficiently under this arrangement.

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[2] **Headquarters, 83 Lines of Communication.**

Extract from a Survey of Dental Services within the NZ Division by Major Middlemass

The NZ Division was hurriedly moved from Syria to Matruh in order to help stem Rommel's apparently irresistible advance on the Nile Valley. 1 NZ Mobile Dental Unit moved with the Division as far as Cairo and then proceeded independently to Maadi Camp with LOB personnel. This was the first occasion on which the unit had moved with the Division. Hitherto, it had always moved independently of the latter—up to Baggush, down to the Canal Area, up to Maadi and finally up to Aleppo. This involves the issuing of a separate movement order by Middle East, through a variable number of Movement Control Officers to the area in which the unit is located and would seem to serve no useful purpose beyond demonstrating that No. 1 NZ Mobile Dental Unit is a non-Divisional unit. Indeed it has the disadvantage that the late arrival of the unit in the Divisional area or billets has always meant a re-arrangement of some Divisional unit in order to provide room for the Mobile Dental Unit. In Baggush, 4 NZ Field Ambulance was affected; in the Canal Area, the 5 NZ Field Ambulance; in Aleppo the 21 NZ Battalion. It is certainly inconvenient to these units while it is most certainly not to the advantage of 1 NZ Mobile Dental Unit.

All these difficulties and unnecessary inconveniences can be overcome by attaching the unit to the Division before the latter moves. Provision is then automatically made for the supply and movement of the unit, and allocation of an area on arrival at the

destination is carried out by Divisional Headquarters. Less administrative work is required and there is less inconvenience to all concerned. It should be remembered too that when the unit is some distance from Base, and operationally this must always be so, it must move under Divisional arrangements. It is unwise therefore to break the normal routine on the comparatively few occasions when it is possible for 2 NZEF to move the unit.

Finally there is no loss of time in commencing work on units, at the latest on the day after the Division arrives in an area. Such is not possible if the unit moves under separate orders.

These opposing views were reconcilable by a fuller knowledge of how, where and when the Mobile Dental Unit could operate. The fullest co-operation between the ADDS, the OC Unit and the ADMS made it possible for attachment to the Division to be done with discretion, to their mutual advantage without the dangers so clearly demonstrated in Greece. In addition to this co-operation, however, it was essential that each, independently, should fully understand the capabilities and limitations of the unit. With the right officers it was unlikely that the unit would be improperly used. With even one of the trio imperfectly trained or unduly headstrong, Major Middlemass's suggestions might have led to disaster. Non-divisional attachment may have had disadvantages but it possessed advantages, especially in the early stages when the full implications of modern mobile warfare were imperfectly understood.

After the Mobile Dental Section had worked for some time under very trying conditions of rain, cold weather, mud and dust, it was announced that the Division would be withdrawn from the Western Desert to the Cairo and Canal areas. It was again noticed after the Libyan battle that there was a large number of broken and lost dentures, making it appear that this could normally be expected after the Division had been in action. It also again emphasised how vulnerable the denture wearer was to war conditions and how essential it was that an efficient dental service should always be available to a force such as the New Zealand

Division.

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

FROM the point of view of the Dental Corps, the Second Libyan Campaign started on 1 October 1941, when the Mobile Dental Section joined the Division at Baggush as, apart from the casualty work of the dental sections attached to medical units, this was the moment when the full dental field organisation went into action. This campaign provided the arena where the organisation could put into practice what had been developed in theory and justify its existence in the field of modern warfare. The loss of the Mobile Section in Greece was an inauspicious beginning and it remained to be seen if the phoenix that arose from the ashes was truly a better bird.

Baggush, or ' Baggush Box' as the area was called, was an advanced base some 200 miles behind the forward positions, and the Mobile Dental Section was allotted space close to Divisional Headquarters centrally placed within the Division. The sea was close at hand with pleasant prospects of swimming, but so was the *Luftwaffe* and the orders were that all ranks should live in dugouts. A wholesome respect for the *Luftwaffe* delayed the start of full treatment. Four sub-sections were immediately sent to surrounding units, but the remainder had to set to work to establish headquarters and to erect the marquee as a dental hospital. It was then considered necessary to have the marquee dug down and sandbagged to a depth of three feet. As it covered an area of 38 feet by 19 feet, the amount of work to do this, even with the help of the Divisional Headquarters Defence Platoon, was enormous and resulted in the loss of at least a week. This extensive digging was later considered unnecessary and neither hospital nor sections were again dug down. All that was considered necessary was to prepare slit trenches and to dig down beds in areas where bombs were likely to be dropped.

At Baggush, all the units of the Division were within a radius of three miles and were receiving casualty treatment from the dental

sections attached to the field ambulances. The responsibility in the first instance for the dental health of the troops lay with these sections, which held nominal rolls for these troops. When, however, the Mobile Dental Section was available, more extensive treatment was possible and the responsibility for dental health shifted to the Officer Commanding this section, but the field ambulance section still had charge of any records, merely supplying those requisite to the section or sub-section concerned.

The original intention at Baggush was for the Mobile Dental Section to render fit every man who presented himself for treatment, but it soon became apparent that the units wanted more than this. They were anxious to parade all their men for examination so that the whole unit could be made fit. At Baggush this could be done and the policy was initiated at that time of examining and rendering fit units in rotation whenever the tactical situation permitted. It was a policy that worked well, and it was found later that under the infinite variety of conditions of the North African campaign each unit received a dental examination and treatment at least once in twelve months.

The field ambulances continued, therefore, to treat all casualties and the Mobile Dental Section concentrated on routine treatment. The hospital marquee, dug down and divided by partitions of sandbags, was excellent under normal weather conditions, when the side could be let down to give light. When sandstorms blew, however, everything had to be closed and the absence of electric light made all but emergency work almost impossible. Still, the headquarters and two sub-sections worked there as a field dental hospital; sub-sections were distributed to various units with instructions to make them dentally fit but, while not refusing to see casualties, to refer as many as possible of these interruptions to the field ambulance sections. It may be mentioned here that the most efficient unit was found to be the section consisting of the officer, orderly and mechanic, with the driver and his truck. More work was done in proportion than when two or more sections were combined to work as a hospital.

On 12 November 1941 the period of training came to an end and the Division moved forward to play its part in the Libyan campaign. According to plan, the dental sections with the field ambulances moved with them but, on strict instructions from the ADDS, the Mobile Dental Section gathered in its sub-sections and remained in Baggush with 'Left out of Battle' (LOB) personnel, whom they continued to treat. Looking at this decision in the light of present knowledge, there is little doubt that if the Mobile Section had moved with the Division it would probably have shared the fate of its predecessor in Greece, and certainly would have been of little value to the Division. This is more easily seen after reading the account of the experiences of the sections with the field ambulances.

The three field ambulances and the Mobile Surgical Unit eventually came together and formed a large Main Dressing Station or Medical Centre, with the exception that one company from each ambulance remained with the brigade groups. Captain C. C. S. Loeber, NZDC, of 4 Field Ambulance, was with one of the Advanced Dressing Stations on liaison duties and maintained contact with the Medical Centre and with Brigade Headquarters. His party had a bad time and was heavily shelled, one of the medical officers being seriously wounded. Captain Loeber took over many of his duties and came out of battle with the company. Captain A. D. Aitken, NZDC, [1] of 5 Field Ambulance, was liaison officer between the ADMS at Divisional Headquarters and the ambulance group. Unfortunately he was at the MDS when it fell into enemy hands. Captain W. P. Skegg, NZDC, [2] of 6 Field Ambulance, was for three days the Ambulance Convoy Officer for the Medical Centre and each day took his ambulances out in the Capuzzo- Sidi Rezegh areas to collect wounded from widely scattered units who were constantly on the move. All his movements were by map, compass and speedometer mileage. On one trip he ran into an enemy camp and came under fire from both sides. After making two attempts to get through with his convoy he stumbled across a British column which, at his request, tried to clear a way for him, but eventually he had to return to the Medical Centre. The last part of his trip was in darkness and navigation was by dead reckoning.

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

EXTRACT FROM A SURVEY OF DENTAL SERVICES WITHIN THE NZ DIVISION BY MAJOR MIDDLEMASS

Extract from a Survey of Dental Services within the NZ Division by Major Middlemass

The NZ Division was hurriedly moved from Syria to Matruh in order to help stem Rommel's apparently irresistible advance on the Nile Valley. 1 NZ Mobile Dental Unit moved with the Division as far as Cairo and then proceeded independently to Maadi Camp with LOB personnel. This was the first occasion on which the unit had moved with the Division. Hitherto, it had always moved independently of the latter—up to Baggush, down to the Canal Area, up to Maadi and finally up to Aleppo. This involves the issuing of a separate movement order by Middle East, through a variable number of Movement Control Officers to the area in which the unit is located and would seem to serve no useful purpose beyond demonstrating that No. 1 NZ Mobile Dental Unit is a non-Divisional unit. Indeed it has the disadvantage that the late arrival of the unit in the Divisional area or billets has always meant a re-arrangement of some Divisional unit in order to provide room for the Mobile Dental Unit. In Baggush, 4 NZ Field Ambulance was affected; in the Canal Area, the 5 NZ Field Ambulance; in Aleppo the 21 NZ Battalion. It is certainly inconvenient to these units while it is most certainly not to the advantage of 1 NZ Mobile Dental Unit.

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Finally there is no loss of time in commencing work on units, at the latest on the day after the Division arrives in an area. Such is not possible if the unit moves under separate orders.

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After the Mobile Dental Section had worked for some time under very trying conditions of rain, cold weather, mud and dust, it was announced that the Division would be withdrawn from the Western Desert to the Cairo and Canal areas. It was again noticed after the Libyan battle that there was a large number of broken and lost dentures, making it appear that this could normally be expected after the Division had been in action. It also again emphasised how vulnerable the denture wearer was to war conditions and how essential it was that an efficient dental service should always be available to a force such as the New Zealand Division.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 16 — A ROVING COMMISSION

CHAPTER 16
A Roving Commission

APART from the Division and the troops at the Base, there were other New Zealanders in the Middle East such as Army Troops, Mechanical Equipment Companies and Survey Batteries. On many occasions these were separated from the New Zealand command and were used by the British Army. From a dental point of view, however, they were still the responsibility of the NZDC, and as they were scattered over a wide area, became a problem to service. A complete sub-section was therefore recalled from the Mobile Dental Section to Maadi Camp, where it was more fully equipped and given instructions to go to Transjordan and Palestine, find these men and treat them. The sub-section was under the administrative control of the ADDS but could be given only broad instructions and had to rely on personal initiative to complete the task. It was instructed to go via Jerusalem and Amman to Aqaba, where it was expected to find 21 NZ Mechanical Equipment Company.

The section, under the command of Captain H. G. Lynch, [1] left Maadi on 1 December 1941 and the story of the next eight weeks reads like a tale of the North-West Mounted Police 'getting their man'. It is best told in the words of the Officer Commanding the section:

> **On 2 December 41 we reached the Egyptian- Palestine frontier and camped. Both that night and the following day exceptionally heavy rain fell and we suffered a delay of several hours at Beersheba where the bridge was washed away. Travelling with a convoy via Gaza and El Ramele we reached Jerusalem on 3 December. Next day I went to the Hotel David only to discover that Force Headquarters had moved and the remaining staff knew nothing of the whereabouts of NZ troops in Trans Jordania or Palestine. I got a map of Trans Jordania and on 5 December set out for Akaba via Amman where we stayed the night at the R.A.F. station.**

On receiving assurances that the main Amman-Maan road was in good order we left for Maan but again the weather upset our plans. Some 30 miles south of Amman terrific rains forced me to turn the truck west and out of the Wadi which was fast becoming a river. That night, after some difficulties, we reached Kerak in the hills and stayed at the barracks of the Arab Legion. Despite the language difficulty, these people did everything possible to make us comfortable. Rain persisted all that night and the following day so that we could move neither backwards nor forwards. Next day, 8 Dec., I made contact with two RASC trucks which had been marooned at Quatran and we decided to try and get to Maan via Tifilia—the main road being completely impassable.

After a difficult day, pushing each truck in turn, we reached Mazer, a distance of only 30 miles. Again we stayed at a fort of the Arab Legion of whose kindness and hospitality I cannot speak too highly. The following day, conditions being greatly improved, we arrived at Maan staying the night with the Trans-Jordan frontier force. Even that part of the journey was not without trouble as the heavy going raised our petrol consumption and although I managed to buy 4 gallons from a native store we had to pool all our petrol to get the three trucks as far as Shoback, 30 miles from Maan. All the remaining petrol was then put into one truck which went on to Maan and returned with supplies for the others. At Maan I found that part of the 21 ME Coy was at Naqb Ashtar, about half way between Maan and Akaba, and I reached this camp on 10 December setting up my tent there.... Severe storms prevented work next day—the camp is at a height of 4,000 feet—but since then conditions gradually improved and I hoped to go on to Akaba about 16 December.

At Naqb Ashtar I completed, amid rain and snow, as many of the [men] as were available and, still in the rain, slipped down the steep face of the Naqb to the Great Red Plain of Guweira, now a vast sea of mud. After some 15 miles of this the truck foundered in

a hole....

Our puny efforts to push it out were unsuccessful so we sat down to await the arrival of a large truck that I knew to be following. To this we tied the little Bedford truck and, like a child dragging a toy in the gutter, it towed us across the plain to the hard stony ground at the head of the Wadi Ithm, whence a very rough track lead to Akaba....

It was at Akaba that I met an English Officer in charge of Royal Engineers stores who needed dental treatment urgently. In return for my treatment he provided us with piping and canvas from which we made a canopy for the truck. This ... was the only way I could get some cover which was essential if we were to continue to travel through these stormy lands....

All work here was completed and, as the road was again passable, we left Akaba on 29 December getting back to Naqb Ashtar without assistance. Here they had collected the untreated men of the repair section and when these had been made dentally fit we left for Amman on 31 December.

As the weather had been fine for some days and after consultations with a very odd Arab-living Englishman, Abu George, I decided on the route via the Wadi Hasa. This would cut out the mountains of the Kerak route but, in case the rain caught us in this lonely desert, I arranged with the OC Trans-Jordan Frontier Force at Maan to have us checked through his forts on the way. If anything went wrong they were to come out and look for us. We were fortunate and after travelling over the worst road I have ever seen, reached Maan that night. Next day, 1 January 42, I left Maan in heavy rain in search of the 36 NZ Survey Battery known to be somewhere in the Jordan Valley and was lucky enough to cross the bridge at Es Salt a few hours before it was washed away. As we neared Jericho we saw a group of New Zealanders across a flooded stream which we forded without trouble and were directed

to the Survey Battery's camp higher up the Jordan Valley.

The weather was execrable—Jerusalem was under snow—but I completed the work on the Battery by 9 January and set out in search of No. 1 Section of 21 ME Coy, who were on the Haifa-Bagdad road in Iraq. Rain made it useless to try to cross the desert to Marfrak so I spent the night in Jerusalem. After refuelling at the Allenby Barracks we set off for Nablus on the minute and implicit directions of a Military Policeman. When the sun came out and the shadows were seen to be lying exactly the wrong way we found we were nearly at Hebron so returned to Jerusalem and tried another M.P. Again the careful instructions with the result that we started on the road to El Ramele and Egypt. Finally broken English and the greater accuracy of the local police got us to Nablus in the pouring rain and we spent a night and day in a small Australian Camp waiting for the weather to improve.

Leaving next morning on the long run to Marfrak we were lucky to meet a NZ truck on the shores of Lake Tiberius and receive our exact location otherwise we might not have got to Marfrak that night. The next day our route was across the dreadful black desert of Iraq to the Iraq Petroleum Company's pumping station H.3. Here the NZ troops were so scattered that I used the truck as a taxi to bring them in for treatment. Bitter winds and terrific frosts made working conditions unpleasant but the Petroleum Company's officials kindly lent me a room in one of their huts.

From H.3. we moved down along the pipe line to G.1. and completed treatment for the 21 ME Coy, leaving for Haifa on 17 January to find the Headquarters Section of that Company. Severe dust storms and later heavy rain delayed us and night found us at Tiberius.... Here for the first time the truck gave serious trouble. Two spark plugs gave out and there being no 14 mm plugs to be got we had to crawl over the hills to Haifa which we reached in the afternoon.... After much difficulty I got authority from Ordnance

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This gave the ADDS a stronger position and more control over the maintenance of dental health in the force.

No. 2 Mobile Dental Unit is Formed

The number of troops in Maadi Camp was getting less and it was found that one of the three dental hospitals could not be kept fully occupied. On the other hand, within the 2 NZEF there was too much work for the number of dental officers, the greater part of it being for units in the field. No. 1 NZ Mobile Dental Unit could be kept fully occupied with the Division but more was needed to attend to NZEF units elsewhere, such as railway units, Army Service Corps units, Army Troops and Mechanical Equipment companies and other small non-divisional units.

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Dental Condition of the Force

It is convenient at this stage, after the withdrawal of the Division from the Libyan campaign and before following it farther, to take stock of the results of the work of the Corps. In his report of 1 February 1942 the ADDS states:

> **With the exception of 5 Brigade Group, which is at present under treatment, the entire Force is virtually dentally fit.**
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Regarding trench mouth, it is interesting to note the precautions, other than those mentioned in the above report, taken by the NZDC to prevent an outbreak and to compare them with those taken by the Army Dental Corps attached to the Royal Air Force.

In the NZDC every case was treated by the Dental Officer but was also reported to the Medical Officer, with a recommendation that it be strictly isolated. In addition to this it was recorded on a dental history sheet which was sent to Headquarters for attachment to the soldier's personal file. Any suspected outbreak was reported immediately to the ADDS, with reasons for the suspicion and details of the steps being taken to prevent further spread of infection.

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[SECTION]

APART from the Division and the troops at the Base, there were other New Zealanders in the Middle East such as Army Troops, Mechanical Equipment Companies and Survey Batteries. On many occasions these were separated from the New Zealand command and were used by the British Army. From a dental point of view, however, they were still the responsibility of the NZDC, and as they were scattered over a wide area, became a problem to service. A complete sub-section was therefore recalled from the Mobile Dental Section to Maadi Camp, where it was more fully equipped and given instructions to go to Transjordan and Palestine, find these men and treat them. The sub-section was under the administrative control of the ADDS but could be given only broad instructions and had to rely on personal initiative to complete the task. It was instructed to go via Jerusalem and Amman to Aqaba, where it was expected to find 21 NZ Mechanical Equipment Company.

The section, under the command of Captain H. G. Lynch, [1] left Maadi on 1 December 1941 and the story of the next eight weeks reads like a tale of the North-West Mounted Police 'getting their man'. It is best told in the words of the Officer Commanding the section:

> **On 2 December 41 we reached the Egyptian- Palestine frontier and camped. Both that night and the following day exceptionally heavy rain fell and we suffered a delay of several hours at Beersheba where the bridge was washed away. Travelling with a convoy via Gaza and El Ramele we reached Jerusalem on 3 December. Next day I went to the Hotel David only to discover that Force Headquarters had moved and the remaining staff knew nothing of the whereabouts of NZ troops in Trans Jordania or Palestine. I got a map of Trans Jordania and on 5 December set out for Akaba via Amman where we stayed the night at the R.A.F. station.**

On receiving assurances that the main Amman-Maan road was in good order we left for Maan but again the weather upset our plans. Some 30 miles south of Amman terrific rains forced me to turn the truck west and out of the Wadi which was fast becoming a river. That night, after some difficulties, we reached Kerak in the hills and stayed at the barracks of the Arab Legion. Despite the language difficulty, these people did everything possible to make us comfortable. Rain persisted all that night and the following day so that we could move neither backwards nor forwards. Next day, 8 Dec., I made contact with two RASC trucks which had been marooned at Quatran and we decided to try and get to Maan via Tifilia—the main road being completely impassable.

After a difficult day, pushing each truck in turn, we reached Mazer, a distance of only 30 miles. Again we stayed at a fort of the Arab Legion of whose kindness and hospitality I cannot speak too highly. The following day, conditions being greatly improved, we arrived at Maan staying the night with the Trans-Jordan frontier force. Even that part of the journey was not without trouble as the heavy going raised our petrol consumption and although I managed to buy 4 gallons from a native store we had to pool all our petrol to get the three trucks as far as Shoback, 30 miles from Maan. All the remaining petrol was then put into one truck which went on to Maan and returned with supplies for the others. At Maan I found that part of the 21 ME Coy was at Naqb Ashtar, about half way between Maan and Akaba, and I reached this camp on 10 December setting up my tent there.... Severe storms prevented work next day—the camp is at a height of 4,000 feet—but since then conditions gradually improved and I hoped to go on to Akaba about 16 December.

At Naqb Ashtar I completed, amid rain and snow, as many of the [men] as were available and, still in the rain, slipped down the steep face of the Naqb to the Great Red Plain of Guweira, now a vast sea of mud. After some 15 miles of this the truck foundered in

a hole....

Our puny efforts to push it out were unsuccessful so we sat down to await the arrival of a large truck that I knew to be following. To this we tied the little Bedford truck and, like a child dragging a toy in the gutter, it towed us across the plain to the hard stony ground at the head of the Wadi Ithm, whence a very rough track lead to Akaba....

It was at Akaba that I met an English Officer in charge of Royal Engineers stores who needed dental treatment urgently. In return for my treatment he provided us with piping and canvas from which we made a canopy for the truck. This ... was the only way I could get some cover which was essential if we were to continue to travel through these stormy lands....

All work here was completed and, as the road was again passable, we left Akaba on 29 December getting back to Naqb Ashtar without assistance. Here they had collected the untreated men of the repair section and when these had been made dentally fit we left for Amman on 31 December.

As the weather had been fine for some days and after consultations with a very odd Arab-living Englishman, Abu George, I decided on the route via the Wadi Hasa. This would cut out the mountains of the Kerak route but, in case the rain caught us in this lonely desert, I arranged with the OC Trans-Jordan Frontier Force at Maan to have us checked through his forts on the way. If anything went wrong they were to come out and look for us. We were fortunate and after travelling over the worst road I have ever seen, reached Maan that night. Next day, 1 January 42, I left Maan in heavy rain in search of the 36 NZ Survey Battery known to be somewhere in the Jordan Valley and was lucky enough to cross the bridge at Es Salt a few hours before it was washed away. As we neared Jericho we saw a group of New Zealanders across a flooded stream which we forded without trouble and were directed

to the Survey Battery's camp higher up the Jordan Valley.

The weather was execrable—Jerusalem was under snow—but I completed the work on the Battery by 9 January and set out in search of No. 1 Section of 21 ME Coy, who were on the Haifa-Bagdad road in Iraq. Rain made it useless to try to cross the desert to Marfrak so I spent the night in Jerusalem. After refuelling at the Allenby Barracks we set off for Nablus on the minute and implicit directions of a Military Policeman. When the sun came out and the shadows were seen to be lying exactly the wrong way we found we were nearly at Hebron so returned to Jerusalem and tried another M.P. Again the careful instructions with the result that we started on the road to El Ramele and Egypt. Finally broken English and the greater accuracy of the local police got us to Nablus in the pouring rain and we spent a night and day in a small Australian Camp waiting for the weather to improve.

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

CHAPTER 17 — IN PALESTINE AND SYRIA

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In Palestine and Syria

EARLY in March 1942 it became known that the New Zealand Division was to move out of Egypt into Palestine and Syria. There was no intention to move 2 NZEF headquarters from Maadi, but an Advanced Base was to be established, probably at Kfar Vitkin, just south of Haifa in Palestine.

The first task of the NZDC was to see that the Division was dentally fit before the move. With the exception of 5 Infantry Brigade Group, this had already been done by February so dental forces were concentrated in Maadi Camp to treat the brigade. The Camp Dental Hospital and the Base Depot Dental Hospital were already there and 1 Mobile Dental Unit was brought to Maadi from Kabrit. This was in line with the usual policy of relying, in the first instance, on the dental sections with the field ambulances and, in this case, a General Hospital and the Convalescent Depot to deal with any emergencies within the Division. Although the Division was going to a static area where full dental treatment could be carried out, it was not considered necessary to send other than emergency dental personnel until it was possible to get some idea of the location of the various units. When this was known the organisation was ready to be put into immediate operation. One small cloud appeared on the horizon during this preliminary stage. As the area to which the Division was going was under British command, the DDDS of the Middle East Forces had drafted a memorandum to his ADDS instructing him that New Zealand dental officers in the area would now be responsible to him, and that all returns and reports must be forwarded to him. Colonel Fuller did not agree and pointed out that the NZDC had no connection whatsoever with the Army Dental Corps and would be controlled by a New Zealand administrative dental officer. This was eventually agreed to by the DDDS.

On 13 April 1942 1 Mobile Dental Unit moved from Maadi to join 5 NZ Infantry Brigade Group, by this time in Syria. On the following day

the ADDS left also for a tour of inspection of the area. As this tour included an inspection of every dental section, an account of it will explain the distribution of the Corps and show how completely and effectively a force spread over a long distance could be serviced under the organisation then existing.

On the first day he arrived at Jerusalem for discussions with the British ADDS on administrative and supply problems. Leaving Jerusalem on 15 April on his way to Damascus, he called at Nazareth and inspected the dental section attached to 2 NZ General Hospital. Here he found Captain F. R. Brebner [1] working under ideal conditions. On 16 April he arrived at Zahle, a peacetime summer resort in the Lebanon Mountains, and stayed with 1 NZ Casualty Clearing Station, to which was attached a dental section under Captain E. P. Pickerill. [2] The surgery was a pleasant room in the hospital building, and although small and curtained into surgery and prosthetic room, had water and electricity laid on, good lighting and, according to Captain Pickerill, a view rivalling anything in the Austrian Tyrol. All troops south of Baalbek came to this CCS for casualty dental treatment. There were British units, Bechuanas, Cypriots, Australian Air Force and American Field Service. Captain Pickerill reported that the mouths of the New Zealand troops were, without exception, in good condition but the teeth and gums of the British troops were in a very poor state.

Next day the ADDS visited the headquarters of the Division at Baalbek. This headquarters, 4 Infantry Brigade Group, 6 Infantry Brigade Group and all the NZASC units were in the Baalbek valley. When he arrived there were three dental sections in the area, 4 Field Ambulance at Baalbek, 6 Field Ambulance at Zabboud and the CCS at Zahle. So many British troops were reporting for treatment that the dental officers could not cope with the work. Relief was urgently needed and, as it so happened, that day 1 NZ Mobile Dental Unit was going from Damascus to Homs by the inland route on its way to join 5 Infantry Brigade Group in the Aleppo area. The OC, Major Middlemass, had come independently to Baalbek via Zahle to discuss matters with the ADMS. In consultation

with the ADDS, he decided to detach two sections from his unit to relieve the pressure.

On 18 April the ADDS travelled from Baalbek to Aleppo via Homs and Hama. At Aleppo he found the 5 Field Ambulance dental section comfortably established in a hospital building in the centre of the town. The Mobile Dental Unit arrived on 19 April and was quartered temporarily at the 'German Barracks'.

The only dental section not so far inspected was that with 1 NZ Convalescent Depot at Kfar Vitkin, which the ADDS reached on 21 April after travelling via Latakia, Tripoli and Beirut. Here was also situated the Advanced Base. There was an establishment enabling the attachment of a dental section to the Advanced Base, but in view of the fact that all men going to this base from hospital, Convalescent Depot or Maadi Camp were dentally fit, there was no reason to over-organise by filling the establishment, especially as the Convalescent Depot dental section was then not fully employed.

It has been mentioned that many men other than New Zealanders were reporting to the NZDC for treatment and, as it has already been pointed out that the success or failure of the Corps' task with the New Zealand troops was a matter of delicate balance, it became necessary to issue some directive lest the main objective suffer. Every New Zealand soldier was made dentally fit before leaving New Zealand and every soldier had to return to civilian life dentally fit. The NZDC with the 2 NZEF had the task of seeing that that standard of fitness did not deteriorate while the men were overseas. One dental officer to 1000 men was the smallest number considered capable of doing this and allowed little margin for interference with this programme. On the other hand, from an ethical point of view as well as from practical and politic motives, it was essential to provide some facilities for all troops in need of urgent treatment, irrespective of country or colour. It was merely a matter of determining how much treatment was to be given.

Naturally, pressure was brought to bear on New Zealand dental

officers by troops other than New Zealanders to do as much work on them as possible. The directive from the ADDS was therefore not only a restatement of the policy of the Corps but an authoritative instruction on which the dental officer could lean to avoid the embarrassment of refusal. It was a commonsense document and can be briefly summarised:

1. Relieve pain, repair essential dentures and even make new ones if a man is obviously ill through lack of them. In other words, observe the usual code of ethics.
2. Complete all work for New Zealand units.
3. If time permits, do more extensive work for other units.

There was some argument that, as the British Government was supplying the stores for the NZDC in the Middle East, the Corps should undertake more treatment for British troops. The ADDS answered this effectively and to the satisfaction of the DDDS at General Headquarters:

> British troops did not arrive in the Middle East dentally fit. This fact explains the very large amount of work in arrears which NZ dental officers have observed in the mouths of British troops and in consequence of which they will have realised that the prospects of them now attaining a standard comparable with our own, even with dental officers on the basis of one to every 1,000 men, are somewhat remote.
>
> It is therefore apparent that if officers of the NZDC were to undertake extensive treatment for British troops, the total effect on those troops would be relatively small; this policy would be accompanied and offset by a rapid deterioration in the standard of dental health within the 2 NZEF. There is no room for a relaxation of present efforts.
>
> Thus, it may be said that it is not that the 2 NZEF is over-endowed with dental officers but that, in our opinion, other troops have been short supplied in the past.

It is understandable that the British troops were continually asking for treatment as they had nothing like the NZDC organisation under

field conditions. For example, in Syria the OC 1 Mobile Dental Unit reported:

> **Imperial troops have been presenting for treatment. The relief of pain and the insertion of necessary fillings have always been carried out. Denture work has, however, been refused except for repairs. The English soldier is in rather an unfortunate position in this area as no arrangements seem to have been made for his treatment. There is certainly no possibility of his receiving any work in the way of remodels or new dentures as the nearest dental centre is at Beirut, about 230 miles away.**

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[1] **Maj F. R. Brebner; Christchurch; born Dunedin, 1 Oct 1905; dental surgeon.**

[2] **Maj E. P. Pickerill, m.i.d.; Timaru; born Ravensbourne, Dunedin, 25 Jun 1912; dental surgeon.**

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 18 — THE BATTLE FOR EGYPT

CHAPTER 18
The Battle for Egypt

THE beginning of June 1942 found the NZDC spread over a wide area in the Middle East. Headquarters, the camp and depot hospitals and two general hospitals were in the Cairo area, i.e., Maadi, Helwan and Helmieh. The Division was in Syria and Palestine with the dental units just described and No. 2 Mobile Dental Unit was in the Western Desert treating non-divisional units such as the Railway Construction Companies. The strategical position, however, was changing and in the middle of June Rommel began his apparently irresistible advance on the Nile Valley.

The New Zealand Division was hurriedly moved from Syria to Matruh to help stem this advance and all units not essential in the forward area were evacuated. This meant a redistribution of dental units throughout the force. No. 1 Mobile Dental Unit and other dental sections in Syria and Palestine moved with the Division, but whereas the field ambulance dental sections remained attached, the Mobile Unit was diverted into Maadi Camp. This was an important decision. While the Division was en route from Syria to the Western Desert the ADMS and the OC 1 Mobile Dental Unit arrived in advance at Headquarters 2 NZEF. The ADMS suggested that the unit should go forward to the fortress of Mersa Matruh which, at that time, the Division was expecting to hold. Bearing in mind the misfortunes of Greece, the ADDS did not agree and asked that the unit be detached from the column and sent to Maadi. It so happened that, at the last moment, the Division did not take a stand at Mersa Matruh but went out into the desert and met Rommel at Minqar Qaim. Mersa Matruh fell into enemy hands and it is a matter for conjecture what the fate of the unit would have been had it gone forward. It would certainly have been of no use dentally and would have added to road congestion in a retreat. No. 2 Mobile Dental Section, which was stationed at Qasaba, found the roads packed with vehicles of all descriptions moving eastwards, indicative of the battle approaching the area. Without instructions or authority from anyone the OC wisely

decided to pack up and take his unit to Maadi. Before Major Young left for the field, the ADDS had emphasised that, should the situation in the field deteriorate, he might have to rely on his own observations and instincts regarding the location of his unit. It was pointed out to him that no one would think any less of him if he brought his unit away from probable capture but that, on the contrary, he would be congratulated upon his good judgment. This, in fact, is what happened. He was given no advice or information from Lines of Communication Headquarters and all evidence pointed to the fact that the unit had been completely overlooked. He sensed that the situation was critical and successfully brought his unit to Maadi. Both Mobile Dental Units were therefore established in Maadi by 24 June.

The 5th Field Ambulance dental section was fortunate in not losing its equipment. The Dental Officer, when the brigade moved into battle, decided to leave his mechanic and heavy equipment at Matruh. The mechanic 'hitch-hiked' to Maadi, having first taken the equipment to a New Zealand ordnance depot for consignment to the Medical Training Centre. Had it not been for the fact that a driver from one of the field regiments, while loading blankets from a store about to be fired, had noticed the dental equipment and, on his own initiative, brought it back, it would have been lost. This raises an interesting point for it will be remembered that after the Libyan campaign, when all the dental equipment with the field ambulances was lost, it was suggested that the dental officer should confine himself to an emergency haversack until such time as he could reasonably use his heavy equipment. The near loss in this campaign does not alter this opinion for losses of equipment of all descriptions are inevitable during hurried retreats, and the farther back the equipment is located, the more time there is for its evacuation. Even the personnel and equipment at Headquarters 2 NZEF were on twelve hours' notice to move from Egypt to Palestine at the end of June 1942 due to the rapid deterioration in the military situation. Old files, papers and correspondence were to be burnt, and it was necessary to estimate what equipment could be taken and what would have to be abandoned.

At the beginning of July, the Dental Corps was working in its most concentrated form. From servicing a long line from Matruh to Aleppo, it had been squeezed like a concertina into Maadi Camp. There were twenty-two dental officers in the camp, too many to be kept together, even having regard to the serious military situation.

The units previously being treated by 2 Mobile Dental Unit had moved to Syria and Palestine so it was possible to use that unit, but there was no place as yet in the field for 1 Mobile Unit. No. 2 Mobile Unit moved to Kfar Vitkin with reserve equipment, taking some of the stores from the 2 NZEF Store in case evacuation should become necessary. Major Dallas of the Base Depot Dental Hospital was given the opportunity to do a tour of duty with the unit, a wise decision to relieve the tedium and reward the faithful service of an officer who had worked hard for long hours in the unspectacular surroundings of the Base.

It was not long before the Division began to notice the absence of regular dental treatment. The first to ask for it was 6 Infantry Brigade, and two sections of 1 Mobile Unit were sent to it. By the time they arrived the brigade had moved forward again. Fourth Brigade was then withdrawn from the battle to Amiriya, and as this brigade was due to rest, reorganise and re-equip at Maadi, the sections returned with it and the whole Mobile Unit concentrated on its treatment. In view of the fact that it took the Mobile Unit about three weeks to make this brigade fit again, it is reasonable to ask what was happening to the other brigades in action in the Western Desert. Were they suffering serious dental casualties in the absence of the Mobile Unit? Was the request from 6 Brigade one of distress or of habit? The quarterly report of the ADDS of 1 August 1942 gives the answer:

> **A noticeable feature of recent months is the surprisingly small amount of attention 2 NZ Division required during the period of action. The number of men who had to leave their units for dental attention was negligible.**

Between 16 June 42 and 27 July 42 only 50 NZ troops in the

Field reported for treatment and the total treatment carried out by the three NZ Field Ambulances amounted to 20 extractions and 8 dressings. There was, therefore little need for NZ dental officers at all, whereas in the neighbouring Ambulances of other Forces it is reported that the Dental Officers were working full time on their dental casualties.

The above mentioned figures are abnormally low for dental casualties—particularly for New Zealanders—and it can only be assumed that the benefit of fully organised treatment is being felt throughout the Force.

Although the dental officers with the field ambulances were not overtaxed with casualties they could not be dispensed with on this account, as they were kept busy on a variety of duties. They did not keep their mechanics or heavy equipment with them except when conditions were expected to be reasonably static, and they carried out their duties from an emergency haversack. There were a certain number of jaw injuries to be attended to but, as pointed out earlier, these were much fewer in this war than in the last. The administration of anaesthetics took up an appreciable amount of time. During July 1942 Captain Gleeson of 4 Field Ambulance gave sixty general anaesthetics, quite a large proportion of the total number at the Main Dressing Station that month. His orderlies worked in the operating theatre and were sufficiently successful at this to be selected to assist with the transfusion apparatus, a credit to them personally and to the general NZDC training.

Although there was little dental work required for the Division in the field, there was a different position at the Base. This was so far the longest action in which the Division had taken part and there were more casualties coming into the General Hospitals. To implement the policy that no man should leave the General Hospital- Convalescent Depot- Reception Depot circuit unless dentally fit, it became necessary to augment the staff at both Convalescent Depot and Reception Depot. The ease with which this was done under the existing organisation was a

justification of the policy of insisting that there should be no rigidity of attachment to any dental unit. All dental forces could be employed where the need was greatest, without any formalities and merely on the instruction of the ADDS.

Once again it was noticed that the number of maxillo-facial cases was small. Out of a group of 1850 wounded New Zealand troops who passed through the Main Dressing Station there were only six cases and, of these, three were also suffering from extensive wounds elsewhere.

On 15 September 1942, 1 Mobile Unit was able to rejoin the Division at Burg el Arab on the coast and moved with it to the training area at El Ghayata, Qarat Somara and Wadi Natrun. Under great difficulty because of continual movement, an effort was made to catch up with the arrears of treatment and to prepare the force for another period in battle. Meanwhile, 2 Mobile Unit had been operating in many places: Aleppo, Ras el Ain, Rayak, Baalbek, Damascus, Azzib, Kfar Vitkin, Amiriya, in three suburbs of Alexandria city and at Tel el Kebir and Ismailia. On 14 October the unit returned to Maadi to attend to 4 NZ Armoured Brigade.

While the Division was in the training area in September-October 1942 preparing for the battle of El Alamein, 1 Mobile Unit was gaining valuable experience in rapid movement. Hitherto it had, to a large extent, been an Advanced Base Dental Hospital, and once located in an area had remained fixed for some time as in Baggush, the Canal Area and Syria. Here, however, moves were frequent and it was unusual for more than a few weeks or even a few days to be spent in the same place. It found that the Headquarters Group could pitch the hospital marquee in a morning and be working in it in the afternoon. It took two to three hours to strike the marquee, fully pack and be ready to move again. Even then, the unit found that if time was likely to be very short it was better to set up one or more sections which could be moved in an hour than to bother with the marquee.

Before going on to the battle of El Alamein and the long trek to Tunisia, the following incident is mentioned as an example of dentistry

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

CHAPTER 19 — ALAMEIN TO TUNISIA

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Alamein to Tunisia

THIS was the period during which the Eighth Army successfully attacked at Alamein and eventually completed the destruction of the Axis forces in North Africa. The advance to Tunisia was rapid and the distance travelled was almost halfway from Cairo to London. It meant a complete decentralisation of command in the dental forces. Major Middlemass, OC 1 Mobile Dental Unit, was the senior dental officer in the field with the Division and as such was adviser to the ADMS on all dental matters, being dependent on his own initiative for carrying out the dental policy. Most of the story can therefore be gleaned from his reports which, although primarily concerned with his own unit, of necessity include some of the problems and activities of other dental units.

Between 20 and 23 October 1942 the New Zealand Division moved forward from the training area to take up battle positions, but the Mobile Dental Unit remained at El Hammam, concentrating on the treatment of ASC companies in that area. After the breakthrough at Alamein early in November, it still remained at El Hammam while the Division swung round into the desert to exploit the position in the rear of the enemy. A short distance behind the Alamein line, in the Imayid area, a New Zealand Divisional Rest Station had been established and on 12 November the Mobile Unit moved up to join it. The Division eventually came to rest near Bardia, and immediately following one of the periodical visits forward by the ADDS, the Mobile Unit left El Imayid to join it, spending the night in bivouacs on the Mersa Matruh- Sidi Barrani road. The hospital was immediately set up for work.

Only one month had passed since the Division left El Hammam but there was a large number of patients who voluntarily paraded for treatment as soon as the unit arrived. Very few of these men complained of pain and most of the work was for broken dentures, displaced or broken fillings, and cavities which they either knew or suspected had

developed. They were all made dentally fit immediately or given appointments, with the result that the book for the next three days was full without any possibility of settling down to routine treatment. Besides working as a hospital, every opportunity was taken of the infrequent halts of the Division to detach sections from the unit for attachment within the Division.

Fourteen days were spent in this area until the Division moved across the desert in a flanking movement by way of El Haseiat and Marada threatening Rommel's Agheila position. It appeared that this would be an action in which there would be few, if any, static periods and that the terrain would be rough. There was little use for the Mobile Unit to accompany the Division. There would be no facilities for other than emergency treatment, which could be adequately handled by the field ambulances, and it was poor policy to take transport over rough terrain if it could arrive at its destination just as well over good roads.

The unit was therefore instructed to join No. 1 NZ Casualty Clearing Station, remaining and moving with that unit so that the Division would know exactly where it was if required. On 5 December it moved to Tobruk, where it detached a section under Captain R. Kelly [1] to remain with 21 Mechanical Equipment Company. On 7 December it moved with the advance party of the CCS via Tmimi, Derna, Benghazi and El Magrun to Agedabia, which it reached on 11 December. Another section was detached at Benghazi under Captain M. Wylie [2] to look after 19 Army Troops Company. On arrival in Agedabia a section under Captain Allan [3] was attached to the New Zealand Administration Post for the double purpose of treating some small New Zealand units and of maintaining a close liaison with the Division, which was in wireless communication with the post. In this connection it is interesting to note that communication with the Division was not necessarily made through the CCS, as was stated to be one of the reasons for the original attachment, but that the OC Mobile Unit always reported to the ADMS as soon as there seemed to be a possibility of his unit joining the Division.

The situation, 13 kilometres north of Agedabia, was in a pleasant

area in undulating greenish country, although on arrival it was raining heavily and the temperature was very cold. The unit stayed there till 22 December, having been rejoined by the sections from Tobruk and Benghazi. The Division was by this time in the Nofilia area and the Mobile Unit made the 170-mile trip to join it in one day, establishing itself on the coast near Sirte.

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[1] Capt R. J. Kelly; Putaruru; born NZ 7 May 1909; dental surgeon.

[2] Capt M. Wylie; born Oamaru, 19 Oct 1908; dental surgeon; killed in accident 17 Jun 1944.

[3] Maj T. B. Allan; Upper Hutt; born Dunedin, 31 Jul 1916; dental surgeon.

It was understood that the Division would remain here for a short period only, probably over the New Year, so Headquarters and its sections were immediately distributed throughout the Division so that all men wanting treatment would have ready access to it. The dental officers from 5 and 6 Field Ambulances joined the Headquarters group.

It is convenient to pause at Nofilia at the end of 1942 to consider Major Middlemass's remarks on general policy in his report to the ADDS of 31 December 1942:

> The General policy of the Unit is to keep rendering units dentally fit at every opportunity but, at the same time, to give priority to casualties. It had been thought that the Ambulances would have been able to deal with the bulk of the latter and that this unit could have confined its work largely to routine work. This, for various reasons, is not possible under active service conditions.
>
> In the first place, there are too many casualties for the

Ambulances to treat in the time available. The length of the period out of action usually seems to be so small that the treatment of the casualties takes up the greater part of the time of all dental officers in the Field with, as a result, fewer routine examinations. Repairs become too much for one mechanic, although these could be decreased by repairing cracked and broken dentures only and leaving the replacement of teeth until later.

Secondly, the MDS of each Ambulance is, as a rule, located in a Divisional Medical area which is often some miles away from the Brigades, the ADS only being located with the latter. The dental sections of my unit, on the other hand, are located within the Brigades with the natural result that all work goes to them rather than to a MDS some distance away. Consideration was given to having the Field Ambulance dental officer with the ADS when a Brigade was out of action but the precedent that a dental officer is always with a MDS is too well established to be lightly departed from.

A third factor ... is that it is general policy within the Division to have only one MDS open and, although there is no reason why the dental officer of the closed MDS should not work, in actual practice all dental patients that go to a MDS go to the one that is open. The one that is closed may not even be in the same area. Distribution of work between all dental officers within the Division is attempted wherever possible as is being done at present but this cannot always be carried out.

The speed of action in this chase after Rommel was finding out chinks in the armour of the organisation but, as the ADDS pointed out in a reply to this report, the answer was in Major Middlemass's own hands as adviser to the ADMS on dental matters. If he considered that the work of his unit and the efficiency of the dental treatment of the Division were being affected by not having a dental officer with the ADS, it was for him to advise the ADMS to that effect.

There were other difficulties due largely to the long line of communication and to enemy action. Water in the Nofilia area was scarce because the enemy had destroyed, temporarily at least, the greater part of the supply. The shortage was so acute that it was necessary for the first few days to use sea water for general washing purposes and for rinsing the mouths of patients. Also, no stores were received, the indent for the month of November to the Advanced Base Medical Stores having gone astray. A double indent was forwarded for December but, as the Medical Store was at Benghazi, supplies could not be expected for some days. Fortunately supplies of rubber, wax and cements were augmented from an Italian dental store.

In the early weeks of January 1943 the Division was again on the move and once again the route lay into the desert on another 'left hook'. This time the Mobile Unit moved with the Division. The greater part of the route was very rough and transport was tested to the limit. Eleven days' rations with water and petrol for 450 miles of desert made a heavy load. Before the move many of the vehicles were due for replacement or to be fitted with new engines, and these needs were even greater on arrival at Tripoli. The unit's place in the column was in the rear with the Administrative Group, Divisional Workshops and Ordnance Field Park Company. Work was actually carried out on this march. The groups would be halted and informed that they would be there for four days, so sections would immediately set up and begin treatment. Next day there would be a signal warning units to prepare to move in two hours. A number of patients were rendered dentally fit but, generally speaking, no attempt would have been made to set up sections if it had been known how short the halts were to be. It is interesting to note that, even with sections set up, the unit was always able to move on time.

Indications were that the Division would remain in the Tripoli area for some time. In view of this, it was decided that the unit would confine its work largely to those units that were due for a routine examination and treatment. The degree of activity of the dental sections was in inverse ratio to that of the Division. The resting period of the Division

was the opportunity for the Dental Corps to catch up with arrears. Most units were available for treatment, although there was some interruption owing to the men being called on to work on the wharves in Tripoli. Casualty work, with two exceptions, all went to the field ambulances, in which the dental officers were now attached to the ADS. The exceptions were the artillery units and the Royal Scots Greys, who were attached to the New Zealand Division at this time. These two units were treated by the headquarters of the Mobile Unit situated near them at Suani Ben Adem.

The Division was now a great distance from its base so it was decided to form an Advanced Base at Tripoli. An Advanced Base Dental Section was established to operate under a similar system to that of the New Zealand Base Depot and 1 Convalescent Depot Dental Hospitals to ensure that all ranks leaving the New Zealand Advanced Base for forward units were dentally fit. As the demands on the Advanced Base increased, there would be a corresponding decrease on those of the New Zealand Base Depot Dental Hospital so personnel could be withdrawn from that hospital accordingly. Major B. Dallas was sent to Tripoli with the Advanced Base personnel on 28 February 1943 to establish the section, originally consisting of one dental officer and three other ranks, including a mechanic.

It had become obvious that 1 Mobile Unit had as much as it could manage with the New Zealand Divisional Headquarters Group, 5 Brigade Group and 6 Brigade Group. No. 2 Mobile Unit had been working in Maadi on reinforcements and by 13 February had completed this work. As 4 New Zealand Armoured Brigade was due to move to the field, it was decided to make it a responsibility of 2 Mobile Unit which, in addition, could detach sections to treat non-divisional units in the field.

Even with the most careful conservative treatment there were bound to be some cases where the natural dentition deteriorated beyond the stage where the teeth could be saved. This is serious enough in civilian life, but with a force in the field is infinitely worse. Major Middlemass reported from Tripoli:

A certain number of patients requiring complete extractions are now presenting. With many of these men the retention of their teeth during three years of war has been made possible by persistent and periodic conservative treatment of the gingivae [gums] thus keeping them in a fair state of health. The almost negligible number of cases of Vincent's infection within the Division is evidence of the effectiveness of this treatment. Now, however, excessive recession of the gingivae and loosening of the teeth is becoming apparent and the stage has been reached ... where conservative treatment is no longer indicated. Old partial dentures, so often the forerunner of full denture prosthesis, are a contributing factor.

These extractions will be carried out in a Casualty Clearing Station if a hospital is not available. Here the patient will receive the necessary care and attention and any post-operative treatment that may be indicated. Dentures will be inserted as early as possible to avoid sending men out on operations without teeth.

Judging by the returns of the number of extractions carried out in the Tripoli area there cannot have been many of these cases, but it is of interest to note that even under field conditions such operations can be carried out without unduly interfering with the efficiency of the force.

Another interesting fact was noted in the same report from Tripoli:

Another practice that has been found necessary on occasions in the Field is the making of a new denture instead of remodelling an old one when the time for treatment is uncertain. Sudden movement of units has resulted in men having to move without a denture which has been in the process of being remodelled with insufficient time to complete fitting and processing. To avoid this, new dentures are now made even though remodelling would suffice, wherever there is any uncertainty regarding the period that a unit will remain stationary. The old denture is taken from

the soldier at the time of insertion of the new one.

The common sense of this is obvious. Except on the grounds of economy or the preservation of stocks in short supply, it appears that, for the comparatively few cases that come into this category, it is better to allow the patient to keep the old denture as a spare than to demolish it for the value of the teeth.

In early March the Division moved out of the Tripoli area on another 'left hook' operation. This time the Mobile Unit remained at Suani Ben Adem with left-out-of-battle (LOB) personnel whom it made dentally fit. This was a pleasant time as the unit was camped in a lush green field, broken, in parts, by a blaze of colour from wild flowers. The tents were pitched beneath olive and almond trees in the shelter of a thick green hedge. After many months of the desert this was a pleasant change. Here the ADDS paid a visit and found half the dental officers working one day and half the next. Here also we can leave it and follow the ADDS in his tour of other dental units with the Division and at the Advanced Base.

> ***War Diary ADDS, 13 March 1943:*** **Moved forward in the Mobile Dental Unit utility car. Am carrying five days' rations and sufficient benzine for 700 miles or more. In the evening found 1 NZ CCS on the Ben Gardane- Medenine road. The Division is on the move again and commenced the move from Medenine today to its next assembly position. The 5 Field Ambulance is, however, still at Medenine but moving tomorrow. Found the Ambulance in the late evening and discussed dental matters with the dental officer attached.**

The Division was on the move to an assembly position in the far south in preparation for a 'left hook' at the Mareth line and a drive directly through the Gabes gap. It was travelling incognito, hat badges, shoulder titles and identity marks on all vehicles being removed. The final stage for all vehicles was to be by night.

14 March 1943: **Drove up to Medenine in the early morning. This town which fronts the Mareth hills is within range of enemy guns. Drove back to CCS and discussed dental matters with dental officer attached. Located 6 NZ Field Ambulance while they were on the march. Moved on to Ben Gardane and in the late afternoon found 4 Field Ambulance on the Ben Gardane- Foum Tatahouine track. At 2000 hours moved out on to the Divisional axis again and drove through the night, the final hours across open desert, locating Advanced Divisional Headquarters in the final hours of darkness.**

15 March 1943: **Saw ADMS and discussed dental matters with him. Delivered dispatches to the GOC 2 NZEF and collected dispatches from him for Cairo. 6 NZ Field Ambulance arrived here at dawn and after lunch with them I began my journey back to Tripoli. On the General's suggestion I did not return by the Ben Gardane track but made a wide sweep south through the desert to avoid convoys and to travel over better tracks. Bivouacked the night on a high plateau above Dehibat. The country was fascinating with deep gorges and precipitous canyons of many colours. The native Berberine villages are troglodytic.**

Major Middlemass was deputy for the ADDS and was responsible for general co-ordination. In particular, he co-ordinated the systematic treatment of units and supplied reinforcements to dental sections in the field. Major B. Dallas was responsible for ensuring that all personnel moving to the field from the Advanced Base were dentally fit. Major Gleeson, dental officer attached to 3 General Hospital, was responsible for the control and direction of the dental aspect of maxillo-facial injuries.

It might be thought from reading the account of the ADDS's tour of the forward areas that dental sections there would do little more than cope with emergencies. It is of interest, therefore, to note part of the report of the dental officer with the CCS, Captain E. P. Pickerill, for the

month of March 1943:

Although certain sections of the CCS remained on their trucks at Ben Gardane, the dental section was set up to relieve the congestion of patients at 15 CCS nearby. These consisted in the main of non-NZ troops and kept my mechanic and myself consistently busy.

Practically all cases of non-NZ troops requiring new dentures were referred to British CCS's but it will be noticed that Corporal Madigan [1] (the mechanic) has been kept very busy with repairs, establishing a record for the month—66.

Two cases of impacted wisdom teeth were referred by British Field Ambulances and have been successfully treated. I lay claim to be the first person to have removed an impacted wisdom tooth in Medinine.

The unit moved three times in the month. Work done is as follows:

Examinations	207
Fillings	122
Extractions	107
New and Remodelled dentures	9
Repairs to dentures	66
General anaesthetics administered	53
Maxillo-Facial cases	10

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[1] Cpl A. J. S. Madigan; born NZ 17 Dec 1919; farm labourer.

This would have been a good month's work under any conditions but under field conditions was remarkable. It is all the more remarkable when it is realised that during all actions from the battle of Alamein onwards, Captain Pickerill was one of the unit's regular anaesthetists, his eight-hourly period in the theatre being arranged late in the day or

during the night so that his work at the dental chair during the hours of daylight would not be interfered with. His maxillo-facial work involved long hours of tedious work (an intermaxillary wiring would take at least two hours and there was continual supervision needed in each case). He improvised a quantity of surgical apparatus and such was his success that many of his cases needed little further treatment on arrival at hospital.

At the beginning of April, the Division had reached Gabes in Tunisia and was proposing to advance still farther. The Mobile Unit was still at Suani Ben Adem, but although it was not expected that there would be an opportunity for carrying out much treatment at Gabes, it was considered that it was too far behind and there would be too much delay in joining the Division when that opportunity arose. Major Middlemass had already moved up to Gabes to 4 Field Ambulance and had arranged with the ADMS for Captain C. Moller [1] to bring the unit up and attach it to 1 NZ CCS which, in most cases, would be within 100 miles of the Division. The unit moved on 6 April, spent the night between Zelton and Pesida and reached Gabes on 7 April. On 10 April it moved to Cekhira and again on 13 April to a point 15 kilometres north of El Djem. This was an attractive spot with an unending vista of red poppies and multi-coloured wild flowers but was also close to fighter and bomber airfields. It was some 45 miles south of the hills around Takrouna and Enfidaville, to the shelter of which the enemy had retreated.

No. 1 Mobile Dental Unit remained at El Djem with 1 CCS as there was no opportunity of carrying out treatment on the Division, then preparing for the attack on Takrouna which followed in a few days. After the battle, however, all six sections were attached to divisional units as soon as they were relieved and brought back to their 'B Echelon' areas. The Headquarters remained at El Djem but the dental position was easily handled by the sections and, except for the inconvenience of having a headquarters 45 miles away, the working capacity of the whole unit was not greatly decreased.

The method of attaching sections to units on this occasion was

somewhat different from usual. As a rule the OC Mobile Unit arranged everything with the commanding officer, second-in-command or adjutant of the unit concerned. On this occasion, however,

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[1] Maj C. E. Moller; Ashburton; born Dunedin, 30 Oct 1908; dental surgeon.

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arrangements had to be made before the units were out of the line. The brigade staff captain was consulted, all arrangements being made through him for units under his jurisdiction while Head-quarters New Zealand Artillery made similar arrangements for the artillery units. This worked smoothly and quickly. The battalions were out of the line for a few days only, during which time all urgent work could be completed. When the brigade moved forward in a semi-static and holding role, four sections moved with the battalions, two being with the B Echelon of forward units and the other two with a battalion in the reserve brigade located in the main divisional area. In this latter brigade, routine treatment was carried out. This was the first occasion on which all six sections had been detached from headquarters and was only made possible by the recent addition of a prosthetic pannier to No. 5 Section. It was a great advantage to be able to do this as it enabled the unit to work to practically full capacity in locations where the pitching of the hospital marquee was not permitted.

This was virtually the end of the campaign as no further major action was fought on this front. The work carried out by the dental sections during this last phase is interesting as it demonstrated that dental work can be carried out in B Echelon areas during static or semi-static warfare, while it certainly should be carried out whenever a unit is brought out of the forward defended localities into an area such as the main divisional area. Major Middlemass's comments on this method of operation were a remarkably accurate forecast of future conditions:

> Mobile warfare as it was known in the desert would seem now to be finished and future tactics will probably consist of attacks

interspersed with periods of static or semi-static warfare of variable lengths with forward units holding defended positions. The operation of the Mobile Dental Unit from the time of the Battle of Takrouna to the end of the North African Campaign, i.e., keeping the headquarters group some distance in the rear and sending sections forward to treat units when they are in a passive role, is probably a prelude to the method of working the unit in future operations.

As will be seen later, this was precisely what happened when the Division joined the Eighth Army in Italy.

Major Middlemass's experiences with the Mobile Dental Unit established that unit as a functional entity with the force and laid a firm foundation for future dental organisation. His summary of lessons learned in that campaign is therefore valuable, although based on only one type of warfare:

1. **The unit should move and remain with the Division provided the tactical position permits. Its place should be with the Administrative Group. *Note.* It can move under any conditions but there is no object in taking transport over rough terrain if it can be taken over good roads after the Division has gained its objective.**
2. **In static or semi-static positions it is best situated with the Main Dressing Station, depending on the tactical situation. If this is not possible, a section or sections can be sent to the MDS.**
3. **Daily contact should be maintained with Divisional Headquarters, circumstances permitting. *Note.* A complete section attached to the open MDS served the dual purpose of providing an extra dental officer to carry out routine duties while his colleague was working in the theatre and of making available an officer to carry out liaison duties between ADMS and OC Mobile Dental Unit.**
4. **During an advance such as this the placing of the unit under Corps administration for movement is not good practice. Corps will not necessarily move it when the Division wants it. *Note.* After the advance from Nofilia to Tripoli, Corps would give no consideration to moving the NZ CCS forward to the Division and it is probable that if the Mobile Dental Unit had not moved by the desert route with the Division it would have remained some time in Nofilia also.**

The foregoing account, dealing of necessity with the organisation of dental treatment for the whole force, gives a broad picture of the campaign as it affected the NZDC. It is incomplete, however, without a closer examination of the conditions under which the work was carried out and the difficulties confronting the individuals who made up the dental team. The dental sections closest to the actual conditions of active warfare were those attached to the field ambulances. Captain N. E. Wickham, NZDC, [1] who was attached to 4 Field Ambulance in this campaign, has written an account of some of his experiences, excerpts from which will give an idea of life in a dental section in North Africa under war conditions:

> The change from the defensive to the offensive at Alamein had its effect on the Dental Officer, for from the commencement of the highly organised advance across North Africa it became obvious that all his energies must be concentrated on dentistry. Especially was this the case for the Field

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[1] Maj N. E. Wickham, m.i.d.; Auckland; born Stratford, 14 May 1917; dental surgeon; CO (Lt-Col) 1 Mobile Dental Unit, RNZDC, 1956–.

> Ambulance Dental Officers as, with rapid advances across the desert, they were often the only ones with the Division. The precedent created in previous campaigns, and in such publications as the ‘ Army Medical Manual’, of using the dental officer in the Field Ambulance for extraneous duties such as Messing Officer or Liaison Officer had to be broken. Except for specialised duties for which his training fitted him, such as administration of anaesthetics or first aid, he must be left free to concentrate on his own work.
>
> There was always dentistry to be done and in the desert the only respite was during the relatively long moves which, though not restful, provided a welcome change from dental routine. Most

of the dental work was of an urgent nature, such as relief of pain, treatment of gingival infections, urgent fillings, replacement of lost or unserviceable fillings, the repair of broken dentures and the replacement of unserviceable and lost ones. There were hospital facilities for multiple or impacted extractions and for post-operative treatment and observation. There was a well equipped operating theatre with anaesthetist and staff and a well-stocked dispensary. Apart from the work for NZ troops there is always a big demand from others. Even civilians made demands on the dental officers. These were treated only for the relief of pain but, especially in Italy, clamoured for other treatment. Here the formula 'Signor Churchill non permisse' was sufficient deterrent although one more astute individual suggested that Mr Churchill need not know about it.

Early adequate treatment of maxillo-facial injuries was very important and the Dental Officer with the Field Ambulance was usually the first to see these cases as he would probably be at the MDS. In the highly mobile warfare of the desert it was usually many days before these casualties reached the Maxillo-Facial Unit so treatment had to be as thorough as possible.

The ability of the dental officer to administer anaesthetics was more frequently used in North Africa than previously. The battle casualties arrived at the MDS in large numbers and, since the CCS was further back, more extensive surgery had to be carried out then and there. Most of the operations were short ones and pentothal was usually the anaesthetic of choice. After administration of the required dosage the anaesthetist could assist the surgeon and save time by attending to some of the minor wounds. Often in the desert after working for days in a hot sticky canvas theatre with only a few hours' spell, one was faced with a large amount of accumulated dental work. At other times, the dental tent being pitched near the theatre, it was a question of dentistry by day and anaesthetics by night.

An infrequent but important duty was the dental examination of unidentified bodies. Dental evidence has at times proved invaluable in the establishment of identity of such bodies.

Captain Wickham found faults in the transport and accommodation provided for the dental section with his field ambulance. Unlike the Mobile Dental Unit and the other field ambulance, his dental section had no transport of its own but had to share a 3-ton vehicle. This was unsatisfactory for the truck became loaded with all manner of gear and personnel, making it difficult to locate, unload and sort out the dental equipment when it was needed. Together with the erection of the tent, this was a formidable task for three men, and the mobility and general efficiency of the section were reduced. This method of transport had become hallowed by custom and nothing could be done to alter it during the North African campaign. The problem was tackled on the return to Maadi, when the front third of the truck was partitioned off for non-dental goods and the rest fitted out as a surgery. Accommodation for the mechanic was provided by a penthouse of heavy canvas and steel pipes built on to the side of the truck so that in transit it folded on to the top of the canopy.

Individual ingenuity, added to an excellent relationship with the workshops in the Division, produced refinements in the standard equipment, increased efficiency and provided extra comfort beyond the bleak though adequate necessities of dental practice in the desert. For example, the lack of a saliva ejector was keenly felt and led to awkward moments during operative and surgical procedures. An efficient substitute was improvised by reversing the plunger and valve of a motor-tyre foot pump and connecting it to a reservoir and ejector tube. The mechanic's hand lathe, requiring two to operate, was converted into a foot-treadle lathe which could be operated alone. Equipment was made in the workshops to enable gold inlays to be made, possibly a luxury for field dentistry but nevertheless an additional service should time and circumstances permit. Even the greatest ingenuity, however, could not completely disguise the discomforts and defects of operating under

active war conditions. Captain Wickham's description gives some idea of the general conditions:

> **The experiences of a non-combatant such as a dental officer are routine and, for the most part, unexciting. Some of these however may prove of interest and provide a rough picture of every day life in the field. The more exciting ones when under attention of the enemy by shell fire or bombing and strafing from the air are infrequent though vivid enough to leave a deep impression.**
>
> **The desert'. Associations and memories conjured up by these two words are deeply engraved and will far outlast those related to life in Italy. Physically it is just an ever-extending expanse of brown, barren terrain, mostly flat, hard-surfaced and covered with stunted shrub growth but, in places, soft and sandy and in others, rocky and ragged. In places it rises to hills and mountains and in others gives way to precipitous escarpments and deep wadis. Spiritually it holds a fascination and possesses a character that draws and holds one insidiously. Its length and breadth, its utter silence and its complete disregard for man convey a sense of the everlasting. Except when molested by man's war machines, it lies as it has for centuries, pure, unspoiled and quiet, changed only by nature whose winds obliterate scars and conceal the past. Here, away from the civilization of cities, one was thrown into close contact with men for long periods under all sorts of conditions. Tempers were tested but one developed a peculiar sense of humour and achieved a spirit of camaraderie which will long be remembered.**
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> **Since for the most part, one was continuously moving across the desert, life revolved about the truck and its crew. It may have been one of the small 15 cwt. class though, more probably, it was a sturdily-built, all-steel, 4-wheel-drive three-tonner, the type to which Field Marshal Montgomery attributed very largely the success of the Eighth Army. One of many motor vehicles scattered over the surface of the desert as far as the eye could see. When the**

Division moved in convoy in long lines up to 10 abreast with 100 yards between vehicles, each one left in its wake a small cloud of dust as the whole assembly moved relentlessly forward as one unit.

A typical day on the move would be something like this. An hour before dawn, the blackest and coldest time of the night, a voice using a variety of expressions announced that a new day, just another day, was about to begin. In complete blackness, no lights being allowed, one groped for clothes, rolled up one's bed-roll, threw it onto the truck and set off for the cook's vehicle for a breakfast of biscuit porridge and a soya bean sausage. One was saved the shock of the early morning wash by a scarcity of water. Shortly after first light the collection of trucks and ambulances that comprise the transport of a Field Ambulance were bumping along in dispersed desert formation.

If there is one thing more than another that a soldier considers essential, it is his mug of tea so, in addition to the midday stop for lunch of canned meat and hard biscuits, stops were also made for morning and afternoon 'brew-ups'. All day one's ears drummed to the screech of second and third gear travel for the going was too rough to permit the use of top gear except on rare occasions. All day one's body was fatigued by continual bumping as well as being generously coated with fine dust. In the late afternoon a halt would be called and the vehicles would be dispersed for the night. Having excavated a shallow slit trench incorporating a hip hole for comfort, one laid out the bed-roll and set off for the cook's truck. Here the hot meal of the day consisted of tinned meat and vegetables followed by rice and dehydrated apples.

By the time the problems of the day had been discussed the next thing was to find one's own truck again in the darkness. Wise and experienced men carefully noted its position in daylight or took a compass bearing on it from the cook's truck as, although there might be only a few hundred yards to cover, moonless nights

in the desert are really black, landmarks nil and directions meaningless.

At times during pursuit when an endeavour was being made to cut off elements of the enemy, travelling would extend well into and through the night. These night moves were carried out in the entire absence of lights, each vehicle blindly following the one in front as closely as possible. They were particularly hazardous and the miracle was that so few trucks suffered serious damage from the jolting and bumping over rough terrain.

Whenever, during the advance, the Division paused to fight a battle, a Field Ambulance in the matter of an hour, set up its tents and equipment, dealt with casualties and then remained behind to evacuate these whilst another Field Ambulance went ahead with the Division.

Working conditions ... were difficult. Ample light being essential, one was obliged to accept with it exposure to the prevailing weather conditions. In the desert this often meant working in a flapping tent with fine dust, whipped up by an angry wind, swirling into every nook and cranny, covering equipment and even the field of operation. Maintenance of equipment, especially working parts of it, was a real problem under these conditions whilst instruments dropped on the ground in soft sand or mud were difficult to retrieve. Only modified asepsis under such circumstances was possible and often, as one had begun some surgical operation, a picture of a clean, neat surgery or theatre with instruments neatly laid out and white-clad figures in attendance, flashed vividly before the mind. Yet, ... remarkably few cases developed post-operative complications. Sometimes the patient and operator were bathed in perspiration and the instruments almost too hot to handle, whilst, on other occasions the operator's hands were too cold and numb to work and the patient too cold to remain sitting in the chair.

Though disconcerting at the time, in retrospect there is humour, belonging to these times in the desert, such as when diving for one's slit trench during an air raid one found it already fully occupied by one's patients awaiting treatment.

The policy of dental treatment in the field, 'to ensure that the standard of dental fitness attained in base areas does not deteriorate unduly', was carried out. In his quarterly report of 1 May 1943 the ADDS stated:

Once again it has been difficult to maintain continuity of treatment in forward areas but this is to be expected. In fact, for planning purposes the conditions of recent months should perhaps be considered the normal. Nevertheless, despite the continual movement and action, dental units in the field have succeeded in maintaining a fairly constant return of work. Needless to say, however, there are some sections of the Division whose treatment at the moment is in arrears, but this occasions no great alarm since the Division only needs to be disengaged for a reasonable period for these arrears to be made good by the dental personnel concentrated in the Field.

There are four salient points arising from this account of the North African campaign that should be stressed:

1. **The handling of the Mobile Dental Units during such a war of uncertain movement as exemplified by the withdrawal of them from the field to avoid unnecessary hazards was correct tactics.**
2. **During a victorious advance with the odds in our favour, the place of the Mobile Dental Unit is within the Division.**
3. **On the march across North Africa, despite extreme mobility, the Mobile Dental Unit was able to play a useful and worthwhile part.**
4. **The forecast of the OC 1 Mobile Dental Unit at the end of the campaign that the mode of operation of dental services in the field in the forthcoming campaigns would be as then established was remarkably accurate.**

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 20 — A YEAR IN ISOLATION

CHAPTER 20
A Year in Isolation

IT is convenient at this stage to look back on the year 1942 as a valuable statistical year. During 1942 the 2 NZEF received no reinforcements from New Zealand so there is an opportunity of observing the effects of organised and systematic treatment on a large section of New Zealanders, of one particular age group, living on practically the same diet and under the same conditions. To all intents and purposes they were shut off from outside influences; there was no influx of men from a different environment and the composition of the group remained constant.

The dental returns, for New Zealand troops only, from 1 January to 31 December 1942 are as follows:

Number of men examined	**66,450**
Number of men requiring treatment	**38,142**
Number of men rendered dentally fit	**36,382**
Number of fillings inserted	**43,096**
Number of extractions	**4,943**
Number of artificial dentures, new or remodelled	**5,961**
Number of repairs to artificial dentures	**6,654**
Total denture cases	**12,615**

It is estimated that the average strength of the 2 NZEF during the year was approximately 30,000. On 1 January 1942 these men were virtually dentally fit, so that for the following twelve months the task was only to maintain that fitness. On the surface this would not seem to amount to much, yet it involved the large amount of treatment shown in the above returns. It meant the employment of dental officers on the basis of one to every 1000 men. It also meant that, except for periods of broken time because of military operations, every dental officer was fully occupied throughout the year and could not relax his efforts for one moment.

Of the 30,000 men of the force, 7000 is a fair estimate of those

without any natural teeth, i.e., wearing full upper and lower dentures. The incidence and development of dental caries was such, therefore, that 43,000 fillings were needed for 23,000 men, or about 1·87 fillings per man per year.

It was estimated that on 1 January 1942 there were between 20,000 and 25,000 artificial dentures being worn in the force, every man in need of a denture being in possession of one. Yet, in order to maintain a state of dental fitness it was necessary to repair, remodel or replace 12,000 of these during the year. Apart from anything else, this was a huge task and emphasises that every effort should be made, in New Zealand, in the community as a whole and in any armed force, to retain the natural teeth and keep the supply of artificial dentures to a minimum.

The small number of teeth extracted as compared with the number of fillings inserted, viz., 11 in every 100, can be regarded as a tribute to the quantity and quality of conservative treatment the men had had and were having at the hands of the NZDC.

As far as the figures show, the whole force was examined twice during the year and, with the exception of 1700 (who were under treatment at the end of the period), all were made dentally fit. There were probably some who missed examination altogether, some who were examined and treated only once and others who were examined and treated three or four times. Unless the number of men examined is about three times the number of men in the force, it is unlikely that every man would be accounted for. In any case, it is a question whether this ideal is worthy of attainment as there is a limit to the amount of time which should be given to parading at dental units. The main thing is that at 1 January 1943 the force was dentally fit to a degree not previously known among New Zealanders and, above all, was dentally fit for war purposes, which was what mattered most.

One very significant fact comes from a study of this year's activities and that is that organised and systematic treatment of a group does

make an impression on the volume of maintenance work to be expected in the future. The denture problem is probably reasonably static in the New Zealand Armed Forces, but the incidence of caries can be and was reduced during 1942. This is shown by the following figures:

PERCENTAGE OF THOSE EXAMINED IN NEED OF TREATMENT

1st Quarter	*2nd Quarter*	*3rd Quarter*	*4th Quarter*
Per cent	Per cent	Per cent	Per cent
60	58	55	45

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 21 — WINDING UP THE AFRICAN CAMPAIGN

CHAPTER 21
Winding up the African Campaign

The Withdrawal of the Division and Scheme RUAPEHU

DURING the early weeks of May 1943, treatment of the Division fully occupied the dental officers attached to the field ambulances and 1 Mobile Unit which, at this time, was located at Sidi Bou Ali with the open MDS, 12 miles south of Enfidaville. On 16 May, all enemy resistance having ceased, the Division began the march back to Egypt which was expected to take about three weeks. The field ambulances and the Mobile Dental Unit went with it, also the section at the Advanced Base when that was disbanded. No. 1 NZ Convalescent Depot and 3 NZ General Hospital, however, remained at Suani Ben Adem in case of operations against enemy-occupied Mediterranean islands and the European mainland. No. 1 NZ CCS began the move back to Egypt but, before arriving in Tripoli, it was decided to keep it in Tripolitania in an operational role at Suani Ben Adem. Later, this dental section worked hard on 1 British Armoured Division, the extent of this work bringing a letter of thanks and appreciation from the DDMS of the Tripolitania district.

Other things, too, were happening at this time which considerably affected the Dental Corps. The first was that, at the express wish of Headquarters 2 NZEF, Lieutenant-Colonel Fuller joined the Hospital Ship *Oranje* as ship's dental officer for a three weeks' tour to Durban and back. It was felt that three and a half years of administrative duties had earned him a change of air and a rest. Captain A. Dickens, NZDC, [1] the *Oranje's* dental officer, came ashore in the meantime. Major Middlemass was appointed to take over the duties of ADDS as well as his command of 1 Mobile Unit but, until he could be flown from Tripoli, Major G. McCallum, OC 1 NZ Camp Dental Hospital, acted for him.

The second was Scheme RUAPEHU. The New Zealand Government decided that a large number of long-service personnel should be returned

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It had always been the practice to make all men returning to New Zealand dentally fit. In this case, the large number in the draft (about 6000) and the short time between the publication of the names and the date of departure made it impossible even to attempt it.

The return of the Division to the Delta and the decision to quarter it in Maadi Camp, with its greater convenience and comfortable hut accommodation, made it necessary to move most of the New Zealand Base units to another camp. Mena Camp, a tented camp in the vicinity of the Pyramids, was selected and the Base Depot Dental Hospital moved there on 24 May with the Reception Depot, setting up in three tents. No. 2 Mobile Dental Unit, which had been working on 4 Armoured Brigade, also moved to Mena Camp, where 2619 of the 9th Reinforcements were expected to undergo training. No. 1 Mobile Dental Unit was to stay of

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The Hospital Ship *Oranje* returned to Suez on 13 June but it was decided that Lieutenant-Colonel Fuller, who now automatically came within the Ruapehu scheme, should travel in her to New Zealand on three months' furlough. This time he went as a ‘protected personnel’ passenger. Major Middlemass relinquished his command of 1 Mobile Dental Unit, was promoted temporary lieutenant-colonel and appointed ADDS. Major G. McCallum assumed command of 1 Mobile Dental Unit, Captain C. Moller of 1 Camp Dental Hospital and Captain K. Moss [1] of 2 Mobile Dental Unit. Captains Moller and Moss received temporary majorities.

During July, while the Division was being treated under good conditions in Maadi Camp, Captain Pickerill of the CCS in Suani Ben Adem was having a busy and trying time treating British troops from Sicily. The temperature at times was 123 degrees in the shade. At this temperature copper and silicate cements set extremely fast. Even cooling the mixing slab had little effect as both the powder and liquid were hot themselves. His mechanic had great difficulty working with wax models and it was some time before a daily supply of ice could be got from the ADDS in Tripoli. Under these conditions his section established its record month: 523 examinations, 354 fillings, 89 extractions, 16 dentures and 30 repairs.

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Preparations for the Italian Campaign and Scheme WAKATIPU

The 10th Reinforcements arrived on 18 August 1943 and treatment was started on them in much the same way as for the 9th. This time the men were due to be posted to their units about the beginning of September, making it impossible to complete all treatment in the training area. No. 1 Mobile Unit concentrated on those posted to the Division and the Camp Dental Hospital on those posted to base units, but this was a more cumbersome and less satisfactory method than that of having all the men grouped together. It was, however, unavoidable as the Division was due to move to Burg el Arab in the Western Desert by the middle of September for brigade and divisional exercises. Welcome reinforcements for the Dental Corps arrived with the 10th Reinforcements, viz., three officers, eight mechanics and twelve orderlies.

At the same time Scheme WAKATIPU, under which the balance of the First, Second and Third Echelons were to return to New Zealand, was launched. These men were not expected to leave until the end of

November, when those of the Ruapehu scheme who were coming back to the Middle East would have arrived. A concentrated effort was made to have all these men dentally fit before embarkation. Although there was inevitably some disorganisation from these schemes, the dental services fared better than most because the ADDS had always insisted that every key position should be understudied. In addition to this there was the policy of using the hospital ships as a means of exchanging dental officers each voyage when required.

Two interesting discussions took place during August on the functions of field ambulance dental sections and mobile dental units.

The first was between Lieutenant-Colonel Middlemass and Major-General Austin, DDS of the War Office, London, who was making a tour of duty in the Middle East. The war diary account of this discussion is as follows:

> ***12 August 1943*: He [Major-General Austin] considers that having a dental officer permanently attached to the MDS of Field Ambulances results in a considerable waste of the dental officer's time. Instead of carrying out dental duties, very often he is asked by his commanding officer to do other regimental duties. Apart from this, when the Ambulance is not in action and resting, very frequently no patients are available in the same area. This is all perfectly true.**
>
> **In view of these facts Major-General Austin is of the opinion that the organisation should be such that the dental sections attached to a Field Ambulance can be detached and placed in an area where it will do the greatest good, e.g., at the ADS or even with a line unit which may be resting. The location of dental officers would be controlled by an ADDS at Corps or Army Headquarters. These views coincide with my own to a large extent at the moment. Certainly something will be done to make greater use of ambulance dental officers and bring them more under control of a Senior Dental Officer in the Field. OC 1 Mobile Dental**

Unit can perform the functions of a DADDS.

***24–25 August 1943*: In further discussions with Major-General Austin about dental officers in the field he said he thought one solution might be to have Mobile Dental Sections only in the field and no attached dental officers to the Ambulances. ADDS Corps or Army would decide where these sections were to go. When it was considered necessary to have a dental officer attached to an Ambulance, e.g., when it went into action, a Mobile Dental Section would be attached. As far as 2 NZEF is concerned the administration of NZDC in the Field could be improved by two means, each of which would give the same end result—unity of all NZDC personnel under one senior dental officer instead of the present organisation where 8 officers in the 1 NZ Mobile Dental Unit are under command of the Unit CO but who has no authority over the dental officers attached to the Field Ambulances.**

The administrative position could be consolidated by increasing the establishment of a Mobile Dental Unit by three sections to include the dental sections attached to the Ambulances, which would thus become part of the Mobile Dental Unit.

The other solution is to make the Mobile Dental Unit a Divisional one with a DADDS at Divisional Headquarters. The first alternative would probably be the one of choice.

Major-General Austin's views were naturally based on his knowledge of the British organisation wherein the dental officer attached to the field ambulance was less concerned with continuous dental work under all conditions than his counterpart in the New Zealand Forces. It must be remembered that during action, especially during such a long and vigorous operation as the pursuit of Rommel across North Africa, the dental officer with the New Zealand Field Ambulance worked almost beyond the limits of human endurance. He was dental casualty officer for a brigade, maxillo-facial expert, anaesthetist, first-aid assistant,

sometimes liaison officer and often fairy godfather to troops less fortunately situated than his own. The brief respites from this were when the Mobile Dental Unit caught up with the Division. It is reasonable to grant him at least a reduction of tempo at these times. He was still responsible for casualties from his brigade, but the systematic and more extensive treatment belonged to the Mobile Unit. As a member of the field ambulance he was part of his brigade and belonged exclusively to it. He was always there when he was wanted, he absorbed something of the tradition of the brigade in general and of his field ambulance in particular, he shared their triumphs and vicissitudes and was accepted as one of a team. To make him just one of many Mobile Unit dental officers would be to sacrifice a degree of individuality impossible to recapture. His duties were not the same as those of the officers with the Mobile Unit and to that extent he became something of a specialist in his own branch. General Austin's proposals, therefore, while possibly applicable to the British organisation, did not apply to the New Zealand field force. Lieutenant-Colonel Middlemass's concurrence with them was based on his experiences as OC Mobile Dental Unit in the field. Later, as the result of further observation and, after full discussion with Lieutenant-Colonel Fuller on his return, he fully supported the blueprint laid down originally. At the time, however, the recent North African campaign, a victorious advance against decreasing enemy resistance, dominated the position and hid the broader concept designed to cover all types of warfare. This is exemplified in the second discussion which took place between Lieutenant-Colonel Middlemass and the ADMS regarding the use of the Mobile Unit. They were in full agreement on four fundamental points, which are important enough to merit separate analysis as similar situations could easily arise in future warfare.

ITALY

1. **The Mobile Dental Unit should move with the Division in the Administrative Group. The Unit should either be completely within the Division or completely away from it. In the event of a sea-borne invasion the Unit would be among the last to be moved, probably with the Divisional Workshops.**

This conclusion was satisfactory for the type of warfare envisaged but was a dangerous precedent to establish too firmly. The infinite variety of circumstances met in warfare must dictate the policy at the time. When under the command of the Division in the field, all movements and attachments of the Unit were made by the OC in consultation with the ADMS, and as these two were, or should be, in constant communication, it was unnecessary and unwise to prejudge the position.

2. **There are occasions when a section from the Mobile Dental Unit could be attached to the open MDS even when the latter is operating in very forward areas. Very often the dental officer attached to the Ambulance may spend a large amount of time in the theatre and is then unable to carry out work on dental casualties. The section from the Mobile Unit would be able to do this work while the Ambulance dental officer would carry out the necessary wiring, etc., for maxillo-facial wounds. Further, the number of dental casualties that present at an MDS is often more than one dental officer can cope with.**

This, of course, was based on experiences in the recent campaign, probably at Takrouna. That type of static warfare was unusual and casualties were pouring into the MDS. In normal static warfare, except

during intense 'set' battles, there are seldom enough casualties even to keep the medical personnel fully employed, so the dental officer would not be needed in the theatre. Also, when the Division is in action and casualties are numerous, routine dental treatment is a secondary consideration. The position was unlikely to arise and, in fact, did not do so in the static warfare in Italy.

3. There are times when a section from the Mobile Dental Unit may conveniently be placed with the ADS, e.g., in static warfare where the Division is holding a front, a dental section located at the ADS makes the evacuation of dental casualties back to the MDS unnecessary. The Field Ambulance dental officer must remain with the MDS in order to be available to assist in the treatment of any maxillo-facial wounds. Where, however, an MDS is closed and two or three ADSs are evacuating to one MDS, then the dental officers at the closed MDSs may move up and carry out dental treatment at their respective ADSs.

This was an academic point and proved to be neither necessary nor practicable. In static warfare, such as occurred in Italy, the Division was concentrated in a small area of little depth. The ADSs were well forward in areas where no Mobile Dental Unit should go and, as the distance from the ADS to the MDS was short, there was no need for the Field Ambulance Dental Officer to go there either.

4. Dental personnel at Ambulance dental sections come into the administrative control of the OC 1 Mobile Dental Unit as regards policy.

This has already been discussed but was sufficiently out of line with the policy set out by Lieutenant-Colonel Fuller to become the subject of a special directive added later to his book of instructions for dental officers:

> **Where a Mobile Dental Unit is attached to a NZ Division in the Field, the officer commanding the Unit has no authority or power of command over the dental officers attached to the NZ Field Ambulances, but, nevertheless, it will be his task to co-ordinate on behalf of ADDS 2 NZEF, and in his absence, the local arrangements as regards dental treatment within the Division.**

There were even occasions when the Field Ambulance dental officer, holding different opinions from those of the OC Mobile Dental Unit, was empowered and encouraged to forward his views to a higher authority by different channels. An example of this was the procedure to be adopted when an outbreak of Vincent's infection was suspected. Paragraph 19, sub-paragraph (*b*) of 'Notes and Instructions' reads:

> **(*b*) (1) When an outbreak of Vincent's infection in an area is suspected by a dental officer he will furnish a report immediately to ADDS 2 NZEF detailing the reasons for his apprehension and the steps being taken to prevent further spreading of infection.**
>
> **(2) If the outbreak is suspected by an Officer of a NZ Mobile Dental Unit attached to a NZ Division, or by OC the Unit, the report will be furnished to ADDS 2 NZEF by OC the Mobile Dental Unit. The report will also be forwarded to ADMS the Division and will embody recommendations to him for a local administrative medical instruction on the subject.**
>
> **(3) If the outbreak is suspected by a dental officer attached to a NZ Field Ambulance or NZ Mobile CCS he should immediately raise the matter with OC the NZ Mobile Dental Unit attached to the Division. The latter may then decide to carry out the procedure outlined in sub-para (*b*) (2) above. If, after raising the matter with OC the Mobile Dental Unit, the dental officer feels he should take action independently he should furnish the report described in sub-para (*b*) (2) above, with the following modifications, viz., the copy for ADMS should be made out to OC the NZ Field Ambulance or NZ Mobile CCS for onward transmission by him and a third copy should be forwarded to OC the Mobile Dental Unit for information.**

Before leaving the subject of the discussion between the ADDS and ADMS, there are two other matters on which comment should be made. The first was that the Mobile Dental Unit was to display the Red Cross on all vehicles and tentage when next it went into the field. Presumably this decision was taken after due consideration of the legal aspect as no mention can be found in the Geneva Convention of dental units being protected units. [1] The Mobile Dental Unit, being entirely separate from any medical unit, was in a different position from such dental sections

as those in the Field Ambulance or CCS. The second was the mention of a DADDS within the Division. This had been considered before and was to come up for discussion again on more than one occasion. The result was always the same: that the service was not big enough to justify an appointment which could not fully occupy the time of a senior officer and that the administration could as easily be done by the Officer Commanding the senior Mobile Dental Unit with the Division.

The Division moved to Burg el Arab in mid-September 1943, 1 Mobile Unit moving with the field ambulance units on the 18th. Italy had capitulated and it was freely rumoured that the Division would shortly be moving to that country. In this case it was arranged that the Mobile Unit should move with the Advanced 2 Echelon, which would be either the last unit in the Division or in the following flight. Work continued on the Division at Burg el Arab until 12 October, when the dental personnel, less equipment and vehicular party, assembled in the Ikingi Maryut staging area in preparation for embarkation at Alexandria. Part of the Division, including 6 Field Ambulance and the dental officer of 5 Field Ambulance, had already left for Italy in the advance party. In the main body which left Alexandria on 17 October, the dental officers were divided among the transports for emergency treatment. They carried emergency haversacks and, after a quiet and uneventful voyage, arrived at Taranto on 22 October. On the outskirts of this town they settled into the transit area to await the arrival of their equipment. A section also moved to Italy with 1 NZ CCS.

Apart from the field units, New Zealand Advanced Base was reformed as a unit of the 2 NZEF and, with 1 Convalescent Depot and 3 General Hospital, moved to Italy. The three dental sections of these units formed the hospital circuit of the dental organisation in Italy.

Meanwhile, Maadi Camp had filled up again with training depots and base and base units and the dental units resumed their normal functions, with the exception of a detachment from 1 Convalescent Depot which had been sent to El Arish in Sinai on special duty. Opportunity was taken to interchange some of the personnel of the base

dental units with those who had been in the field for some time.

These arrangements did not have to last long as, late in November, the decision was made to transfer Headquarters 2 NZEF from Egypt to Italy. The move was expected to take place in January 1944, leaving some seven or eight weeks to plan the new organisation. Actually, apart from reallocating certain responsibilities with various units and the packing of equipment, the organisation was so adaptable that it merely became a matter of redistributing units. Those dental sections attached to medical units remained attached, with the exception of the maxillo-facial specialists who were to transfer from 1 General Hospital, which was staying in Egypt, to another general hospital in Italy. The office of the ADDS and the Store would move with Headquarters 2 NZEF. No. 2 Mobile Dental Unit would move as a unit to the Advanced Base, where it would probably lose its mobility and become a Camp Dental Hospital, from which it was originally formed. The Base Dental Hospital, of which part was already in Italy, would disband and re-form in Italy if required. The Convalescent Depot dental section was already in Italy, except for the detachment in El Arish which would join it on completion of its tour of duty. No. 1 CCS had moved with the Advanced Base. No. 1 Mobile Dental Unit, the field ambulances and 3 General Hospital were in Italy and 2 General Hospital was soon to move there also. This left 1 General Hospital and 1 Camp Dental Hospital as the only medical and dental units unaccounted for.

Training depots and parts of certain services were to remain at Maadi, so part of Headquarters 2 NZEF had to remain too. The only large medical units remaining in Egypt were 1 General Hospital, 1 Camp Hospital and 2 Rest Home. No. 2 NZ Rest Home, situated at Alexandria, was expected to have so little dental work that it would be unnecessary to attach a dental section to it. No. 1 General Hospital was to have two dental officers and 1 Camp Dental Hospital was to remain intact with six dental officers or, at times, more.

It was hoped that all patients in 1 General Hospital would be made

dentally fit before leaving the hospital, so as to relieve 1 Camp Dental Hospital of the work normally done by NZ Base Depot Dental Hospital, which would be in Italy. All dental work in Maadi would therefore be done by 1 Camp Dental Hospital, instead of by two or three units as in the past. The work was grouped under three headings:

1. *Reinforcements*. All reinforcements from New Zealand were to go to Maadi, where it was expected they would remain for from four to six weeks, during which time they had to be examined and made dentally fit before moving on to Italy.
2. *Repatriated Personnel*. Besides acting as a reinforcement camp, Maadi was to be a 'clearing house' for those returning to New Zealand. All members of the 2 NZEF returning to New Zealand, either for medical or other reasons, had to be made dentally fit and charted on Form NZ361 in Maadi, with the exception of patients in general hospitals who would be treated and charted by the dental officers attached to those units. Those in Italy posted for return to New Zealand had to pass through the Reception Depot at the Advanced Base before embarking for Egypt and would be treated there, but would not be charted on Form 361. The charting had to be done by 1 Camp Dental Hospital, thus constituting a final check on their condition.
3. *Routine treatment of the staff of Maadi Camp*. These were to be examined and treated once in every six months, the work being carried out between the arrival of reinforcements.

As the New Zealand Store was moving to Italy, the units remaining in Egypt were to make their own indents on British sources for dental supplies and on the New Zealand Ordnance Depot in Maadi for everything else.

A number of protected personnel were repatriated at this time from Germany while, with the Allies' advance into Italy, other small groups of men escaped from prisoner-of-war camps to make their way through the lines to safety. All who arrived at Maadi Camp were made dentally fit before embarkation for New Zealand. Considering the abnormal conditions under which they had been living and the poor diet, their dental condition was comparatively good. A number of acrylic dentures had been made and some conservative work carried out in the stalags. With the protected personnel repatriated from Germany were three

dental mechanics, six orderlies and ten ASC drivers of the Mobile Dental Section captured in Greece.

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[1] **See**

Chapter 5, p. 58.

Another Milestone

The end of 1943 marked the close of a definite period in the history of the Dental Corps in the 2 NZEF and it is right that we should look back along the road for a brief moment before leaving the Middle East for the Central Mediterranean. The first year, 1940, was characterised by lack of equipment and personnel so that extensive and organised treatment was impossible. During the second year 25 per cent of the Corps and a large amount of equipment were lost in the Greece and Libyan campaigns, so that again the full amount of treatment could not be done. The third year, 1942, the year of isolation already described, was a year of intense effort and marked the beginning of achievement, but it was not until the end of the fourth year that there was proof beyond all doubt that definite headway had been made in the establishment of a higher standard of dental health in the force. It was noticed by all dental officers that not only were there fewer fillings to be done but, in most cases, only simple operative procedures were necessary.

The following table gives a comparison of the work carried out in the four years:

	1940	1941	1942	1943
Number examined	14,347	66,379	68,355	74,674
Number requiring treatment	10,170	36,083	38,211	39,462
Number rendered dentally fit	— *	28,785	35,962	37,635
Number of fillings	6,657	33,468	42,835	41,699
Number of extractions	— *	5,401	8,558	6,020
New or remodelled dentures	1,297	5,694	5,914	5,294
Repairs to dentures	1,308	5,222	6,584	6,830
Total denture cases	2,605	10,916	12,948	12,124
Maxillo-facial cases admitted and treated	12	36	62	55

The full officer strength of the Corps was not reached until January

1942 but was steady from that date onwards. 1942 and 1943 therefore provide the most interesting comparison and, for that purpose, it must be stated that the figures given above do not include work done for other than New Zealand troops.

It will be noted that, in spite of the fact that 6319 more examinations were carried out in 1943 than in 1942, only 1251 more required treatment, indicating a greater number of dentally fit mouths in the force. Also, even with an extra 1251 men to treat, 1136 fewer fillings were needed to make them dentally fit. Dentures were reasonably constant in number but are no guide to a standard of dental health. It will be noted that 2538 fewer extractions were needed in 1943, showing that conservative treatment was having a beneficial effect.

On 10 September 1943 the OC 1 Mobile Dental Unit received the following memorandum:

> The GOC 2 NZEF has instructed me to express to you his appreciation of your work with the Division. He realises the large amount of work involved and the high dental standard of the Division.
>
> signed: R. D. King,
> Colonel, NZMC. [1]
>
> ADMS 2 NZ Div.

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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); physician 1 Gen Hosp 1940–41; CO 4 Fd Amb 1942–43; ADMS 2 NZ Div Jun 1943–Dec 1944; DDMS NZ Corps Feb–Mar 1944.

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* Figures not available.

THE NEW ZEALAND DENTAL SERVICES

THE WITHDRAWAL OF THE DIVISION AND SCHEME RUAPEHU

The Withdrawal of the Division and Scheme RUAPEHU

DURING the early weeks of May 1943, treatment of the Division fully occupied the dental officers attached to the field ambulances and 1 Mobile Unit which, at this time, was located at Sidi Bou Ali with the open MDS, 12 miles south of Enfidaville. On 16 May, all enemy resistance having ceased, the Division began the march back to Egypt which was expected to take about three weeks. The field ambulances and the Mobile Dental Unit went with it, also the section at the Advanced Base when that was disbanded. No. 1 NZ Convalescent Depot and 3 NZ General Hospital, however, remained at Suani Ben Adem in case of operations against enemy-occupied Mediterranean islands and the European mainland. No. 1 NZ CCS began the move back to Egypt but, before arriving in Tripoli, it was decided to keep it in Tripolitania in an operational role at Suani Ben Adem. Later, this dental section worked hard on 1 British Armoured Division, the extent of this work bringing a letter of thanks and appreciation from the DDMS of the Tripolitania district.

Other things, too, were happening at this time which considerably affected the Dental Corps. The first was that, at the express wish of Headquarters 2 NZEF, Lieutenant-Colonel Fuller joined the Hospital Ship *Oranje* as ship's dental officer for a three weeks' tour to Durban and back. It was felt that three and a half years of administrative duties had earned him a change of air and a rest. Captain A. Dickens, NZDC, [1] the *Oranje's* dental officer, came ashore in the meantime. Major Middlemass was appointed to take over the duties of ADDS as well as his command of 1 Mobile Unit but, until he could be flown from Tripoli, Major G. McCallum, OC 1 NZ Camp Dental Hospital, acted for him.

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It had always been the practice to make all men returning to New Zealand dentally fit. In this case, the large number in the draft (about 6000) and the short time between the publication of the names and the date of departure made it impossible even to attempt it.

The return of the Division to the Delta and the decision to quarter it in Maadi Camp, with its greater convenience and comfortable hut accommodation, made it necessary to move most of the New Zealand Base units to another camp. Mena Camp, a tented camp in the vicinity of the Pyramids, was selected and the Base Depot Dental Hospital moved there on 24 May with the Reception Depot, setting up in three tents. No. 2 Mobile Dental Unit, which had been working on 4 Armoured Brigade, also moved to Mena Camp, where 2619 of the 9th Reinforcements were expected to undergo training. No. 1 Mobile Dental Unit was to stay of

course with the Division in Maadi Camp; in fact it remained under the command of the Division as presenting fewer difficulties of administrative control. Quite obviously the ghost of non-cooperation so active before the Greece campaign had been successfully laid. No. 1 Camp Dental Hospital also remained at Maadi, firstly to treat 876 of the 9th Reinforcements, chiefly Armoured Corps, secondly to provide a service for those base units which did not move to Mena, and thirdly to take over the Discharge Depot duties of the Base Depot Dental Hospital and those of the Convalescent Depot, most of whom were in Tripolitania.

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THE NEW ZEALAND DENTAL SERVICES

PREPARATIONS FOR THE ITALIAN CAMPAIGN AND SCHEME WAKATIPU

Preparations for the Italian Campaign and Scheme WAKATIPU

The 10th Reinforcements arrived on 18 August 1943 and treatment was started on them in much the same way as for the 9th. This time the men were due to be posted to their units about the beginning of September, making it impossible to complete all treatment in the training area. No. 1 Mobile Unit concentrated on those posted to the Division and the Camp Dental Hospital on those posted to base units, but this was a more cumbersome and less satisfactory method than that of having all the men grouped together. It was, however, unavoidable as the Division was due to move to Burg el Arab in the Western Desert by the middle of September for brigade and divisional exercises. Welcome reinforcements for the Dental Corps arrived with the 10th Reinforcements, viz., three officers, eight mechanics and twelve orderlies.

At the same time Scheme WAKATIPU, under which the balance of the First, Second and Third Echelons were to return to New Zealand, was launched. These men were not expected to leave until the end of November, when those of the Ruapehu scheme who were coming back to the Middle East would have arrived. A concentrated effort was made to have all these men dentally fit before embarkation. Although there was inevitably some disorganisation from these schemes, the dental services fared better than most because the ADDS had always insisted that every key position should be understudied. In addition to this there was the policy of using the hospital ships as a means of exchanging dental officers each voyage when required.

Two interesting discussions took place during August on the functions of field ambulance dental sections and mobile dental units.

The first was between Lieutenant-Colonel Middlemass and Major-

General Austin, DDS of the War Office, London, who was making a tour of duty in the Middle East. The war diary account of this discussion is as follows:

> ***12 August 1943*: He [Major-General Austin] considers that having a dental officer permanently attached to the MDS of Field Ambulances results in a considerable waste of the dental officer's time. Instead of carrying out dental duties, very often he is asked by his commanding officer to do other regimental duties. Apart from this, when the Ambulance is not in action and resting, very frequently no patients are available in the same area. This is all perfectly true.**
>
> **In view of these facts Major-General Austin is of the opinion that the organisation should be such that the dental sections attached to a Field Ambulance can be detached and placed in an area where it will do the greatest good, e.g., at the ADS or even with a line unit which may be resting. The location of dental officers would be controlled by an ADDS at Corps or Army Headquarters. These views coincide with my own to a large extent at the moment. Certainly something will be done to make greater use of ambulance dental officers and bring them more under control of a Senior Dental Officer in the Field. OC 1 Mobile Dental Unit can perform the functions of a DADDS.**
>
> ***24–25 August 1943*: In further discussions with Major-General Austin about dental officers in the field he said he thought one solution might be to have Mobile Dental Sections only in the field and no attached dental officers to the Ambulances. ADDS Corps or Army would decide where these sections were to go. When it was considered necessary to have a dental officer attached to an Ambulance, e.g., when it went into action, a Mobile Dental Section would be attached. As far as 2 NZEF is concerned the administration of NZDC in the Field could be improved by two means, each of which would give the same end result—unity of all NZDC personnel under one senior dental officer instead of the**

present organisation where 8 officers in the 1 NZ Mobile Dental Unit are under command of the Unit CO but who has no authority over the dental officers attached to the Field Ambulances.

The administrative position could be consolidated by increasing the establishment of a Mobile Dental Unit by three sections to include the dental sections attached to the Ambulances, which would thus become part of the Mobile Dental Unit.

The other solution is to make the Mobile Dental Unit a Divisional one with a DADDS at Divisional Headquarters. The first alternative would probably be the one of choice.

Major-General Austin's views were naturally based on his knowledge of the British organisation wherein the dental officer attached to the field ambulance was less concerned with continuous dental work under all conditions than his counterpart in the New Zealand Forces. It must be remembered that during action, especially during such a long and vigorous operation as the pursuit of Rommel across North Africa, the dental officer with the New Zealand Field Ambulance worked almost beyond the limits of human endurance. He was dental casualty officer for a brigade, maxillo-facial expert, anaesthetist, first-aid assistant, sometimes liaison officer and often fairy godfather to troops less fortunately situated than his own. The brief respites from this were when the Mobile Dental Unit caught up with the Division. It is reasonable to grant him at least a reduction of tempo at these times. He was still responsible for casualties from his brigade, but the systematic and more extensive treatment belonged to the Mobile Unit. As a member of the field ambulance he was part of his brigade and belonged exclusively to it. He was always there when he was wanted, he absorbed something of the tradition of the brigade in general and of his field ambulance in particular, he shared their triumphs and vicissitudes and was accepted as one of a team. To make him just one of many Mobile Unit dental officers would be to sacrifice a degree of individuality

impossible to recapture. His duties were not the same as those of the officers with the Mobile Unit and to that extent he became something of a specialist in his own branch. General Austin's proposals, therefore, while possibly applicable to the British organisation, did not apply to the New Zealand field force. Lieutenant-Colonel Middlemass's concurrence with them was based on his experiences as OC Mobile Dental Unit in the field. Later, as the result of further observation and, after full discussion with Lieutenant-Colonel Fuller on his return, he fully supported the blueprint laid down originally. At the time, however, the recent North African campaign, a victorious advance against decreasing enemy resistance, dominated the position and hid the broader concept designed to cover all types of warfare. This is exemplified in the second discussion which took place between Lieutenant-Colonel Middlemass and the ADMS regarding the use of the Mobile Unit. They were in full agreement on four fundamental points, which are important enough to merit separate analysis as similar situations could easily arise in future warfare.

ITALY

1. **The Mobile Dental Unit should move with the Division in the Administrative Group. The Unit should either be completely within the Division or completely away from it. In the event of a sea-borne invasion the Unit would be among the last to be moved, probably with the Divisional Workshops.**

This conclusion was satisfactory for the type of warfare envisaged but

was a dangerous precedent to establish too firmly. The infinite variety of circumstances met in warfare must dictate the policy at the time. When under the command of the Division in the field, all movements and attachments of the Unit were made by the OC in consultation with the ADMS, and as these two were, or should be, in constant communication, it was unnecessary and unwise to prejudge the position.

2. There are occasions when a section from the Mobile Dental Unit could be attached to the open MDS even when the latter is operating in very forward areas. Very often the dental officer attached to the Ambulance may spend a large amount of time in the theatre and is then unable to carry out work on dental casualties. The section from the Mobile Unit would be able to do this work while the Ambulance dental officer would carry out the necessary wiring, etc., for maxillo-facial wounds. Further, the number of dental casualties that present at an MDS is often more than one dental officer can cope with.

This, of course, was based on experiences in the recent campaign, probably at Takrouna. That type of static warfare was unusual and casualties were pouring into the MDS. In normal static warfare, except during intense 'set' battles, there are seldom enough casualties even to keep the medical personnel fully employed, so the dental officer would not be needed in the theatre. Also, when the Division is in action and casualties are numerous, routine dental treatment is a secondary consideration. The position was unlikely to arise and, in fact, did not do so in the static warfare in Italy.

3. There are times when a section from the Mobile Dental Unit may conveniently be placed with the ADS, e.g., in static warfare where the Division is holding a front, a dental section located at the ADS makes the evacuation of dental casualties back to the MDS unnecessary. The Field Ambulance dental officer must remain with the MDS in order to be available to assist in the treatment of any maxillo-facial wounds. Where, however, an MDS is closed and two or three ADSs are evacuating to one MDS, then the dental officers at the closed MDSs may move up and carry out dental treatment at their respective ADSs.

This was an academic point and proved to be neither necessary nor practicable. In static warfare, such as occurred in Italy, the Division was concentrated in a small area of little depth. The ADSs were well forward

in areas where no Mobile Dental Unit should go and, as the distance from the ADS to the MDS was short, there was no need for the Field Ambulance Dental Officer to go there either.

4. Dental personnel at Ambulance dental sections come into the administrative control of the OC 1 Mobile Dental Unit as regards policy.

This has already been discussed but was sufficiently out of line with the policy set out by Lieutenant-Colonel Fuller to become the subject of a special directive added later to his book of instructions for dental officers:

> **Where a Mobile Dental Unit is attached to a NZ Division in the Field, the officer commanding the Unit has no authority or power of command over the dental officers attached to the NZ Field Ambulances, but, nevertheless, it will be his task to co-ordinate on behalf of ADDS 2 NZEF, and in his absence, the local arrangements as regards dental treatment within the Division.**

There were even occasions when the Field Ambulance dental officer, holding different opinions from those of the OC Mobile Dental Unit, was empowered and encouraged to forward his views to a higher authority by different channels. An example of this was the procedure to be adopted when an outbreak of Vincent's infection was suspected. Paragraph 19, sub-paragraph (*b*) of 'Notes and Instructions' reads:

> **(*b*) (1) When an outbreak of Vincent's infection in an area is suspected by a dental officer he will furnish a report immediately to ADDS 2 NZEF detailing the reasons for his apprehension and the steps being taken to prevent further spreading of infection.**
>
> **(2) If the outbreak is suspected by an Officer of a NZ Mobile Dental Unit attached to a NZ Division, or by OC the Unit, the report will be furnished to ADDS 2 NZEF by OC the Mobile Dental Unit. The report will also be forwarded to ADMS the Division and will embody recommendations to him for a local administrative medical instruction on the subject.**
>
> **(3) If the outbreak is suspected by a dental officer attached to a**

NZ Field Ambulance or NZ Mobile CCS he should immediately raise the matter with OC the NZ Mobile Dental Unit attached to the Division. The latter may then decide to carry out the procedure outlined in sub-para (*b*) (2) above. If, after raising the matter with OC the Mobile Dental Unit, the dental officer feels he should take action independently he should furnish the report described in sub-para (*b*) (2) above, with the following modifications, viz., the copy for ADMS should be made out to OC the NZ Field Ambulance or NZ Mobile CCS for onward transmission by him and a third copy should be forwarded to OC the Mobile Dental Unit for information.

Before leaving the subject of the discussion between the ADDS and ADMS, there are two other matters on which comment should be made. The first was that the Mobile Dental Unit was to display the Red Cross on all vehicles and tentage when next it went into the field. Presumably this decision was taken after due consideration of the legal aspect as no mention can be found in the Geneva Convention of dental units being protected units. [1] The Mobile Dental Unit, being entirely separate from any medical unit, was in a different position from such dental sections as those in the Field Ambulance or CCS. The second was the mention of a DADDS within the Division. This had been considered before and was to come up for discussion again on more than one occasion. The result was always the same: that the service was not big enough to justify an appointment which could not fully occupy the time of a senior officer and that the administration could as easily be done by the Officer Commanding the senior Mobile Dental Unit with the Division.

The Division moved to Burg el Arab in mid-September 1943, 1 Mobile Unit moving with the field ambulance units on the 18th. Italy had capitulated and it was freely rumoured that the Division would shortly be moving to that country. In this case it was arranged that the Mobile Unit should move with the Advanced 2 Echelon, which would be either the last unit in the Division or in the following flight. Work continued on the Division at Burg el Arab until 12 October, when the dental personnel, less equipment and vehicular party, assembled in the Ikingi Maryut staging area in preparation for embarkation at Alexandria. Part

of the Division, including 6 Field Ambulance and the dental officer of 5 Field Ambulance, had already left for Italy in the advance party. In the main body which left Alexandria on 17 October, the dental officers were divided among the transports for emergency treatment. They carried emergency haversacks and, after a quiet and uneventful voyage, arrived at Taranto on 22 October. On the outskirts of this town they settled into the transit area to await the arrival of their equipment. A section also moved to Italy with 1 NZ CCS.

Apart from the field units, New Zealand Advanced Base was reformed as a unit of the 2 NZEF and, with 1 Convalescent Depot and 3 General Hospital, moved to Italy. The three dental sections of these units formed the hospital circuit of the dental organisation in Italy.

Meanwhile, Maadi Camp had filled up again with training depots and base and base units and the dental units resumed their normal functions, with the exception of a detachment from 1 Convalescent Depot which had been sent to El Arish in Sinai on special duty. Opportunity was taken to interchange some of the personnel of the base dental units with those who had been in the field for some time.

These arrangements did not have to last long as, late in November, the decision was made to transfer Headquarters 2 NZEF from Egypt to Italy. The move was expected to take place in January 1944, leaving some seven or eight weeks to plan the new organisation. Actually, apart from reallocating certain responsibilities with various units and the packing of equipment, the organisation was so adaptable that it merely became a matter of redistributing units. Those dental sections attached to medical units remained attached, with the exception of the maxillo-facial specialists who were to transfer from 1 General Hospital, which was staying in Egypt, to another general hospital in Italy. The office of the ADDS and the Store would move with Headquarters 2 NZEF. No. 2 Mobile Dental Unit would move as a unit to the Advanced Base, where it would probably lose its mobility and become a Camp Dental Hospital, from which it was originally formed. The Base Dental Hospital, of which part was already in Italy, would disband and re-form in Italy if required.

The Convalescent Depot dental section was already in Italy, except for the detachment in El Arish which would join it on completion of its tour of duty. No. 1 CCS had moved with the Advanced Base. No. 1 Mobile Dental Unit, the field ambulances and 3 General Hospital were in Italy and 2 General Hospital was soon to move there also. This left 1 General Hospital and 1 Camp Dental Hospital as the only medical and dental units unaccounted for.

Training depots and parts of certain services were to remain at Maadi, so part of Headquarters 2 NZEF had to remain too. The only large medical units remaining in Egypt were 1 General Hospital, 1 Camp Hospital and 2 Rest Home. No. 2 NZ Rest Home, situated at Alexandria, was expected to have so little dental work that it would be unnecessary to attach a dental section to it. No. 1 General Hospital was to have two dental officers and 1 Camp Dental Hospital was to remain intact with six dental officers or, at times, more.

It was hoped that all patients in 1 General Hospital would be made dentally fit before leaving the hospital, so as to relieve 1 Camp Dental Hospital of the work normally done by NZ Base Depot Dental Hospital, which would be in Italy. All dental work in Maadi would therefore be done by 1 Camp Dental Hospital, instead of by two or three units as in the past. The work was grouped under three headings:

1. ***Reinforcements.*** **All reinforcements from New Zealand were to go to Maadi, where it was expected they would remain for from four to six weeks, during which time they had to be examined and made dentally fit before moving on to Italy.**
2. ***Repatriated Personnel.*** **Besides acting as a reinforcement camp, Maadi was to be a 'clearing house' for those returning to New Zealand. All members of the 2 NZEF returning to New Zealand, either for medical or other reasons, had to be made dentally fit and charted on Form NZ361 in Maadi, with the exception of patients in general hospitals who would be treated and charted by the dental officers attached to those units. Those in Italy posted for return to New Zealand had to pass through the Reception Depot at the Advanced Base before embarking for Egypt and would be treated there, but would not be charted on Form 361. The charting had to be done by 1**

Camp Dental Hospital, thus constituting a final check on their condition.

3. *Routine treatment of the staff of Maadi Camp.* These were to be examined and treated once in every six months, the work being carried out between the arrival of reinforcements.

As the New Zealand Store was moving to Italy, the units remaining in Egypt were to make their own indents on British sources for dental supplies and on the New Zealand Ordnance Depot in Maadi for everything else.

A number of protected personnel were repatriated at this time from Germany while, with the Allies' advance into Italy, other small groups of men escaped from prisoner-of-war camps to make their way through the lines to safety. All who arrived at Maadi Camp were made dentally fit before embarkation for New Zealand. Considering the abnormal conditions under which they had been living and the poor diet, their dental condition was comparatively good. A number of acrylic dentures had been made and some conservative work carried out in the stalags. With the protected personnel repatriated from Germany were three dental mechanics, six orderlies and ten ASC drivers of the Mobile Dental Section captured in Greece.

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[1] See

Chapter 5, p. 58.

THE NEW ZEALAND DENTAL SERVICES

ANOTHER MILESTONE

Another Milestone

The end of 1943 marked the close of a definite period in the history of the Dental Corps in the 2 NZEF and it is right that we should look back along the road for a brief moment before leaving the Middle East for the Central Mediterranean. The first year, 1940, was characterised by lack of equipment and personnel so that extensive and organised treatment was impossible. During the second year 25 per cent of the Corps and a large amount of equipment were lost in the Greece and Libyan campaigns, so that again the full amount of treatment could not be done. The third year, 1942, the year of isolation already described, was a year of intense effort and marked the beginning of achievement, but it was not until the end of the fourth year that there was proof beyond all doubt that definite headway had been made in the establishment of a higher standard of dental health in the force. It was noticed by all dental officers that not only were there fewer fillings to be done but, in most cases, only simple operative procedures were necessary.

The following table gives a comparison of the work carried out in the four years:

	1940	1941	1942	1943
Number examined	14,347	66,379	68,355	74,674
Number requiring treatment	10,170	36,083	38,211	39,462
Number rendered dentally fit	— *	28,785	35,962	37,635
Number of fillings	6,657	33,468	42,835	41,699
Number of extractions	— *	5,401	8,558	6,020
New or remodelled dentures	1,297	5,694	5,914	5,294
Repairs to dentures	1,308	5,222	6,584	6,830
Total denture cases	2,605	10,916	12,948	12,124
Maxillo-facial cases admitted and treated	12	36	62	55

The full officer strength of the Corps was not reached until January 1942 but was steady from that date onwards. 1942 and 1943 therefore provide the most interesting comparison and, for that purpose, it must be stated that the figures given above do not include work done for other than New Zealand troops.

It will be noted that, in spite of the fact that 6319 more examinations were carried out in 1943 than in 1942, only 1251 more required treatment, indicating a greater number of dentally fit mouths in the force. Also, even with an extra 1251 men to treat, 1136 fewer fillings were needed to make them dentally fit. Dentures were reasonably constant in number but are no guide to a standard of dental health. It will be noted that 2538 fewer extractions were needed in 1943, showing that conservative treatment was having a beneficial effect.

On 10 September 1943 the OC 1 Mobile Dental Unit received the following memorandum:

> **The GOC 2 NZEF has instructed me to express to you his appreciation of your work with the Division. He realises the large amount of work involved and the high dental standard of the Division.**
>
> **signed: R. D. King,**
> **Colonel, NZMC.** [1]
>
> **ADMS 2 NZ Div.**

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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); physician 1 Gen Hosp 1940–41; CO 4 Fd Amb 1942–43; ADMS 2 NZ Div Jun 1943–Dec 1944; DDMS NZ Corps Feb–Mar 1944.**

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 22 — EARLY DAYS IN ITALY

CHAPTER 22
Early Days in Italy

THE transports carrying the main part of the New Zealand Division and the field dental services arrived at Taranto on 22 October 1943. The transit area was some four miles from the docks in the Tesceda valley, Alguria, and here the dental units set up their tents and made it known that they were open for business. Only urgent work could be done as, apart from the emergency haversacks carried on the transports and one surgical pannier that 1 Mobile Dental Unit had managed to squeeze into the limited shipping space allotted to it, there was no equipment or transport. Still, by instituting a roster, one dental officer became duty officer each day and the others kept themselves fit by route marches and football.

The Mobile Unit moved forward with 5 Infantry Brigade, being the last group of New Zealand troops to leave the Taranto area. Five hundred and fifty vehicles moved in fine weather to the staging area at Altamura, where the night was spent in intense cold. The towns they passed through were poor and dingy but the countryside was glorious in the cloak of autumn, with golden or deep red vines and oaks covering the hills.

The troops were now high up in the hills and it was cold and damp, with a thick Scotch mist which took fully two hours to clear to a visibility of twenty feet. Passing through Corato, Andria, Canosa and Cerignola, the unit arrived at Foggia, which was showing signs of bombing and demolition, to find that the Division had moved on, and it was then sent to join 1 Mobile CCS at San Severo. The following day, in blinding rain, an attempt was made to find 4 Armoured Brigade at Termoli, but the brigade had moved two days previously so the unit joined in a very slow convoy towards the demolished bridge over the Trigno River, now spanned by Bailey bridges. Fortunately the German Air Force no longer held superiority as some thousand vehicles, nose to tail, took an hour and a half to move five miles. Cupello was reached

that night and the unit bivouacked as well as it could in unpleasant conditions.

Rear Divisional Headquarters was found to be at Furci. Next day Major McCallum saw the ADMS and made arrangements to attach sections to units in the Division and elsewhere. The Mobile Unit's headquarters remained with Rear Headquarters and attended to urgent treatment in that area. This was much as was predicted at Takrouna, it being expected that in this static type of warfare there would always be troops available for treatment and little prospect of sudden movement.

Replenishment of stores was difficult at this time as the source was No. 7 Advanced Medical Store, which had only limited supplies. Additional indents had to be placed with the dental store at Maadi and immediate emergencies met by inter-unit borrowing.

The Division remained in this area for nearly two months which marked a definite chapter in the saga of the Dental Corps. The Sangro River gave its name to this front, and to this day the word ' Sangro' will open the floodgates of memory among those who served there, linking them together with a bond swaged in the forge of common achievement and stamped with the hallmark of the pioneer. They had to contend with the snow, rain and mud of an Italian winter, amid widespread demolition by the retreating enemy. Sometimes they worked in buildings, but as most of these were damaged and poorly lighted by small windows, the extra protection seldom compensated for the trouble of moving the equipment in and out. Most of the work was done in tents, the dental officer standing in thick mud with rain driving in over patient, operator and equipment. Some of the experiences they recorded will give an idea of the conditions:

Major McCallum, War Diary, 1 January 1944:

> **Routine treatment was impossible this morning as most of our tentage collapsed at 0300 hours under a severe snowstorm. The area was a shambles.... Any attempt at drying out was useless.**

Drains were made and all spare personnel were housed as comfortably as possible in an E.P.I.P. [1] tent. Only the good spirits of this grand crowd of fellows made even our existence worth recording.

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[1] **European Personnel Indian Pattern.**

Captain N. E. Wickham of 4 NZ Field Ambulance:

The tented life in the field under winter conditions in Italy depresses the morale but a source of comfort to every soldier is the charcoal brazier. Charcoal is a common form of fuel in Italy and a small tin of glowing embers sheds a considerable amount of warmth in a tent or bivouac. It also gives out a certain amount of carbon monoxide but casualties from this are relatively few. The tin is energetically twirled, before dark of course, to produce a brazier full of glowing coals which will not fill the tent with smoke.

Captain P. F. Foote [2] of 6 NZ Field Ambulance:

Perhaps the most unique and picturesque setting this dental section has operated in so far in Italy was in Castlefrentano during the Xmas-New Year period, 1943/44. So as to be in a building the MDS was established in the schoolhouse, a distance of 4,000 yards from the FDLs. [1] There were no ADSs forward of Castlefrentano and as casualties in the first battle for Orsogna were heavy, the dental section was called on to do additional duties. The dental officer administered anaesthetics and the orderlies were stretcher bearers. The surgery window, without glass, looked on to the Appenines which were completely snowclad and, during daylight, a magnificent sight from the chair.

One of two things happens to a soldier who reports sick for dental reasons in the line. He is either held till the unit comes out

to rest or he is evacuated to the open MDS depending on the decision of the RMO. [2] The former are generally denture troubles or broken fillings which are not causing great inconvenience while the latter include acute troubles and Vincent's Stomatitis. In one area I was in, movement in and out of the line could only take place during darkness so the dental casualties arrived for breakfast and left after dinner at night.

From time to time a down-trodden Italian peasant would ask for dental attention usually after suffering pain for weeks that no New Zealander would put up with for days. Every dental officer who has worked in the Division in Italy will recall the familiar sight of a party of peasants cautiously approaching the tent, one of their number peeping at you through yards of woollen scarf. After 'multi parlare' chiefly by the relatives about 'multo dolore' and 'niente dormire', the tooth is located and, amid much holding of hands and performances is extracted.

It can be readily understood that the intense cold made it very difficult to operate, especially in tents. Apart from the disadvantages already mentioned of operating in buildings, there was the danger of contracting typhus fever which is common in southern Europe, and, as most of the recently occupied buildings were harbourers of lice, the carriers of the disease, the discomforts of the tent were more cheerfully accepted.

On 18 January 1944 the Division moved out of this area in the strictest secrecy to the Fifth Army front on the other coast of Italy. Seven days' reserve rations and extra petrol were carried on each vehicle, making them much overloaded but, to the credit of the ASC drivers and the Motor Transport Sergeant, all the dental vehicles arrived without having to break convoy. They passed through Ariano, Bovino, Riatella, Grottaminarda, Avellino, Monteforte, Cancello and Caserta to the Alife area some miles south of Cassino. Here the units settled down amongst olive trees and towering mountain peaks overlooking the

Volturno valley with the river winding through its tortuous course. There were heavy frosts but brilliantly fine sunny days, a bright beginning for an area the men were to know well for some time. Unfortunately it was soon found that this was but a beginning and that they had not finished with the rain, mud and cold. Sections were again attached to units and the work went on. Here they can be left while some consideration is given to the units left behind at the Advanced Base near Bari.

The Advanced Base Dental Section under Major B. Dallas, 3 General Hospital Dental Section under Major N. M. Gleeson and the Convalescent Depot Dental Section under Captain A. C. Dickens constituted the 'hospital circuit' of the organisation in Italy. Their policy was to guarantee dental fitness for every man in that circuit before allowing him to pass on to the next. It was an empiric organisation only and could not carry out this policy indefinitely with only three sections, but it was the foundation for a bigger one to be built up when Headquarters 2 NZEF moved to Italy. To this end a stone dental hospital was designed to a plan similar to that at Maadi. It was found to be impracticable, but a special hospital Nissen hut was designed instead, though not completed until March 1944.

This was the position when Headquarters 2 NZEF, including Lieutenant-Colonel Middlemass as ADDS, arrived at Taranto on 25 January 1944. Two other dental units arrived at the same time, viz., 2 Mobile Dental Unit and the Base Depot Dental Hospital. Headquarters was set up in San Spirito, a small town seven miles north of Bari on the Adriatic coast. In Bari itself was 3 General Hospital and at San Basilio, 35 miles south of this, was the Advanced Base now containing the Base Depot Dental Hospital, 2 Mobile Dental Unit and the Convalescent Depot. The ADDS's store was housed in two adjoining huts at Advanced Base as there was no room for it at San Spirito. It still distributed supplies to the dental sections, in turn being stocked from ADDS, Allied Force Headquarters, every three months, picking up the supplies at Naples. The original source of supply therefore continued to be British.

The distribution of sections throughout the force was uneconomical

but continued in this form through the month of February. With the Division, the field ambulance dental sections were dealing with casualty work and 1 Mobile Dental Unit was struggling with an increasing volume of routine examination and treatment. On the other hand, at the Base, the Base Dental Hospital was unable to work through lack of accommodation and was being used for camp fatigues, while 2 Mobile Dental Unit was providing sections to work on base personnel. The time was over-ripe for a reorganisation of the whole service to meet new conditions, but this was left to Lieutenant-Colonel Fuller, who resumed his duties as ADDS on 1 March 1944.

Before describing the reorganisation, one result of Colonel Fuller's return should be mentioned. It had originally been intended that Colonel Middlemass should be granted furlough in New Zealand on handing back the command. Circumstances had altered, however, and it meant that he had to revert to the rank of major, return to his former command of 1 Mobile Dental Unit, replacing its existing CO and, in turn, each of the others holding senior appointments in the Corps. Saturation point had been reached regarding both field rank and senior appointments and, with no furlough or exchange scheme in operation, the senior men in the middle of the gradation list were denied opportunities for advancement and promotion.

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[2] Maj P. F. Foote; born Westport, 21 Jun 1917; dental surgeon.

[1] Forward Defended Localities.

[2] Regimental Medical Officer.

Reorganisation for Close-country Warfare

The type of warfare in Italy was very different from that recently experienced by the New Zealand Division in North Africa. Instead of

rapid movement with long lines of communication, there was now concentration into a comparatively small area, with only short moves having little effect on the locations of dental units. Certain non-divisional units had been disbanded and the number of men on the Lines of Communication had been decreased. On the other hand, the Division in the field had been augmented by the addition of 4 Armoured Brigade, bringing the total strength up to between fifteen and eighteen thousand. Dental officers were still allotted to the force on the basis of one to every 1000 men. The number was according to this ratio but the distribution was at fault. With the Division there were eight dental officers with 1 Mobile Unit and one with each of the three field ambulances, a total of eleven to treat 15,000 to 18,000 men. The dental officer with the CCS could not be included as he was outside the divisional organisation. At the Base, however, apart from the General Hospitals and the Convalescent Depot, there were two dental units carrying more than was required, viz., 2 Mobile Dental Unit and the Base Depot Dental Hospital.

One solution would have been to move 2 Mobile Unit up to the Division but there were difficulties associated with this. The organisation would have been uneconomical and cumbersome and the duties of the respective commanding officers of the Mobile Units might have clashed. Colonel Fuller had a better solution:

1. Both 2 NZ Mobile Dental Unit and NZ Base Depot Dental Hospital should be disbanded as units of the 2 NZEF.
2. A new unit, 2 NZ Camp Dental Hospital, with the same establishment as 1 NZ Camp Dental Hospital should be formed from the disbanded units and located, primarily, at Ad- vanced Base 2 NZEF. This hospital would operate at first with only three officers, its duties, although similar to those of 1 NZ Camp Dental Hospital, consisting principally, for a time, of work passing through the NZ Reception Depot. From time to time, if 1 NZ Mobile Dental Unit should happen to be otherwise fully engaged, Lines of Communication units away from Advanced Base would be treated by detachments from this hospital.

3.1 NZ Mobile Dental Unit should be expanded from a unit of eight officers to one of twelve, four complete sections being transferred to

it from 2 NZ Mobile Dental Unit. This would mean that, with the three Field Ambulances, there would be fifteen dental officers available in the field, although not necessarily always employed in the field.

With this rearrangement the headquarters of one of the Mobile Dental Units would be dispensed with, and there was a corresponding saving in transport, dental and ordnance equipment, and personnel. As regards personnel, the dental service would lose positions for three staff-sergeants and three corporals, offset by an increase of two sergeants. This was of no great moment, especially as the ADDS intended to bring up the whole subject of rank in the Corps.

His recommendations were approved and took effect from 7 March 1944.

A further recommendation by the ADDS that the number of majors remain on a Corps basis, increasing in number from five to nine, was granted.

The ADDS also submitted a recommendation concerning other ranks in the Corps. The NZDC other rank had no prospect of attaining commissioned rank and, under existing regulations, could rise no higher than WO II. It was felt that the senior NCO in the office of the ADDS, who carried out the duties of Adjutant and Quartermaster to the dental service, if unable to be commissioned, should at least be a WO I. Similarly, the WO II with the newly constituted Mobile Unit now carried greatly increased responsibilities and should be similarly ranked. These were approved by Headquarters 2 NZEF.

The stores position at this time was not entirely satisfactory. All supplies came from British sources and it was not always possible to obtain as much as was required. Handpieces had become worn, allowing the bur to wobble and vibrate. For some reason new ones were difficult to procure and reconditioned ones were unsatisfactory. Those in use had seen four years' service and were due for replacement, so unless Army Medical Stores could supply new ones they must be procured elsewhere.

A cable was sent to the liaison officer at the New Zealand High Commissioner's Office in London asking him to procure seventy-two contra-angle and twelve straight handpieces, preferably from Army Stores but, failing this, from any source. Captain Pickerill was in England undergoing a course in maxillo-facial work and it was hoped that he could bring them with him on his return to Italy. This was one of many cases which made it seem that there was a lack of appreciation of the requirements of dental stores and equipment. The three-monthly supplies to replenish the NZEF store were frequently late in coming to hand and it became difficult to comply with the monthly indents from the units and sections. For example, the indent submitted on 9 March 1944 for the period April to June was not expected to arrive before June, although being intended for use during April, May and June. The last supplies had been received in December 1943. Apart from the regular supply for a service doing a large volume of work, there was the fact to be considered that it was working under conditions which placed a strain on equipment, especially that with moving parts such as handpieces. It is small wonder that equipment was wearing out. Admittedly, Medical Stores themselves had a three to four months' time-lag between ordering and receiving their supplies but, by this stage of the war, they would have had a reasonably accurate knowledge of the amounts required by each dental service. They suggested to the ADDS that he should indent every month instead of every three months as was then the custom. [1] This was an acknowledgment that they were not stocking in advance against commitments that could easily have been assessed. Their supplies came from North Africa, the United Kingdom and the Middle East. To work to so fine a margin in time of war was alarming to the NZDC, which was dependent on them for its very existence.

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[1] Memorandum from DDMS, AAI, to ADDS 2 NZEF, 29 April 1944.

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

THE transports carrying the main part of the New Zealand Division and the field dental services arrived at Taranto on 22 October 1943. The transit area was some four miles from the docks in the Tesceda valley, Alguria, and here the dental units set up their tents and made it known that they were open for business. Only urgent work could be done as, apart from the emergency haversacks carried on the transports and one surgical pannier that 1 Mobile Dental Unit had managed to squeeze into the limited shipping space allotted to it, there was no equipment or transport. Still, by instituting a roster, one dental officer became duty officer each day and the others kept themselves fit by route marches and football.

The Mobile Unit moved forward with 5 Infantry Brigade, being the last group of New Zealand troops to leave the Taranto area. Five hundred and fifty vehicles moved in fine weather to the staging area at Altamura, where the night was spent in intense cold. The towns they passed through were poor and dingy but the countryside was glorious in the cloak of autumn, with golden or deep red vines and oaks covering the hills.

The troops were now high up in the hills and it was cold and damp, with a thick Scotch mist which took fully two hours to clear to a visibility of twenty feet. Passing through Corato, Andria, Canosa and Cerignola, the unit arrived at Foggia, which was showing signs of bombing and demolition, to find that the Division had moved on, and it was then sent to join 1 Mobile CCS at San Severo. The following day, in blinding rain, an attempt was made to find 4 Armoured Brigade at Termoli, but the brigade had moved two days previously so the unit joined in a very slow convoy towards the demolished bridge over the Trigno River, now spanned by Bailey bridges. Fortunately the German Air Force no longer held superiority as some thousand vehicles, nose to

tail, took an hour and a half to move five miles. Cupello was reached that night and the unit bivouacked as well as it could in unpleasant conditions.

Rear Divisional Headquarters was found to be at Furci. Next day Major McCallum saw the ADMS and made arrangements to attach sections to units in the Division and elsewhere. The Mobile Unit's headquarters remained with Rear Headquarters and attended to urgent treatment in that area. This was much as was predicted at Takrouna, it being expected that in this static type of warfare there would always be troops available for treatment and little prospect of sudden movement.

Replenishment of stores was difficult at this time as the source was No. 7 Advanced Medical Store, which had only limited supplies. Additional indents had to be placed with the dental store at Maadi and immediate emergencies met by inter-unit borrowing.

The Division remained in this area for nearly two months which marked a definite chapter in the saga of the Dental Corps. The Sangro River gave its name to this front, and to this day the word ' Sangro' will open the floodgates of memory among those who served there, linking them together with a bond swaged in the forge of common achievement and stamped with the hallmark of the pioneer. They had to contend with the snow, rain and mud of an Italian winter, amid widespread demolition by the retreating enemy. Sometimes they worked in buildings, but as most of these were damaged and poorly lighted by small windows, the extra protection seldom compensated for the trouble of moving the equipment in and out. Most of the work was done in tents, the dental officer standing in thick mud with rain driving in over patient, operator and equipment. Some of the experiences they recorded will give an idea of the conditions:

THE NEW ZEALAND DENTAL SERVICES

MAJOR MCCALLUM, WAR DIARY, 1 JANUARY 1944:

Major McCallum, War Diary, 1 January 1944:

Routine treatment was impossible this morning as most of our tentage collapsed at 0300 hours under a severe snowstorm. The area was a shambles.... Any attempt at drying out was useless. Drains were made and all spare personnel were housed as comfortably as possible in an E.P.I.P. [1] tent. Only the good spirits of this grand crowd of fellows made even our existence worth recording.

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[1] **European Personnel Indian Pattern.**

THE NEW ZEALAND DENTAL SERVICES

CAPTAIN N. E. WICKHAM OF 4 NZ FIELD AMBULANCE:

Captain N. E. Wickham of 4 NZ Field Ambulance:

The tented life in the field under winter conditions in Italy depresses the morale but a source of comfort to every soldier is the charcoal brazier. Charcoal is a common form of fuel in Italy and a small tin of glowing embers sheds a considerable amount of warmth in a tent or bivouac. It also gives out a certain amount of carbon monoxide but casualties from this are relatively few. The tin is energetically twirled, before dark of course, to produce a brazier full of glowing coals which will not fill the tent with smoke.

THE NEW ZEALAND DENTAL SERVICES

CAPTAIN P. F. FOOTE2 OF 6 NZ FIELD AMBULANCE:

Captain P. F. Foote [2] of 6 NZ Field Ambulance:

Perhaps the most unique and picturesque setting this dental section has operated in so far in Italy was in Castlefrentano during the Xmas-New Year period, 1943/44. So as to be in a building the MDS was established in the schoolhouse, a distance of 4,000 yards from the FDLs. [1] There were no ADSs forward of Castlefrentano and as casualties in the first battle for Orsogna were heavy, the dental section was called on to do additional duties. The dental officer administered anaesthetics and the orderlies were stretcher bearers. The surgery window, without glass, looked on to the Appenines which were completely snowclad and, during daylight, a magnificent sight from the chair.

One of two things happens to a soldier who reports sick for dental reasons in the line. He is either held till the unit comes out to rest or he is evacuated to the open MDS depending on the decision of the RMO. [2] The former are generally denture troubles or broken fillings which are not causing great inconvenience while the latter include acute troubles and Vincent's Stomatitis. In one area I was in, movement in and out of the line could only take place during darkness so the dental casualties arrived for breakfast and left after dinner at night.

From time to time a down-trodden Italian peasant would ask for dental attention usually after suffering pain for weeks that no New Zealander would put up with for days. Every dental officer who has worked in the Division in Italy will recall the familiar sight of a party of peasants cautiously approaching the tent, one of their number peeping at you through yards of woollen scarf. After 'multi parlare' chiefly by the relatives about 'multo dolore' and 'niente

dormire', the tooth is located and, amid much holding of hands and performances is extracted.

It can be readily understood that the intense cold made it very difficult to operate, especially in tents. Apart from the disadvantages already mentioned of operating in buildings, there was the danger of contracting typhus fever which is common in southern Europe, and, as most of the recently occupied buildings were harbourers of lice, the carriers of the disease, the discomforts of the tent were more cheerfully accepted.

On 18 January 1944 the Division moved out of this area in the strictest secrecy to the Fifth Army front on the other coast of Italy. Seven days' reserve rations and extra petrol were carried on each vehicle, making them much overloaded but, to the credit of the ASC drivers and the Motor Transport Sergeant, all the dental vehicles arrived without having to break convoy. They passed through Ariano, Bovino, Riatella, Grottaminarda, Avellino, Monteforte, Cancello and Caserta to the Alife area some miles south of Cassino. Here the units settled down amongst olive trees and towering mountain peaks overlooking the Volturno valley with the river winding through its tortuous course. There were heavy frosts but brilliantly fine sunny days, a bright beginning for an area the men were to know well for some time. Unfortunately it was soon found that this was but a beginning and that they had not finished with the rain, mud and cold. Sections were again attached to units and the work went on. Here they can be left while some consideration is given to the units left behind at the Advanced Base near Bari.

The Advanced Base Dental Section under Major B. Dallas, 3 General Hospital Dental Section under Major N. M. Gleeson and the Convalescent Depot Dental Section under Captain A. C. Dickens constituted the 'hospital circuit' of the organisation in Italy. Their policy was to guarantee dental fitness for every man in that circuit before allowing him to pass on to the next. It was an empiric organisation only and could not carry out this policy indefinitely with only three sections, but it was the foundation for a bigger one to be built up when Headquarters

2 NZEF moved to Italy. To this end a stone dental hospital was designed to a plan similar to that at Maadi. It was found to be impracticable, but a special hospital Nissen hut was designed instead, though not completed until March 1944.

This was the position when Headquarters 2 NZEF, including Lieutenant-Colonel Middlemass as ADDS, arrived at Taranto on 25 January 1944. Two other dental units arrived at the same time, viz., 2 Mobile Dental Unit and the Base Depot Dental Hospital. Headquarters was set up in San Spirito, a small town seven miles north of Bari on the Adriatic coast. In Bari itself was 3 General Hospital and at San Basilio, 35 miles south of this, was the Advanced Base now containing the Base Depot Dental Hospital, 2 Mobile Dental Unit and the Convalescent Depot. The ADDS's store was housed in two adjoining huts at Advanced Base as there was no room for it at San Spirito. It still distributed supplies to the dental sections, in turn being stocked from ADDS, Allied Force Headquarters, every three months, picking up the supplies at Naples. The original source of supply therefore continued to be British.

The distribution of sections throughout the force was uneconomical but continued in this form through the month of February. With the Division, the field ambulance dental sections were dealing with casualty work and 1 Mobile Dental Unit was struggling with an increasing volume of routine examination and treatment. On the other hand, at the Base, the Base Dental Hospital was unable to work through lack of accommodation and was being used for camp fatigues, while 2 Mobile Dental Unit was providing sections to work on base personnel. The time was over-ripe for a reorganisation of the whole service to meet new conditions, but this was left to Lieutenant-Colonel Fuller, who resumed his duties as ADDS on 1 March 1944.

Before describing the reorganisation, one result of Colonel Fuller's return should be mentioned. It had originally been intended that Colonel Middlemass should be granted furlough in New Zealand on handing back the command. Circumstances had altered, however, and it meant that

he had to revert to the rank of major, return to his former command of 1 Mobile Dental Unit, replacing its existing CO and, in turn, each of the others holding senior appointments in the Corps. Saturation point had been reached regarding both field rank and senior appointments and, with no furlough or exchange scheme in operation, the senior men in the middle of the gradation list were denied opportunities for advancement and promotion.

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[2] Maj P. F. Foote; born Westport, 21 Jun 1917; dental surgeon.

[1] Forward Defended Localities.

[2] Regimental Medical Officer.

THE NEW ZEALAND DENTAL SERVICES

REORGANISATION FOR CLOSE-COUNTRY WARFARE

Reorganisation for Close-country Warfare

The type of warfare in Italy was very different from that recently experienced by the New Zealand Division in North Africa. Instead of rapid movement with long lines of communication, there was now concentration into a comparatively small area, with only short moves having little effect on the locations of dental units. Certain non-divisional units had been disbanded and the number of men on the Lines of Communication had been decreased. On the other hand, the Division in the field had been augmented by the addition of 4 Armoured Brigade, bringing the total strength up to between fifteen and eighteen thousand. Dental officers were still allotted to the force on the basis of one to every 1000 men. The number was according to this ratio but the distribution was at fault. With the Division there were eight dental officers with 1 Mobile Unit and one with each of the three field ambulances, a total of eleven to treat 15,000 to 18,000 men. The dental officer with the CCS could not be included as he was outside the divisional organisation. At the Base, however, apart from the General Hospitals and the Convalescent Depot, there were two dental units carrying more than was required, viz., 2 Mobile Dental Unit and the Base Depot Dental Hospital.

One solution would have been to move 2 Mobile Unit up to the Division but there were difficulties associated with this. The organisation would have been uneconomical and cumbersome and the duties of the respective commanding officers of the Mobile Units might have clashed. Colonel Fuller had a better solution:

1. **Both 2 NZ Mobile Dental Unit and NZ Base Depot Dental Hospital should be disbanded as units of the 2 NZEF.**
2. **A new unit, 2 NZ Camp Dental Hospital, with the same establishment as 1 NZ Camp Dental Hospital should be formed from**

the disbanded units and located, primarily, at Ad- vanced Base 2 NZEF. This hospital would operate at first with only three officers, its duties, although similar to those of 1 NZ Camp Dental Hospital, consisting principally, for a time, of work passing through the NZ Reception Depot. From time to time, if 1 NZ Mobile Dental Unit should happen to be otherwise fully engaged, Lines of Communication units away from Advanced Base would be treated by detachments from this hospital.

3.1 NZ Mobile Dental Unit should be expanded from a unit of eight officers to one of twelve, four complete sections being transferred to it from 2 NZ Mobile Dental Unit. This would mean that, with the three Field Ambulances, there would be fifteen dental officers available in the field, although not necessarily always employed in the field.

With this rearrangement the headquarters of one of the Mobile Dental Units would be dispensed with, and there was a corresponding saving in transport, dental and ordnance equipment, and personnel. As regards personnel, the dental service would lose positions for three staff-sergeants and three corporals, offset by an increase of two sergeants. This was of no great moment, especially as the ADDS intended to bring up the whole subject of rank in the Corps.

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The ADDS also submitted a recommendation concerning other ranks in the Corps. The NZDC other rank had no prospect of attaining commissioned rank and, under existing regulations, could rise no higher than WO II. It was felt that the senior NCO in the office of the ADDS, who carried out the duties of Adjutant and Quartermaster to the dental service, if unable to be commissioned, should at least be a WO I. Similarly, the WO II with the newly constituted Mobile Unit now carried greatly increased responsibilities and should be similarly ranked. These were approved by Headquarters 2 NZEF.

The stores position at this time was not entirely satisfactory. All supplies came from British sources and it was not always possible to obtain as much as was required. Handpieces had become worn, allowing the bur to wobble and vibrate. For some reason new ones were difficult to procure and reconditioned ones were unsatisfactory. Those in use had seen four years' service and were due for replacement, so unless Army Medical Stores could supply new ones they must be procured elsewhere. A cable was sent to the liaison officer at the New Zealand High Commissioner's Office in London asking him to procure seventy-two contra-angle and twelve straight handpieces, preferably from Army Stores but, failing this, from any source. Captain Pickerill was in England undergoing a course in maxillo-facial work and it was hoped that he could bring them with him on his return to Italy. This was one of many cases which made it seem that there was a lack of appreciation of the requirements of dental stores and equipment. The three-monthly supplies to replenish the NZEF store were frequently late in coming to hand and it became difficult to comply with the monthly indents from the units and sections. For example, the indent submitted on 9 March 1944 for the period April to June was not expected to arrive before June, although being intended for use during April, May and June. The last supplies had been received in December 1943. Apart from the regular supply for a service doing a large volume of work, there was the fact to be considered that it was working under conditions which placed a strain on equipment, especially that with moving parts such as handpieces. It is small wonder that equipment was wearing out. Admittedly, Medical Stores themselves had a three to four months' time-lag between ordering and receiving their supplies but, by this stage of the war, they would have had a reasonably accurate knowledge of the amounts required by each dental service. They suggested to the ADDS that he should indent every month instead of every three months as was then the custom. [1] This was an acknowledgment that they were not stocking in advance against commitments that could easily have been assessed. Their supplies came from North Africa, the United Kingdom and the Middle East. To work to so fine a margin in time of war was

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[1] **Memorandum from DDMS, AAI, to ADDS 2 NZEF, 29 April 1944.**

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 23 — THE ITALIAN CAMPAIGN

CHAPTER 23
The Italian Campaign

TO preserve continuity in the story of the Italian campaign it is necessary to return to the Fifth Army front, where the field dental units were attending the Division at the end of January 1944. A New Zealand Corps was then formed under the command of Lieutenant-General Freyberg.

Cassino and Monastery Hill, a rocky spur some 1700 feet above the plain, crowned by the ancient Benedictine monastery, were the Corps' objectives and it soon became obvious that the Division was about to face a most difficult operation. The sections of the Mobile Dental Unit remained attached to the units they were servicing and moved to the battle area with them. Only one had to be withdrawn to a safer area because of intense counter-battery activity; the others continued to work despite heavy artillery duels. The headquarters of the unit moved forward to a most unpleasant area characterised by incessant rain and deep mud, leaving the Alife area to be serviced by Captain Foote of 6 Field Ambulance.

For six weeks the Division fought a bloody battle on this front. Dental treatment was consequently spasmodic, but by the time that the Division was withdrawn the Mobile Dental Unit had been reinforced by the addition of the extra sections from the disbanded 2 Mobile Dental Unit and was in a stronger position to meet the increased demands.

On the Cassino front the NZDC came for the first time in close contact with the American Dental Service. They were able to exchange ideas and equipment and compare their respective services. The American dental officer worked on the ratio of one officer to 1000 men and, even though the men had not been made dentally fit before leaving home, seemed to manage adequately. No figures are available as to the amount of dental disease existing among American troops, but to service them effectively with this ratio it must have been considerably less than

that in the New Zealand force. Relatively few American soldiers wore artificial dentures of any description, so dental officers in the field carried no prosthetic equipment and all such work was sent back to a centre some 20 miles behind the 'combat area'.

In early April the subject of furlough for the 411 officers of the first three contingents who were still with the force was reopened and a ballot was taken among the dental officers as to who should be included. Majors Middlemass and B. Dallas were successful. Major McCallum therefore resumed command of the Mobile Unit and Major J. W. Johnston [1] took charge of 2 NZ Camp Dental Hospital.

The Division left the Cassino sector about this time and took up positions forward of Venafro in the mountains rising above the Volturno River and fronting the Rapido and Monte Cairo. The country was mountainous, the roads tortuous and narrow, treacherous and greasy in wet weather, making access to forward positions difficult. In many cases the only way in was by foot or mule. The Mobile Unit was first established under olive trees just off the Venafro - San Pietro road but soon moved to an area in the vicinity of Roccaravindola, a white stone village perched upon a steep coneshaped pinnacle. The camp site lay on an easy slope above the road at the foot of the mountains which rose immediately before it.

In this type of warfare, with front and back areas of the Division so close to each other, most of the dental work was carried out in the back areas. The sections could be recalled and reattached easily and, even when the lines of communication lengthened, as they did when the Division again came under Eighth Army control, the headquarters of the unit could retain control without moving far.

A considerable amount of work was done for other than New Zealand troops. When the New Zealand Corps was formed, numerous British units were attached. There seemed to be a lack of British dental establishments in that area, e.g., 2 Indian CCS had no dental section and 7 British CCS did not set up until April. Whereas the number of

dental casualties from the New Zealanders, that is serious casualties, was few, the attached English troops arrived in a steady stream. It appeared that whatever were the facilities in the British Dental Service at hospitals or at the base, there were practically none in the field. It had dental officers with the field ambulances, but enough has already been said in this history to see how inadequate that would be to cope with the volume of work. The result was that a large number of men had to be evacuated from the field for dental reasons. The usual treatment for these men on reporting to a New Zealand section was extraction as the teeth were past the stage of filling. A comparison between the dental conditions of the British and New Zealand forces fully justifies the use of a mobile dental unit. The initial establishment

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[1] Maj J. W. Johnston, ED; Dunedin; born Wanganui, 18 Oct 1916; dental surgeon; Dental Officer 3 Gen Hosp1941; CO 2 Camp Dental Hosp 1944; CO (Lt-Col) 3 Mobile Dental Unit, RNZDC, 1956–.

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of dental fitness before active service, coupled with continuous unrelenting maintenance, is the only way that any impression can be made on the vast problem of dental health. Once the position has been allowed to drift, no amount of work can possibly catch up with arrears without interfering with the soldier's main purpose, which is to fight. Before the great advances made in medical science, the casualties in war from disease and sickness were more than those from enemy action. The medical profession bent itself to this task. The lesson is clear from this war that the dental profession could and did stop another source of wastage, for the number of men in the New Zealand Forces, wherever they served, who were evacuated for dental reasons was infinitesimal. The main essential is continuity of treatment. An interesting example of this is the comparison between the amount of treatment required by the first section of the 11th Reinforcements and the amount required by the returning members of the Ruapehu draft. Both arrived in Egypt on 21 February 1944; both had been given treatment in New Zealand before leaving. Whereas the furlough party had had regular treatment in the 2

NZEF for three years, the reinforcements had had probably their first thorough dental treatment on entering a mobilisation camp shortly before leaving. For every hundred men of the furlough party examined 49.7 fillings were required, while for every hundred of the reinforcements 89.6 fillings were required.

The first few months of 1944, when conditions were favourable both in the field and at the bases, recorded the highest returns in the 2 NZEF. Twenty thousand men were dentally examined and 12,000 made dentally fit. The ADDS remarked:

> One need only say that, wherever a dental section was found, there also would be a patient occupying the chair, boot soles facing tent door outwards, another waiting his turn nearby; dental officer head down operating at the chairside morning and afternoon, day in day out; mechanic in the background at his bench industriously supplying artificial dentures from laboratory to chairside.

June saw the Division advancing, now in the heat of an Italian summer, with the dental sections still attached to units and the headquarters of the Mobile Unit creeping up behind by stages. Where possible, unit headquarters was located near to the open MDS of the field ambulances, this being the most suitable area for the treatment of casualties and for keeping in touch with the dental sections. The dental sections were with the B echelons of units while the troops were in action, and at the various unit headquarters during rest and training periods. Another dental section was with the L of C units. From Cassino, overlooked by Monastery Hill, surrounded by spring growth so great that it was impossible to believe that a battle had recently been fought there, through Belmonte and Atina to Fontechiari and then through Sora, Isola del Liri and Fontana Liri, Headquarters arrived at Frosinone. Sections were working everywhere under all sorts of conditions, e.g., the 5 Field Ambulance MDS occupied the grounds and buildings of an Italian millionaire, where the cloisters and the private chapel, the gardens and

the pergolas made a peaceful background and a welcome change from the rain and mud. On 17 June the Corps lost one of its keenest officers in a jeep accident. Captain M. Wylie of 1 Mobile Dental Unit, attached to 18 Armoured Regiment, was killed early in the morning of 17 June on Highway 6 near Sora. Apart from his loss as an extremely efficient operator and organiser, he was greatly missed, being popular with his brother officers and other ranks in the Corps and with all who knew him in the Division.

Then for the first time since fighting began in Italy the Division was able to rest, and it assembled near Arce in the lower Liri valley in the middle of June. Here was the opportunity for dental work. The advantage of continual treatment through the days of battle was becoming evident when dental units, who would normally be snowed under with work, could take part in the leave privileges granted to the rest of the men.

The next phase in the campaign, the taking of Arezzo and the advance on Florence, began in mid-July. Units became widely scattered and it was impossible to estimate how long any area would be occupied. In many cases sections would set up their tents and equipment only to find that they had to move on immediately. The Mobile Dental Unit headquarters became adept at quick moves. Major McCallum reported that tents could be struck, equipment loaded, hot evening meal served and vehicles cleared within an hour.

On 15 July 1944 a circular was sent to all dental officers from the ADDS which, by a curious coincidence, was very well timed:

> **An experienced NZ Dental Officer in his monthly report makes the following statement:**
>
> **'On enquiry it has been found that all patients examined here have been made dentally fit within the last six months. Nevertheless, as can be seen from the weekly returns, about half those reporting required gross scaling, and on enquiry it was established that in the majority of cases no such scaling had been**

done for the last twelve months. Obviously it is of no great value to concentrate on saving teeth by fillings if they are going to be lost by pyorrhoea.'

In comment on the above statement, I think it quite probable that a tendency has crept in to pass by unnoticed a proportion of cases that rightly should have been scaled. Will you please take care not to overlook this aspect of dental treatment.

Shortly after receipt of this, seven extremely virulent and five mild cases of Vincent's stomatitis were reported from the Division. What might have been a serious outbreak was averted by immediate isolation of the serious cases in hospital and suitable treatment of the others. An inquiry was instituted to find the reason for the outbreak. The result is interesting and instructive.

If scaling had been neglected, and it is understandable that the more obvious filling work might overshadow the importance of prophylaxis, there would be many mouths in a receptive condition for the disease. Unless by accident, a dental officer would not suspect its presence among the troops until a patient reported through pain or illness, and it was unlikely that he would so report until the disease had reached that stage. As the disease is contagious, efforts were made to trace the source of infection. The significant fact emerged that there was a large increase at the same time of venereal disease, traced to contact over a wide area with the Italian populace in the Divisional Rest Area at Arce. The lesson was clear. Establish mouth conditions resistant to the disease and the risk of infection is reduced to a minimum.

It was then the Italian summer and working conditions were pleasant among wooded hills and vineyards famous for Chianti wine. The country, however, was known to be highly malarious and strict anti-malaria precautions had to be taken. The prospect of casualties from malaria was alarming to the Corps as the margin for wastage was extremely small. Several other factors were causing anxiety in this respect. Firstly, two dental officers had returned to New Zealand on

furlough. Secondly, three were boarded for medical reasons and returned to New Zealand. Thirdly, Captain Pickerill, who had been in England undergoing a maxillo-facial course which had already extended longer than was at first expected, was recommended for a medical board on arrival back with the 2 NZEF. Fourthly, there was the controversial question of treatment of repatriated prisoners of war from Germany, who were expected to arrive in the United Kingdom after the cessation of hostilities.

The controversy in this last factor was between Headquarters in New Zealand and those in 2 NZEF. From the dental point of view, it was felt in the 2 NZEF and in London that treatment of these men who had been part of 2 NZEF should be undertaken by the dental service to that force. To this end 2 NZEF was agreeable and anxious to send to England a complete Camp Dental Hospital, and more when required, on the understanding that this could not be done until the end of the war, or at least until the New Zealand Division had finished operating. In July, however, a letter was received from Headquarters 2 NZEF:

> **An appeal has been received from NZ Headquarters in the United Kingdom for these personnel to be supplied forthwith, as circumstances have arisen to increase the urgency. It may be taken that the appeal is a really genuine one. It is incumbent upon us to exert every effort to meet it.... The difficulties of the situation are fully appreciated by this Headquarters and have been communicated to London.**

At great sacrifice and at the expense of 1 Mobile Dental Unit, three officers and twelve other ranks were immediately assembled to be ready to leave at a moment's notice for England. Major McCallum, who was at that time next in seniority to the ADDS, was the obvious officer to be in command of the dental services in England. He had the necessary experience of work in the field and full knowledge of the intricacies of supply from British sources. In addition to this the commander designate of the New Zealand prisoner-of-war repatriation organisation, Lieutenant-Colonel L. F. Rudd, DSO, [1] before he left the Central

Mediterranean Force for England, asked particularly for Major McCallum. It was anticipated, and discussed with Colonel Rudd, that Major McCallum should assess the position in England and ask for necessary reinforcements from 2 NZEF. As far back as April 1944 the DDS in New Zealand had been asked to send, when required, equivalent numbers to 2 NZEF to make good this loss. This, of course, was expected to take place after the cessation of hostilities. In the meantime the DDS at Army Headquarters, Wellington, feeling that the responsibility for treating the prisoners of war was his and knowing that 2 NZEF could not immediately supply enough personnel, cabled to London:

> DDS considers insufficient provision has been made for dental requirements. He recommends as follows. (A) Personnel group HQ, 1 officer ADDS, 1 WO I, 1 S/Sgt, 1 Sgt, 5 Rank and File, total 9. Dental Pool, 20 officers (5 majors, 15 captains), 2 S/Sgts, 18 Sgts, 9 Cpls, 41 Ptes, total 90. (B) Full dental equipment and stores for 20 operators.
>
> Above to serve Navy, Army, Air. He expects extensive work and strongly recommends all be made dentally fit before departure from UK which is in accordance with general policy and greatly in interests Prisoners of War.
>
> Personnel to be provided (A) 3 officers 12 other ranks by 'Fernleaf'. [2] (B) 10 officers 26 other ranks from Prisoners of War. (C) 8 officers (including ADDS) and 40 other ranks from New Zealand. These and equipment etc., to be despatched by direct ship estimated time of departure 25 August.

A copy of this cable was sent to 2 NZEF and caused considerable surprise and disappointment, coupled with a sense of frustration. Presumably the DDS, by including the personnel from 2 NZEF in

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[1] Col L. F. Rudd, DSO, OBE, ED, m.i.d.; Auckland; born Christchurch, 13 Jan 1898; barrister and solicitor; 1 NZEF, 1917–19; wounded and p.w. Apr 1918; OC 6 Fd Coy 1939–41;

Military Secretary, 2 NZEF, Jul 1941–May 1944; comd 2 NZEF Reception Group (UK) Aug-Oct 1944; British legal mission to Greece, 1945.

[2] HQ 2 NZEF.

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the establishment, was under the impression that they had already left for England. Actually this was not the case and it became necessary to reconsider the selection. Major McCallum, whose services with the 2 NZEF were only being sacrificed because of his qualifications as an ADDS for the new service, could not be spared to act in a junior capacity under an ADDS from New Zealand. Although the whole question of treatment in the United Kingdom was the responsibility of the DDS and, as such, nothing to do with 2 NZEF, the decision was a *volte-face* and, in effect, made it appear that New Zealand considered that the inclusion of any 2 NZEF personnel in the establishment was unfortunate. As, contrary to previously stated views, London cabled agreement with the DDS's establishment, all that was left for Colonel Fuller to do was to extricate his service from the undertaking as economically as possible. He therefore cabled New Zealand and London on 9 August:

> Dental personnel to be supplied by 2 NZEF viz., 3 officers, 12 other ranks cannot leave Italy until early September.... Suggest therefore for consideration that replacements being sent from NZ to 2 NZEF for this party should be sent direct to UK and that we do not supply any personnel.

This was agreed to and the 2 NZEF took no part in the organisation of treatment for repatriated prisoners of war in England. Comment on the establishment and on the general service in the United Kingdom belongs to another chapter. In this context it is right to mention that the 2 NZEF had at no time underestimated the amount of work to be done on the prisoners of war and had reported to New Zealand to this effect; that they felt that their experience and organisation would have been the more economical solution to the problem, and that they were

disappointed that what they considered their duty to their former companions was being discharged by others.

A further drain on the resources of the Corps in the 2 NZEF was still another furlough draft. In the middle of July advice was received that a proportion of other ranks of the 4th Reinforcements, together with the remaining officers of the first three contingents, were to return to New Zealand, the scheme being known as TAUPO. The number lost to the Corps was thirteen, consisting of one officer, Major Gleeson, and twelve other ranks. The whole draft was about 1700 men, all of whom had to be made dentally fit before embarkation.

At the beginning of August, Major McCallum relinquished the command of 1 Mobile Dental Unit, Captain D. W. Earle [1] being temporarily appointed in his stead. This temporary command

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[1] Lt-Col D. W. Earle, m.i.d.; Wanganui; born Wellington, 11 May 1903; dental surgeon; ADDS (A), Army HQ, 1942–43; OC 1 Mobile Dental Unit 1944; ADDS 2 NZEF; Nov 1944–Dec 1945.

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soon became substantive as Major McCallum was sent to hospital, from which he later returned to New Zealand. In the middle of the month the Division moved out of the forward area to a concentration area in the Chianti Mountains in the vicinity of Castellina, not far from Siena. It was soon to leave this area, this time to the Adriatic coast near Iesi. The last stage of this move was a severe test for the ASC drivers as it was over a secondary road, at night and without lights. Again the Mobile Dental Unit proved that it could function under all conditions in Italy. This move of the Division brought about a similar move of Headquarters 2 NZEF from near Bari to Senigallia, which was reached on 15 September. The ADDS found an office in a war-scarred villa. Advanced Base was to be housed in the centre of Senigallia in a large Italian barracks and the Camp Hospital in an adjacent building formerly either a convent or a hospital. This area was to hold reinforcement personnel only, estimated at a maximum of 3000. The bulk of the dental

work of the Advanced Base always came from the Reception Depot, which was now to be located in a separate area three or four miles north of Senigallia, and it was expected that this would now be even more so because of the speeding up of the furlough drafts to New Zealand. It was therefore decided to site 2 Camp Dental Hospital at Reception Depot rather than at Advanced Base, leaving only a section at the latter to deal with troops in that area. Nissen huts of hospital pattern 24 feet wide were chosen as accommodation. The dental sections in the field were all at work with the Division, which was in a close reserve area flanking the coast about three or four miles short of Rimini, the scene of a battle at that time. The staff problem again began to cause worry as New Zealand cabled that Majors Middlemass and Dallas were not returning to the 2 NZEF. The furlough schemes were seriously affecting the efficiency of units which had built up for themselves a reputation for steady and conscientious work. Demands were of course made for reinforcements, but it was impossible to replace highly trained senior administrators at a moment's notice.

On 25 September Colonel Fuller fell a victim to infective hepatitis (jaundice) which was claiming many victims in the force. He was admitted to 1 General Hospital but continued to attend to service affairs while a patient, being assisted by Major Johnston, OC 2 Camp Dental Hospital, acting as DADDS.

In early October the proposed move of Advanced Base to Senigallia was cancelled so 2 Camp Dental Hospital remained at San Basilio. This left the treatment of Headquarters 2 NZEF personnel to the dental section attached to 1 Convalescent Depot, as soon as that unit could get to Senigallia. These moves and cancellations of moves fully tested the elasticity of the dental organisation and emphasised two important points. Firstly, that the continuous treatment of the force at the Base and in the field had established such a satisfactory state of dental health that short periods away from treatment could be tolerated with impunity. Secondly, the coverage was so complete that no unit was ever far from some dental section.

Reinforcements continued to arrive in Egypt from New Zealand and 1 Camp Dental Hospital in Maadi was hard pressed to render them dentally fit before leaving for Italy. The standard of dental fitness of these later reinforcements was found to be not as good as that of earlier ones. It was therefore necessary to send more officers from Italy to assist in the work. Captains L. R. Sprague, [1] R. H. B. Mottram [2] and G. D. Sutherland [3] were selected, the first named to be promoted to major to take over command from Major Moller, who was to return to New Zealand. Sickness took a heavy toll and at one time during October there were only five dental sections operating with the Division in the field. The main trouble was again infective hepatitis.

November ushered in a change in command of the NZDC with the 2 NZEF. Lieutenant-Colonel Fuller left hospital for the Officers' Rest Home at Loreto on convalescent leave and Major D. W. Earle was appointed ADDS with the rank of lieutenant-colonel. Lieutenant-Colonel Earle had had experience in the office of the DDS in Wellington as administrative ADDS and also as PDO [4] of more than one mobilisation camp. He had left for the Middle East in January 1944, relinquishing his majority to do so and, as has been seen, commanded 1 Mobile Dental Unit in the field. He was the exception to the rule that the highest appointments in the 2 NZEF should be given only to those who had grown up with that organisation. Only his administrative ability, which had precluded his earlier despatch from New Zealand, and his seniority qualified him for acceptance as other than an ordinary reinforcement. Major R. D. Stewart [5] took over his command of the 1 Mobile Unit.

Before handing over command, Colonel Fuller made a concession from his original ideal. It was one forced on him by circumstances over which he had no control. It had already been agreed that, on the cessation of hostilities, no attempt would be made to examine

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[1] Maj L. R. Sprague; Auckland; born 16 Jun 1916; dental surgeon.

[2] Capt R. H. B. Mottram; Christchurch; born Christchurch, 17 Sep 1917; dental surgeon.

[3] Capt G. D. Sutherland; Oamaru; born Dunedin, 18 Mar 1913; dental surgeon.

[4] Principal Dental Officer.

[5] Maj R. D. Stewart; Hawera; born Balclutha, 2 Dec 1907; dental surgeon.

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the whole force on the New Zealand History Sheet (Form NZ361), as this would interfere with the completion of the necessary treatment. Now that the replacement scheme between New Zealand and 2 NZEF was in force and drafts were moving backwards and forwards, it became necessary to take a practical view of the whole situation. It was found that reinforcements from New Zealand needed an alarming amount of treatment to make them dentally fit for service, whereas drafts returning to New Zealand were already remarkably fit. The ideal was to make every man fit before moving on anywhere, but the most important thing was to make fit those men who were moving to the field. With the staff at his disposal, the large amount of work needed by the reinforcements and the continual stream of men both ways, it was impossible to do both. He therefore decided to stop the examination and charting of men returning to New Zealand, treating only those in these drafts who asked for it, unless it was clear that treatment of reinforcements and the rest of the 2 NZEF would not be interfered with.

Reinforcements for the Corps were not coming to hand as quickly as anticipated owing to an altered date for the arrival of the 14th Reinforcements, but fortunately Brigadier Park [1] arrived from the United Kingdom and suggested the use temporarily of some of those accumulated there for the treatment of prisoners of war. The DDS, Wellington, agreed, as also did Lieutenant-Colonel Rout, ADDS of the

New Zealand Dental Corps in the United Kingdom. Three officers, Major H. Colson and Captains J. R. Benson [2] and F. J. Jacobs, [3] arrived by the Hospital Ship *Oranje* on 15 December. At the same time word came from New Zealand that five others were on their way, four of them by the Hospital Ship *Maunganui*. Major Colson took over command of 1 Mobile Dental Unit and the other two officers went to 2 Camp Dental Hospital. The acute shortage of staff in December was to some extent balanced by the fact that the Division was in action most of the time in the Forli area and fewer troops were available for treatment.

With the battle moving steadily northward, the greatest concern in regard to treatment was the lengthening of the Lines of Communication, throwing an added strain on those dental sections responsible for the treatment of non-divisional units. It meant that the responsibility had continually to be changed from one section to another, with frequent redistribution of personnel. At the end of January 1945 the distribution of NZDC sections and units was as follows:

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[1] Brig R. S. Park, CB, CBE; Auckland; born Dunedin, 18 Feb 1895; Regular soldier; NZ Fd Arty 1917–19 (Lt); NZ Military Liaison Officer, London, 1939–46; Commander, Northern Military District, 1947–50; Commander K Force (Korea), 1950–53.

[2] Capt J. R. Benson; Dunedin; born NZ 14 Mar 1911; dental surgeon.

[3] Capt F. J. Jacobs; Wanganui; born Dunedin, 31 Jan 1903; dental surgeon.

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1. With the Division in the Forli and Faenza area. 1 NZ Mobile Dental Unit 1 NZ Mobile CCS 4, 5 and 6 NZ Field Ambulances. *Note.* A detachment from the Mobile Dental Unit had been sent to Rome to treat the staff of the New Zealand Forces Club there.
2. At Senigallia. 1 NZ Convalescent Depot was at full strength and responsible for all NZ troops in this area with the exception of patients and staff of 1 NZ General Hospital. 1 NZ General Hospital.

Maxillo-facial specialist, Major A. T. Lawson. [1]

3. At Caserta. 2 NZ General Hospital.
4. At Bari. 3 NZ General Hospital. This hospital now had two dental officers and the requisite number of other ranks to handle all treatment in the Bari area.
5. At San Spirito. A detachment of 1 NZ Convalescent Depot did all casualty work for NZ units in San Spirito in addition to normal duties.
6. At San Basilio. 2 NZ Camp Dental Hospital.
7. In Egypt. 1 NZ Camp Dental Hospital at Maadi Camp.

The returns for the year 29 January 1944 to 27 January 1945 show that even more work was completed than in the previous year, 1 February 1943 to 29 January 1944. Static warfare, with its greater facilities for attachment of dental sections, would account for this to a large extent, though shortage of staff would counteract some of this advantage. The previous year's figures are in parenthesis:

	2 NZEF	*Other than 2 NZEF*	*Total*	*NZ Troops only*
Number examined	78,560	2,610	81,170	(74,674)
Number requiring treatment	46,645	2,531	49,176	(39,462)
Number rendered dentally fit	41,836	1,815	43,651	(37,635)
Number of fillings	48,621	1,194	49,815	(41,699)
Number of extractions	5,769	1,451	7,220	(6,020)
Number of dentures, new and remodelled	6,673	189	6,862	(5,294)
Number of repairs	7,431	313	7,744	(6,830)
Total denture cases	14,104	502	14,606	(12,124)
Number of maxillo-facial cases admitted and treated	52	3	55	(55)

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[1] Maj A. T. Lawson; Hastings; born Cressy, Aust., 17 Dec 1914; dental surgeon.

It is significant that the number of extractions in proportion to the number of fillings had noticeably decreased, showing again that conservative treatment relentlessly carried out was having its effect.

During February, March and early April 1945 the treatment of the Division and in the Base Camps continued under good conditions regarding availability of patients and staff to deal with them. There was some anxiety over the supply of reinforcements of mechanics from New Zealand and consideration was given to the employment of women in Base Camps and of men of lower medical grading in Lines of Communication. Nothing, however, came of this, though it is something that could be borne in mind for the future. It must, however, always be remembered that under war conditions it is a big advantage to have all personnel interchangeable between the Base and the field, and this would be impossible if women and lower grade mechanics were employed. On the other hand, if there is a definite shortage of key men such as mechanics, it is better to sacrifice this elasticity than allow the work to accumulate beyond the stage when dental fitness would be past achievement. A school for training suitable orderlies as mechanics was started under Captain S. A. Blue [1] and this helped the situation.

In the middle of April the type of warfare changed with the breakthrough at the Senio. Routine treatment became difficult and at times impossible owing to the fluid nature of the action. Dental sections were continually on the move with the B echelons and patients were seldom available. The sections spread throughout the Division were able to act as excellent casualty centres, making it unnecessary for men to be evacuated to field ambulance dental sections. Headquarters of the Mobile Unit was kept well to the rear of the action. In this position it was difficult to keep in touch with some of the sections and it meant much travelling by the CO. The effect of an action such as this was to expand the area to be covered, meaning that full use had to be made of every man in the unit. Three cables arriving at this time could not therefore have been more ill-timed. Firstly, a request came from England for nine dental officers to be sent there urgently by air. Secondly, Army Headquarters, Wellington, asked for the return of Major Dickens on grounds that were difficult to refuse. Thirdly, notification was received that, instead of four dental officers, only one was arriving by the next reinforcements from New Zealand. Nothing could be done about the

second and third cables and it was obvious that with an action in progress nine dental officers could not be spared for England. Three, however, were selected, Major Wickham, Captains

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[1] Maj S. A. S. Blue; Matamata; born NZ 28 Aug 1909; dental surgeon.

H. F. W. Dornhorst [1] and M. J. Wall. [2] These three were flown to the United Kingdom within eight days of the request being received.

On 1 May the headquarters of the Mobile Unit began its longest move for some time, crossing the Rivers Po and Adige that day and arriving 20 miles short of Trieste the following day. Business was very much 'as usual', even the news on 8 May of the capitulation of the German forces and the end of the war in Europe failing to qualify for so much as a mention in the Mobile Unit war diary. The ADDS's war diary of 9 May reads:

Skeleton staff only. Official holiday.

In contrast the Mobile Dental Unit's diary reads:

9 May 1945:

0800 hours. Weather fine with promise of heat.

0830 hours. Treatment of casualties presenting.

0915 hours. CO called on CO 4 NZ Field Ambulance and remained two hours.

1200 hours. Normal daily routine.

It is possible that the two hours spent with the CO 4 Field Ambulance were in other than official pursuits, even if the time was a little unusual for a social call. It is more probable that the large number of denture casualties anticipated and realised after every action was

enough to monopolise the thoughts of every dental officer in the field.

Naturally the dental service was affected by the changed role of the Division, but this did not happen suddenly. To begin with, treatment continued as before but, after several weeks, adjustments had to be made to meet the new conditions. Generous leave was given to divisional troops which interfered with routine examination and treatment. Later a different position arose and all dental officers were besieged by troops wanting a 'check over' and the casualty rate rose to high proportions. Lost and broken dentures came in in numbers far greater even than when the Division was in action. The penalty of having to pay for loss of dentures by negligence seemed to have little deterrent effect after hostilities had ceased. It was found necessary to withdraw several sections of the Mobile Unit from routine treatment and place them throughout the Division to cope with the increased casualty treatment in their immediate vicinity. In contrast to this, the general hospitals became less busy as casualties were not coming in from enemy action. Several replacement schemes were in force whereby those men with the longest service overseas could be returned to New Zealand, being replaced

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[1] Capt H. F. W. Dornhorst; Rhodesia; born London, 15 Nov 1911; dental surgeon.

[2] Capt M. J. Wall; born Auckland, 25 Apr 1914; dental surgeon.

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by fresh troops. As the strength of one dental officer to 1000 men had to be maintained, the release of dental officers depended on three things. Firstly, the arrival of replacements from New Zealand or elsewhere; secondly, a reduction in the length of the Lines of Communication, allowing a more economical distribution of dental officers; and thirdly, a reduction in the size of the force. When the size of the force began to diminish by the withdrawal of replacement drafts,

dental personnel automatically became included in the drafts. The heaviest loss to the Corps was in senior NCOs who were difficult to replace, but this problem was common to all units. Dental officers released from service with the 2 NZEF did not necessarily return direct to New Zealand, as there were a number of bursaries they could apply for enabling them to undertake post-graduate study. These were arranged through the New Zealand Government Rehabilitation Department and, according to length of service, could be taken up in England, Canada, the United States or New Zealand.

No attempt was made to examine and systematically treat the personnel returning to New Zealand under the replacement schemes, although all who wanted treatment could have it. This had been agreed upon between 2 NZEF and Wellington in the days when Colonel Fuller was ADDS, when he made it quite clear that to examine and chart on NZ361 all troops at the end of the war would not only serve no useful purpose but would seriously interfere with the amount of treatment that could be done for them. It would appear that, with the satisfactory dental health of the force and with only enough staff to maintain it, anything more could not reasonably be expected, especially considering that all the men would be re-examined on arrival in New Zealand by the board of civilian dentists appointed by the Dental Hygiene Division of the Department of Health. A cable received from Wellington on 3 September 1945 altered this agreement:

> It has now been decided that personnel certified dentally fit within four months of embarkation for NZ will NOT, repeat not, be dentally examined on arrival in NZ unless on personal request. Every effort will therefore be made to render all personnel dentally fit before embarkation. Dental history sheets of those requiring dental examination or treatment only to be attached to personal files. Dental Officer with draft to prepare nominal roll of those requiring examination and/or treatment for delivery to DDS.

The ship's dental officer would have neither the time nor the facilities to examine a large draft and raise the required nominal rolls,

so it meant that examinations would have to be completed before embarkation. More dental officers would have to be kept at the two base hospitals.

Japan's capitulation on 15 August 1945 brought new issues to light as it was learnt that an occupational force for Japanese territory was to be formed from the 2 NZEF. The size of the force would make it necessary to send a Camp Dental Hospital consisting of 5 officers and 19 other ranks. Apart from this, staff was still needed to wind up 2 NZEF affairs. Everyone was anxious to get back to civilian life as soon as possible and it was only fair that those with the longest service should be the first to be released. Colonel Earle decided to call for volunteers. Single men of the 13th, 14th and 15th Reinforcements were not given an option but, from the others, volunteers were called for (*a*) Jayforce, i.e., the Japanese Occupation Force, (*b*) winding up 2 NZEF, (*c*) either of these two. With the exception of those who volunteered for these services, officers and men would be released strictly according to length of service when circumstances permitted. The equity of this decision was not fully appreciated by New Zealand as repeated requests for individual releases were made, irrespective of the order of priority.

On 29 November 1945 confirmation was received that sufficient shipping was in sight to lift by the end of December all the 2 NZEF except 2000, and dental officers were allotted to the four ships concerned.

Regarding stores and equipment, it was proposed to send everything to New Zealand, as was being done with medical stores. This, however, was not agreed to by New Zealand, who stated that they wanted nothing but the maxillo-facial equipment. It was therefore decided to offer it to UNRRA, which agreed to buy it.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 24 — SUMMARY

CHAPTER 24
Summary

IN the search for an ideal there is fascination in the intricacies of the chase, satisfaction in the smoothing of the way and pride in the development of efficiency and power. All played their parts, important parts, in the story that has just been told. Yet all are subordinate to the ideal which runs as the only sure path through the maze of complicated detail. Lest the bypaths should lose us in their seductive lanes, it is right that the highway should be floodlit that its surface may be examined for imperfections and the seal set upon its laying. Let us quote the policy on which the reader may judge the degree of achievement. 'Notes and Instructions relating to the Organisation and Administration of the NZ Dental Corps 2 NZEF', compiled by Lieutenant-Colonel Fuller for the guidance of his officers, reads:

(*a*) It is the purpose of the NZ Dental Corps to provide a service within the Expeditionary Force that is readily accessible to every soldier and that, by being on a scale sufficient practically to eliminate oral sepsis from the Force, makes the maximum contribution towards the common effort of developing and then maintaining a high degree of physical fitness among the troops. Moreover, its efforts must reduce to an absolute minimum the occurrence of dental pain throughout the Force and, as far as possible, prevent the loss of effective men from their units on account of dental lesions.

(*b*) Because of the fact that every soldier is made dentally fit in New Zealand prior to embarkation, it is the consequent responsibility of the NZ Dental Corps in the Expeditionary Force to endeavour to maintain every man in that state.... Furthermore, by maintaining that standard, the well-being and efficiency of the 2 NZEF as a whole will be favourably influenced, a consideration that is important above all others. In addition, the NZ Government has undertaken to return every man to civilian life dentally fit when the time arises. Hence, it is desirable, for this reason also, that the standard of dental fitness within the Force should not be allowed to deteriorate, even though the above Governmental undertaking may have no direct bearing on the immediate war effort overseas.

(c) In general the scope of the dental service must be wide, extending from the specialist branches of oral surgery and the dental aspects of maxillo-facial injuries down through the Base dental installations, whose conditions closely approximate those of civil practice, to the dental service in the Field which, although operating under active service conditions, must also be adequate and complete.

(d) In general, and in keeping with the constantly changing features of war, the organisation must be flexible and capable of immediate modification and expansion to meet special circumstances. In particular, it must be designed to serve a Force whose component parts are, for the most part, mobile.

(e) Lastly, the size of the service must be in balanced proportion to the other needs of a Force whose purpose is primarily to fight. The service must never be organised and expanded to such an extent that some of its operations, when measured in relation to the purpose of the Force, are unnecessary; nor should they ever hinder essential military activities of units of the Force, but, on the other hand, their effect should be continually to contribute towards and act as a stimulus to general fitness and efficiency.

On these postulates the organisation and equipment were based. The road was not easy but, from the early squelching in the mud through the comparative comfort of macadam to the ease of the autobahn, it was followed with determination and courage. No soldier was ever far from a dental section of some kind, neither was oral sepsis nor dental pain allowed to interfere with his efficiency. The precious asset of dental health was not only his for the asking but was cherished for him by the constant vigilance of the dental service. Not only was his dental health maintained, it was improved and he was encouraged to appreciate its value and co-operate in its establishment. All this was done without interfering with his duties as a soldier or seriously curtailing his hours of leisure. He was treated as an individual, not as a cog in the war machine. There was always a danger that the struggle for material results might submerge the right of the individual to human consideration and sympathy. This was recognised as one of the risks to be run in an impersonal socialisation of a personal service and steps were taken to lessen that risk. The ADDS wrote an article for the *New*

Zealand Dental Journal from which the paragraphs relevant to this subject were deleted in Wellington. He considered them of such importance, however, that he published them in his 'Notes and Instructions' to his officers. They are published here as a matter of interest to all who received dental treatment in the 2 NZEF and in recognition that the risk will still be there in similar organisations in the future.

Institutions, organised services and communities, where the craftsman and the scholar are regimented, tend to become soul destroying. In the case of the dental profession, war time service in an Expeditionary Force probably suppresses, or even destroys the individuality of some operators. That is inevitable. War demands that the individual shall contribute his personality to the common cause. In any event, no dental officer is justified in expecting directly to profit by his service experience.

The greatest weakness is the tendency for operators to pay less attention to the approach towards patients and the handling of them. Those who have left civilian practices to join an Army Dental Service find suddenly that their livelihood ceases to depend on these requirements. Consequently, unless the weakness is known and guarded against, there can be a tendency in Camp Dental Hospitals and similar units for patients to become just a series of numbers in the minds of the operators. When that happens, the dental officer himself is well on the way towards becoming merely an automaton.

A war time Dental Service is not a post-graduate unit for officers fresh from university and we advise them not to view it as a school for gaining experience and furthering their training.

We draw the attention of junior dental officers to these dangers and we prevent the growth of the purely mechanical outlook. Fortunately there is a safeguard. Every dental officer knows that the soldier is entitled to treatment and attention of

only the highest order from the profession and, as it happens, the very standards which must be maintained to achieve this purpose are themselves a protection.

Within the limits permitted by military requirements, every effort is made to ensure that an officer retains independence in his technical work; no steps are taken to supervise or inspect it and no detailed instructions are issued to tell him how operations shall be executed. This is necessary for another reason as every officer is eventually required to serve in the Field, and usually is asked to operate an independent sub-unit in circumstances where he must rely on his own resources.

All officers are asked to consider themselves civilians in uniform when at the chairside (but only at the chairside and at no other time), and to handle and approach every patient with that attitude in mind.

The position should not arise when a soldier is lost to his unit during a critical period on account of insufficient treatment at an earlier date or because the treatment was carried out inefficiently. There is no opportunity or excuse for taking those risks which become justifiable in civilian life by virtue of the fact that, should trouble develop, the patient is within easy reach of the surgery or another practitioner nearby. In the Expeditionary Force it must be assumed that, when the treatment is completed, the soldier will be going to a unit in the Field where conditions will be vastly different. Therefore clinical risks cannot be taken.

This chapter may well close with a quotation from a letter from Lieutenant-General Sir Bernard Freyberg to Lieutenant-Colonel Fuller dated 30 December 1944:

Thank you also once again for all you have done in the Middle East and Italy. The New Zealand Dental Corps in 2 NZEF has won a great and well deserved reputation. I am very grateful to you for

the part you have played in making it the efficient organisation it is.

With every good wish,
Yours sincerely,

THE NEW ZEALAND DENTAL SERVICES

PART III — OTHER THEATRES OF WAR

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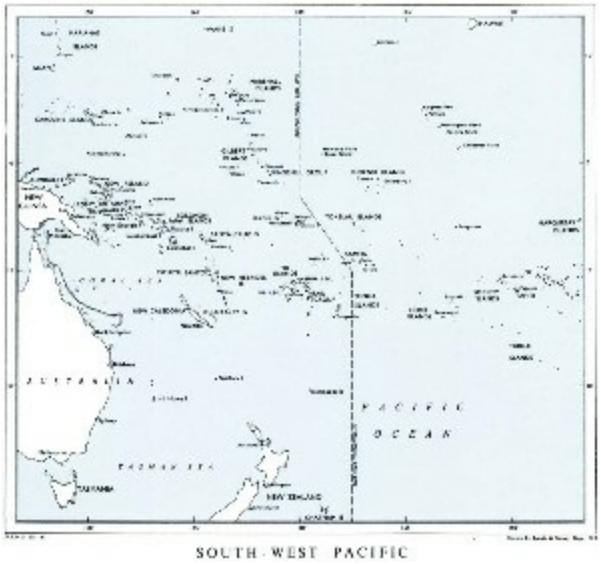
THE NEW ZEALAND DENTAL SERVICES

[UNTITLED]



SOUTH-WEST PACIFIC

SOUTH-WEST PACIFIC

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 25 — FIJI

Contents

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

ABOUT 1100 miles north of New Zealand in the South Pacific Ocean is a group of 250 islands collectively known as Fiji. They are well-wooded islands of volcanic origin and, although some are mere uninhabited islets or rocks, others are large prosperous trading centres. From a military point of view Fiji was one of the key positions in the Pacific, and although New Zealand already had extensive commitments, she accepted responsibility for their defence. She mobilised 8 Infantry Brigade Group, disguised its weakness under the *nom de guerre* 'B Force', and equipped it to the best of her ability by almost completely denuding her own defences.

This force was assembled in 1940 at Ngaruawahia Camp, near Hamilton, in the North Island of New Zealand, and the New Zealand Dental Corps was instructed to make it dentally fit. The intention was that these troops would serve only six months in Fiji, after which they would return to New Zealand, spend a short time there and go on to the Middle East. It was important therefore to ensure that, on their return to New Zealand, they would need little further treatment. The Corps was working to capacity in New Zealand at this time and could ill afford to spare many personnel for Fiji. As the men were all dentally fit before they left New Zealand, it was considered that two dental officers with attendant orderlies and mechanics would have to suffice. This made no allowance for sickness or other emergencies, but Fiji was not far from New Zealand and replacements could be sent reasonably quickly. One of the dental officers, Captain H. A'C. G. Fitzgerald, was appointed Senior Dental Officer and, in addition to his operative duties, was responsible for the organisation and would act as adviser to the commanding officer of the force on dental matters. With one clerk, two orderlies, one mechanic, a mechanic's orderly and a batman, he sailed with the force on 28 October 1940. A month later Captain R. Cox [1] with an orderly and a mechanic followed him. Some months later Captain Fitzgerald was

promoted to Major and became known as Brigade Dental Officer.

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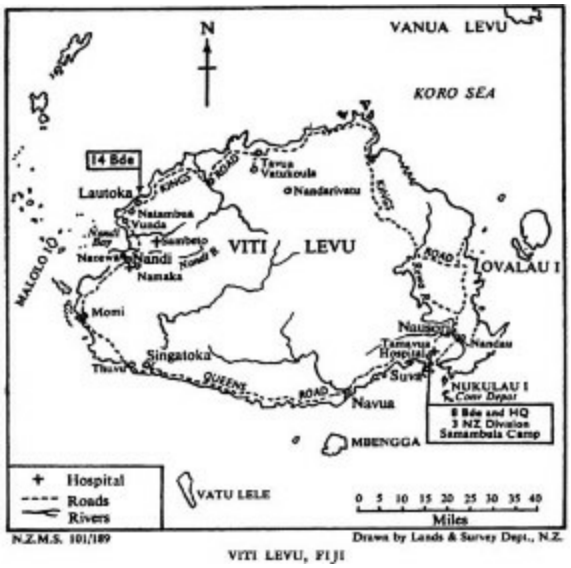
[1] **Maj R. N. Cox; Kaitaia; born Dunedin, 6 May 1907; dental surgeon; Dental Officer att 7 Fd Amb, Fiji, Nov 1940–Jun 1941; PDO Burnham MC, 1944–45.**

The force arrived at Suva on Viti Levu Island on 1 November in HMNZ Transport *Rangatira* and the men were initiated into active service conditions by a lengthy route march which successfully dispelled any illusions they may have had that their functions were purely sedentary. The camps were not ready so most units had to find temporary accommodation. The dental section was located in what had previously been the Suva Girls' Grammar School hostel. Even here the space was limited and only the dental officer, the clerk, one orderly and the mechanic could be accommodated, the others going to Nasese Camp, which already existed under Fijian organisation. Fortunately the treatment in New Zealand had been sound and there was little to be done apart from an occasional denture repair. The field dental panniers contained enough equipment for the urgent work and it was unnecessary to unpack the bulk stores.



VITI LEVU, FIJI

Time, however, was important and, with the limited staff available,

the Senior Dental Officer was anxious that the dental condition of the troops should have no chance of deteriorating. He wore a path between the hospital and Group Headquarters in the Government Buildings, continually urging that his section should move to Samabula (Samambula) Camp [1] so that routine work could begin. At the camp, however, most of the units were living in tents in the mud and permission was refused.

On 22 November the second dental section arrived from New Zealand, but as this was to be attached to 7 Field Ambulance at Namaka, it was sent on immediately by road transport. Namaka was about 150 miles by road from Suva in the north-west part of the island, where a camp had been built for the main troop concentration in the west. The section's field dental equipment had arrived in advance, so work started at once in part of the temporary camp hospital.

In addition to the field dental outfits for each section, large stocks of materials and spare equipment had been shipped from New Zealand to establish a bulk store. It was intended that this should be under the direct control of the Senior Dental Officer but, as there was as yet no permanent dental hospital, it was stored temporarily with other army stores. The climate of Suva affected the storage of dental equipment and materials. The mean maximum temperature as observed in Suva over a period of forty-eight years ranged from 86·4 degrees Fahrenheit in February to 79 degrees in July and August. This mattered little in itself but the relative humidity was high, ranging between 76·3 and 82·2. Metal instruments rusted easily and materials such as plaster of paris deteriorated if left open to the air for even a short time. All spare instruments made of metal had to be kept in an oil bath and the bulk supplies of plaster had to be taken out of the wooden casks and sealed in tins. A biscuit factory in Suva made some 14 lb tins, the plaster was put into these and the tins were soldered to make them airtight.

Meanwhile, in Suva the dental section continued to use the military hospital as a base but, finding little to do for the main force, decided to examine and treat 18 Army Troops Company and the New Zealand

Engineers who had arrived earlier to establish camps and works. These men were scattered, but by establishing the section in a house being prepared as Brigade Headquarters, the engineers, who were engaged in tunnelling nearby, could be treated and, by moving to Nasese Camp, the section could treat 18 Army Troops Company.

By this time it was mid-December and the section moved one step nearer its proposed home by taking up quarters with the Regimental Aid Post of 29 Battalion in 'A' camp at Samambula, a small new

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[1] In this series, Fijian place-names have been spelt as pronounced, e.g., Nandi in preference to Nadi, Sambeto rather than Sabeto, etc.

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building consisting of two rooms, one with a minor subdivision. Conditions were unattractive, as may be gathered from the following account by the Senior Dental Officer:

> There were at that time quartered in 'A' camp, the 29 Battalion, the main body of 18 Army Troop, some Army Service Corps and ourselves. Roads were still under construction and the mud was atrocious. It was here we made our first contact with the squeegee.... In later days we were to know it well. It was a heartbreaking job and a backbreaking one too to keep the dental surgery looking anything like a surgery. With the torrential rain and the clinging mud tramped into the building on numerous pairs of ... army boots, the floor rapidly acquired a film of mud.... Twice a day it was cleaned by pouring buckets of water over it, in a more or less scientific manner of course, removing the muddy water with the ... [squeegee] and returning the resultant 'Porridge' whence it came. Let it be said it was an amazingly efficient method of floor cleaning.

In this temporary home, under these somewhat primitive conditions, 18 Army Troops Company was made fit and examination and treatment

of 29 Battalion was carried out by companies.

The permanent home of the Dental Corps in the Suva area was to be constructed in 'B' camp at Samambula and a start was made on this building as soon as the more urgent task of housing the troops was under control. Half the building was to house the dental section and store while the other half was for a detachment of 7 Field Ambulance. It was built mainly by native labour under the supervision of the New Zealand Engineers, all the plumbing and fittings being done by New Zealand troops. The dental part of the building consisted of a surgery large enough to accommodate two dental officers, a workroom, orderly room and bulk dental store. All the rooms were larger than would have been considered necessary in New Zealand and as much window space as possible was included, this being very necessary in a humid tropical climate. On 30 January 1941, nearly three months after 'B' Force arrived on the island, the building was ready for use and dentistry could be carried on under conditions similar to those existing in New Zealand. To quote the Senior Dental Officer:

> **It was a very pleasant place in which to work. Hot and cold running water, electric light and efficient drainage were installed and the interior of the suite, with the exception of the store room, was painted. Best of all, authority had been got to purchase a large ice box for the surgery. In this climate some method of providing cold water for cooling impressions and storing denture cases is essential. One would not be entirely wrong in suggesting that an occasional bottle of warm beer may have found its way into the ice chest in preparation for a cold drink after working hours.**

Things had now sorted themselves out in Fiji. The main concentration area for Suva was Samambula Camp, about five miles from the centre of the town. It was divided into 'A' and 'B' camps by the Suva- Nausori road. In 'A' camp were the larger units such as 29 Battalion and 35 Battery, while 'B' camp housed the Training Battalion and such smaller units as the Army Service Corps, Ordnance, Motor Transport Field Workshops and Dental, sometimes referred to as

brigaded units. The dental unit, being small, shared quarters with 20 Light Aid Detachment and the Motor Transport Field Workshops, and these three units drew and distributed each other's pay in turn. In Namaka similar accommodation was built but was not occupied by the dental section until June 1941, when its use as a temporary camp hospital was no longer required. There was, however, quite suitable alternative accommodation and, on both sides of the island, six-monthly examination and treatment of all units was carried out.

THE NEW ZEALAND DENTAL SERVICES

STORES

Stores

There were enough expendable and non-expendable stores and equipment to last both dental sections for a long time without further stocking from New Zealand. Owing to the uncertainty of the war situation and the fact that there was no supply house in Fiji, it was considered wise to keep the stocks at this high level, so frequent indents were placed with the Army Base Dental Store, Wellington, with the result that the Dental Corps was one of the best equipped units in the brigade. Nearly every other arm of the service was suffering from extreme shortages. The credit for this happy state of affairs must be shared by the DDS for his untiring efforts in building up stocks generally and by the sergeant clerk for the meticulous care bestowed on this valuable and perishable asset.

Each dental section had field equipment with a normal three months' supply, so very little was drawn from the bulk store for some time. This store, although situated in the same building as the Suva section and under the control of the officer in command of that section in his capacity as Senior Dental Officer, was a separate entity. Its accounts were kept apart from those of the Suva section and both sections had to indent on it for their supplies.

THE NEW ZEALAND DENTAL SERVICES

ORGANISATION

Organisation

The Brigade Dental Officer carried out both staff and executive duties. In addition to being responsible to the Brigade Commander for all dental arrangements for the force, he was the only dental officer in the Suva area and, as such, was responsible for the actual treatment of about 2000 men. His staff consisted of one clerk, who also acted as storeman, two orderlies, one mechanic, one mechanic's orderly and a batman (officially called 'Orderly General Duties'). He needed them all. Although properly attached to Brigade Headquarters, most of his time was spent in his surgery at Samambula, so for convenience he lived with the Training Battalion in 'B' camp. The dental officer at Namaka was attached to 7 Field Ambulance and was responsible through the ambulance commander to the Brigade Dental Officer for the dental health of the troops on that side of the island. His staff consisted of one clerk orderly and a mechanic. He also had about 2000 men to treat. As soon as the dental hospitals were established, the work began to pour in, not because of serious deterioration in individual mouths but because of the large number of men each officer had to look after. If the men had not all been made dentally fit before leaving New Zealand, the task would have been impossible. As it was there had been valuable time lost waiting for accommodation and arrears of work had necessarily banked up. Fortunately, apart from an acute appendicitis for the batman and a skin rash for one of the mechanics, which were treated by the NZMC without evacuation to New Zealand, there were no casualties. The larger part of the work was prosthetic, as was so often the case with New Zealand troops. New dentures had to be made for those who had lost or damaged them; immediate dentures which had been inserted at the time of extraction in New Zealand were becoming unserviceable; repairs were made to broken dentures and some remodelling done.

On 20 February 1941 there was an unexpected interruption which might easily have been more serious. Everyone had heard about the hurricanes that periodically visited Pacific islands and most men felt that they would be cheated of an interesting experience if Fiji failed to produce one. Fiji did, but the men asked for no encore. It is impossible for anyone who has not experienced a hurricane to imagine that wind is capable of such devastating force. As the Brigade Dental Officer reported:

> **The Samabula telephone rang at 0930 hours and a voice announced that a hurricane was expected. Immediate steps were taken to protect all equipment and personal gear. Two men were detailed to look after the men's belongings in their quarters, a Staff-Sergeant to look after the gear in the Sergeants' hut and a sergeant and private to remain with the Brigade Dental Officer in the dental hospital.**
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> **Very little time elapsed between the warning and the onset of the storm. Windows to windward were boarded up and those to leeward kept open, and a very difficult job it proved to be, as they were of the type which were hinged at the top and pushed outward at the bottom, being held out by wooden bars. No sooner would they be propped open than they would shut again and most of the day was spent, soaked to the skin, trying to keep open windows which just wouldn't stay that way. The object in keeping windows open on the leeward side is to allow the wind, or some of it, to pass through the building. This reduces the force applied to the windward side which might otherwise be enough literally to push the building over.**
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> **The storm reached its height at midday and from then on gradually decreased. We were fortunate in sustaining little damage even in the bulk store, mainly due to the stores sergeant who worked like a Trojan to protect his beloved stores. Just before the storm reached its peak the workers in the dental hospital received**

reinforcements as the staff-sergeant had been forced to evacuate the sergeants' quarters, the hut having developed such a lean as to be voted by all present as unsafe.

As the hurricane abated in the late afternoon a sigh of relief went up all round. It had been an eventful and very tiring day and preparations had to be made for the night. The dental hospital became sleeping quarters for our sergeants and several Field Ambulance men whose quarters had also been destroyed. Planks and trestles were used to sleep on as the floor was covered in slimy mud to a depth of two or three inches. One feature of a first class hurricane is that the wind picks up fine silt with the result that everything is covered with a film of mud when the show is over. It took days to wash everything down after the storm.

In the evening, as everybody was preparing for an early night, the camp fire-alarm rang and fire was found to have broken out in one of the stores containing a lot of inflammable material. Unfortunately for us, the hut occupied by our men was close to this so all personnel and gear had to be moved out until the fire was under control.

Many of us had expressed the wish to experience a hurricane about which we had heard so much but few want to repeat the experience. A few days were sufficient to repair the damage to the dental hospital, mainly some panes of glass ruined by amateur and over-enthusiastic carpenters and general cleaning and drying out equipment.

The big motor transport field workshop, less than a hundred yards from the dental hospital, was flattened out but the Corps escaped lightly. Loss or damage to the equipment would have seriously affected its programme.

With the arrival in January 1941 of Royal New Zealand Navy and Royal New Zealand Air Force units, these also became the responsibility

of the Dental Corps. There were not enough of them to justify asking New Zealand for another dental officer. In the western area the airfield, now well known as Nadi (pronounced Nandi), was close to Namaka Camp and in Suva the Air Force was not as yet dispersed. Later the Air Force grew large enough to have a dental service, but the Navy at no time had more men than could be conveniently serviced by either the Army or Air Force dental sections.

One of the difficulties arising out of the shortage of staff centred round the dual appointment held by the Brigade Dental Officer. Besides being dental officer of the section at Samambula, he was responsible to the Brigade Commander for the work of the dental officer at Namaka and had to pay occasional visits to the western area. While he was away, 2000 men were without the services of a dentist. Up to the middle of 1941 the Air Force was always willing to take him across the island on routine flights, which meant that his business could be easily completed in one day. Instructions were then issued from Brigade Headquarters that army officers were not to be carried on the planes. Some of the aircraft had been destroyed in the hurricane and apparently there had been some abuse of the limited remainder by joy-riding. The instruction was unfortunate for the Brigade Dental Officer and for the men in the Suva area as, using motor transport, each visit to Namaka took at least three days.

By the middle of April all troops in both areas, with the exception of some artillery at Momi Bay, were dentally fit. Momi Bay was some 15 miles from Namaka, so the dental section moved out and treated the gunners under field conditions. This was the first time the section had had an opportunity to work in the field, although it had been on manoeuvres with 7 Field Ambulance at Caboni (pronounced Thamboni) for a week in March as an exercise. At Momi Bay it worked in bell tents with coconut palm leaves as a floor covering and commandeered a Fijian *bure*, or thatched native hut, as a laboratory. In a week the section returned to Namaka. In accordance with policy, the first relief for the force arrived from New Zealand in May 1941 and with it a new dental

section for Namaka. Captain A. A. Heath [1] relieved Captain Cox but Major Fitzgerald was not relieved until July, when Major T. V. Anson became Brigade Dental Officer.

The new relief brought increased work for the Corps. All the men had to be examined and there were the inevitable late postings who had not received treatment in New Zealand. There was plenty of work, but life was made pleasant by the hospitality of the people of Fiji and by organised sport such as cricket, boxing, running and even horse racing. There were cinemas; shops full of goods not seen in New Zealand for a long time and at prices unbelievably low; kava ceremonies and Indian fire-walkers; stockings to gladden the hearts of the women at home; tortoise-shell, Indian jewellery and Chinese silks; pineapples, pawpaws, mangoes in profusion and plenty of good Scotch whisky. Discipline, though strict, was not oppressive and the men of the Corps were fit, busy and happy, with no time to be affected by that apathy known to the Fijians as *malua*. As yet only the distant rumblings of war were heard and there was some resentment by the New Zealanders at being condemned to stay in a backwater, however pleasant, while their friends in the Middle East were already blooded.

At the end of 1941 came Pearl Harbour and a real threat to Fiji. Several practice alarms had been held and, by a curious coincidence, the whole brigade had gone to action stations at the exact time the Japanese launched their treacherous attack. Obviously the force

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[1] Capt A. A. Heath; Napier; born Napier, 29 Jul 1912; dental surgeon.

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would have to be increased to meet this new threat and, with it, the Dental Service must be reorganised. In December the Director of Dental Services accompanied other service chiefs on a flying visit and reorganised the service on the basis of a strength of two brigades, providing a separate section for the Air Force. Major Fitzgerald was to come back to Fiji as ADDS and, with a clerk, was to be attached to Force

Headquarters. There were to be two brigade dental hospitals, each with three dental officers. A certain amount of transport and twenty-one other ranks completed the establishment. Major Anson and Captain Heath were to return to New Zealand so, with the exception of Major Fitzgerald and some other ranks, there was an entirely new team.

All ideas of limiting service in Fiji to six months were discarded and men and equipment poured in as fast as ships could bring them from New Zealand. From being a quiet backwater, Fiji was now New Zealand's front line of defence. On 14 January two officers and seven other ranks arrived at Lautoka to staff the dental hospital at Namaka, forming 14 Brigade Dental Hospital, which was responsible to the Brigade Commander and the ADDS and no longer part of 7 Field Ambulance.

Both brigade dental hospitals were now fully equipped to look after themselves. They were their own accounting units and indented on the bulk store for their dental requirements and on the Ordnance Department for their other needs. The western area, defended by 14 Brigade, was large and the units were scattered. Headquarters with one battalion and some smaller units occupied Namaka, one infantry battalion was at Momi Bay and another at Sabeto (pronounced Sambeto), a new camp not far from Namaka but over poor roads. There were also field and anti-aircraft artillery spread over the whole area. The total strength was approximately 5000, a big task for two dental officers.

The men were a mixture of old and new troops, so the only way of finding out how much work there was to do was to examine them all and start afresh. A dental section was detached from the Brigade Dental Hospital and sent to 37 Battalion at Sambeto but took no mechanic with it. The mechanical staff was limited so it was necessary to get every ounce of work from them. More could be done in a hospital than in the field, so denture cases were sent from Sambeto to Namaka by despatch rider for processing. Shortage of staff was a continual worry in the western area but New Zealand could not supply more. Great efforts were called for and cheerfully given, with unfortunate results for the 14 Brigade dental officer, Captain J. M. McBrearty, [1] whose health later

broke down, causing a

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[1] Capt J. M. McBrearty; Greymouth; born Greymouth, 3 Nov 1913; dental surgeon.

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medical board to send him home to New Zealand, vigorously protesting.

The 8 Brigade dental hospital in the Suva area needed less reorganisation and, despite shortage of staff, the position was not so acute, for even with the addition of the divisional units to the number of the brigade troops, there was an extra dental officer to do the work. At this time No. 17 Field Dental Section was formed as a separate section, responsible direct to the ADDS. This could be used for treating outlying units as, for instance, 29 Battalion stationed at Nausori, some 20 miles from Suva. Its success depended largely on the ingenuity of its staff as it seldom operated where there were reasonable facilities and, although fully equipped, had to search for its own accommodation and improvise its own comfort. Later this improvisation led to a change in the design of the standard tent to make it more suitable for use in tropical climates. There was no mechanic with the section and prosthetic work, carefully wrapped in banana leaves, arrived regularly at Samambula by despatch rider.

With the expansion of the New Zealand Forces, the Fiji Defence Force of one infantry battalion, the Suva Battery for coastal defence, the Fiji Naval Force and other subsidiary units came under the General Officer Commanding the New Zealand Forces. The Dental Corps found itself responsible for a number of local Europeans, Fijian natives, Eurasians and Indians for whom there had been no organised dental treatment of any kind. Their condition was not as bad as might have been expected considering that few, other than the Europeans, had had any previous treatment. The first thing was to extract neglected teeth, or, more accurately, teeth that had been ruined by the white man's diet. Weston Price's world crusade against the over-refinement of natural

foodstuffs and his indictment of civilised man for introducing this evil to the native races were fully borne out by the dental examinations in Fiji. There was a marked difference in the incidence of caries between natives recently arrived from the back country and those who had spent a year or so near a European centre.

The ADDS asked that his establishment be increased by one officer and five other ranks, as, with the Fiji Defence Force added to the two New Zealand brigades, each officer had to treat and maintain 1900 men. With men recently made dentally fit and all conveniently concentrated in one area, at least one dental officer to 1000 men was considered essential to maintain dental fitness. Some of the men in Fiji had had no treatment at all and many of them were scattered all over the island. The answer from New Zealand was that dental officers were not, repeat not, available. Major Fitzgerald knew something of the acute shortage in New Zealand and was not altogether surprised at the answer, but it was cold comfort when he had to ask more from his staff than anyone had a right to expect from them. He suggested that native dental practitioners, trained in Samoa, could be co-opted to treat fully mobilised Fiji Defence Force troops under his direction. An assurance was received from the Director of Medical Services in the Fijian Government that there would be no friction between the Fijians and the Samoans, but Army Headquarters in Wellington turned the scheme down, deciding that the NZDC must accept the responsibility. The staff willingly accepted the added burden and found some compensation, at least at first, in the interesting study of the native dentition.

Captain J. P. S. Stocker, [1] dental officer to the Air Force in Fiji, wrote of his treatment of native troops:

> I found that both Fijians and Indians had enamel which was comparatively easy to cut, and what a pleasure it was to work on a Fijian, you could just about walk into his mouth, he had such well-developed jaws. Their lips were surprisingly soft and flexible and they were usually very good patients. My only complaint was that

their huge mop of fuzzy hair pricked my left forearm making it quite itchy.

Following the expansion of the force in January 1942, no dental personnel were attached to medical units. Primarily this was because of the shortage of dental officers but chiefly because, with the force not in action, the medical units were not in the best situations from which the dental officers could work. A large military hospital was being built at Sambeto, with provision in the plans for a dental section should this be required. The relationship between the two Corps was much the same as in New Zealand. The ADDS was responsible to the General Officer Commanding for organisation and administration and kept in the closest touch with the ADMS regarding the dental health of the troops. While the troops were acting as a garrison, the two services ran parallel courses, but in an emergency the relationship became closer. Fiji at this time was in a constant state of alert and alarms were frequent, so the Dental Corps had to decide what to do on these occasions. For a non-combatant unit, scientifically trained and suddenly deprived of its main function, the obvious place was with the Medical Corps. First-aid duties could be carried out, anaesthetics administered and co-operation given in the treatment of maxillo-facial injuries. Routine dental treatment would automatically stop and dental casualties would come through the same channels as medical ones. It was therefore decided that in an emergency the Dental Corps would report to the general hospitals for duty. At first some of the rank and file

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[1] Capt J. P. S. Stocker; Blenheim; born Picton, 9 Jan 1913; dental surgeon.

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were appointed as guards on ambulance vehicles but, after a strict interpretation of the non-combatant status of the Corps, this was discontinued.

One of the early problems was that of motor transport, a problem shared with practically every unit on the island. The war equipment

table laid it down that each Brigade Dental Section should have one 2-ton truck and one motor-cycle, but even these modest demands could not be met until the end of March 1942, when two 30-cwt trucks and two motor-cycles were received. One truck and one motor-cycle were immediately sent to Namaka and the other truck was sent to the Motor Transport Field Workshops to be converted into a mobile prosthetic laboratory. The canopy was raised, benches, cupboards and drawers were fitted and a water tank and sink installed. This took so long that the truck was only ready for use just before the existing organisation came to an end. The conversion of this truck into a specialised vehicle at this time leads to speculation as to whether the lessons of the war were being fully digested. A year before, a similar though more elaborate vehicle had been lost in Greece, and in the reconstruction of the Mobile Dental Unit in Egypt the wisdom of building another mobile laboratory had been questioned in the light of war experience. The trend was towards standard vehicles, which could be easily replaced, carrying the special equipment which must be capable of being easily and quickly transferred to a new vehicle. The truck in Fiji complied with neither of these requirements.

There was no provision for Army Service Corps drivers to be in charge of the Dental Corps vehicles as was the case with most mobile dental units. Dental orderlies with previous experience of heavy trucks were given a course of training in driving and maintenance, while others were instructed in the handling of motor-cycles. This was not considered a disadvantage by the ADDS, who wrote as follows:

> New Zealand Dental Corps transport was therefore the responsibility of NZDC personnel, an ideal state of affairs. Being driven and maintained by the 'Firm' they take a good deal more interest in their vehicles and in the job as well as ensuring unification of control.

It is difficult to agree with this opinion. No doubt the NZDC drove and cared for its vehicles well, but it cannot be denied that it was lucky to have had men in the Corps with previous experience of heavy trucks.

It is unfair to the Army Service Corps to suggest that its drivers would not have been equally enthusiastic and possibly more efficient. The record of those ASC drivers attached to dental units in other theatres of war rebuts the statement. A risk was being taken in entrusting valuable and essential transport to the care of semi-trained men. The risk was justified in this case because of the shortage of ASC drivers but does not commend itself as a regular practice.

On 24 March 1942 one officer and two other ranks arrived from New Zealand to complete the establishment and were immediately sent to Namaka, receiving a warm welcome from that overworked unit.

A recent addition to the organisation in the western area was a commando school at Vatakoula where men were trained in bush warfare. They were specially selected Fijians, officered by Europeans, and their task was to establish themselves in the hinterland and, in the event of invasion, to infiltrate into the enemy's lines and harass him. Their standard of physical fitness had to be exceptionally high and the Dental Corps, by reducing the possibility of dental casualties, could play an important part in the success or failure of the operation. First, all the men had to be made dentally fit while training at Vatakoula, for when they left there they would be in wild country where dental treatment was impossible and their only communication with headquarters would be by wireless. The Officer Commanding 14 Brigade Dental Section, relieved of some of his duties by the arrival of an extra officer, undertook the work himself. Even with the most meticulous care, however, it was impossible to guarantee complete immunity from dental trouble and some arrangements had to be made to meet these emergencies. Although, where possible, the troops lived off the land, they had to send down occasionally for some rations. There were pre-arranged points for these rations to be picked up, and if treatment was needed the commandos could send a signal and a dental officer with emergency haversack would meet them there. Actually the number of casualties was very small, a tribute to the work of the Brigade Dental Officer. Just after completing the work he was evacuated to Namaka hospital with acute tonsillitis,

and then to New Zealand for surgical treatment. The ADDS attributed his condition to overwork and again expressed his concern at the pressure at which dental officers were expected to work in that trying climate.

At this time 17 Field Dental Section was with 1 Battalion, Fiji Defence Force, a few miles south of Suva working in tents, and it was here that its dental officer designed improvements to the standard tent which were afterwards adopted by all sections working in the field in tropical countries. The small Indian pattern tent had a ground measurement of 14 ft by 14 ft and only a 2 ft wall, giving insufficient head room. It was a double-thickness tent and double-thickness fly of the ridge-pole type with three upright poles. Besides being cramped, it was hot to work in. The whole tent was raised by putting blocks under the poles and the space left between the tent wall and the ground was filled by a latticed wall of bamboo. The blocks were round posts, six inches in diameter and eighteen inches long, countersunk to take the base of the tent pole. The latticed wall was made in eight pieces about seven feet in length, one of which had a gateway in it. It was lashed to posts 4 in. by 4 in., driven into the ground at the corners of the tent and halfway along each side. With the existing tent pegs but longer ropes, the tent could be erected in much the same way as the original one. A slightly more elaborate modification was to use a stout 15 ft ridgepole in place of the usual divided bamboo one. This could be threaded through the canvas loops of the tent and drilled at each end to take the uprights. This did away with the centre pole. In place of tent pegs a rail was erected at a height of 3 feet to which the ropes were tied, giving more space between the fly and the tent and more ventilation. Apart from the added comfort, this preserved the tent material which, under rainy, humid conditions, tended to mildew and, under dry hot conditions, 'lost life'.

As time went on it became apparent that big changes were imminent. The Americans were expected to undertake the defence of Fiji and the New Zealand Forces, with some exceptions, would be going

home. Stores and equipment were reassembled at Samambula. Certain non-expendable equipment, six months' supply of expendable equipment and two field outfits were kept and the rest was packed ready for shipment to New Zealand. This was in June 1942. No. 17 Field Dental Section was detached from the Division and made responsible to the Commandant of the Fiji Defence Force. In the western area, the field section was merely a detachment from the Brigade Dental Section, so it was divorced from this and became 18 Field Dental Section, attached to the anti-aircraft unit of 3 Division, 2 NZEF. Each area would then have its own section responsible for New Zealand and Fiji navy and army personnel.

Meanwhile, the American dental units had arrived, with Lieutenant-Colonel Semons as Senior Divisional Dental Officer. The ADDS took him with him on his final tour of the island to show him what facilities were available, after which most of the Corps returned to New Zealand. This is a convenient point at which to pause while the story of the dental service to the Air Force in Fiji is told.

THE NEW ZEALAND DENTAL SERVICES

DENTAL TREATMENT OF THE ROYAL NEW ZEALAND AIR FORCE IN FIJI

Dental Treatment of the Royal New Zealand Air Force in Fiji

The first detachment of the Royal New Zealand Air Force to arrive in Fiji consisted of 10 officers and 55 airmen, who sailed in HMNZS *Monowai* and SS *Rangatira* on 11 November 1940, arriving in Suva and Lautoka respectively on 14 November. The Army Brigade Group had arrived a fortnight earlier, complete with attached Dental Corps, so it was arranged that, for dental treatment, the Air Force should be added to the Army strength.

Royal New Zealand Air Force Headquarters was established at Government Buildings, Suva, with four officers and eleven men. Subsequently it was moved to Garrick House in Cakabau Road (pronounced Thakambau), where an underground operations room was built. In the western area, the remaining six officers and forty-four men formed No. 4 General Reconnaissance Squadron, the first in the south-west Pacific, and were quartered at Namaka Camp until January 1941. An airfield was opened at Nausori, some 20 miles from Suva, in November 1940 as a refuelling base for patrolling aircraft, and in March 1941 the first RNZAF station in the Pacific was established at Nandi, close to Namaka. Nandi was later to become, and still is, one of the big air stations of the Pacific, but at that time it could be used only for small planes.

With the limited flying facilities, the number of men was small, at least not large enough to keep a dental section fully employed; but, even before Japan entered the war, it became obvious that this would not be so for long. A Civil Construction Unit came from New Zealand to make runways at Nandi so that Hudsons could take over the long-distance patrols and the Ferry Command could use it as a link between America and Australia. No. 2 Mobile Heavy Construction Squadron, 7 Composite Works Squadron and 6 Works Maintenance Squadron also became based

at Nandi. The two dental officers struggled through 1941, but when the dental service was reorganised in early 1942 to meet the large increase in army strength, the rapidly expanding Air Force was excluded from this organisation. A dental section arrived from New Zealand specially for the Air Force. Commanded by Captain J. P. S. Stocker, the section was responsible to the DDS in Wellington through the officer commanding the Air Force in Fiji and was in no way under the direction of the ADDS.

It is questionable whether this separation of command was wise, as the Air Force was not all in the same area. The men were on both sides of the island and, as the dental officer could not be in two places at the same time, he had to have the co-operation of the Army Dental Service if large numbers of men were not to be deprived of attention while he was away. If the Navy, Army, and Air Force in Fiji had been looked upon as so many men to be treated, and the ADDS had been given the authority and the staff to carry this out, he could have made all necessary dispositions with reference to the changing conditions, something which could not be accurately assessed in Wellington.

The reasons for the decision can only be guessed. Possibly the Air Force thought that the large amount of army work might prejudice its chance of regular attention. If it had its own dental officer he could not be used to help the Army catch up with arrears. Possibly the DDS thought the ADDS already had enough on his hands and hesitated to saddle him with the extra burden of 1000 men, even with another section at his disposal. The system of accounting which kept the costs of the two services separate may have had something to do with it. The value is not so much in speculating as to the reasons but in analysing the results.

The ADDS was in Suva in close touch with Army and Air Force headquarters, in closer touch with the latter than the Air Force dental officer could be. If he could not see the wood for the trees, he was not capable of holding his command, a state of affairs contradicted by the

efficiency of his organisation. He could have added the Air Force to his responsibility and still have had only a fraction of the command held by the ADDS in the Middle East. There is no doubt that the Dental Service is most efficient when its sections can be quickly and easily moved to the different units needing treatment. Only unified control within the whole force can accomplish this. Fortunately in Fiji there was close co-operation between the ADDS and the Air Force Dental Officer, but there might not have been, and petty jealousies or a too rigid adherence to the letter of the law could have resulted in one or other of the services suffering.

Captain Stocker arrived in Suva in the first week in January 1942 in SS *Wahine*, somewhat hurriedly according to his account:

> **The 'Wahine' was poorly equipped for tropical troop-carrying, having no forced ventilation to the cabins, which became almost intolerable, with ports sealed from well before dusk to dawn. It was so stifling that the men in the lower cabins made no attempt to sleep there, preferring the open deck instead....**
>
> **Approaching Fiji we became increasingly conscious of heat and humidity, ... [and of] steep craggy hills shrouded in misty cloud.... We had had no time to get suitable clothing and, in that hot humid climate we were soon in a sorry state. The ADDS was most helpful in getting an issue for the men and some speed out of an Indian tailor on my behalf....**
>
> **My first impressions of Suva were of heat, sweat and smells, with at night hordes of cockroaches. Long months afterwards I was to develop quite an affection for Suva, the smells gradually fading and the heat, which at first had made my shirt wringing wet, becoming tolerable.**

The section was then taken by a communications flight DH89 from Nausori to Nandi:

> **It was a relief to be up in the cooler air again as we skirted**

around Suva, being careful not to annoy ack-ack batteries, and proceeded around the Southern coastline. There were many attractions and novelties on that first trip—rice fields, swamps, small farms, plantations, neat native villages, fish traps and many more, but the most striking were the gorgeous colours of the sea and coral reef. Mile after mile we flew, right down close to the beaches, following the line of the coral reef which encircles the island.

Nothing was ready for it at Nandi where, although a large building programme was in progress, there was no sign of a dental surgery. The section used a Public Works tent as a makeshift until the Works Squadron moved on and took it with it, leaving the section to find an Indian pattern tent more suitable to its requirements. The dental officer at Namaka had been working consistently on Air Force men but there was still plenty to do, especially for the construction squadrons, who complicated matters by employing many of their men on night shifts. The will to work was there, however, and this, combined with a sense of humour, seems to have overcome most of the difficulties, for the dental officer's reports are full of descriptions such as the following:

> At one stage they were building a large water tower about thirty yards from our sleeping quarters. We soon got used to sleeping through the din of a motor-driven concrete mixer but, every time they took an eight pound hammer to jar loose the concrete sticking to the sides, we came back to earth smartly. The mess kitchen at Nadi was of interest if visited late at night as everything, stores and all, seemed absolutely alive with cockroaches. If you gave a box of currants a smart jolt, those which did not scurry off were the currants.

It was not long before the framework of the new building, which was to be an extension of the medical one, was erected but shortage of labour and building materials prevented its completion for several months. Windows, lining and plumbing were hard to get, and small

things, such as screws and hinges, sent the dental officer on frequent shopping expeditions to Suva. The interior fittings were made by Chinese workmen. They made excellent joinery with the most elementary tools and built all the benches and cupboards in their workshops from blueprints. They were not particular, however, whether the prints were read from the front or back so that when it came to fitting things into the building, an aptitude for jigsaw puzzles and a judicious use of the saw were necessary.

The finished building consisted of two rooms, workroom and surgery, with a covered verandah running the full length of the medical and dental departments as a waiting room. The lack of an office, which Captain Stocker suggested could easily have been supplied by partitioning off part of the verandah, was a decided disadvantage. Except in the field, where recording and reportings should be kept at the lowest figure, there is enough clerical work in a dental section to warrant the provision of a separate office, apart from the inadvisability of using the surgery for other than its proper function.

With permanent quarters, the section settled down to serious work. There were many men transferred to the RNZAF from the Civil Construction Unit who had not been previously treated by the Corps and who had allowed their mouths to get into a bad state. They added a heavy burden to the dental officer, already responsible for 1000 men, and also added to his diagnostic problems. With initial treatment there was more need for such aids as X-ray which he did not possess at Nandi. The medical hospital at Namaka had one with the same head and tube as the average dental model but without the same range of movement. A little contortion on the part of the patient produced quite good results from this machine. In the western area, however, all the men were not conveniently concentrated in Nandi. The Works Squadron was scattered all over the country, for instance, twenty-three men operating a radar post on the island of Malolo, west of Nandi Bay. As these units could not come to Nandi to be examined, the dental officer had to pack up his chair and visit them, arranging for those needing treatment to have it

done on their leave trips.

Soon the Americans arrived in increasing numbers with Fortress and Liberator bombers, a welcome sight but raising a problem in accommodation, which squeezed the dental section out on to a corner of its verandah until a camp was built for the newcomers a mile or two away. These Americans were ahead of the main body of United States troops and had no Dental Corps of their own until June 1942. The New Zealand dental officer attended to their casualties in the meantime. Here are his comments:

> It was interesting to note the Americans' enlightened ideas about dental surgery. A surprisingly large number of them came to me asking for treatment or a check up 'Just in case'. What is more, some of them had the courtesy to come back and tell me that when their own dental officer arrived he had expressed favourable comment on my work.
>
> Although I may be in error here, I gathered that, despite the lavish scale of equipment available to the Americans, the NZDC could learn little from them about keeping the men up to the mark as regards dental treatment. We in the Corps have had years of great opportunity to get in some quiet propaganda for dental health and oral hygiene. How well we have carried out this obligation to our profession, only time will tell. Although the average American mouth which I saw generally had a more attractive dentition than that of the average New Zealander, I also saw some shocking mouths and ... some very mediocre work.

He also commented that the enamel of the Americans' teeth did not appear to be so 'glassy hard' as ours, giving his opinion that this may have been due to the continual chewing of candy, gum or peanuts.

It was now March 1942 and the Air Force Dental Officer was still busy at Nandi. The ADDS had been doing what he could for the Air Force in the Suva area but, owing to the pressure of army work, had to

withdraw his offer to attend to anything more than casualties in the future. The futility of expecting one dental section to give adequate attention to a divided force was exposed. There was still plenty to do at Nandi but, on 4 April, having arranged for casualties to report to Namaka, the section, complete with panniers, set off for Suva. It set up in a room at the Boys' Grammar School with the chair on a wide, well-lit verandah, with a packing case for the mechanic, and completed treatment in a month.

From early May to late August the Air Force dental section divided its time between Nandi and Nausori, striving, without ever quite succeeding, to keep up with the work. Finishing one station, it would arrive at the next to find new arrivals from New Zealand, Canada or Singapore with a lot of outstanding work to be done. While this was being done, the dental health of the others was gradually deteriorating.

At this stage the American Forces took over the defence of Fiji, but it seemed certain that, at the same time, the numbers of the RNZAF would increase. The Administration Officer to the Air Force realised the hopeless position of the dental officer and asked him for a full report of the situation to back up a request to Wellington for an additional officer. Wellington had few officers and many commitments' and was apparently embarrassed by the request. A somewhat acrimonious correspondence passed between the DDS and the Air Force Dental Officer which suggested that the former was not fully appreciative of the difficulties of the situation. Possibly some delay in the receipt of reports led to the misunderstanding, giving the DDS a false picture and making him believe that the hurdle was not so insurmountable as the dental officer made it out to be. Possibly the extreme shortage of dental officers suggested that a spur to increased effort was the solution. Whatever the reason, the result was a happy one with assurances of mutual respect and trust and a reorganisation of all three services in Fiji on a slightly more co-operative basis. It is emphasised that there would have been no misunderstanding if all dental arrangements in Fiji had been under the direction of the ADDS.

This brings us to the point at which we left the army story, and from now on the description applies to all three services.

It will be remembered that when most of the New Zealand troops left Fiji, Nos. 17 and 18 Dental Sections were retained to treat those remaining, with the exception of the Air Force. The dental health of the Air Force had deteriorated for the reasons just mentioned, but reports showed that the Army and the Navy were in a satisfactory condition. It was decided to restudy the whole position but, in the meantime, the two army sections were put at the disposal of the Air Force dental officer to establish dental fitness there as soon as possible. This was in September 1942, when the Air Force strength in Fiji was 1007, 491 being in the eastern area and 516 in the western.

In October, after consultation between the DDS and the heads of the Army and Air Force in Fiji, there was a complete reorganisation. There was still a disinclination to regard the three services as one dental problem, but the new organisation was not so rigidly divided into compartments as previously. Three sections were established.

1. RNZAF Station, Suva. A dental hospital was built at Laucala Bay (pronounced Lauthala), just out of Suva, where there was a flying-boat base. The section here was responsible to the DDS through RNZAF Fiji Headquarters for the dental health of all RNZAF men in the eastern area.
2. Headquarters, Fiji Section 2 NZEF, Suva. This was 18 Dental Section, which now became attached to the above command to be responsible for the dental health of all 2 NZEF and naval personnel in the eastern area. The dental officer was instructed to co-operate closely with Lauthala Bay.
3. No. 4 General Reconnaissance Squadron. The dental section attached here was to look after Navy, Army and Air Force personnel in the western area.

No. 17 Dental Section ceased to exist, its dental officer returned to New Zealand and its other ranks went to Lauthala Bay. Its stores were divided between the two sections in the eastern area and another officer was sent from New Zealand for 4 GR Squadron.

The Senior Medical Officer of the American Forces was approached with a request that his dental officers should do all conservative treatment for the Fiji Defence Force in both areas. The NZDC would do prosthetic work for this force and also for the Americans themselves, it being understood that they had no facilities for this class of work at the time. The reply was that shortage of supplies and staff prevented the Americans from doing anything except emergency treatment for the Fiji Defence Force. As the NZDC was also short of staff, the Fiji Defence Force had to be content with only emergency treatment from that source too.

Captain Stocker became Senior Dental Officer in Fiji and adviser on dental matters to the three services. The position at the end of 1942 was that 4 GR Squadron had moved to the eastern area, leaving only about fifty Air Force men behind, divided between the island of Malolo and a camp at Viseisei, halfway between Nandi and Lautoka. One dental section remained in the western area to look after these men and about 569 of the Army. The headquarters section in Suva was responsible for about 924 Army and Navy and the Lauthala Bay section for 1000 Air Force. All the Dental Corps buildings except that at Lauthala Bay had been taken over by the Americans, who also controlled all building materials. The result was that in most cases, such as at Nausori where 4 GR Squadron was stationed, converted buildings, tents or *bures* had to be used.

The organisation was ample to treat the three New Zealand services, but the Fiji Military Forces were expanding rapidly and the island had no Dental Corps of its own. In January 1943 the estimated strength of the New Zealand and Fiji Military Forces was over 9600.

Most of these troops were Fijian natives whose dental condition, according to a long and comprehensive report by Mr H. S. Mount, a dentist practising in Suva, had been steadily deteriorating for some years due to adoption of the European diet. Next to nothing had been done by the Fijian Government to check this. The men were serving under New

Zealand command and as such could be considered New Zealand troops, qualified to receive full treatment from the NZDC. On the other hand, the Dental Corps had only limited resources and was being asked to accept a responsibility rightly belonging to and totally ignored by the Fijian Government. Before committing himself to anything, the DDS decided to look into the position himself and arrived in Suva on 5 March 1943. With two of his officers, he examined a cross-section of 150 to 200 men from each of the battalions to find out how much work would be involved. On his return to New Zealand he recommended a new organisation with clearly defined limitation of responsibilities.

The new organisation, which was additional to the existing Fiji dental organisation, came into force in September 1943. It was called the New Zealand Dental Detachment, NZDC, Fiji Military Force, and consisted of three officers, one in the rank of major, and nine other ranks. Two field dental outfits were provided and stores were taken over from 18 Section, which had seen eighteen months' service and was broken up, its officer returning to New Zealand. A 3-ton Chevrolet truck was fitted out as a mobile laboratory and a heavy motor-cycle was included in the establishment. According to Major R. M. McDonald, NZDC, [1] the commanding officer, the transport needed some acclimatisation to local conditions as, the first time the truck was used on the rough roads, it nearly fell to bits and had to be sent to the workshops to be strengthened. It was also unpleasant to work in owing to bad ventilation. The motor-cycle took a dare-devil to ride it and luck to keep him out of hospital.

Although there was some dispersal of troops, the main concentrations were at Suva and Nausori in the eastern area, so the headquarters section was set up at the New Zealand camp at Tamavua in a house occupied by the medical section. There were two surgeries, prosthetic room, orderly room and large storeroom, electric power and water, facilities enough for all troops south of Nausori. The other section went to Naduruloulou Camp (pronounced Nanduruloulou) near Nausori to treat all units at and north of Nausori. It found a house used as 1 Bearer

Company headquarters and lived in tents, but soon got better accommodation by having a native hut constructed. These huts were very satisfactory in the hot moist climate, being better than tents except when frequent moves were contemplated.

Huts of bark, bamboo or palm leaves are used almost exclusively by the natives of the Pacific Islands. They are easy to build, everything growing close at hand, and, although varying slightly in the different island groups, are generally similar in design. The Fijian *bure* has a framework of native timber lashed together and on this are constructed sides of native grass or caneleaf thatching, the roof being thatched with the same material. They are cool, waterproof if well constructed, and resist most weather conditions, even hurricanes. Certain modifications can be made without sacrificing these advantages, such as incorporating windows or doors, providing floors of wood or concrete and installing electricity, running water and drainage. There is a certain risk of fire as, in areas with little rainfall, the materials get tinder dry, but this did not apply to Nausori with its constant rain, and in any case, modern extinguishers and ordinary care made them safer than for the natives, who used candles and kerosene lamps and seldom had a fire.

At this time Fijian troops were being used in the Solomon Islands. Though the policy was to give only limited treatment for these men, it was necessary to reduce the possibility of dental casualties as much as possible by eliminating gross lesions before they left Fiji. An examination of seven hundred native troops gives some idea of their standard of dental fitness and an indication of the policy adopted by the Corps:

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[1] Maj R. M. McDonald; Wairoa; born NZ 19 Jul 1906; dental surgeon.

	Per cent	
Dentally fit	28	Perfect teeth and membranes.
Reasonably	41	Men who will not seek treatment for nine months, have

fit		small cavities and in many cases heavy calculus deposits with slight marginal gingivitis. N.B. They were very happy about their dental condition and the detachment did not call them up except for occasional fillings and scalings.
Requiring extractions	27	Immediate, extraction of 480 teeth which when completed would place most of them in the 'Reasonably fit' category. Some required full clearances.
Other treatments	4	Scaling, fillings and dentures.

It needed accurate diagnosis and sound judgment to assess a standard of reasonable fitness and long hours of work to establish it. Brigadier Dittmer, [1] in command of the Fiji Military Forces and the Fiji Section of the 2 NZEF, showed his appreciation of the work of the Corps when he wrote:

> I would like to draw attention to the excellent job of work that has been done by the NZ Dental Detachment here. The Detachment has at times been called on to work hard and continuously over fairly long periods to ensure that the teeth of all ranks of units proceeding overseas were in a satisfactory condition; the work has always been done on time and done well, as well as to the satisfaction of those receiving treatment.

While appraising the application of the detachment to the task in Fiji, he was not fully appreciative of the dental position as a whole. The fact that there were 2225 Fijian troops in the forward area, in the same locality but some distance from 3 NZ Division with its dental services, worried him. He applied in March 1944 for permission to send part of the dental detachment to them. Reports from the forward area which afterwards proved to be misleading probably influenced him, coupled with the knowledge that the United States Forces did little dental treatment in the forward areas. He could not send the detachment without permission from Wellington because the DDS had stipulated in September 1943 that it was for service in Fiji only.

The DDS refused the request but made arrangements with a dental section attached to the RNZAF in the forward area to give treatment up to the standard adopted in Fiji. The dental officer at Bougainville was busy treating New Zealand men but agreed to do

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[1] 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–Feb 1942; comd 1 Inf Bde Gp (in NZ) Apr 1942–Aug 1943; 1 Div, Aug 1942–Jan 1943; Fiji Military Forces and Fiji Bde Gp, Sep 1943–Nov 1945; Commander, Central Military District, 1946–48.

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any urgent treatment for the Fiji Military Forces, while regretting his inability to undertake examination and full treatment for the European members of the force. It would appear from his report two months later that the urgency of the situation had been misrepresented, or at least unwittingly overestimated, for very few asked for his services and, of these, two were officers who wanted partial dentures for aesthetic reasons. Nevertheless, dental reinforcements were sent to Espiritu Santo in June 1944 to undertake fuller treatment.

In justice to Brigadier Dittmer, he could not have known at that time that considerable changes were mooted in the dental organisation in Fiji. The sections with the RNZAF at Lauthala Bay and Nausori were not fully employed. There was still an acute shortage of medically Grade I dental personnel for service in other theatres of war which weakened the justification for the detachment's presence in Fiji. The DDS gave instructions in June 1944 that it should return to New Zealand forthwith. This stirred up a veritable hornets' nest. There was a storm of protest and voluminous correspondence between Fiji and New Zealand, which lasted in one form or another almost to the end of the war.

The DDS was adamant and his decision was upheld by Headquarters in Wellington. To understand the position it is necessary to go back a little to bring into the picture certain activities of the Fiji Government.

The Fiji Department of Health started a scheme at the beginning of 1944 to provide a dental service at the Colonial War Memorial Hospital in Suva and a mobile dental clinic. Mr Vosailagi, a Fijian graduate of the Otago University Dental School in New Zealand, was attached to the hospital. He was treating inpatients, staff and native civilian casualties, and it was also rumoured that he was lecturing, or about to lecture to, eight Fijian dental students. This tardy recognition by the Government of some responsibility was probably inspired by the refusal of the New Zealand Dental Corps to give other than limited treatment to the Fijian native troops but was worthy of encouragement as a step in the right direction. Without assistance, however, it could be nothing but a gesture. There were no dental supply houses in Fiji, each dentist importing his own stock and equipment and keeping his own bulk store. The Fiji Government, having hitherto had no dental service, had practically no stock at the inauguration of the scheme and was still in that position in June 1944 when the DDS decided to withdraw the detachment from Fiji.

The DDS held that the NZDC had fulfilled its mission in the interests of the dental health of the Fijian natives and European soldiers for three and a half years, more especially in the last two. The whole force had been periodically examined and treated, was reported on 30 June to be in a reasonable state of dental health and should require little maintenance. The Corps was short of dental officers for its obligations to its own forces and he considered that the time had arrived for the Fiji Government to accept the responsibility of further maintenance of dental health in its forces. It was agreed that the three complete dental outfits belonging to the detachment, together with the mobile laboratory, would be sold to the Fiji Government. The fully equipped dental quarters in the New Zealand camp at Tamavua were to be made available to Mr Vosailagi. The RNZAF dental officers would undertake all treatment for the 2 NZEF and Royal New Zealand Navy at no cost to the Fiji Government, would help Mr Vosailagi in cases of emergency and would continue treatment for about one hundred full Europeans of the Fiji Military Forces who had hitherto been accepted on the same basis as

our own troops. The Fiji forces in the forward areas would continue to be treated by the NZDC.

The dental detachment returned to New Zealand in July 1944, leaving the treatment of all troops in Fiji to the two Air Force dental officers and Mr Vosailagi. In addition, the dental officer at Nausori was instructed to visit Tonga at regular intervals to look after a limited number of troops still stationed there. The stage was now set for what developed into a protracted argument in which the Fijian natives' dental treatment was the centrepiece. It is as well, therefore, to have a clear idea of the obligations of the two NZDC officers in Fiji. As the following figures show, they were up to the limit considered reasonable for the maintenance of dental health:

LAUTHALA BAY	
RNZAF	836
Navy	130
Army	180
Total	1146

Navy included approximately 60 Europeans of Fiji Naval Volunteer Reserve who had been receiving treatment previously.

Army included European members of Fiji Military Forces.

NAUSORI	
RNZAF (Nausori)	420
RNZAF (Tonga)	140
Army	580
Total	1140

Of the Army figures, 104 were on furlough in New Zealand and 72 were in forward areas where they were receiving treatment.

The relative Army figures for each section were liable to variation.

The coverage of these men was adequate and in accordance with the usual custom of the NZDC. The position of the Fijian native, however, was more confused. It is obvious that the ideal would have been to

establish complete dental fitness throughout the whole force but this was beyond the resources of the NZDC, quite apart from the injustice of expecting it to neglect its own obligations to undertake a responsibility belonging to the Fiji Government. The confusion arose in assessing the urgency of the work and the degree of dental fitness required. In one of his reports Major McDonald stated:

> **My opinion is that 90% of the natives and half-castes (European) are not really concerned about their dental condition but will report for extractions only when in pain. This is the only type of treatment they appreciate. The Fijian Government have shown no interest in our work nor have they requested that they receive a higher standard of treatment. I have observed that extensive dental caries does not affect the natives' health or physical fitness to the same extent as the Europeans. In fact, before the detachment arrived the Europeans and natives received no organised treatment from the Army, the Europeans reporting to the local dental surgeon and the natives to the Fijian dentist attached to the Colonial War Memorial Hospital.**

In view of this report it would appear that there was little to be alarmed about in the dental condition of the natives, nor was there more work than could be reasonably expected from Mr Vosailagi, equipped as he was with full facilities. Brigadier Dittmer, however, was not happy about it. He maintained that there would be about 6000 Fijians to cater for at an early date, that it was doubtful if the first and third battalions would be dentally fit on return from the forward areas and that the three hours daily, from Monday to Friday, were interfering with Mr Vosailagi's civilian duties. He backed up his request for dental reinforcements by expressing doubt about the accuracy of Major McDonald's reports:

> **I regret having to say that, if the withdrawal of the complete dental detachment was assisted or brought about in any way by the reports of Major McDonald, that officer either did not fully appreciate the situation here or he was anxious to have the dental**

detachment return to New Zealand for some other reason.

Presumably there must have been expert opinion to back up this statement and it is proper to investigate the source. The Air Force dental officers, whose reports are quoted later, substantially agreed with Major McDonald. The only other sources were Mr Vosailagi and/or the Fiji Director of Medical Services, to both of whom the arrival of a dental detachment from New Zealand would be a distinct advantage, and the Senior Medical Officer of the New Zealand Forces. The last part of Brigadier Dittmer's statement must be considered as his personal opinion, which in the absence of any evidence is impossible to substantiate or refute.

Actually, the dental situation in the forward areas was satisfactory, as shown by a cable to the DDS:

> **Dental condition F.M.F. first battalion, Europeans fit, all necessary extractions for natives done. Third battalion and first Dock battalion, Europeans fit, natives have had emergency treatment, more required.**

In view of this the Brigadier was informed by the DDS that the dental officers in Fiji had the local situation well in hand, the men in the forward area were reasonably fit and it was regretted that the resources of the NZDC would not permit sending reinforcements. He asked Brigadier Dittmer to explain the position to the Colonial Secretary by assuring him that the services rendered by the NZDC to the European and native members of the Fiji Military Forces over the last three years had been considerable, with far-reaching effects not only on their dental but on their general health; that with the dental equipment handed over to his Government and the facilities at the New Zealand camp at Tamavua, the task of maintaining them in their present state should not unduly encroach on the civilian duties of his Government dental officer, provided that arrangements for implementing a regular, though necessarily restricted, maintenance service were not unduly delayed.

The Fiji Medical Service failed to cope with the situation. Mr Vosailagi would do no prosthetic work and gave only limited time to his army duties. The Fiji Government would not commission him on a full-time basis and made further determined efforts to hand the responsibility back to the NZDC. The matter was not handled very tactfully as the first move was a report from the senior officer of the New Zealand Medical Corps to the ADMS, which was forwarded to the Director-General of Medical Services:

> **I am informed by the Senior Medical Officer that there is the greatest difficulty now in obtaining dental treatment for New Zealand Army and Fijian personnel, particularly as regards prosthetic work, and it is felt that there is a definite need for a dental section to be attached to the New Zealand Camp. Might this question be taken up with the Director of Dental Services with a view to the provision of a satisfactory dental service.**

Somewhat naturally this antagonised the two dental officers in Fiji and the Senior Medical Officer later modified his report, admitting that the service to the Army was eminently satisfactory, except for transport difficulties which were out of the control of the dental officers, and that he only meant it to refer to the men of the Fiji Military Forces. Also, the DDS naturally expected that complaints about the dental service would be conveyed to the dental officers in Fiji rather than reach him in a roundabout way through the Medical Service. In fairness to the Senior Medical Officer, the figures of a recent examination of 113 men of a Fijian company made the situation look serious and he can hardly be blamed for being affected by the general panic. Neither could he be expected to know without advice that, although there had undoubtedly been some deterioration, it was not as serious as the figures might indicate. He was not in a position to interpret the figures correctly and his chief error was in not accepting the advice of the dental officers in Fiji. Their reports are full of interest:

> **In November, at the request of the Senior Medical Officer of**

the Fiji Military Forces and in company with Mr. Vosailagi, I examined one Company of the third battalion of the Fiji Military Forces, the personnel being wholly Fijian and the number 113. The examination was thorough and disclosed a considerable amount of conservative work to be done. For the 113 men, a total of approximately 500 cavities were found. This figure is not so alarming as it sounds because, included in it, were large numbers of deep pits and fissures, which may or may not be carious. The amount of advanced caries was not very great. A notable feature of the men's mouths was the large amount of heavy calculus deposit with accompanying gingivitis. The number of extractions and dentures required was very small.

To include only the figures without the explanation would certainly reveal a serious state of affairs.

To get all these men dentally fit on the New Zealand Army standards would require the services of a number of officers for some considerable period, particularly when it is realised that it is impossible in the Fijian climate to maintain the same rate of work as in New Zealand.

The present set up seems adequate to give the Fijian troops sufficient treatment to keep them in reasonable dental health and free from pain and their present condition is incomparably better than it was on their enlistment.

I found the general condition of the native members of the Fiji Military Forces to be very good and I think the position as regards the dental fitness has been erroneously reported. This is particularly evident in denture work required as, from observations, it appears that they have expected partial dentures where there are perhaps two anterior teeth missing and thirty perfectly formed teeth remaining, a very common condition amongst them. Oral hygiene generally is only fair and to remedy same would, in my opinion, take some time and in the majority of

cases would be time wasted.

Presumably these expert opinions were not accepted, for on 13 December 1944 a cable was sent from Headquarters, Fiji, to Army Headquarters, Wellington:

> **Dental condition of all battalions Fiji Infantry Regiment very serious. Urgent need two dentists and three mechanics for repair and denture work. Work required extensive and urgent. Government dental service quite inadequate here and no prospect of improvement locally in dental service for battalions. RNZAF officers can undertake only European personnel.**

Obviously the Fiji Medical Service had made no serious effort to give an adequate dental service to the Fiji Force, had ignored the advice of the DDS, had adopted the report of the Senior Medical Officer in preference to those of the dental officers and now wanted the NZDC to undertake a task beyond reasonable demands and one that arose from its own neglect.

What followed is an excellent example of the wisdom of placing the control of the Dental Corps in its own hands. The Director-General of Medical Services in New Zealand, finding that the DDS refused to be stampeded into hasty action, approached the Adjutant-General. He repeated the assertion he had made on many occasions that the dental services should come under medical control as a specialist branch, and it is reasonable to assume that, if this had been the case, dental officers and mechanics would have been withdrawn from important posts to be sent to Fiji. As will be seen very shortly, this would have been a complete waste of valuable manpower. The decision was left to the DDS.

He agreed to take over the responsibility for the natives up to a specified standard only, by temporarily neglecting the RNZAF, who at that time were all dentally fit. He therefore instructed the Air Force dental officers to do the work. The standard laid down was:

1. **No insertion of metal or cement fillings.**

2. Extraction of teeth only where considered necessary to obviate pain or to remove septic conditions.
3. The provision, remodel or repair of artificial dentures. Partial dentures to be provided only where there is insufficient masticatory efficiency without them.
4. Prophylactic treatment up to a point if the Government dentist cannot cope with this phase of the work.

The RNZAF dental officers had very little difficulty in doing what was necessary for the natives and it was only a fortnight before the Senior Dental Officer cabled Wellington:

> Third and Fourth battalions completed to standard required except small amount of denture work. First battalion to be treated by Vosailagi. No assistance required.

All denture work for the first battalion was also carried out by these officers free of cost to the Fiji Government.

By adopting a common-sense standard instead of 'Crying for the moon', the Fiji Government, through its own dentist, could have held on to the satisfactory state of dental fitness established by the dental detachment before it left for New Zealand in July 1944. As it was, the New Zealand troops had to be neglected for two weeks by their own dental sections and, had it not been for the perception and tenacity of the DDS and his advisers, two dental officers and three mechanics would have left the war effort for a labour of Sisyphus. The state of the natives' teeth was only related to their service diet in those cases where they had not been in touch with European civilisation before the war. The deterioration in the mouths of the others had been known to the Fiji authorities for a long time and mobilisation had merely served to highlight this fact. It was not the duty of the NZDC to correct these defects, and it had already done more than might reasonably have been expected of it.

From March 1945 onwards there was a gradual retrenchment, beginning with the closing of the Nausori dental section and the return of that officer to New Zealand. At Lauthala Bay work continued till

September, when the Fiji Military Forces were demobilised and the New Zealand troops were expected shortly to return home. There was then a duty to see that all three services, whether returning home or remaining for duty in Fiji, were dentally fit. Added to this was an accumulation of prosthetic work for the natives, which it will be remembered Mr Vosailagi declined to do. To hurry on this work the DDS sent over an extra officer and three other ranks.

Everything was finished by 23 October 1945 and the extra personnel returned to New Zealand early in November, leaving Lauthala Bay in charge of one dental officer. For five years the NZDC had worked in Fiji, and though the conscientious discharge of duty is its own reward, to it may be added the satisfaction of leaving the Fijian native the better for its presence.

Little has been said of the Navy in Fiji. At no time, however, were there enough of them to need a dental section of their own. When they were in port they reported to the nearest Army or Air Force section, except on one occasion in June 1942. One of the biggest minesweepers, with a large complement, spent most of her time at sea so No. 17 Field Dental Section went to sea too. It is a question who enjoyed it the more, the ship's complement or the dental section. Judging by the warm welcome given to the dental officer and his men, it was probably the latter.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 26 — THIRD NEW ZEALAND DIVISION

Contents

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

THIRD New Zealand Division originated in Fiji as an enlargement of 8 Brigade Group, already there when Japan entered the war. The dental service to the Division in Fiji has already been described so the story will continue from August 1942, when it was relieved by the American Forces and returned to New Zealand to be reorganised either for the defence of the homeland or for service further afield.

New Zealand's commitments in other theatres of war had already strained her limited resources and she could not immediately produce another full division, so, although the organisation was divisional, the strength was only two brigades. Actually the Division never operated at a greater strength than two brigades and, as will be seen later, even these had to be disbanded before the end of the war. There were hopes, however, at the time of organisation that somehow or sometime a full division would eventuate and the Dental Corps had to be prepared for this. There had to be a basic organisation, which could expand with the Division without upsetting the administrative arrangements, yet be adequate to give coverage without waste of staff.

The establishment was based on the ratio of one dental officer to 1000 men. Excluded from this was the ADDS, whose duties were purely administrative. Lieutenant-Colonel O. E. L. Rout was appointed ADDS in September 1942, becoming officially known as Assistant Director of Dental Services, New Zealand Expeditionary Force in the Pacific (ADDS, 2 NZEF IP). The wording of his appointment is important. Administrative Instructions of 31 August 1942 stated:

> **The Assistant Director of Dental Services [is] to be responsible on behalf of the Director of Dental Services, Army Headquarters, Wellington to the General Officer Commanding the Third Division through the Base Commandant.**

1. For the general administration of the New Zealand Dental Corps in accordance with the principles laid down in 'Instructions to Dental Officers NZDC 1942' and distribution of the NZDC personnel amongst the units of the Force to the best advantage in the interests of manpower and efficiency.
2. For advice to the General Officer Commanding the Third Division and Base Commandant on all dental questions affecting the dental health of the troops.
3. For co-ordination and consultation with the Assistant Director of Medical Services to the Third Division on all questions affecting the general health of the troops.
4. For the control, maintenance and issue of all dental equipment and stores from the Advanced Base Dental Store and submission of requisitions on the Director of Dental Services, Army Headquarters, Wellington as required.

Appearing over the Adjutant-General's signature, these instructions were addressed to the Headquarters of 3 Division and copies were sent, among others, to the ADMS at Army Headquarters and ADMS of the Division. They appear to leave no room for misunderstanding. The ADDS wrote to the DDS on 1 October 1942:

> The truth is that 'Division' does not seem to have made up its mind just how we are responsible, re what and to whom, and it is all very awkward while this stage of flux and floundering disorder lasts. The General definitely has the right idea himself, according to our conversation the other day, but even up to that date had forgotten to pass on the result of your conference with him to AA & QMG and to General Staff. In the meantime they decline to give a definite answer. The ADMS says that all technical stuff is to go through him and everything else through the Base Commandant. The Base Commandant says that I've nothing to do with him and quotes our amended 'Administrative Instructions'.

Nothing can be found of any amended instructions to throw light on the Base Commandant's remark. The letter goes on:

> The ADMS interprets 'technical stuff' to include his decision as

to where I'm to put my section, which is 'With medical units where possible', and a desire to have all my Circular Administrative Instructions—General Staff Instructions and Circular Memoranda handed on through him. I'm getting everything except General Staff instructions direct and I've got them all. The General Staff instructions are sent through ADMS and I've got just two out of twelve that I know of.

The ADDS's task was made difficult and unpleasant. A rigid adherence to the terms of his appointment was inviting an open breach with Force Headquarters, while an acquiescence with the absorption of his command would rob him of all initiative in the performance of a carefully calculated undertaking. As an example, the ADMS's desire to attach dental sections 'With medical units where possible' conflicted with the advice the ADDS had received from the DDS in the Administrative Instructions, of which the ADMS had a copy.

The permanent attachment of a dental section to a Field Ambulance or General Hospital is not indicated as the Force is at present constituted owing to the extreme shortage of specialised dental personnel and the great amount of dental treatment required in the three arms of the New Zealand Forces. At no time can NZDC officers be spared for such duties as Assistant Adjutants, Intelligence Officers or Liaison Officers with Medical Units. They can be employed more usefully in the maintenance of dental fitness on the Lines of Communication or Base Depots, but where their services are considered necessary to co-operate with Medical Officers in Maxillo-Facial Injury cases or where a medical unit is favourably situated to enable a subsection of a Mobile Dental Section to function among the troops of the line, it should be made available by the ADDS or his representative, the OC Mobile Dental Section.

Medical Headquarters in Wellington received a copy on 1 September 1942, which makes the following minute sheet the more remarkable:

Adjutant-General.

Re: 3 Division, New Zealand Dental Corps.

I presume that the relationship of the ADDS, 3 Division and New Zealand Dental Sections to ADMS will be similar to that of 2 New Zealand Division, Middle East. It has not been suggested that the New Zealand Dental Corps will be directly under 'A' [Adjutant-General] but I am anxious that there shall be no misunderstanding.

(signed).....

Brigadier,
DGMS (Army and Air) 29/10/42

DGMS.

Have you discussed this with DDS? I presume he agrees with arrangements in Middle East.

(signed).....

Brigadier,
AG, 1/11/42

Adjutant-General.

I have not discussed this with the DDS. As regards his agreement with the arrangement in the Middle East, this was laid down early in the war and so far as I am aware, there has been no deviation, but I am particularly anxious that similar conditions should hold as regards 3 Division. My reason for mentioning this was because of the DDS's memorandum in which he asked that the New Zealand Dental Corps should be completely separate from the Medical Corps under the Adjutant-General.

(signed).....

Brigadier,
DGMS (Army and Air) 3/11/42

The relationship of the ADDS to the ADMS was clearly stated in the Adjutant-General's Administrative Instructions of 31 August 1942, quoted above. Inasmuch as the dental health of the troops was essential to their general health, there was no question of absence of responsibility to the ADMS, but the means by which that dental health was established was the province of the ADDS alone. In this respect it is difficult to put any other interpretation on the intention of the instructions than that the two services were to be separate. Exactly the same position existed in the Middle East. 'Notes and Instructions relating to the Organisation and Administration of the NZDC 2 NZEF', published in the Middle East, reads in paragraph 3:

> Headquarters of the New Zealand Dental Corps is at Headquarters 2 NZEF under the administration of an Assistant Director of Dental Services. This officer, who is responsible to the Director of Medical Services for the dental health of the Expeditionary Force, is in command of the Dental Corps with the Force; it is under his direct control on all policy and technical matters and he commands all New Zealand Dental Corps personnel.

The DGMS had on more than one occasion stated that the Dental Corps should be under his command as a specialist branch of medicine. Others held different views which had been expressed in tangible form by authoritative instructions.

While all this was going on, the Division was being formed in the Northern Military District of New Zealand. The men were being treated and the dental organisation was taking shape. Until 29 September 1942, when the ADDS formally accepted responsibility for the dental health of the force, most of the work was done in the field by the Northern

Military District mobile dental sections, and some in Papakura Camp at the dental hospital there.

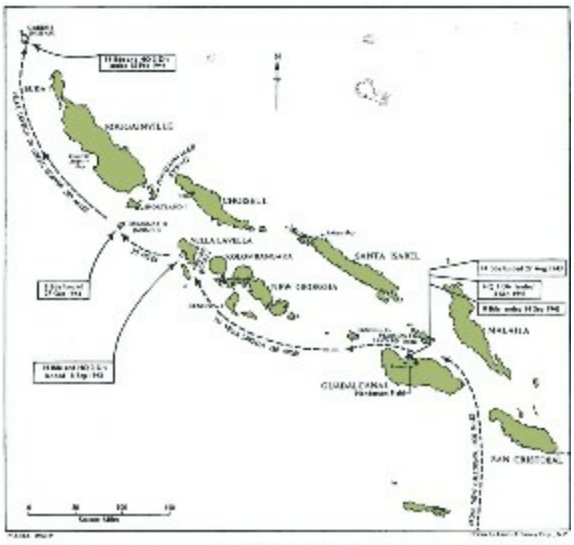
THE NEW ZEALAND DENTAL SERVICES

ORGANISATION

Organisation

It was important that the organisation should be capable of expanding as the force grew, that it should not be too rigid and should be able to be conveniently serviced for supplies and designed to meet either static or mobile conditions. The nucleus can be divided into three parts:

1. ***Headquarters and Advanced Base Dental Store*** **This was administrative headquarters of the ADDS. He had as staff a warrant officer second class, a staff quartermaster-sergeant, two clerk orderlies, one a staff-sergeant and one who could be a corporal, a storeman packer, batman and an Army Service Corps driver to look after the 15-cwt covered truck. There was no mention in the establishment of a car for the ADDS, who presumably would draw one from the general pool, but a bicycle was provided.**
2. ***Base Dental Hospital and NZDC Reinforcement Depot*** **As its name implies, this was a hospital capable of treating troop concentrations and of absorbing reinforcements to the Corps, either for its own use or for posting elsewhere. The original establishment was for a major in command with three captains or lieutenants; one sergeant as clerk; six orderlies, of whom one was a staff-sergeant, one a sergeant and one a corporal; four mechanics, of whom one was a staff-sergeant and one a sergeant; and one batman—a total staff of sixteen. Equipment was in the usual panniers, surgical, prosthetic and stores. There were four each of these and four emergency haversacks. Two Indian pattern tents provided operating and prosthetic accommodation and there was a bicycle for transport.**



SOLOMON ISLANDS

3. ***No. 10 Mobile Dental Section*** **This was capable of providing a headquarters section and six or possibly seven self-contained sub-sections for attachment to the headquarters of any unit not actually engaged in the battle area. A sub-section could be either complete with mechanic or could be used as a purely surgical unit, sending prosthetic work by motor-cycle transport to the nearest field prosthetic laboratory. The commanding officer was a major, who had with him seven captains or lieutenants. There was a warrant officer second class as staff quartermaster-sergeant; ten orderlies, of whom one was a staff-sergeant, four sergeants and two corporals; eight mechanics, of whom one was a staff-sergeant, three sergeants and one corporal; two motor-cycle orderlies, a cook and two batmen. There were in addition fourteen ASC drivers, of whom one was a sergeant, with permission to have a corporal, lancecorporal and a driver-mechanic. Transport consisted of one heavy car, two 30-cwt four-wheeled dual-rear covered trucks with portable laboratory fittings, eight similar vehicles without the fittings, two motorcycles and a 15-cwt water truck. They were equipped as for the Base Hospital but with enough panniers to equip each sub-section and the headquarters section. Specialists in maxillofacial injury work were included for attachment to a general hospital or other medical unit if required. It was probable that on occasions this mobile section would be attached to large formations such as a brigade, far from the ADDS and his headquarters. On these occasions its commanding officer would assume a similar relationship to the Brigade Commander as that of the ADDS to the GOC and would not communicate direct with the ADDS except on technical matters.**

There was an opportunity to test this organisation in New Zealand

while the Division was training in the Waikato area for three or four months. The dental units were brought up to strength and outfitted for overseas service, ordnance and technical equipment were assembled and checked and they moved with the Division from Papakura Camp to the Waikato district. From then on they were part of 2 NZEF (IP)

The force was bound for New Caledonia and all dental units embarked within a month of each other, the final and largest draft leaving New Zealand on 29 December 1942. They arrived in Nouméa harbour on New Year's Eve in a tropical mid-summer and encountered what turned out to be the beginning of a late wet season. One of the dental officers with this draft wrote:

> **We disembarked on New Year's Day and in a fifteen mile trip by motor transport to the staging camp at Dumbea, received our first impression of the island of New Caledonia. Predominant impressions were of intense heat, clouds of dust and almost barren hills, the only relief to the landscape being the ubiquitous Niaouli tree, which, with its characteristic outline and foliage, was to become a familiar sight during the following months. After remaining a few days at the staging camp, we travelled some ninety miles by motor transport to Bourail where Base Headquarters NZEF, IP had been established. Bourail is a small township of some five hundred very mixed inhabitants, French, Javanese, Tonkinese, Kanakas and the results of their interbreeding.**

The ADDS had arrived three weeks before this and had set up headquarters and the store in a wing of *L'EÁcole Communale*, which was eminently satisfactory after the rooms had been cleaned, a certain amount of calcimining done and repairs carried out by the unit. Benches and bins, mostly of the large pigeonhole variety, were built out of old timber and cases.

There was a hitch in the arrival of the equipment from New Zealand. The Base Dental Stores arrived with the last draft but the unit

equipment, classed as priority B, was left behind and did not arrive until 3 February. This was a serious setback. Four subsections of the Mobile Dental Section had arrived earlier with their own technical equipment but, with the dispersal of troops already evident, this was not much. In desperation, the ADDS decided to carry out the examination of base and divisional troops with emergency haversacks. The Base Dental Hospital, useless as such without equipment, was split up into sections to carry out the examinations. When the equipment arrived, they continued as separate sections, but doing full treatment, until a hospital was established at Base Reception Depot in Tene Valley, some five miles from Bourail.

The valley was surrounded by hills heavily wooded with niaouli trees and had a good stream for water supply and bathing. The first hospital was of tents sited along the top of a ridge within easy distance of the Base Training Depot, but later, when prefabricated tropical huts became available, a well appointed hospital was built on the same site. This was to treat all troops in the base area and, on the arrival of reinforcements from New Zealand, to examine and treat them before they were posted to divisional units. The treatment of the divisional troops, which were scattered the length and breadth of the island, was the responsibility of the Mobile Dental Section, working as a self-contained unit, its commanding officer being responsible to the ADDS.

NEW CALEDONIA

Throughout the force there was a general shortage of transport and, although the Mobile Dental Section began operating with all its authorised transport, this happy state of affairs did not last long. The first to be commandeered, 'For use where the need is more urgent' as the GOC put it, were the eight trucks without the portable laboratory fittings. Still the work went on and transport for all essential moves was provided from the general pool. Subsections were attached to various units under the direction of the OC Mobile Dental Section. They were quartered and rationed by that unit and moved on only when all had been made dentally fit. With these units often hundreds of miles apart in New Caledonia, and later on four different islands in the Solomons, the Mobile Dental Section fully justified its name. Whenever it was attached more or less intact to Divisional Headquarters or to a brigade, it grouped itself into a miniature camp of its own. The layouts, as at Moindah, Bouloupari and later at Guadalcanal, were similar and a credit to the commanding officer, Major A. I. McCowan. [1] The fivechair surgery, constructed from standard equipment and the natural resources of the country, showed considerable ingenuity in design, as also did the use of the valises in which the tents were carried and the standard waterproof sheets to make a cookhouse. In New Caledonia one discomfort for operator and patient came from hordes of rapacious mosquitoes, against whom the Medical Corps waged incessant war.

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[1] Maj A. I. McCowan, OBE; Pukekohe; born Stratford, 23 Jun 1914; dental surgeon.

THE NEW ZEALAND DENTAL SERVICES

STORES

Stores

The ADDS controlled the maintenance and issue of all stores, everything, from whatever source, being issued to him in the first place. If it had been possible to draw all stores from New Zealand, as was the case in Fiji, no difficulty would have been experienced, but arrangements had been made for the United States to provide most of those needed for general running purposes out of lend-lease. There were three sources available:

1. **From the Director of Dental Services at Army Headquarters, Wellington.**
2. **From United States Controlled Stores. These, which included everything for denture construction, needed a special requisition and the approval of the dental surgeon of the American Command.**
3. **From United States Maintenance Stores. These were a monthly maintenance schedule direct from the 21st Medical Supply.**

Theoretically, there was nothing wrong with this arrangement. It mattered little to the ADDS where the supplies came from so long as he could be sure of their arrival. In practice the position was most unsatisfactory. The first maintenance supplies came from the United States depot at Nouméa on 23 February 1943, but it was impossible to find out before delivery what could and what could not be supplied. The only information was that there was a general shortage, that NZDC requirements had been ordered and six months' supply would be arriving soon, but details were unavailable. In the American services the dental stores were included with the medical and veterinary, much to the annoyance of the Service Command Dental Surgeon, who stated that, although the medical stores were well looked after, the dental ones were pushed into the background. He told Colonel Rout that he was dedicating the rest of his days after the war to try to separate the dental services from medical control.

Meanwhile the Advanced Base Dental Store satisfied all demands but could not restock with such essentials as silver alloy, silicate cements, hypodermic needles, sheet wax or plaster of paris. Indents for these and other urgent supplies had to be placed on Wellington. The future supply of vulcanite rubber from American sources also caused the ADDS some anxiety. The American Dental Service was beginning to substitute acrylic resin for vulcanite as a denture material, which meant that less rubber would be imported. The new material was eminently suitable for tropical climates and has since become the standard foundation for dentures throughout the world. At that time, however, the NZDC everywhere was using vulcanite and, however sorely tempted the ADDS may have been to change, it would have been difficult for him to alter what was an established policy of the Corps. In addition to this, there was no guarantee that he could be provided with as much tin foil as he wanted and this was essential for curing the acrylic resin. There was a substitute for tin foil, a solution of cellulose tri-acetate in chloroform, which was procurable in New Zealand, but this was as yet only in the experimental stage. With the large number of dentures in the New Zealand Force the risk was too great. Strangely enough the obstacles in the path of smooth supply, which might have been expected to have caused the ADDS acute embarrassment, proved a blessing in disguise. They sickened the ADMS of wanting to control dental stores and he was soon thankful to wash his hands of the whole situation.

The organisation was fully tested in the early days in New Caledonia, or 'Necal' as it was called officially. Sections and sub-sections were attached to units all over the country and had to adapt themselves to a variety of conditions. Furniture and fittings had to be improvised because of a shortage of dressed timber. There was hardly a section that did not make for itself an electric polishing lathe from the battery and starter motor of some wrecked vehicle. In the surgery of the maxillo-facial injury section attached to 4 General Hospital were an ultra-modern cuspidor made from half a differential housing of a wrecked truck and an all-metal welded surgical table made from bits and pieces. In its laboratory was a petrol blowpipe made on the premises from

assorted parts which proved to be more efficient than the standard gas blowpipe for the casting and soldering of metal splints, and also a bunsen burner adapted from a petrol lamp.

Urgent treatment was carried out for the French and native population, who were most appreciative. Their teeth were badly neglected. The French farmers and their families, most of them appearing to be poorly off, were on the whole friendly and, despite the language barrier, offered some home life, one of the things the men missed most. Most of the leisure hours, however, were devoted to keeping fit. Until the advent of organised sport, swimming in the rivers and occasionally at excellent surf beaches was all the exercise to be found.

On 24 February the Corps suffered its first casualty. Captain B. S. Wilkie [1] was killed in a jeep accident when going from Moindah to Bourail to collect unit pay. Fortunately the sergeant with him escaped serious injury.

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[1] **Capt B. S. Wilkie; born NZ 23 Jun 1914; dental surgeon; accidentally killed 24 Feb 1943.**

THE NEW ZEALAND DENTAL SERVICES

REORGANISATION

Reorganisation

The intention was to examine and make dentally fit every man in the force once every six months, but with wide dispersal of troops, scarcity of transport and no margin for sickness or accident, this was not feasible. The ADDS reported on 31 May 1943:

> **It has been considered that an average figure for maintenance conservative treatment after six months is 50 fillings for 100 men, taking into consideration that 50% to 60% wear either partial, single or complete dentures. It was found however that examination of a cross section of 75 men of 30 Battalion, which was rendered dentally fit in February 43, disclosed 54 fillings for the 75. It appears therefore, subject to confirmation when general examination of all units is carried out after the six-monthly period, that the maintenance figures may be somewhat higher. This may be attributed to (*a*) Diet, (*b*) Conditions affecting general resistance, (*c*) Acclimatisation period. Steps are being taken to advise all personnel in oral hygiene and special care of the teeth and oral tissues but it is anticipated that the treatment required to maintain the Force will necessitate strict periodical survey of all units. It is expected that, even with the assistance of dental units arriving from New Zealand, it may not be possible to begin re-examination and treatment strictly within the six-monthly period in the first instance, the amount of casualty work also being a factor.**

Dental officers had been working at the ratio of one to 1500 men instead of one to 1000 as originally intended. Everyone agreed that more staff was needed but there was little unanimity when it came to deciding the form it should take and how it should be apportioned. The DDS and the ADDS based their calculations on the amount of work to be done and

a wide experience of the number of officers and men needed to carry it out. The new establishments they submitted for approval were practical but immediately became a bone of contention. The Medical Corps wanted dental sections attached to the Casualty Clearing Station and the Convalescent Depot, regardless of the fact that this had already been promised by the ADDS should the need arise. Its ideas were unacceptable to both ADDS and DDS as conflicting with the flexibility of the existing organisation. The Adjutant-General also took exception to some of the establishments and suggested various combinations and eliminations, presumably on the grounds of economy.

In the face of this opposition, what should have been a simple addition, designed specifically to meet a known situation, became an exercise in the art of sophistry and intrigue. The DDS, sure of the accuracy of his appreciation, submitted the establishments in a different form to achieve the same result. The issue became confused in a maze of correspondence out of which the DDS arose triumphant, having seized on a mistake to get his men overseas before it was discovered. As will be seen later, the end fully justified the means. Anything less than the establishment provided or a rigid attachment of personnel to medical units would have made the task impossible.

In addition to the reinforcements from New Zealand, the dental section which had been working on Norfolk Island was sent to New Caledonia. The new establishment totalled 21 officers and 86 other ranks. This was based on a ratio of one dental officer to 900 troops, which in view of the fact that the force would soon be widely dispersed, was none too many. The ADDS could provide treatment under operational or static conditions and could attach sections to medical units without losing the services of those sections when attachment became unnecessary. Generous provision was made for transport but, although approved, this was not allotted for reasons set out by the GOC to Army Headquarters on 12 April 1943:

> At the moment I do not think any transport, or at any rate

anything more than a limited amount of transport, is required for the Dental Services with this Force. For operations such as those which may be ahead of us, the transport is more likely to be boats than trucks. I suggest however that the establishments as drafted, be approved, but that in the meantime no effort be made to fill the transport requirements. It is more important that such vehicles as we can get from New Zealand should be allotted to units which have to undertake cross-country tasks.

This was eminently reasonable and apparently the Dental Corps could draw transport from the general pool when moves were necessary. Unsuccessful efforts were made to have the Quartermaster in charge of the Store commissioned as a subaltern, as was the case in the Base Dental Store in Wellington.

About July 1943 it became apparent that the Division was to move further forward although the Base was to remain in New Caledonia. Hopes of completing the strength of 15 Brigade could not be fulfilled and it was disbanded, leaving the Division on a two-brigade basis, consisting at this time of approximately 17,000 men, expected shortly to rise to 19,000.

The first task of the Dental Corps was to concentrate in the two brigade areas, Taom Valley and Bouloupari, so that all divisional troops would be dentally fit before embarkation to the forward areas. After a long discussion with the GOC, the ADDS decided that the Mobile Dental Section and 2 Maxillo-Facial Injuries Section would go forward with the Division, the latter being attached to the Casualty Clearing Station. The Officer Commanding the Mobile Dental Section would be the Senior Dental Officer with the Division and, as such, responsible for the dental health of the troops in the forward areas. The Maxillo-Facial Injuries Section would be conveniently situated to maintain the chain of treatment. In view of the medical policy of quick evacuation, cases would soon be back at the General Hospital in New Caledonia, to which the senior maxillo-facial officer was attached. Under this arrangement there would be ten dental officers at the Base, excluding the ADDS, and

nine in the forward area. Just before embarkation the officer in charge of 2 Maxillo-Facial Injuries Section was graded as unfit for tropical service and returned to New Zealand. The need for an immediate appointment of a substitute emphasises the importance of training all dental officers in the principles of maxillo-facial work. The intricate and often lengthy treatment of these cases can well be left to higher trained specialists, but the importance of the preliminary treatment cannot be too strongly stressed.

The ratio of dental officers to men again became one to 1000, which later proved to be none too many. In the climate they were to work in sickness could be expected to take its toll. Already in New Caledonia there had been cases of dengue fever, including the ADDS himself, and so many ailments, especially among the mechanics, that the ADDS went so far as to recommend a 10 per cent surplus of key personnel. Confidential reports from American sources painted a gloomy picture of casualties from malaria. They spoke of a 20 per cent average and as much as 70 per cent for some units. Though the New Zealanders hoped to reduce these figures to 10 per cent by enforcing strict anti-malaria precautions, the Dental Corps could not afford even this amount of wastage. Only men who were medically Grade I were allowed farther forward than New Caledonia, which meant that any change of grading would send them back to Base.

The Division was virtually dentally fit on embarkation, the condition of the base units was described as satisfactory and the curtain was ready to rise for the second act.

THE NEW ZEALAND DENTAL SERVICES

GUADALCANAL

Guadalcanal

For security reasons the forward area had been referred to as MAINYARD and was now revealed as Guadalcanal, an island of the Solomons Group. The dental units were split up among American ships of the convoy and sailed from Nouméa on 24 August 1943. They immediately encountered a heavy swell which accounted for the loss of nineteen artificial dentures from seasickness. It was perhaps at this moment that the full significance of the GOC's prophecy about transport was appreciated. If boats were to be the future transport rather than trucks, there was plenty of work ahead. There was every reason to expect loss and damage to artificial dentures after the Division came out of action. Reports from the Middle East substantiated this. The expectation of casualties before the Division went into action was something new. To have relied on a rigid attachment of dental sections to medical units, such as Field Ambulances and the Casualty Clearing Station, would have been totally inadequate to meet the prosthetic problem. The Mobile Dental Section was free to mingle with the whole force and either send self-contained sections where they were needed or bring the prosthetic work in to a central laboratory. Should the type of warfare merit the attachment of dental sections to medical units, the organisation was there to meet it. The whole dental organisation was built on the principle that changing circumstances could be met without any interference with the basic administration.

The first port of call was Vila on the island of Efate in the New Hebrides. Disembarkation drill was practised and landings were made on Meli Beach, the night being spent ashore in bivouac in heavy rain.

Leaving Vila harbour on 1 September, the convoy arrived at Guadalcanal the following day. The Mobile Dental Section set up headquarters at Point Cruz and the Maxillo-Facial Injuries Section at the

Casualty Clearing Station nearby. This was one of the best sites on the island. Some of the jungle was cleared away, the ground was levelled by bulldozers and the tents were set up. Some of the larger trees were left for shade and, being on the neck of a small isthmus, it was close to the sea and a good bathing beach. To begin with the surgeries were tents with coral floors, but later a building with a wooden floor was built, a great advantage in a land where high rainfall and violent thunderstorms were of almost nightly occurrence and the lower-lying areas constantly flooded. The rivers, unlike those in New Caledonia, were dirty and muddy, and until supplies from springs were organised, there was a shortage of water for washing and drinking. Everybody managed, however, and shower baths of all descriptions were improvised, even old gas masks being used for the purpose.

Guadalcanal had been freed from the Japanese in February 1943 and, at that time, was the principal forward American base for actions in other islands of the group. It was still close enough to Japanese bomber bases to receive regular attention and consequently camps had to be dispersed and camouflaged. They spread for over 60 miles along the coast and up steep ridges into the hinterland. The heat was oppressive, the island being latitude 9 degrees south, and the slightest exertion produced trickles of sweat. The digging of foxholes in the hard coral, an essential chore for every man as a protection from enemy action and our own falling shrapnel, was a labour not easily forgotten. During the day the men could work stripped to the waist but after dusk shirts had to be worn as a protection from the mosquitoes, whose bite brought malaria. This precaution, plus insect repellent lotion plus atebrin, paid dividends, for proportionately the New Zealand Division had a much smaller number of casualties from malaria than the Americans, who placed more faith in atebrin alone.

Sub-sections were attached to units but the days of leisurely training were over and the Division was feverishly busy. ‘On active service’ really meant what it said and few were inclined to waste precious time on dental parades. Casualty treatment was all that could reasonably be

done and the routine of examination and treatment, as carried out at the Base, could not be attempted. This was anticipated and was the chief reason for the intense drive for dental fitness at the Base, but the need for constant vigilance was not forgotten. As the ADDS reported on 14 January 1944:

> There is a noticeable similarity in the amount of dental treatment completed in the Base Area (Necal) and in the forward area (Mainyard). In other words, the amount of treatment required to make fit and maintain 5,000 men in Necal is about the same as the casualty treatment carried out for 13,000 men in the forward area. The natural conclusion is that there is a considerable amount of treatment outstanding in the forward area.

It is when the fighting forces come out of action and concentrate in static form that the Dental Corps can catch up with arrears. This never happened with the whole 3 Division. It was under the general command of the Americans and never went into action as a complete force. Apart from the fact that it was never a complete division of three brigades, the two brigades, the 8th and the 14th, never fought on the same island and did not join up again until the return to New Caledonia in 1944. Even on Guadalcanal they were not together for long as, when 8 Brigade landed on 14 September, the 14th was actually preparing to leave for the assault on Vella Lavella. No. 10 Mobile Dental Section therefore never had the opportunity of working other than as detached sub-sections.

The Mobile Dental Section was supplied with panniers containing enough for ninety days. In addition, three 'units' of dental stores from the United States Maintenance Schedule were shipped forward with the Advance Base Medical Stores. As in New Caledonia, however, this shipment contained few of the essentials and could not be relied on except as a stopgap. The only sure source of supply was from the ADDS, but if everything had to go through his store at Bourail, it meant unnecessary movement, delay and expense. On the other hand, the ADDS was in charge of all dental stores in the force, whether at the Base or hundreds of miles away in the forward areas. Setting up a new store at

the Forward Maintenance Centre, as the forward base at Guadalcanal was called, would deprive him of full control and lead to duplication and confusion. A section of the existing Advanced Base Dental Store was therefore established with an NCO in charge, responsible to the OC Mobile Dental Section as deputy for the ADDS. This branch was stocked and maintained by the ADDS, but time and expense were saved by dividing the requisitions on Wellington into New Caledonia and Guadalcanal requirements so that they could be shipped direct but were still under the control of the ADDS. Controlled and Maintenance United States stores could also go through the branch store. The system worked smoothly and was one worry less for the ADDS, who was always uneasy about the uncertainty of American supplies, especially of prosthetic materials. Indeed, after visiting the DDS in November, he decided to draw practically everything from Wellington and to use the American source only for minor non-essentials or materials known to be stocked in reasonable amounts.

Before going any further it is opportune to glance at the character of the war in the Pacific so that the dental problem may be more easily appreciated. This was no open warfare with fast transport, easy communications, broad vision and movement on a large scale, but was fought in dense jungle by small patrols when distances were counted in yards rather than miles. To quote from a survey written for the New Zealand Army Board by an officer who served in the campaign:

> **Conditions were harsh and difficult. Rain fell, drenching the men and soaking their equipment and stores and turning the jungle into a bog. Progress was slow, amounting to only 300 to 600 yards a day during contact with the enemy, and a company front was rarely more than 100 yards wide. The men moved along narrow tracks in single file, hindered by tree roots and clutching vines and always on the alert against ambush or enemy traps. The construction of roads was impossible and would have taken months of work with bulldozers. Every noise was suspect, for the Jap, hidden among the roots of the trees or up the trees**

themselves, held his fire until patrols came within five or ten yards.... Every yard of ground had to be searched thoroughly, and when it was declared clear by the patrols, other troops followed round the coast in landing craft, establishing bases at sites dictated by openings in the reef for the next probe forward.

Quite obviously there was no place for the Dental Corps in warfare of this type. Its contribution was to see that all men going out on these patrols were in such a good state of dental health that dental casualties, unassociated with general casualties, could be ignored as being too few to affect the efficiency of the campaign. There was therefore no need, and indeed no justification, for placing a dental section further forward than the Casualty Clearing Station. It was the medical policy to evacuate all casualties as soon as possible, so anything serious affecting the Dental Corps, such as maxillo-facial injuries, would be sent back immediately.

As an example, in the Vella Lavella operation 22 Field Ambulance had an Advanced Dressing Station with each of two battalions converging on the Japanese in the north-west of the island. They evacuated the sick and wounded as soon as possible by barge to a field hospital established among the palms of Gill's Plantation on the other side of the island. Emergency operations could be carried out here but usually the casualties were sent on, sometimes even by plane, to the Casualty Clearing Station on Guadalcanal. With the exception of preliminary treatment of maxillo-facial injuries, there was nowhere on this chain forward of the Casualty Clearing Station where a dental section would have been of use. When, however, the Japanese had been driven out of an island, there came a time when the brigade paused while acting as a garrison to protect air-fields and naval bases and to plan the next move. Then the Mobile Dental Section could send forward sub-sections to attend casualties and carry on the drive for dental fitness.

THE NEW ZEALAND DENTAL SERVICES

VELLA LAVELLA

Vella Lavella

The capture of Vella Lavella was the first operation carried out by the Division. Fourteenth Brigade landed on the island on 18 September 1943, bypassing enemy-occupied Kolombangara and some smaller islands near New Georgia. The last of the Japanese were evacuated by barges to waiting destroyers on the night of 6 October while the battalions were preparing for a final assault, and on the same day at 7.45 a.m. two sub-sections of the Mobile Dental Section left Guadalcanal for Vella Lavella.

Arriving on 8 October, they were attached to 17 Field Regiment and 30 Battalion, both at Gill's Plantation, on the edge of a low cliff behind Joroveto on the east coast. Major McCowan went up with them to see something of the general conditions, returning to Guadalcanal by air the next day. There were about 3700 troops on the island, a somewhat formidable task for two sections, especially as they were scattered in places inaccessible by land in a country almost entirely covered by dense jungle. Under these conditions examination and full treatment were impracticable but there was any amount of casualty work. The sections attached themselves to units in turn, only moving on when all casualties had been treated. It was dentistry under the most primitive conditions, never dry and always hot, the smells of the surgery a welcome relief from the stench of decaying vegetation; surrounded by birds, insects, lizards and crabs and at night by the cacophony of the jungle orchestra. Tent sites had to be cleared with pick and shovel in the hard coral rock. For the size of the section the space required was large as three sites had to be prepared for surgery, laboratory and sleeping quarters. This was exceptionally hard work for so few men. The floors of the tents were usually tightly packed coral sand as being the easiest to keep clean and tidy. Sawn timber was scarce so benches for the

workroom had to be made of anything available, often mahogany, teak or rosewood.

Climatic conditions forced the sections to work shorter hours than they would have done at the Base, allotting time for rest and recreation. Hobbies were encouraged, one of the most popular being the fashioning of knick-knacks from the abundant supply of scrap metal. The popular sports of Guadalcanal, canoeing and baseball, gave place to tenniquoits in the late afternoon. Swimming was still popular and several men learnt to swim at Vella Lavella. The American Forces held cinema shows almost nightly in the open air regardless of rain or thunderstorms, only closing down, and then hurriedly, during air-raid alerts.

Very soon Divisional Headquarters established itself on Vella Lavella. Roads were pierced through the jungle, rivers and streams bridged and orderly camps laid out. Working conditions were improving but, on the other hand, more men were arriving regularly from Guadalcanal until by 25 October there were 17,000 New Zealanders and Americans on the island. Obviously two sub-sections could not cope with even casualty treatment for so many and on 6 November sub-section 10/5 [1] left Guadalcanal, arriving on 8 November.

Transport was one of the chief difficulties and in most cases was by boat. Typical reports from a sub-section give some idea of this:

> Sub-section 10/2 landed at Barakoma on Vella Lavella and were attached to Headquarters 30 Battalion, located at Bauroto Point on the South side of the Mumia River. Arrangements were made to treat each of the outlying companies ... in turn, moving ... by Higgins boat.
>
> 17 January 44.—For the past week heavy running seas and driving wind and rain have made transfer from this area impracticable. All our equipment has been ready and waiting for barges since 28 December. We are expecting to be moved about 19 January to Ruravai on the East coast where the whole 35

Battalion will be concentrated.

20 January 44.—Treatment is being maintained in the 35 Battalion combat team but great difficulty is being experienced with transport. All communication is by water and heavy seas have hampered operations. In order to move to a new location with another company ... it was necessary to employ native canoes to negotiate the heavy surf to reach the LCT {Landing Craft Tank}. All equipment was transferred from shore to ship without damage or loss.

Even though the troops were not engaged with the enemy, there was never a time on Vella Lavella when they were conveniently situated for dental treatment other than casualty.

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[1] **No. 5 Sub-section of 10 Mobile Dental Section.**

THE NEW ZEALAND DENTAL SERVICES

TREASURY ISLANDS

Treasury Islands

While 14 Brigade was on Vella Lavella 8 Brigade was preparing for the next operation, the capture of the Treasury Islands, about 70 miles north-west of Vella Lavella. The proposed date of the landing was dawn on 27 October 1943, and what was left of the Mobile Dental Section on Guadalcanal set to work to complete as much treatment as possible before that date. This was not easy as the brigade was fully occupied with battle exercises, even rehearsing attacks on the island of Florida across the Sealark Channel from Guadalcanal. Fortunately the men had become appreciative of the value of dental health and Major McCowan particularly commented on the number who came of their own accord asking for examination and treatment. Without this it would have been difficult to muster satisfactory dental parades. A large number of American troops was associated with the brigade for the assault, and as only one sub-section was to accompany the force, these men received treatment before leaving Guadalcanal. The sub-section was attached to 7 Field Ambulance on 20 October, to await embarkation with the second echelon.

The Treasury Group consists of two islands, Mono and Stirling, separated by Blanche Harbour, which is itself studded with small islands. Because of the difficult jungle country, it took days of slow painstaking work to exterminate the hidden enemy garrison but the brigade was in full possession by 1 November. As Stirling Island had been occupied unopposed, it was decided to bring up 7 Field Ambulance even though Mono Island, steep, cone-shaped, covered with jungle and scored by rivers, was still being cleared of the enemy.

It appears strange that only one sub-section was sent for a force of this size. This must also have occurred to Brigade Headquarters, which immediately sent an urgent signal to Guadalcanal asking for another

dental officer. Sub-section 10/4 arrived on 15 November, which was just as well as the dental officer of 10/3 spent most of November and December suffering from dysentery, being in hospital almost as much as on duty.

On 1 December sub-section 10/6 also left Guadalcanal and was soon established on the north-east coast of Mono Island, where a radar station had been set up.

Rain was more or less continual, with seas of mud everywhere, and the heat and humidity made conditions most unpleasant. Stores and equipment were easily damaged by moisture and even sandpaper, arbor bands and discs had to be packed in airtight tins. The tins of a well-known and popular brand of cigarettes became passports to popularity with the Dental Corps.

THE NEW ZEALAND DENTAL SERVICES

REINFORCEMENTS

Reinforcements

The resources of 10 Mobile Dental Section were now strained to the limit by the wide dispersal of the Division. Headquarters, less its sub-section, the maxillo-facial injuries section and 10/1 subsection were at Guadalcanal, where there were still about 1600 troops. Captain S. N. Jolly [1] of the maxillo-facial injuries section helped with the general work but could not be moved from the Casualty Clearing Station. Sub-sections 10/HQ, 10/2 and 10/5 were with 14 Brigade on Vella Lavella, 10/6 was on Mono Island and 10/3 and 10/4 on Stirling Island.

With only casualty treatment being carried out for the Division in the forward areas it was obvious that there must be some deterioration in the general dental condition. The Mobile Section must have reinforcements, so, anticipating the request, the ADDS instructed three sections in New Caledonia to be ready to go forward at short notice and in January 1944 went to Guadalcanal himself to sum up the position. On the face of it this was merely a redistribution to meet a special set of circumstances but in fact was not so simple. He was having difficulty in maintaining the strength of his establishment and was not receiving a very sympathetic hearing about his staff troubles from Force Headquarters. He had managed to keep up the strength of dental officers by exchanging the one or two casualties with fit ones from New Zealand, but sickness and inefficiency had left him short of three orderlies. His attempts to replace them from other units were unsuccessful as only over-age men, difficult to train and not fit enough for the rough conditions in the Solomons, were available. The only other source was New Zealand.

In all good faith he asked Force Headquarters to cable New Zealand for three Grade I orderlies to be sent as soon as possible, little suspecting that this simple request was to involve the force in an argument with

Army Headquarters on general policy in which he became the 'chopping block'. Unaware of the fuse he had lit, he left for Guadalcanal before the cable was sent.

The Adjutant-General replied to the cable:

> **In view of the direction that no further reinforcements for any arm are to be despatched to 2 NZEF, IP, it is requested that you submit to Army Headquarters an explanation of your demand for further NZDC personnel, action concerning which is, therefore, being withheld pending receipt of your advice.**

This cable, dated 14 January 1944, evoked a reply from Headquarters 2 NZEF (IP) by letter on 24 January, suggesting, beneath the official phraseology, a degree of irritability that augured ill for the ADDS:

> **Reference your D330/7/91 of 14 January, this has been referred to ADDS for his comments.**
>
> **At the time of despatch of the signal his explanation was that he had arranged this matter with the DDS in New Zealand in order to ensure that the dental requirements of this Force could be efficiently attended to. At the present time the ADDS is visiting the forward areas but on his return a further reply will be despatched.**
>
> **Your statement that you have a direction that no further reinforcements for any arm are to be despatched to 2NZEF, IP, is noted but it would have been appreciated if such information had not been sent under open cover.**
>
> **At a recent conference attended by the GOC of 2NZEF, IP, DGMS of NZ Military Forces and the DDMS of 2NZEF, IP, it was arranged that to assist in relieving the shortage of medical practitioners in New Zealand, immediate replacement of those medical officers who had returned, or who were returning, to New**

Zealand on the grounds of sickness or to take up civilian work would not be asked for except those already promised. In these circumstances the DGMS agreed that, should an emergency arise, necessary medical officers would be immediately despatched either for temporary or permanent duty.

The first part of your cable would appear to render such promise null and void but before referring this correspondence to the GOC, could we be advised that the decision that 'No further reinforcements for any arm are to be despatched to 2NZEF, IP' will not be adhered to in the case of replacement of medical officers should they be required.

A separate communication is being despatched in regard to the replacement of personnel who have been returned to New Zealand on compassionate grounds.

The ADDS returned to New Caledonia as to a hive resounding to the humming of angry bees and, whether it was retributive or merely coincidental, he received his share of stings, leaving his relationship with some senior staff officers somewhat strained. There were suggestions that the dental services were overstaffed, that too much work was being done for the French, that a certain dental officer should be moved to another section and generally the administration was criticised. The ADDS had good and sound proof that these statements were incorrect but made a tactical error in attempting to refute them. He asked for them in writing. To use his own expression:

Whether I was going to Infantry Reinforcements or to New Zealand roll, medically graded IV on grounds of insanity wasn't clear for the next ten minutes.

It would appear that if it is necessary to sit on a circular saw it is unwise to inquire too closely which tooth did the damage.

Everything soon quietened down and no grudges were held on either

side. The ADDS got his orderlies, a dental officer was tactfully switched with someone else, and a section at the camp at Bourail whose hut had been blown down in a hurricane and which had been refused other accommodation was set up elsewhere with only slight inconvenience. The arrival of a hurricane must have been but a mole hill to the mountain of worries as the ADDS does not mention it in any of his reports but only in a personal letter to the DDS:

> The roofs of the two four-man huts at Bourail camp were lifted off and tossed into the next valley. I don't know yet if they are repairable. A good job of work was done collecting the stuff and getting it under cover. All tentage was flattened and in some cases so were the huts. My staff is living temporarily in some rooms in the school here until accommodation is rebuilt. The camp really did look a sorry sight when I went up first thing yesterday morning.... The camp dental hospital was all but flattened but everything is under control and an emergency surgery had been erected. 'Business as usual'. Subject to check, there appears to have been no loss of equipment right through. The dental sections North of Bourail were not inconvenienced very much at all. At Moindah the bure had the roof blown off but as the natives were due the next day to put a new one on anyway, the storm saved the trouble of taking the old leaking one off.

At the end of 1943 the force was static and divided into four groups, viz., New Caledonia, Guadalcanal, Vella Lavella and the Treasury Islands. Arrangements were therefore made to re-examine and treat all the men. Results to hand indicated that the amount of treatment required would be much as estimated, i.e., just over 50 fillings per 100 men and 11 per cent denture cases, mainly remodels and repairs.

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[1] Maj S. N. Jolly; Papatoetoe; born Cromwell, 25 Sep 1906; dental surgeon.

THE NEW ZEALAND DENTAL SERVICES

GREEN ISLANDS

Green Islands

It was known early in January 1944 that the spring was being coiled for a further operation in the Solomons and the GOC with his senior staff officers once more set up headquarters in Guadalcanal. The Mobile Dental Section was reinforced by Nos. 3, 4 and 5 Dental Sections from New Caledonia. Though not strictly part of the establishment of the Mobile Section, they came under its command and were used as sub-sections of the unit.

The operation being planned was an assault on Nissan, largest of the Green Islands Group, north-west of Bougainville and four degrees south of the equator. Fourteenth Brigade, then on Vella Lavella, was to be combined with American forces under the command of General Barrowclough, [1] GOC 3 Division, to carry out the assault in conjunction with Rear-Admiral Wilkinson, in command of amphibious operations. Major McCowan had to consider a suitable distribution of his forces to cover the operation but could only guess the time he would have to do it in as D-day was known only to a few officers in key positions.

The Green Islands Group is an atoll, that is to say, an island or number of islands surrounding a lagoon. It is of coral formation covered by dense jungle, and at that time there were only a few native clearings and two coconut plantations, Pokonian and Tangalan. By the time the dental sub-sections arrived there Japanese resistance had been overcome, two airfields, a bomber and a fighter strip, were well on the way to completion, roads were being made and the troops were settling down to another garrison period. The sub-sections did not land without incident as their equipment suffered from several submersions in sea water, fortunately without serious damage. 10/HQ acted as administrative detachment and was located with the Field Ambulance. It was issued with two months' expendable stores as a reserve. Work

continued where it left off in Vella Lavella a short time previously.

A problem common to all on Nissan Island was a shortage of fresh water, the only natural source being rain, other than native wells which were all condemned as polluted. Large condensers capable of distilling 4000 gallons of sea water daily had been installed and units received a daily ration to be used sparingly. Fortunately, in the early stages of the occupation, the bulldozers were pushing down palms right and left to clear the ground for landing beaches, roads and airfields, and the milk of the green coconut became a standard drink. The water shortage, widely dispersed units and poor communications added to the difficulties of providing an adequate dental service. The few roads there were mere tracks to begin with and most transport was by boats across the lagoon. One particularly annoying pest was a hairy caterpillar which lived off the leaves of the trees and, when moulting, filled the air with fine hairs which produced an itchy skin rash similar to an urticaria. As on the other islands, there was trouble with metal instruments and certain stores which had to be protected from the heat and humidity.

After working for about a month, the sub-sections found they were losing ground and had to ask for reinforcements. 10/1, which had not previously been further forward than Guadalcanal, arrived on 27 March by air with all its equipment. In the meantime sections 3 and 4 had been sent to Stirling Island in the Treasury Islands to help with 8 Brigade.

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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 Jan 1894; barrister and solicitor; NZ Rifle Bde 1915–19 (CO 4 Bn); comd 7 NZ Inf Bde in UK, 1940; 6 Bde, May 1940-Feb 1942; GOC 2 NZEF in Pacific and 3 NZ Div, Aug 1942-Oct 1944; Chief Justice of New Zealand.

THE NEW ZEALAND DENTAL SERVICES

RECAPITULATION

Recapitulation

The end of March 1944 was the summit of the Division's operations in the Pacific and found the Dental Corps at its widest dispersal, as follows:

New Caledonia:

1. **Headquarters and Advanced Base Dental Store. At Bourail.**
2. **No. 1 Camp Dental Hospital. At Base Reception Depot at the racecourse camp at Tene, Bourail, in a tropical-type prefabricated building accommodating five chairs and complete with laboratory, store room, orderly room, waiting room and office.**
3. **Detachment from camp dental hospital at Néméara with the Artillery Training Depot, working in a 24 ft by 16 ft native type *bure*, laid out as a surgery with one chair, laboratory, office and store combined and a waiting room.**
4. **1 Dental Section at the transit camp at Nouméa in a prefabricated building laid out similarly to the *bure* at Néméara.**
5. **2 Dental Section, attached to 2 Convalescent Depot at Kalavera, working in tents.**
6. **1 Maxillo-Facial Injuries Section, attached to 4 NZ General Hospital in the Dumbéa valley and, like the hospital itself, accommodated in well-built prefabricated huts.**

Forward Maintenance Centre, Guadalcanal:

1. **Headquarters 10 Mobile Dental Section at Point Cruz. The building was 54 ft by 20 ft overall and was nearly completed, being done entirely by the men of the section under the direction of a master builder who was one of the ASC drivers. The branch of the Advanced Base Dental Store was also at Point Cruz in a building with coralled floor, with stores set out in bins.**
2. **2 Maxillo-Facial Injuries Section, although still attached to the Casualty Clearing Station, had moved to an attractive site some 50**

yards along the coast because of a general building programme being undertaken by the CCS.

3. 5 Dental Section was moving from unit to unit.

Nissan Island:

1. 10/HQ. Attached to 22 Field Ambulance.
2. 10/1. Attached to 30 Battalion.
3. 10/2. Attached to 37 Battalion.
4. 10/5. Attached to 37 Battalion.

Treasury Islands:

1. 10/3. Attached to 8 Brigade Headquarters.
2. 10/4. Attached to 29 Battalion.
3. 10/6. Attached to 34 Battalion.
4. 3 and 4 Dental Sections were attached to 36 Battalion.

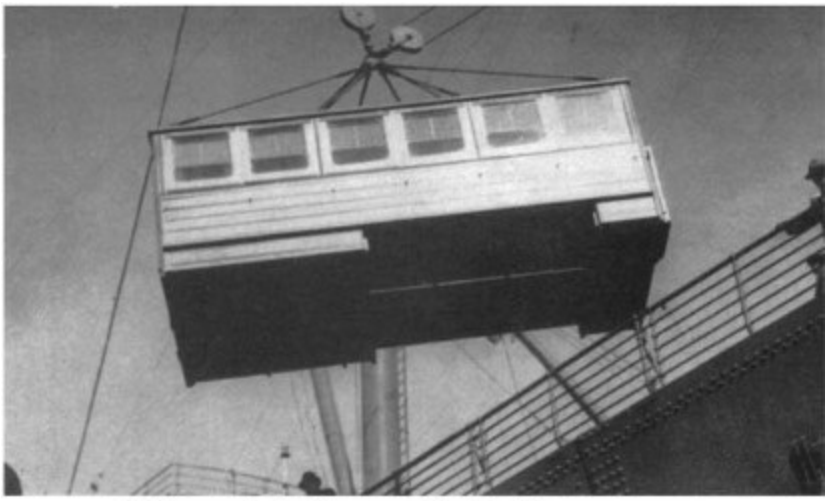
The troops at the Base were virtually dentally fit, those at the FMC were expected to be so within a week and work was progressing as fast as possible for the two brigades.

Headquarters Group, 1 New Zealand Mobile Dental Unit, in the Western Desert

Headquarters Group, 1 New Zealand Mobile Dental Unit, in the Western Desert

At work in 1 New Zealand Mobile Dental Unit

At work in 1 New Zealand Mobile Dental Unit



Mobile prosthetic laboratory being loaded on a transport
en route to Egypt

Mobile prosthetic laboratory being loaded on a transport en route to Egypt

Inside the mobile dental laboratory

Inside the mobile dental laboratory

1 New Zealand Mobile Dental Unit, Helwan, ready to embark for Greece

1 New Zealand Mobile Dental Unit, Helwan, ready to embark for Greece

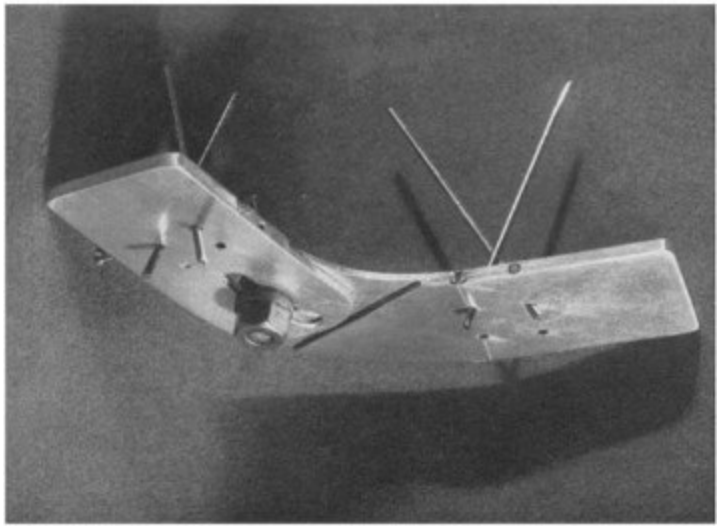
4 Field Ambulance dental section, Alamein

4 Field Ambulance dental section, Alamein

Dental section in the snow at Castelfrentano, Italy

Dental section int he snow at Castelfrentano, Italy

Special fixation appliance made by Captain F. R. Brebner. *See p. 377*

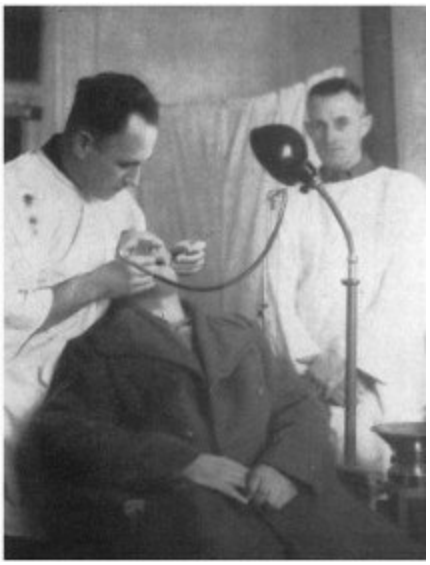


Special fixation appliance made by Captain F. R. Brebner. See p. 377

Dental mechanic at work, Stalag 383

Dental mechanic at work, Stalag 383

Captain J. G. W. Crawford, assisted by Corporal P. D. Johnson, NZDC, operating at Stalag 383



Captain J. G. W. Crawford, assisted by Corporal P. D. Johnson, NZDC, operating at Stalag 383

Lieutenant-Colonel
O. E. L. Rout,
ADDS 2 NZEF (IP)

Lieutenant-Colonel O. E. L. Rout, ADDS 2 NZEF (IP)

Sub-section of the Mobile Dental Section at Tontouta, New Caledonia

Sub-section of the Mobile Dental Section at Tontouta, New Caledonia

Headquarters Section of the Mobile Dental Section embarks for Guadalcanal

Headquarters Section of the Mobile Dental Section embarks for Guadalcanal

Personnel of dental section, RNZAF station, Los Negros

Personnel of dental section, RNZAG station, Los Negros

Standard dental unit built in New Zealand

Standard dental unit built in New Zealand

Base Dental Store, Trentham

Base Dental Store, Trentham

THE NEW ZEALAND DENTAL SERVICES

RETRENCHMENT

Retrenchment

Because of her natural resources and her geographical position on Allied lines of communication, New Zealand was asked by the Allied authorities to undertake a greatly increased programme for the supply of food and other primary products as part of the general war strategy. This she could not do without reducing the number of her armed forces. She wanted men for farming, butter and cheese factories, freezing works, building and construction, sawmilling and coal mining, and she wanted them ready for work in July. Third Division was chosen as a source of supply and was to be whittled down to about a third of its strength, leaving only a cadre force to be built on in the future should occasion arise.

The method of selection need not be elaborated on at this stage, although later it concerned the Dental Corps intimately. Suffice it to say that the men were allowed to express a preference for the different classes of work and were asked to co-operate. The main concern of the Dental Corps when the GOC released the news in April 1944 was to see that all returned to New Zealand dentally fit, and this required a thorough knowledge of how, when, and to what they were going.

It was expected that they would return to New Zealand according to industrial priorities and that this would be spread over a considerable period. Meanwhile the cadre units would remain at their stations in the forward areas until the future of the depleted Division was known. Before returning to New Zealand, everyone would spend some time in New Caledonia while all trace of malarial infection was eradicated. On arrival in New Zealand they would have twenty-eight days' leave with other concessions, just as if being discharged from the Army, but at the end of this they would be placed on indefinite leave without pay and become subject to direction to some industry by a manpower officer. Although

liable to be recalled to active service at any time, they were to all intents and purposes back in civilian life. The policy of the Government was that every officer and man, on discharge, should be in a satisfactory dental condition, and certainly in no worse condition than he was on mobilisation. While in the Navy, Army or Air Force this was the responsibility of the NZDC, but on discharge there was an examination by a civilian dental board which authorised any outstanding work to be done by a civilian dentist of the man's own choice. It was a point of honour with the NZDC that as little work as possible should remain to be done on handing over. Anything else was a reflection on its stewardship and as such deeply resented by every officer, NCO and man of the Corps.

At first sight it would appear reasonably easy to make all returning men dentally fit but actually there were many difficulties. One of these concerned the Department of Dental Hygiene, the Government department controlling the civilian board of examiners and the subsequent treatment of discharged men. Sensing the urgency of the situation, the Department asked the NZDC in the Pacific to act as the civilian board in any case that could not be made dentally fit before embarkation. There was some confusion caused by the Department's insistence on the use of an unsuitable form, but eventually the DDS persuaded the Director of the Division of Dental Hygiene to accept a certificate of dental fitness on the army form, except where further treatment was required.

A further anomaly concerned the right of men who still had work to be done to choose any civilian dentist from the list of those co-operating in the scheme. In principle this was right and, in the case of those men who were fully discharged from further service with their destiny in their own hands, it was not only just but was reasonable and convenient. Those returning from 3 Division, however, were not in this category. They were merely exchanging their army bonds for the shackles of manpower control. Of what use, therefore, was it to nominate the dentist they wished to attend if, after spending their twenty-eight days' leave, they were directed to an industry hundreds of miles away? Also,

although the Dental Corps in the Pacific had been asked to assume the functions of the civilian board, there was neither a list of civilian dentists to submit to the men nor means of knowing whether the dentist selected was still in practice or even alive.

As a check on the dental health of the force, records had been kept according to sub-units such as companies, batteries or troops. With the decision to return men to New Zealand this system became obsolete overnight. Men were taken from all units and classified according to trade or occupation, collectively grouped as APR, that is Awaiting Passage for Return. Reclassification under this heading would mean complete re-examination of the whole force, which was impracticable. An attempt was made and about 400 men each day were collected for examination. The trouble was that, with medical boarding, working parties and the hundred and one things moving troops had to do, this was probably the only day the Dental Corps would see these men. As much treatment as possible would have to be done for them because next day they would be otherwise engaged and another 400 would be paraded outside the dental hut. The circumstances were exceptional, and although headquarters in New Caledonia were fully co-operative, nothing more could be done. To get anything done at all, it was essential to adhere strictly to whatever system was adopted by 2 NZEF (IP) Headquarters, even though conflicting with instructions received from Wellington.

The same thing happened in New Caledonia as had been noticed in Fiji. Wellington, instead of confining instructions to matters of policy, attempted to define the methods by which that policy should be carried out. Instructions were issued without full knowledge of the factors influencing the situation and were often quite impossible to carry out. The command had been decentralised and the ADDS should have been in complete charge of all administrative details. Consequently there was a certain amount of confusion and there were some acrimonious arguments.

By the end of June there were only about 9000 troops on New

Caledonia but the ratio of dental officers to men had to be higher than one to 1000 as they were still dispersed. The Mobile Dental Section was no longer needed, the treatment being handled by the Camp Dental Hospital and sections detached from it to isolated groups. Only one maxillo-facial unit was now required. The Officer Commanding the Camp Dental Hospital was selected and coached as successor to the ADDS should the plans of the DDS materialise, which meant that Headquarters could be withdrawn at any time without embarrassment to the organisation.

Reduction of staff simply meant reducing the size of the Camp Dental Hospital. By the end of July, most of the stores were packed and from then until the middle of October, men and equipment were returning to New Zealand. All drafts of 'Essential Industry' personnel were returned dentally fit, with the exception of occasional men ill in hospital and the negligible few who refused treatment.

As from 5 p.m. on 20 October 1944 3 New Zealand Division ceased to exist. Some of its personnel went to essential industries and some to camps to await posting to other theatres of war. The Dental Corps emerged richer in experience, the joy of successful achievement tinged with the sadness of leaving a force whose reputation was second to none. Some of the Corps returned to civil life but most went on with the fight against dental disease in the Navy, Army and Air Force in New Zealand or overseas.

The Dental Corps comes into close association with more individuals of a force than perhaps any other service; how close is shown by the summary of dental treatment for the eighteen months in the Pacific ended 30 June 1944:

Number of patients examined	40,976
Number dentally fit on examination	22,966
Number requiring treatment	18,010
Number presenting for treatment	41,870
Number rendered dentally fit	27,427

Number of extractions	**5,934**
Number of fillings	**42,034**
Number of scalings and cleanings	**7,515**
Number of full dentures	**973**
Number of partial dentures	**919**
Number of remodels to dentures	**2,796**
Number of repairs to dentures	**4,144**
Total denture cases	**8,832**

From this it can be seen that, with examinations and treatments, at least 82,846 appointments were made in a force never in excess of 18,000. Truly can it be said: *'Dens sana in corpore sano'*.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 27 — TONGA

CHAPTER 27
Tonga

THE Tongan or Friendly Islands are in the southern Pacific, east-south-east of Fiji by some 390 miles. Mostly of coral formation but some of volcanic origin, they spread over an area of 250 square miles and are a kingdom under a protectorate of the Western Pacific High Commission.

New Zealand's first association with Tonga, which in any way affected the Dental Corps, was at the end of 1941 when thirty-eight officers and men of the Heavy Regiments of the New Zealand Artillery were selected for duty with the Tonga Defence Force. It was first intended that these men must conform to the special dental standard laid down for 'A' Company, that is to say, for men serving in isolated areas such as Fanning Island where dental attention was not available. [1] Wearers of artificial dentures would not qualify under this standard for inclusion in the force. Almost immediately this ruling was changed, possibly because so many were rejected under this rigid standard that it appeared there would be no key men included, but probably because there was a civilian dentist practising in Nukualofa, the seat of Government on Tongatabu Island.

In February 1942, 200 additional troops were sent to increase the infantry strength of the Tonga Defence Force from 450 to 650. All these men were made dentally fit before leaving for Tonga, but this did not absolve the New Zealand Government of the responsibility of maintaining that state of fitness. There were too few to keep a dental section fully employed so it was arranged with the Tongan Government that Mr Franzen, the dentist in Nukualofa, would carry out all necessary work at the expense of the New Zealand Government. Mr Franzen was already treating the Tongan members of the Defence Force on behalf of his own Government.

As yet, apart from the men mentioned above, New Zealand had

accepted no responsibility for the defence of Tonga, but in July 1942, in return for an annual payment of £25,000, she released the Tongan Government from all further calls in the matter of defence. This annual payment, reduced in 1944 to £12,500, made the New Zealand Government responsible *inter alia* for the dental health

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[1] **See**

of all mobilised troops in Tonga, including natives. When, at the end of October 1942, 34 Battalion and some Air Force men arrived, the numbers became more than Mr Franzen could be expected to handle; and when, early in 1943, New Zealand was asked to take over responsibility from the United States Forces, it was obvious that a dental section would have to be provided.

The force was expected to be about 1700 New Zealand and 2100 Tongan troops. 'T' Force Field Dental Section was therefore mobilised at Trentham Camp on 10 February 1943. It consisted of three dental officers, Captain E. R. Wimsett [1] in command, an administrative staff-sergeant, a sergeant, corporal and private as clerk orderlies, and three mechanics in similar ranks. A dental section was also formed to accompany 15 Fighter Squadron of the RNZAF but this did not stay long in Tonga. There was very little time spent in Trentham, so emphasis was laid on accurate examination of the force so that treatment could begin immediately on arrival in Tonga. This was one of the few occasions when troops were allowed to leave New Zealand dentally unfit, but the circumstances were exceptional. The limited time was largely taken up by inoculations against tetanus and typhoid, in which the Dental Corps participated; the troops were not newly mobilised and had had previous treatment; they were not going to an area where they were likely to go straight into action and there would be plenty of time for treatment in Tonga.

They sailed on 17 February 1943 and, after a rough trip of five days, arrived at Tongatabu, where American heavy transport met them and took them to Houma on the south-west coast. Here the Americans had established 7 Evacuation Hospital in the bush. Battalion camps were being established under difficulty due to the nature of the country and the abnormally prolonged rainy season, which meant mud up to the axles most of the time and sticky, humid conditions.

The Field Dental Section could be split up into three fully equipped sub-sections. It was originally intended to attach one to each battalion of the brigade group, viz., 1 Tongan Battalion, 2 Tongan Battalion, and 6 Canterbury Battalion which took over from 34 Battalion on 8 March. After conferring with Brigade Headquarters, however, Captain Wimsett decided to keep his headquarters section at Houma, partly because of the widely scattered units and partly because patients sent in from the other sub-sections for specialist services such as X-rays could be more conveniently handled at this centre.

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[1] **Capt E. R. Wimsett; Palmerston North; born Wellington, 23 May 1903; dental surgeon; OC 18 Fd Dent Sec, Tonga, Feb 1943–Feb 1944.**

Headquarters Section therefore looked after the middle and western parts of the island, the main units being 1 Tongan Battalion, Engineers, Ordnance, Army Service Corps, various batteries, Brigade Headquarters, Signals, Pay and Records and the Women's Army Auxiliary Corps, twenty of whom arrived on 22 March. Treatment was also given by this section to the Observer Section stationed on small, lonely islands sometimes miles from the mainland.

On 9 March one sub-section was attached to 2 Tongan Battalion at the aerodrome and consisting of New Zealanders and Tongans undergoing training. Here the accommodation was in American pattern tents of ancient lineage, so frail that one tent had to be covered by another to get reasonable protection from the incessant tropical rain. These were only used for quarters as two good Indian pattern linen and cotton tents were on issue to each sub-section for surgery and laboratory, so that on starting work the sub-section looked much like any early-war section in New Zealand except for the rain, heat, steam, mud and mosquitoes.

The other sub-section was attached to 6 Canterbury Battalion at Mua. The companies of this battalion were spread over the northeastern

part of the island. Unlike the Tongan battalions, there were no natives in this battalion so there were no suitable rations for a Tongan orderly who would normally be attached to the dental sub-section. The section therefore had to do without one.

Apparently the Tongans made good orderlies as Captain Wimsett wrote in one of his reports: 'Both lads did exceptionally good work and displayed a keenness that could well be followed by all ranks.

Regular examination and treatment was carried out and, when it was decided to reduce the garrison in December 1943, the Corps reported that the main body that left Tonga on Christmas Day was dentally fit almost to a man. Two sub-sections returned to New Zealand with the main body, leaving the headquarters section to establish dental fitness for the few who were to stay in Tonga after they themselves left with the rear party, including Brigade Headquarters, in February 1944.

Captain Wimsett reported:

> **It might be appropriate to mention here that the NZDC arrived probably the best equipped unit of the Force. Suffice it to say that we had three hammers and the Engineers only one. The main equipment ship did not arrive until May and until then units had to do their best with what facilities they could make available for themselves. Lack of transport was naturally a great drawback. We were at all times greatly indebted to the Engineers who, despite their own lack of equipment were most helpful in all ways and assisted materially in maintaining the sub-sections in a reasonable state of repair.**

When the Dental Corps left Tonga, it was estimated that there would be about 550 mobilised troops remaining, of whom 340 would be New Zealand and Tongan and the remainder United States Navy. Of the New Zealand and Tongan troops, 190 were Army and 150 Air Force. The New Zealand Government, under the agreement with the Tongan Government, was still responsible financially for the defence of the

island and this included dental treatment for all mobilised troops. Mr Franzen's services were once more solicited for all New Zealand troops other than the Air Force. All work was to be done by him on an order signed by the Medical Officer, payment being made from the New Zealand Treasury. For the Tongan troops the Tongan Government agreed that, as Government Dental Officer, he should do extractions, fillings and general dental care, but that dentures would be supplied only on an order from the Medical Officer as for New Zealand troops. For the Air Force the DDS instructed the dental officer attached to the RNZAF station at Nausori in Fiji to visit Tonga at regular intervals. The Army 'Care and Maintenance' party at the aerodrome was grouped with the Air Force for dental treatment.

If the Tongan native gained anything from his brief association with the New Zealand Dental Corps, the advantage was not entirely one-sided. The opportunity to examine the mouths of natives from different localities in the Tongan group provided further proof of the damage done to the natural dentition by the white man's diet. Much had been written on this subject but it was seldom that such an opportunity arose to observe at first hand. Captain Wimsett's report on the subject therefore merits inclusion in this history:

> Of 460 recruits examined, representing four companies of the 2 Tongan Battalion, 195 were found to be dentally fit. Those requiring treatment averaged about one filling per man. Many of them required scaling and cleaning only. These men's teeth are remarkably free from caries though, where this is present, it seems to be of a virulent type. Gum conditions are markedly poor and extensive calculus deposits almost universal, and in most cases teeth require extraction for these reasons. These men have had no dental attention except for occasional extractions usually by Tongan Medical Practitioners and do not appear to employ any type of prophylaxis.

This report applied to recruits, mostly from the outlying islands such as Haapi, where the natives were living away from the influence of white

people.

> **Those personnel who were recruited from the larger villages and especially from Nukualofa, showed extensive caries.... Those natives who lived on a natural diet of yam, taro etc., showed very little caries but still extensive calculus. Those who were able to get bread and canned meats, to which they were very partial, showed extensive and multiple caries plus the usual calculus.**
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> **The significance of these observations brings to mind the report made some years ago by Weston Price, a much travelled American research worker, who found similar conditions prevailing in countries whose inhabitants live under somewhat similar conditions to the natives of the Tongan islands. This report is not concerned with any theories but is a statement of cold, hard, and undeniable facts as they were found.**

Here was the same story as in Fiji: civilisation and dental caries marching hand in hand to that Gehenna where there shall be wailing but no gnashing of teeth. The dentists of the world are fully employed in smoothing the downward path by deadening the pain of nature's warning or fashioning a crutch for the dental cripple. The answer is there at the beginning of the road, but to reach it the snowball of public opinion must be rolled back up a long steep hill or melted altogether in the fires of Armageddon.

The connection between civilised diet and dental caries is obvious, but the menace of calculus with its handmaiden pyorrhoea is present with the native in his natural existence and is something that warrants further research. Even in his natural existence the native does not use his jaws as much and as vigorously as his distant ancestors did. Gone are the days when the teeth were used to kill the prey and tear the flesh from its bones. Gone also is the mechanical cleansing this exercise would give to the teeth. Loss of function carries penalties and human jaws are growing too small to accommodate all the teeth, as can be seen in the number of third molars with insufficient room to erupt. Captain

Wimsett noticed this in the Tongan natives:

> **One other fairly common occurrence was the number of impacted third molars. The Tongans have, like our Maori people, large wide arches (I never saw one case with a Gothic arch), yet on account of the large teeth there still was not enough room in a number of cases. These impacted and unerupted third molars caused them a considerable amount of trouble and, as is to be expected, it was found necessary to remove them. Access however, as might be expected, is very good and I gained considerable experience in this class of work. Generally speaking the teeth of the Tongans are not difficult to remove.**
>
> **From the conservative aspect the teeth are somewhat similar to those of our Maori in that the extent of the caries was more real than apparent. Malignant growths of the oral tissues were occasionally seen but mostly only when the case was apparently hopeless as the native seeks help only when sheer necessity drives him to it. On enquiry I found that cancer as the layman understands the term is rare in the Tongan people. Although tuberculosis is very common among the natives I did not see any oral manifestations of the disease and would say that tubercular ulceration of the oral mucosa was rare. The Tongan makes a good patient and is co-operative and grateful for anything one does for him, particularly if the work entails the replacement of anterior teeth which makes him the cynosure of all eyes among his brethren.**

The Tongan Group is serviced from Tongatabu to Vavau by the Government dentist. Mr Franzen. Conservative work and extractions for the natives are free but prosthetic work has to be paid for. The Dental Corps remembers with gratitude his valuable advice, his practical help and the hospitality of his home.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 28 — NORFOLK ISLAND

CHAPTER 28
Norfolk Island

ABOUT 930 miles from Sydney and 400 miles from New Zealand sits Norfolk Island in the middle of a vast ocean. It is only five miles long and three in breadth, and since its discovery by Captain Cook in 1774 has produced little of importance to the world except a species of pine tree that bears its name. From 1788 to 1853 it was a convict settlement, and then in 1856 it was populated by descendants of the mutineers of the *Bounty*. At the beginning of the war, apart from the presence of a cable station, the inhabitants, of whom there were about 900, lived a peaceful existence under antiquated conditions in a quiet backwater of civilisation under the administration of the Australian Government. There was no electricity except for individual plants at Government House and a few residences; apart from a few wells and creeks, there was no water except what could be collected from rain; roads were mostly unmetalled and all vehicles needed chains in wet weather. The population was decreasing gradually but surely through emigration.

Suddenly, as a result of the rapid development of the war in the Pacific, this small island was focussed in the spotlight of international strategy. Its geographical position made it an important stepping stone in the air link with the forward war zones. Australian workmen cut swathes through the Norfolk pines and native ferns to make an aerodrome and, late in 1942, New Zealand sent a force of 1500 troops as a garrison. With this force was sent a detachment of the New Zealand Dental Corps, slightly bigger than a section. Captain H. J. Jones [1] was the dental officer in charge and he had with him a staff-sergeant as administrative clerk, two orderlies, of whom one was a sergeant, and a dental mechanic who could carry the rank of corporal.

There were certain differences between this undertaking and that of other theatres of war in the Pacific. As a garrison force it was expected that a high state of dental fitness should be maintained but the facilities

available on the island more closely resembled those met in the field. The invasion of workmen and troops had

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[1] Capt H. J. Jones; Christchurch; born Christchurch, 4 Nov 1908; dental surgeon.

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almost trebled the population of the island and they could not be accommodated in existing buildings. Tents were unsatisfactory except in summer and, although huts would almost certainly be built from the abundant timber on the island, the Dental Corps could not anticipate the favourable treatment it actually received in this connection. Nothing electrical could be included in the equipment. The engine had to be worked by foot and the lathe by treadle or hand. Primus stoves were used for heating and petrol lamps for light. Otherwise equipment was standard, viz., the three usual panniers, emergency haversack, two Indian pattern tents and an 18 ft by 12 ft tarpaulin. The original intention to use a 30-cwt truck with portable laboratory fittings was abandoned. It would have been of little use on the poor roads and, in any case, no units had their own transport, this being provided from a general pool under the control of Headquarters.

The detachment arrived on 9 October 1942 to find that the advance party had solved the accommodation problem. Rations and quarters had been provided for it close to the medical unit near the centre of the island. The surgery was on a glassed-in verandah with a southerly aspect and the prosthetic laboratory was in a small room next to it. Both were well lighted and conditions were ideal, while the central situation provided the opportunity to study the whole position and await future developments. Captain Jones had brought his emergency haversack with him and, until the arrival of the main equipment on 13 October, was able to cope with urgent casualties.

Although the delay in the arrival of equipment was not great on this occasion it is reasonable to emphasise the importance of the emergency haversack always being available for the use of the dental officer. If,

instead of being made a unit issue, each officer was issued with his own haversack to be carried as part of his personal kit, there would never be an occasion when he was 'grounded' for want of equipment. He could be made responsible for its contents, would account for all items used and would replenish it from unit stock. Some idea of the working conditions can be got from the following report dated 1 November 1942:

> **Equipment and stores arrived safely in a good state of repair. Owing to the climatic conditions (humidity 95% at times) and through conversation with the local dentist, all surplus stores have been put away in lever lid cannisters, of which supplies are ample owing to the consumption of large quantities of service biscuits....**
>
> **Definite precautions are necessary for the secure packing of any future stores as the ship is unloaded in the roadstead on to lighters, usually in a heavy swell, and then from the lighters on to the wharf, requiring much handling. Wiring and the use of substantial boxes should obviate any loss of stores.**

The port facilities were certainly primitive, consisting in the main of two moles, one at Kingston, the chief town on the southern coast, and one at Cascade Bay on the northern coast. It depended on the weather which mole was used, but they both needed repairing, having been originally constructed by prison labour some 100 years earlier.

The first examination of the troops showed that the dental health of the force was good. Out of 1483 men, all but 262, who were on special duties unloading stores or setting up camp, were examined between 15 and 31 October: 826 were dentally fit and 395 required treatment, mostly fillings.

The number of remodels (97) and repairs to dentures (58) was in excess of what might be expected in a force which had recently arrived from New Zealand, but the explanation was simple. The fault lay with the service biscuits, which were one of the main items in the ration and were so hard that those whose dentures were not completely stable could

not eat them, and even those wearing stable dentures broke teeth on them. The only thing to do was to remodel every unstable denture immediately, even if in the normal course this would not have been done for several months, and also to expect a continual succession of repairs. As there were about 100 wearers of acrylic dentures in the force, an urgent demand for this material had to be made on Wellington. In other respects the report was satisfactory. About 67 per cent of the men required no treatment at all and, of the remainder, there was less than one filling per man. Scalings are always numerous but do not necessarily indicate a serious deterioration in the health of the oral tissues. Rather, they emphasise the appreciation of the dental officer of the need for eternal vigilance if the seed of ulceromembranous stomatitis, the potential saboteur of whole armies, is to be deprived of the soil in which to flourish.

The medical detachment continued to house the Corps for some months as the dental hut was not ready until 1 July 1943. Patients came from outlying companies in their own transport. The temporary quarters took on a compact and businesslike appearance, being painted inside by enthusiasts in the detachment with a cream body paint with blue facings. Everybody was happy in a warm climate with plenty of work, daily physical training, a weekly route march of about ten miles and organised compulsory sport to keep them fit.

The Australian workmen had brought with them an American medical and dental section consisting of two medical officers and one dental officer. The equipment included a complete field dental pannier very similar in its contents to the New Zealand surgical pannier except that the folding chair was not carried separately but was packed into the pannier itself. As the American sections were due to leave when the aerodrome construction was finished, the 'N'

Force medical detachment was anxious to take over all their stores but this did not materialise, at least as far as the dental section was concerned.

During December 1942, a squadron of the RNZAF arrived numbering 143 and examination and treatment of these men were immediately begun. Their dental condition was surprisingly good, however, and there was little to do for them. At the same time the local force, the Norfolk Island infantry detachment, became attached to 'N' Force as a pioneer unit, becoming the responsibility of the NZDC for dental treatment. No record can be found of the result of the initial examination of this detachment but, judging from the itemised summaries of work done for them from time to time, their dental condition was no better than that of our own men, if anything slightly worse.

In March 1943 a re-examination of the whole force was undertaken, revealing an even better state of dental health than originally.

First Examination		*Second Examination*
Dentally fit	67 per cent	74 per cent
Fillings per man	1	½
Scalings	147	100
Remodels	97	41
Repairs	58	31

Extractions were negligible and new dentures too few to be taken into account. Apparently the biscuits were still taking their toll for the number of remodels and repairs, though less, was still high. The new examination was just completed when sudden movement orders were received. There was to be a general relief of units, including the dental detachment. There was no time to do other than urgent work such as extractions, fillings and repairs to dentures. Nevertheless the force left the island in a satisfactory dental condition.

A new dental detachment took over at the beginning of April 1943. It was still located with the medical section under good conditions, as reported by the incoming dental officer, Captain A. E.

Hope [1]:

I would like to place on record the very excellent work done by

the previous section, for not only were their efforts responsible for this section operating in the shortest time possible but also they did much to improve the conditions under which we are living. Everywhere I have been I have been greatly impressed by the high opinion held of the Corps.

On 24 May a start was made on building the dental hut. Until its completion on 1 July, the dental section continued to work at the 'Burnt Pine Hospital'. Competitive sport, especially baseball, claimed the Corps as ardent enthusiasts, so much so that the DDS

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[1] **Capt A. E. Hope; Gisborne; born Dargaville, 26 Apr 1897; dental surgeon.**

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had to place certain restrictions on his dental officers. The decision must have cost him considerable thought as his enthusiasm for physical fitness in the Corps was well known. He sent out the following instruction to all dental officers in New Zealand and to the dental officer on Norfolk Island:

Owing to the prevalence of physical injuries entailing lengthy absence of dental officers from duty, it is regretted that their participation in organised games such as football, hockey etc., must cease.

In May a further responsibility was thrown on the Corps. The local dentist died and the Administrator asked Captain Hope to provide emergency treatment for the people until a dentist could be obtained from Australia. The Force Commander agreed to allow Captain Hope to do this so long as the work was confined to the barest limits and the Administrator got materials from New Zealand for the purpose. It was fortunate that this proviso was made as the condition of the mouths of the children attending the public school revealed an alarming state of affairs, all the pupils suffering from dental disease in some form. These conditions were past the stage when emergency treatment meant much

more than enforced mutilation of young dentitions by wholesale extraction of teeth. The dental officer, without the time himself to institute bold conservative measures, could do nothing more than report on the true position as he found it. For his own protection it was essential that he should let the Administrator know the facts, also that he could not even attempt to remedy the position. He completed the work that the local dentist had on hand at the time of his death and made himself responsible for any emergencies among the civilian population. Beyond that he could not go without prejudicing his duties to the armed forces.

From the middle of 1943 there were continual reductions in the size of the force. Instead of easing the burden on the dental officer, these reductions made more work as they entailed bursts of immense effort to ensure that no man returned to New Zealand unless dentally fit.

On 8 December 1943 the main body of the garrison force consisting of 23 officers and 455 other ranks left for New Zealand. The dental officer and one orderly were left to look after 200 Air Force, 200 Army and 38 of the Norfolk Island infantry detachment. It was proposed to pass the command of the island from Army to Air Force as soon as certain construction work was completed. This was expected about the end of December, when all but sixty of the Army would return to New Zealand, where the manpower position was acute. This was considered a convenient time to relieve the dental officer and his orderly, so on 29 December Captain R. R. Murray [1] arrived by air. He celebrated his arrival by going straight to hospital with laryngitis but fortunately the rear party, including Captain Hope and his orderly, did not return to New Zealand till 14 February 1944.

Meanwhile Captain Murray and his two orderlies had moved into the dental hut with their quarters close by in the RNZAF 'Burnt Pine' hospital. Facilities were better than they had expected, thanks to the outgoing detachment which had improvised numerous improvements. Even during the days of army occupation transport was always difficult to get but now the position was infinitely worse. There was no public

transport system of any sort and the sense of isolation became very real. Even Kingston by its inaccessibility conjured up visions of the fleshpots of Egypt. Under these conditions, with not enough work to keep the section fully occupied, it was difficult to maintain morale. Tennis, when the courts were not too dry, table tennis, reading and even poultry-keeping helped, but Captain Murray was worried and suggested two alternatives. One, that a dental officer with the help of a WAAF clerk orderly would be ample for all the work, and the other, that the section be part-time only and be made mobile for tours of duty elsewhere. Every opportunity of finding work was grasped, such as the visit of an American ship with United States Navy personnel aboard, and the obligations to the civilian population of the island became a pleasure rather than a burden.

In June 1944 it was decided to withdraw the section from the island, placing future responsibility with the dental section at Whenuapai Air Station in New Zealand. The dental hut was left fully equipped with all stores and equipment protected from rats and damp and was locked and reserved for the use of the Dental Corps only. The policy was that at regular intervals the dental officer at Whenuapai would visit the island, get the key from the Station Adjutant, and find a fully equipped surgery at his disposal.

All on the island were dentally fit before the section left at the beginning of July. Each new draft from New Zealand was made dentally fit before embarkation and it was not found necessary to call on the services of the Whenuapai dental section until the end of November. Then a dental officer and sergeant went over for a month. They found the position extraordinarily good. Out of a total of 304 men, 146 needed treatment, viz., 184 fillings, 5 extractions, 84 scalings, 2 full upper or full lower dentures and 11 repairs. The dentures were both cases of men who had lost those they had, the extractions were of teeth erupting under artificial dentures and

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[1] Capt R. R. Murray; Auckland; born Timaru, 6 May 1907;

dental surgeon.

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the scalings were due to faulty care of the mouths and an ignorance of methods of oral hygiene. Before leaving the island the dental officer gave the Commanding Officer a certificate that all his men were dentally fit.

In June 1945 the same dental officer visited the island for a month and then in November that year a dental officer with orderly and mechanic, who were being repatriated from Espiritu Santo, were diverted to the island for a month. This system worked well until March 1946, when all equipment was returned to New Zealand. Further arrangements for the dental treatment of RNZAF troops on the island are outside the scope of this history.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 29 — THE ROYAL NEW ZEALAND AIR FORCE—NO. 1 (ISLANDS) GROUP

CHAPTER 29
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LATE in September 1942 No. 3 General Reconnaissance Squadron of the Royal New Zealand Air Force left Whenuapai for the island of Espiritu Santo in the New Hebrides Group. From this modest beginning grew an organisation with bases from the Bismarck Archipelago, through the Solomon Islands and New Hebrides, to Fiji and Tonga.

Espiritu Santo at this time was being developed as a United States naval base, a cruiser task force, which included HMNZS *Leander*, being based there. The battle of Guadalcanal was over but there still remained the threat from the Japanese Navy and Air Force, and this base, with one on the island of Efate, farther south, formed important links in the chain of defence of the South Pacific. The headquarters of the United States Service Command, the 13th United States Air Force, the 1st Marine Wing and the Air Command of the South Pacific were located there, as were two United States Navy Mobile Hospitals, a United States Evacuation Hospital and, later, Station and Army General Hospitals.

The New Zealand Dental Corps was not concerned with the first five months that the New Zealand squadron was on the island as urgent dental treatment was provided by the dental hospital at the 25th United States Army Evacuation Hospital, under Major Marks as Senior Dental Officer. This state of affairs could not continue indefinitely and a dental section under the command of Captain D. T. Allan [1] was flown from Whenuapai, arriving at Espiritu Santo on 15 February 1943.

No. 3 GR Squadron had established headquarters at Espiritu Santo and carried out the main servicing of aircraft there, although Guadalcanal was the operational base. Group Captain S. Wallingford, [2] shortly to take over the command of the RNZAF in the Pacific, was already on the island as liaison officer with COMAIRSOPAC. [3] Early in February No. 4 Repair Depot arrived but for some months was unable to work as a unit because of the delay in the arrival of heavy machinery

and prefabricated hangars. The Dental Section found itself in a similar plight, as the equipment, which left New Zealand the day before it, did not arrive until the end of May. Had it not been for the emergency haversack and the good offices of the United States Dental Service, even urgent dental treatment could not have been provided. The United States transport *Louis McLean*, with the equipment aboard, had put in to Nouméa in New Caledonia to await further cargo before going on to Espiritu Santo. Requests that the dental equipment be taken off and sent by other transport were answered by the information that it was under 2000 tons of cargo and could not be reached. As this cargo was not unloaded for so long it must have been classified as of low priority and, as such, should not have included the dental equipment. If no faster transport was available it was a waste of trained personnel to send the section overseas when there was ample work to be done in New Zealand. As it was, from the date of arrival, 15 February 1943, to 20 March when it was possible to start building the dental hospital, Captain Allan was employed as Squadron Gas Officer and Assistant Cipher Officer, while the other ranks were used for camp duties. It seems incredible that when it was found that delay in the delivery of the equipment was inevitable, some further equipment was not sent by air freight to enable the section to function.

The original camp for the squadron was poorly situated in the jungle which, in the wet season, made conditions trying but possessed the advantage of providing natural camouflage. Later, the permanent RNZAF camp was established in a nearby coconut plantation, where everybody was accommodated in prefabricated huts.

The construction of the dental hospital was begun on 20 March 1943 by the men of the dental section under the supervision of the RNZAF Works Unit. It was a building 40 feet long by 16 feet wide by 8 feet high, having a surgery for two chairs at one end and a workroom at the other, with an orderly room between them. The entrance was into the orderly room by way of a porch, in which was a basin for oral prophylaxis. The windows were made of gauze.

After commending the efforts of the men of his section as amateur carpenters, Captain Allan wrote as follows to the DDS:

> **The only building supplies available at the camp were the walls of the building. It is safe to say that every other camp on the island was solicited for building supplies such as nails, timber, netting, taps, pipes, light fittings etc. For instance, the surface of the plaster bench was covered with aluminium salvaged from the petrol tank of a crashed 'Flying Fortress'.**

The hospital was completed on 17 April 1943, two days before the arrival of No. 9 General Reconnaissance Squadron with its own dental section, whose equipment made it possible for treatment to start.

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[1] **Maj D. T. Allan; Wanganui; born Dunedin, 7 Jan 1910; dental surgeon; Group Dental Officer, No. 1 (Islands) Group, RNZAF, 1943–44.**

[2] **Air Cdre S. Wallingford, CB, CBE, Legion of Merit (US); Wellington; born Hythe, England, 12 Jul 1898; AOC No. 1 (Islands) Group, 1943–44; Air Member for Supply 1944–46; Air Member for Personnel 1948–52; retd 1953.**

[3] **The Air Command of the South Pacific.**

No. 1 (Islands) Group, RNZAF

The arrival of 9 Squadron heralded the reorganisation of the RNZAF in the Pacific and the formation of the No. 1 (Islands) Group under the command of Group Captain Wallingford. The disposition of squadrons under this organisation was to be:

1. **At Espiritu Santo.**
   (*a*) **Headquarters No. 1 (Islands) Group.**
   (*a*) **One General Reconnaissance Squadron.**

b)

(One Fighter Squadron engaged mainly in training but also
c) providing night-fighter patrols at Espiritu Santo.

(No. 4 Repair Depot.
d)

2. At Suva, Fiji. Headquarters RNZAF, Fiji, under the direction of the Islands Group.
3. At Lauthala Bay, Fiji. One Flying Boat Squadron and one Flying Boat Training Flight.
4. At Nausori, Fiji. One General Reconnaissance Squadron with a detached flight at Tonga.
5. At Guadalcanal.
   (*a*) One General Reconnaissance Squadron.
   (*b*) One Fighter Squadron.
6. In New Zealand. One Fighter Squadron and one General Reconnaissance Squadron in training to relieve the respective squadrons on completion of their tour of duty.

Later reorganisation saw the disappearance of the squadron establishments of ground crew and the institution of fighter and bomber maintenance units. In turn, this led to the establishment of RNZAF stations made up of one or more squadrons together with the necessary servicing units, medical, dental, accounts, equipment and administration sections.

Air Mobile Dental Section

At the time of the formation of the No. 1 (Islands) Group, RNZAF, the dental services to the Air Force in the Pacific, with the exception of those at Fiji and Tonga, consisted of three sections. One, as already mentioned, was at Espiritu Santo with 3 General Reconnaissance Squadron. One was with 9 General Reconnaissance Squadron and one with No. 15. With the reorganisation of the RNZAF in the Pacific the three squadrons and 4 Repair Depot were amalgamated under one command. No. 9 Squadron arrived at Espiritu Santo on 19 April 1943 and No. 15 at Guadalcanal on 31 May. The Repair Depot was already on Espiritu Santo.

It therefore became apparent that the dental services should be reorganised and on 19 April 1943 Captain Allan made a recommendation to the Director of Dental Services that this should be on a Group basis. At the same time, Group Captain Wallingford asked Captain Allan to assume the duties of Group Dental Officer until matters could be finalised and the new establishment authorised.

Early in May 1943 the Director of Dental Services visited Fiji, Espiritu Santo and Guadalcanal and, as a result of his visit, decided to confirm the arrangements already made until a more permanent organisation, capable of expansion with the rapidly growing Air Force in the Pacific, could be set up. After a short visit by Captain Allan to Colonel Finn in Wellington in late July, an Air Mobile Dental Section was officially formed on 4 August 1943. Captain Allan was given the temporary rank of major and confirmed in his appointment as Group Dental Officer, responsible through Group Headquarters for the dental health of all Group personnel except those in Fiji and Tonga. He was also Officer Commanding the Mobile Dental Section and adviser to the Air Officer Commanding on dental subjects. His position was similar to that of the ADDS of 2 NZEF (IP) as described in a previous chapter.

The Air Force in Fiji had its own dental service which had been working satisfactorily since 1942, and the detached flight in Tonga was included in this service. In the original memorandum of August 1943 it was the intention of the DDS to add this service to the command of the Group Dental Officer, but written corrections added to the typewritten script make it clear that he changed his mind and decided to retain the Fiji dental services under his own control. Possibly he was influenced by the fact that in Fiji the dental service to the Air Force was so intimately bound up with those to the Army and the Navy that he feared a change in command might upset the delicate balance between the services. Fiji and Tonga, therefore, although included in the No. 1 (Islands) Group under the command of Group Captain Wallingford, were excluded from the dental services under his Group Dental Officer.

When the Air Mobile Dental Section was first formed it was divided into two:

(a) A headquarters section consisting of two officers and eight other ranks.

(b) No. 1 Sub-section consisting of one officer and three other ranks.

Actually this organisation was a change in name only as already Major Allan and Captain J. Hawksworth [1] were on Espiritu Santo and a section under Captain H. W. Washbourn [2] was operating on Guadalcanal. It did, however, give facilities for expansion within the framework of a Mobile Dental Section by the addition of subsections. Actually, until May, only one sub-section was added, but it was reasonably certain that the Air Force was going to expand and disperse and the dental organisation was ready to meet this.

All reinforcements and replacements for the Corps were sent direct to Group Headquarters in the first place. Postings for duty were then made by the Group Dental Officer. The tour of duty within the Group area for dental officers and other ranks was to be a minimum of twelve months, with the exception of the Group Dental Officer where a maximum of two years was recommended. The reason given for the longer tour of duty for the Group Dental Officer was that it was considered better to interfere as little as possible with the official relationship with the Americans, especially regarding stores.

Despite this arrangement, however, Major Allan handed over his command to Major W. M. Cunningham [3] on 15 March 1944 and returned to New Zealand. His report on the activities of the Air Mobile Section, the dental condition of the men, supplies, and the health and morale of the Corps, gives a picture of the position at that time:

> R.N.Z.A.F. personnel on arriving at Espiritu Santo, where the headquarters section was located, were immediately examined and, as far as possible, those going to forward areas were made 'Dentally fit' before leaving. The ... men were more readily available for

treatment at Base....

The dental condition ... was, on the whole, excellent. Number 3 Squadron had been without treatment for six months before N.Z.D.C. facilities were available and on examination needed only one filling per man....

Later, when the establishment of the R.N.Z.A.F. was being increased and reinforcements and replacements were arriving frequently, a number of drafts required treatment on a scale that was higher than average. This state of affairs was soon rectified in New Zealand and then the necessity for examining drafts on arrival disappeared.

Throughout my tour of duty in the Pacific I observed that the standard of dental health was particularly high and maintenance, in my opinion, was less than that needed in New Zealand. It was anticipated that, owing to the lack of fresh fruit and vegetables, there would be a relatively high incidence of gingival conditions but this was not the case. From February 43 to April 44 not one case of Vincent's Stomatitis was reported while the number of cases of simple gingivitis was very low....

The health of all ranks was excellent. During the period February to May 43 Dengue Fever was rife at Espiritu Santo.... Dysentery, sinusitis and a transitory type of Migraine were prevalent.... Malaria control units throughout all the islands were exceptionally efficient....

The morale of all N.Z.D.C. personnel was excellent and all ranks were willing and conscientious in the performance of their duties. One of the most pleasing results of my tour of duty was to note the way in which all ranks turned their hands to carpentry and constructed the dental hospitals in the areas. It is not boasting to say that all the dental hospitals were a credit to the New Zealand Dental Corps.

As at April 1944 the establishment of the Air Mobile Dental Section was as follows:

1. **Headquarters Section at Base Depot, Espiritu Santo, consisting of two dental officers, one of whom was the Senior Dental Officer, an administrative NCO, five dental clerk orderlies and one dental mechanic. There were approximately 1250 men stationed at the Base, representing a ratio of 625 to each officer, although the Senior Dental Officer, by reason of his administrative duties could not spend much time at the chairside. There was a monthly intake of 500 transient personnel which makes the figure 1250 an underestimate.**
2. **Sub-section 1 at Guadalcanal consisting of one dental officer, two clerk orderlies and one mechanic. There were 1300 men to whom must be added 225 of No. 6 Flying Boat Squadron and 75 of the Royal New Zealand Navy based at Tulagi, making a total of at least 1600. At this time they only needed maintenance but it was still a large number for one dental officer.**
3. **Sub-section 2 at Bougainville was similarly staffed to that at Guadalcanal. There were 1200 men of the RNZAF but, in addition, there was a Fiji Battalion for whom urgent treatment had to be available. Later the scope of treatment for this battalion was enlarged as described in the chapter on Fiji.**

There were therefore four dental officers, or more accurately three and a half, responsible for the full treatment of 4050 men and limited treatment of over 2000 of the Fiji Military Forces, mostly natives.

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[1] **Capt J. Hawksworth; Gisborne; born NZ 20 Dec 1908; dental surgeon.**

[2] **Lt-Col H. W. Washbourn, OBE; Timaru; born Timaru, 8 Apr 1909; dental surgeon; ADDS (Navy, Army and Air) 1944–46.**

[3] **Maj W. M. Cunningham; Dunedin; born Dunedin, 29 Aug 1908; dental surgeon; CO Mobile Dental Sec, No. 1 (Islands) Gp, RNZAF, 1944–45.**

Headquarters No. 1 (Islands) Group, RNZAF, drew attention to the fact that the title ' Air Mobile Dental Section, NZDC' was not accurate and suggested substituting ' RNZAF' in place of the word 'Air'. In April 1944 it was decided to adopt this suggestion and, at the same time, to redistribute the sections and sub-sections with an increased establishment.

There was to be a Headquarters Section with five sub-sections, consisting of six officers, i.e., one major and five captains, and nineteen other ranks, of which thirteen were dental clerk orderlies and six mechanics. This gave the greatest flexibility both for distribution throughout the Group and for further expansion. There was to be an Advanced Base Dental Store attached to the Headquarters Section in a similar manner to that in the dental service attached to 3 Division.

About this time it became known that the No. 1 (Islands) Group was to move its headquarters from Espiritu Santo to Guadalcanal. To keep in close touch with the situation it was essential that the Senior Dental Officer move too, even though the Base Depot and some squadrons were remaining at Espiritu Santo. The proposed date of the move was 1 June 1944, so on 22 May Major Cunningham left for Guadalcanal to make arrangements for building a store and office. On arrival he found everything in a turmoil as word had been received the day before that all RNZAF units west of the 159th parallel of longitude had to be withdrawn by 15 June. This meant that all units at Bougainville, the sawmill at Arundel in New Georgia and some radar units would arrive in Guadalcanal. A large camp was to be built on the site of the Casualty Clearing Station, about ten miles from the RNZAF camp, to accommodate 1300 men and the existing camp had to expect another 600. He arranged for an office and store to be built near the existing section and for one of the wards of the Casualty Clearing Station to be fitted out to accommodate sub-sections 2 and 3. Majors McCowan and Jolly of the NZDC attached to 3 Division helped him out with benches and lathes and he returned to Espiritu Santo on 27 May to ship the panniers for the new sub-section. On arriving again in Guadalcanal, this

time with his section, he found that the move out of Bougainville had been postponed for three months, when the position would be reviewed.

The RNZAF in the Pacific was steadily growing in size and complexity and it was essential that the Senior Dental Officer should know enough of the functions of its several units to place his subsections to the best advantage. The original distribution of No. 1 RNZAF Mobile Dental Section as at 1 June 1944 shows the variety of units to be serviced and emphasises the necessity for careful study in the making of appointments for dental treatment.

1. Headquarters Section. Attached to Headquarters at Guadalcanal. Headquarters No. 1 (Islands) Group. Headquarters RNZAF Station, Guadalcanal. Bomber Reconnaissance Squadron. Bomber Servicing Units.
2. No. 1 Sub-section. At Guadalcanal. Fighter Squadron. Fighter Servicing Unit. Flying Boat Squadron. (At Halavo Bay, Florida.) Royal New Zealand Navy. (At Tulagi.) Radar Squadron. Works Squadron.
3. No. 2 Sub-section. At Bougainville. RNZAF Fighter Wing.
4. No. 3 Sub-section. At Bougainville. TBF Squadron. [1] TBF Servicing Unit. SBD Squadron. [2] SBD Servicing Unit. Fiji Military Forces.
5. No. 4 Sub-section. At Espiritu Santo. No. 5 Sub-section. At Espiritu Santo. Headquarters Base Depot. Base Depot Workshops. Bomber Squadron. Bomber Servicing Unit. Transit Camp.

By the end of September 1944 it was apparent that instead of withdrawing units from forward areas to Guadalcanal, the RNZAF was about to spread its tentacles over many islands, even as far as the Admiralties. Major Cunningham's letter to Colonel Finn dated 23 September 1944, on completion of six months as Officer Commanding the Mobile Dental Section, gives a picture of the situation at the time and the problems of organisation he had to face:

> The first three months were rather difficult because of the uncertainty of what would be the future role of the R.N.Z.A.F in the Pacific.
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> Since 1 June, when the Headquarters Section moved to Guadalcanal and the establishment was increased, the work has

proceeded much more smoothly although it has been difficult to plan ahead because of the lack of a definite

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[1] Torpedo Bomber Fighter.

[2] Scout Bomber Dive.

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policy for the R.N.Z.A.F. in the Pacific. This of course was due to factors over which Air Department and No. 1 Islands Group had no control.

However, the policy for the next few months is now fairly well defined and I think it is quite evident that we will need a substantial increase in our establishment.

The total number of men in the No. 1 Islands Group will, I understand, increase to 8,000 or 8,500. When I wrote on 30 August about an increase in establishment it was thought that squadrons would be established on Emirau and Green Islands. A few days later it was decided that a squadron would also be located at Los Negros in the Admiralty Islands.

Another complication has arisen at the seaplane base at Halavo, Florida Island. In the past the squadron there has been treated each six months and casualties in the meantime have been treated by the United States Dental Officer attached to the Base. I am now told that the United States squadron will be withdrawing so we will have to visit Halavo frequently in future. As 450 men are involved they are too big a unit to leave for any length of time. Halavo is half a day by ship from Guadalcanal.

The same position will occur at Los Negros. There will be about 300 to 400 men and they will have to be visited frequently, probably by the dental officer at Emirau.

Under the new organisation there will be 700 to 800 men at both Emirau and Green islands and about 400 to 500 at Bougainville.

The number at Espiritu Santo, now 1,350, will soon be increased to 1,800 by the arrival of No. 5 Flying Boat Squadron from Fiji.

As I visualise the developments in the next few months, I think our establishment should be increased to nine or ten officers and three should be posted as soon as possible.... As the size of the section grows, more and more of my time will be taken up with administrative work and I will no longer be able to spend a full day in the clinic.

As a result of Major Cunningham's recommendations a new establishment, consisting of a Headquarters Section and ten subsections, was authorised on 14 November 1944.

Assuming the number of men in the group to be about 8500 and excluding the Senior Dental Officer, the ratio worked out at one dental officer to 850 men. This was low compared with other theatres of war and with New Zealand, but units were small and scattered, sometimes into groups of no more than 400 to 700 men long distances apart. Groups of this size could not be left without a sub-section for any length of time, so it meant that more subsections were needed than if the men had all been congregated together. They had all been treated either at an Air Force station in New Zealand or at the Port Depot before embarkation and their tour of duty in the Pacific was short. Their problem was therefore one of maintenance. The combination of these factors made the task of the dental section with the Air Force in the Pacific less arduous than that of its counterpart with the Army in the same area.

In operations such as those in which the RNZAF was engaged in the Pacific, conditions changed rapidly and the Dental Corps establishment

had only been in existence for about six weeks before Major Cunningham suggested that it could safely be reduced in size. The senior and one other dental officer, the administrative NCO, one mechanic and six orderlies were due for repatriation at the beginning of March 1945 in accordance with the agreed length of service in the Pacific. With the wide distribution of units, some sub-sections were responsible for from 400 to 500 men, while in other cases two or more sub-sections would be working together in the same building. In all cases reasonable facilities such as running water, electric light and power were available. The ratio of two orderlies to each officer therefore seemed excessive. As the war moved farther north, the squadrons at Espiritu Santo and Guadalcanal were no longer needed for garrison duties so could be reduced in size and split up among the operational units. Although this meant that the stations at Bougainville, Nissan Island, Emirau and Los Negros would be increased to about 1100 men each, one dental sub-section would not find such a station beyond its capabilities. It was thought by the Senior Dental Officer that the Royal New Zealand Navy would probably withdraw from the area about April 1945, releasing a dental officer, who would then be available to accompany any squadron that moved to a new location or to reinforce a station where routine examinations were falling behind schedule. His recommendation was not approved.

On 3 May 1945 Major J. C. M. Simmers [1] (promoted lieutenantcolonel on 27 May) replaced Major Cunningham and held the appointment until the end of hostilities in the Pacific.

During its existence from June 1944 to October 1945 No. 1 Mobile Dental Section, RNZAF, covered a wide field, as can be seen from the following locations:

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[1] Lt-Col J. C. M. Simmers; Rotorua; born 4 Dec 1905; dental surgeon.

[2] Commander, New Zealand Air Task Force.

Guadalcanal:	**Camp Waitemata**
	Henderson Field
	West Cape
Bougainville:	**Camp Waitemata**
	COMZEAIRTAF [2]
	Camp Rata
	Camp Hinemoa
	Camp Kiwi
Florida Island:	**Halavo Bay**
Emirau Island	
Los Negros Island	
Espiritu Santo	
Green Islands	
New Britain:	**Jacquinot Bay**
Russell Islands:	**HMNZS *Kahu***

Until the end of hostilities the dental organisation continued to be a Mobile Section with varying numbers of sub-sections. On 12 October 1945 the following cable was received from the DDS:

> **Authority given to cancel establishment No. 1 RNZAF Mobile Dental Section with effect from 20 October 45 and to establish three self-contained dental sections as advised.**

Three self-accounting sections were formed, stocked with adequate supplies for four months and stationed at Espiritu Santo, Bougainville and Jacquinot Bay. Surplus personnel and stores were then ready to return to New Zealand. Actually these sections were not required for long and on 14 November 1945 instructions were issued for them to return to New Zealand. The stores were given an air transport priority No. 3 and arrived in Auckland in mid-February 1946.

Treatment

A high standard of oral health was maintained for all men by systematic examination by units. The average airman was made 'dentally fit' three times during his twelve months' tour of duty: once

before leaving New Zealand and twice by the Mobile Dental Section. It was very rare, therefore, to find extensive caries and few extractions were necessary. The health of the gingival tissues was good, and although there was a marked prevalence of salivary calculus, as was noted in other tropical stations, the tissues soon regained their tone when the calculus was removed. The few cases of Vincent's infection were all recent arrivals from New Zealand. Major Cunningham reported on 15 March 1945 as follows:

> **It is considered that the good health of the soft tissues is due in no small measure to the large quantities of citrus fruit juices and the vitamin concentrates B1 and C which the men were encouraged to take each day. All the dental officers consider that the gingival tissues are healthier here than in New Zealand and the increased amount of vitamins B1 and C must be given some of the credit.**

This opinion was endorsed almost word for word by Lieutenant-Colonel Simmers in a report dated 31 July 1945.

While giving due credit to this diet, it is felt that the strongest emphasis should be placed on the necessity for constant vigilance against the mechanical irritation of salivary and seruminal calculus, the main etiological factors in periodontal disease. It is significant that in the Middle East, where the supply of citrus fruits was negligible, there were no cases of Vincent's infection. Admittedly vitamins B1 and C were available in tabloid form but there is little evidence that they were regularly taken. The Dental Corps in the Pacific can take much of the credit for the general healthy state of the gingival tissues because of its declared war against calculus in any form. This is shown by the number of scalings carried out.

From March 1944 to March 1945, 11,530 patients were treated, and of this number 2134 were scalings. From March 1945 to the end of July of that year 6641 were treated, of which 1085 were scalings—that is, about 18 per cent and 16 per cent respectively. When it is remembered

that the number of denture wearers was high in the New Zealand Forces and that these men would not need this treatment, the percentage would be nearer 30.

Fillings required per man were between 0.7 and 0.9 and extractions were never above 0.06 per man. The bulk of the denture work was remodelling and repairing, although a certain number of new full and partial dentures were made. From this it can be seen that most of the work was maintenance, with oral prophylaxis demanding much of the dental officer's time. In the United Kingdom there is a scheme whereby women are given some months' training in the purely mechanical operation of tooth scaling, and after satisfying a board of examiners that they have the requisite manual dexterity, are registered as dental hygienists with the right to perform this work. During the war the dental service in the Royal Air Force used dental hygienists and it would appear that there could be a considerable saving in trained manpower if similar use were made of them in the New Zealand Dental Corps. As the law stands in New Zealand there would have to be alterations before anyone other than a fully qualified, registered dental surgeon could carry out this work. For the protection of the public it would be essential to define very clearly the exact nature of the work to be sanctioned, especially in view of a popular misconception that the construction of artificial dentures is also a purely mechanical procedure. It cannot be too strongly stated that the two operations are not analogous and that the inclusion of the dental hygienist in a strictly limited capacity bears no relation to the claims of the dental mechanic to the right to carry out work for which he has not had adequate training.

One interesting problem arose in connection with the Air Force in the war which was new to the dental profession. Under certain conditions of pressure and strain, met with in high flying and divebombing, cases of acute toothache developed. On examination it was often difficult to find any reason for this as the tooth in question appeared to be sound, although it was found that it only occurred in teeth that had been filled. It appeared, therefore, that what was, under

normal conditions, a sound filling needed something else to withstand the abnormal conditions to which aircrew were subjected. In most cases if the filling was taken out and reinserted with a greater pulp protection there was no further trouble. Research by Beryl Ritchey, Balint Orban, Warren Harvey and others led to the conclusion that disturbance of circulation at high altitudes caused pain in certain vital pulps which had previously been the subject of tissue changes. In many cases a lining of Eugenol mixed with zinc oxide was sufficient to protect the pulp, and this was used in the case of most deep cavities for men who were likely to meet the abnormal conditions. For convenience of discussion the subject was called Aerodontia.

The men were quartered and rationed by the Americans and were eating food to which they were not accustomed, and which was perforce under the existing conditions lacking in full vitamin content. This may have been the cause of some of the post-extraction haemorrhages noted by Major Washbourn. That at least was his opinion, and he went so far as to adopt preoperative medication as a routine, although no mention can be found of this being done by other dental officers in the Group.

When it came to making appointments for treatment there were certain important factors to be considered. The average patient in the Air Force was not trained to the same degree of physical hardness as his counterpart in the Army and was often living under a great strain. He could be compared to the University student at examination time, a young man with taut nerves. He was therefore not the best subject for dental operations and responded best to short appointments. Some men were highly trained personnel whose time was exceptionally valuable, so it was essential that they be absent from their duties as little as possible. It was usually possible for the dental officer to make his appointments in such a way as to avoid interfering with the duties of any individual, yet still have a full book, by calling on men from the less specialised units. Fortunately unit commanders were well aware of the importance of dental health and were fully co-operative.

Stores and Equipment

Most supplies were through monthly indent on the Army Base Dental Store in Wellington. Through the excellent co-operation of Air Movements, it was possible at all times to keep these up to requirements.

Certain stores were available from the United States Medical Supplies, but too much reliance could not be put on this source as it was short in dental stocks. Any stocks bought from the Americans were issued on the lend-lease system, but since Wellington was also buying stocks under the same system and held them in fuller supply, there was little advantage to be gained except in emergency.

As many stores from Wellington were sent by air transport, certain modifications in the method of packing had to be made. In the first place, weight was a primary consideration and the wooden boxes in general use were unacceptable to the Air Force, which repacked the stores into cardboard cartons. This led to some damage from rough handling until instructions were issued that all fragile goods were to be suitably marked as such. Secondly, the reduced atmospheric pressure at high altitudes made it necessary to wire down all corks of bottles containing liquids. One package in the early days was ruined by bottles of chromic acid and absolute alcohol blowing their corks.

The same trouble was experienced in keeping certain stores and equipment as was seen in Fiji and with 3 Division. An American dental officer made a small 'hot-box' for his instruments and burs which proved very satisfactory. It was a simple box containing one or more electric light bulbs. By reason of the humidity, synthetic porcelain fillings were not fully satisfactory, Units of acrylic resin were of little use unless the monomer could be kept in a refrigerator to prevent it solidifying. As acrylic resin was only used by the New Zealand Dental Corps for isolated cases, this mattered little, but the Americans, who had adopted its use more fully, must have had considerable difficulty if away from their base.

Spirit lamps and primuses were used in surgeries and workrooms instead of bottled gas, which in February 1943, when the sections were equipped, was in short supply in New Zealand. It is interesting to note that while all reasonable demands for supplies were met by Wellington, the Dental Corps was not pampered and had to rely on initiative to meet exceptional circumstances. One dental officer sent the following request to Army Base Dental Store:

> **Matches are very scarce and a packet or two would be very useful if they could be included in the indent. Sufficient draught to keep the place cool plays havoc with the spirit lamp and a considerable number of matches are used.**

The answer from Headquarters, Wellington, was 'No. Improvise lamp shield.'

Later, when the supply of electricity was better, some electric sterilisers and water heaters were supplied. Other electrical equipment such as polishing lathes and fans followed shortly afterwards. Such things as electric lathes and fans had been considered as luxuries, but Major Cunningham on his return to New Zealand in May 1945 had a personal interview with Colonel Finn in which he was able to prove that they were definite aids to efficiency. This interview smoothed out many small difficulties in connection with stores administration in the Islands Group.

Up to this time, all unserviceable equipment had to be returned to New Zealand before it could be written off the charge of the Senior Dental Officer. Similarly, there were no local facilities for writing off missing equipment. Authority was now given for all equipment, other than glassware, which had become unserviceable through fair wear and tear, to be written off by a local Board of Survey consisting of two dental officers other than the accounting officer. It was suggested that this board meet every three months. Items of glassware broken in use were to be entered on Form 138 (an army form which was an application to write off stores) and not returned to Army Base Dental Store.

On account of the lack of air freight, supplies of workroom plaster, artificial stone and other items of a high weight-to-value ratio were procured locally under lend-lease. This countermanded an order of April 1945 that no further supplies were to be obtained from United States sources. Another item got from lend-lease sources was X-ray films. The films supplied from the Army Base Dental Store were unsuitable for the climate and the United States Medical Depots had slow X-ray films in a special tropical pack.

Buildings

There were no standardised plans for the building of dental accommodation in the Islands Group with the result that there was a variety of structures. All contained the essentials but differed according to the ingenuity of section commanders. Environment and the character and availability of materials, as well as the limitations imposed by lack of experience in construction, influenced the choice of design. Most were erected by the Dental Corps men themselves, except for certain special work such as plumbing and electricity and a general expert supervision.

Rain and heat were constant companions and buildings had to be constructed with this in mind, although it was found to be impossible to shut out all the rain and keep cool as well.

Working Conditions

As has been stated earlier, the dental section with the Air Force in the Pacific was seldom confronted with the large volume of work met with in the Army. There was always plenty to do, but neither the same banking up of arrears nor the desperate urgency. Consequently there were more leisure hours and an obligation to occupy these hours to some purpose, a highly important factor in the maintenance of morale.

Books, magazines and digests were sent to the forward areas from time to time and current issues of the principal dental journals of the

world were circulated among the officers. A monthly newsletter was also started to keep closer touch between Headquarters and the scattered sub-sections. Hobbies were encouraged and were numerous and varied.

Some idea of the conditions and of the general life can be gleaned from the following excerpts from narratives supplied from dental officers who were there:

Espiritu Santo:

Number 5 Flying Boat Squadron Camp is situated beside the sea at 50 to 100 feet altitude so there is a cool breeze to make living conditions pleasanter. The camp itself is in the middle of a coconut plantation and consists, for the most part, of Quonset huts. The administration is American so the food to a large extent consists of American dishes. These were enjoyed as a novelty but were not really palatable to us. Facilities are available for swimming, basket ball, volley ball and table tennis and in addition there is a good library and outdoor picture show. Launch trips are always a great delight....

At the Base depot there is a well established camp, very clean, with well-constructed buildings, good roads and all possible conveniences such as electric iron and hot and cold showers. This camp compares very favourably with those on Air Force Stations in New Zealand.

The hours of duty are 0730 to 1130 and from 1330 to 1615. This leaves two spare hours in the middle of the day for reading, relaxing in the shade of a palm or swimming. Gardening and boat building are other forms of recreation. Fresh milk is one of the things missed most.

Guadalcanal:

... a beautiful spot just like a tourist's guide to the South Seas.

Jungle in the background, palms, coral sand beach, coral reef with breakers on the outer edge and deep blue sea beyond.

We established the section in one end of the medical hut with the chair in the open doorway to get the best light and began work under the curious gaze of an audience of natives.

On the Saturday evening a native arrived from the Catholic Mission about twelve miles away with a note from Father LeClark ... requesting my assistance with a maternity case, a delayed placenta. We went there on the Sunday and were greatly relieved on arrival to find that our services were not required.

During off hours we built a raft of oil drums and bamboo and using a viewing glass spent many hours examining the underwater life of the reef. Also, wearing goggles and armed with bows and arrows we hunted fish to the advantage of our general education but with little increase to our rations.

Halavo Bay, Florida Island:

Halavo Bay is on the Western shore of Florida facing Guadalcanal and about 15 minutes by launch from Tulagi. It was formerly a Melanesian mission station but, with the advent of the Japanese, the natives fled inland.

We shared a Quonset Hut with the American Dental Officer. Living conditions were good and food excellent and there were pictures every night and an occasional travelling concert party. We had our own vegetable garden with plenty of tomatoes and cucumbers.

Los Negros:

The experience of erecting our own building was thoroughly enjoyed. Everything was done by the men of the section except cutting the rafters and the lighting and plumbing installations.

The kit of tools was a Godsend as the Works Section could only spare one hammer and a rip saw.

The camp site was well chosen on clean coral with rapid drainage. The climate is good, the average temperature being about 85 to 90 degrees.

The study and hunting of butterflies can be followed to some extent and some beautiful specimens were obtained.

Russell Islands:

H.M.N.Z.S. 'Kahu', the New Zealand Naval Base on the island is attached to an American Naval Unit and the camp is situated in the midst of a coconut plantation at the head of Renard Sound. Climatic conditions are good with the Anopheles mosquito not in evidence.

Excellent swimming is obtainable at Lingatu, an American Recreation Centre on the opposite side of the island. Launch trips to neighbouring atolls interspersed with deep sea fishing for bonita or tuna help to pass our leisure hours.

Bougainville:

The section is well known for its interest in queer insects of which there are great numbers, especially butterflies of all colours.

The climate is one of the best in the area, the temperature remaining much the same all the year round, i.e., 90 degrees in the daytime and 72 at night. The soil is sandy so the rain which is daily and often heavy soon drains away. Very few fruits grow on this part of the island.

Emirau:

The ship steamed into Hamburg Bay, Emirau Island, situated

in the St. Matthias Group.... The island is small, some 7 miles by 4 at its widest part. It is the island where the survivors of the sinking of the ' Rangitane' were landed.

The heat is intense, particularly with the glare off the coral strip and shoreline but against this, the rains and storms bring welcome relief from the incessant dust and cloudless skies.

The camp site was cleared out of the dense jungle. Timber as we understand the word does not exist but there are many young saplings which are invaluable for our type of tropical building.

Green Island:

The camp, abandoned two months previously by the Americans, was a dilapidated affair of broken down buildings and rotting tents, the whole place overgrown with rank weeds, vines and creepers. Snakes abounded and the small barking toads made sleep almost impossible. Scores of pigs wandered about as if they owned the place. However these were only first impressions. As the weather improved and the mud hardened, the weeds were cleared, the tents made habitable and the pigs driven away, more or less, and we found we had a camp as good as any on the island.

The following figures give details of the treatment afforded by the Air Mobile Dental Section and No. 1 RNZAF Mobile Dental Section from 4 August 1943 to 20 October 1945, when hostilities were over:

Patients presenting	**23,495**
Patients rendered dentally fit	**13,614**
Extractions with local anaesthetic	**1,601**
Extractions with general anaesthetic	**32**
Amalgam fillings or inlays	**16,345**
Synthetic fillings	**2,492**
Root fillings	**32**
Scalings	**3,958**
Full upper dentures	**229**

Full lower dentures	101
Partial upper dentures	273
Partial lower dentures	93
Dentures remodelled	1,377
Dentures repaired	1,487

Knowing that the RNZAF was to be demobilised, every attempt was made to make all personnel dentally fit as late as possible in their tour of duty. To assist this an extra officer and orderly were transferred to Jacquinot Bay, where the work was behindhand owing to the protracted changeover from Nissan Island earlier in 1945.

In conclusion, it would appear that the Mobile Dental Section with its headquarters section, advanced base dental store and subsections was the best organisation to service a scattered force such as No. 1 (Islands) Group. It is also clearly shown that without individual initiative, no amount of organising would provide a satisfactory dental service under conditions such as existed in the Pacific. Judging by the amount of construction done by the officers and men of the Corps, a good kit of tools is an essential part of equipment. Transport is not so important, as in many cases there are no roads. The specially converted truck can seldom be used in the Pacific and in many cases was dismantled by the sections themselves so that its equipment could be moved into buildings. When trucks are needed, there is a strong argument in favour of the use of standard types which can be easily fitted with specialised equipment and just as easily dismantled. A certain number of trucks could then be allotted to the Dental Corps, but not necessarily used by it unless conditions warranted it. It is not economical for any unit to keep to itself transport that cannot be fully employed and which in bad climatic conditions tends to deteriorate rapidly. One dental tender was released by the Senior Dental Officer in November 1944 at the request of the Chief Supply Officer, but the Senior Dental Officer made it clear at the time that he had no intention of parting with any others. It is difficult to see how any of his transport could have been fully employed on dental business. The fear that transport released to the common pool would not be available if required under different circumstances should not

influence a decision that should only be based on a co-operative attitude for the efficiency of the whole force. It should not be difficult for a Senior Dental Officer to justify demands for transport, specialised or otherwise. His Commanding Officer is usually in a better position to assess the priorities of the units of his force.

The remarks of Lieutenant-Colonel Simmers on 26 October 1945 make a fitting ending to this chapter:

> **I wish to record my appreciation of the service rendered by all ranks. At all times their general conduct has been very good. They have worked consistently well under trying conditions and the results of their efforts have been evident in the dental service rendered to the R.N.Z.A.F. and in the number of excellent sections which were constructed by their own efforts and initiative.**

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

LATE in September 1942 No. 3 General Reconnaissance Squadron of the Royal New Zealand Air Force left Whenuapai for the island of Espiritu Santo in the New Hebrides Group. From this modest beginning grew an organisation with bases from the Bismarck Archipelago, through the Solomon Islands and New Hebrides, to Fiji and Tonga.

Espiritu Santo at this time was being developed as a United States naval base, a cruiser task force, which included HMNZS *Leander*, being based there. The battle of Guadalcanal was over but there still remained the threat from the Japanese Navy and Air Force, and this base, with one on the island of Efate, farther south, formed important links in the chain of defence of the South Pacific. The headquarters of the United States Service Command, the 13th United States Air Force, the 1st Marine Wing and the Air Command of the South Pacific were located there, as were two United States Navy Mobile Hospitals, a United States Evacuation Hospital and, later, Station and Army General Hospitals.

The New Zealand Dental Corps was not concerned with the first five months that the New Zealand squadron was on the island as urgent dental treatment was provided by the dental hospital at the 25th United States Army Evacuation Hospital, under Major Marks as Senior Dental Officer. This state of affairs could not continue indefinitely and a dental section under the command of Captain D. T. Allan [1] was flown from Whenuapai, arriving at Espiritu Santo on 15 February 1943.

No. 3 GR Squadron had established headquarters at Espiritu Santo and carried out the main servicing of aircraft there, although Guadalcanal was the operational base. Group Captain S. Wallingford, [2] shortly to take over the command of the RNZAF in the Pacific, was already on the island as liaison officer with COMAIRSOPAC. [3] Early in February No. 4 Repair Depot arrived but for some months was unable to work as a unit because of the delay in the arrival of heavy machinery

and prefabricated hangars. The Dental Section found itself in a similar plight, as the equipment, which left New Zealand the day before it, did not arrive until the end of May. Had it not been for the emergency haversack and the good offices of the United States Dental Service, even urgent dental treatment could not have been provided. The United States transport *Louis McLean*, with the equipment aboard, had put in to Nouméa in New Caledonia to await further cargo before going on to Espiritu Santo. Requests that the dental equipment be taken off and sent by other transport were answered by the information that it was under 2000 tons of cargo and could not be reached. As this cargo was not unloaded for so long it must have been classified as of low priority and, as such, should not have included the dental equipment. If no faster transport was available it was a waste of trained personnel to send the section overseas when there was ample work to be done in New Zealand. As it was, from the date of arrival, 15 February 1943, to 20 March when it was possible to start building the dental hospital, Captain Allan was employed as Squadron Gas Officer and Assistant Cipher Officer, while the other ranks were used for camp duties. It seems incredible that when it was found that delay in the delivery of the equipment was inevitable, some further equipment was not sent by air freight to enable the section to function.

The original camp for the squadron was poorly situated in the jungle which, in the wet season, made conditions trying but possessed the advantage of providing natural camouflage. Later, the permanent RNZAF camp was established in a nearby coconut plantation, where everybody was accommodated in prefabricated huts.

The construction of the dental hospital was begun on 20 March 1943 by the men of the dental section under the supervision of the RNZAF Works Unit. It was a building 40 feet long by 16 feet wide by 8 feet high, having a surgery for two chairs at one end and a workroom at the other, with an orderly room between them. The entrance was into the orderly room by way of a porch, in which was a basin for oral prophylaxis. The windows were made of gauze.

After commending the efforts of the men of his section as amateur carpenters, Captain Allan wrote as follows to the DDS:

> **The only building supplies available at the camp were the walls of the building. It is safe to say that every other camp on the island was solicited for building supplies such as nails, timber, netting, taps, pipes, light fittings etc. For instance, the surface of the plaster bench was covered with aluminium salvaged from the petrol tank of a crashed 'Flying Fortress'.**

The hospital was completed on 17 April 1943, two days before the arrival of No. 9 General Reconnaissance Squadron with its own dental section, whose equipment made it possible for treatment to start.

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[1] **Maj D. T. Allan; Wanganui; born Dunedin, 7 Jan 1910; dental surgeon; Group Dental Officer, No. 1 (Islands) Group, RNZAF, 1943–44.**

[2] **Air Cdre S. Wallingford, CB, CBE, Legion of Merit (US); Wellington; born Hythe, England, 12 Jul 1898; AOC No. 1 (Islands) Group, 1943–44; Air Member for Supply 1944–46; Air Member for Personnel 1948–52; retd 1953.**

[3] **The Air Command of the South Pacific.**

THE NEW ZEALAND DENTAL SERVICES

NO. 1 (ISLANDS) GROUP, RNZAF

No. 1 (Islands) Group, RNZAF

The arrival of 9 Squadron heralded the reorganisation of the RNZAF in the Pacific and the formation of the No. 1 (Islands) Group under the command of Group Captain Wallingford. The disposition of squadrons under this organisation was to be:

1. **At Espiritu Santo.**
   - **(*a*) Headquarters No. 1 (Islands) Group.**
   - **(*b*) One General Reconnaissance Squadron.**
   - **(*c*) One Fighter Squadron engaged mainly in training but also providing night-fighter patrols at Espiritu Santo.**
   - **(*d*) No. 4 Repair Depot.**
2. **At Suva, Fiji. Headquarters RNZAF, Fiji, under the direction of the Islands Group.**
3. **At Lauthala Bay, Fiji. One Flying Boat Squadron and one Flying Boat Training Flight.**
4. **At Nausori, Fiji. One General Reconnaissance Squadron with a detached flight at Tonga.**
5. **At Guadalcanal.**
   - **(*a*) One General Reconnaissance Squadron.**
   - **(*b*) One Fighter Squadron.**
6. **In New Zealand. One Fighter Squadron and one General Reconnaissance Squadron in training to relieve the respective squadrons on completion of their tour of duty.**

Later reorganisation saw the disappearance of the squadron establishments of ground crew and the institution of fighter and bomber maintenance units. In turn, this led to the establishment of RNZAF stations made up of one or more squadrons together with the necessary servicing units, medical, dental, accounts, equipment and administration sections.

THE NEW ZEALAND DENTAL SERVICES

AIR MOBILE DENTAL SECTION

Air Mobile Dental Section

At the time of the formation of the No. 1 (Islands) Group, RNZAF, the dental services to the Air Force in the Pacific, with the exception of those at Fiji and Tonga, consisted of three sections. One, as already mentioned, was at Espiritu Santo with 3 General Reconnaissance Squadron. One was with 9 General Reconnaissance Squadron and one with No. 15. With the reorganisation of the RNZAF in the Pacific the three squadrons and 4 Repair Depot were amalgamated under one command. No. 9 Squadron arrived at Espiritu Santo on 19 April 1943 and No. 15 at Guadalcanal on 31 May. The Repair Depot was already on Espiritu Santo.

It therefore became apparent that the dental services should be reorganised and on 19 April 1943 Captain Allan made a recommendation to the Director of Dental Services that this should be on a Group basis. At the same time, Group Captain Wallingford asked Captain Allan to assume the duties of Group Dental Officer until matters could be finalised and the new establishment authorised.

Early in May 1943 the Director of Dental Services visited Fiji, Espiritu Santo and Guadalcanal and, as a result of his visit, decided to confirm the arrangements already made until a more permanent organisation, capable of expansion with the rapidly growing Air Force in the Pacific, could be set up. After a short visit by Captain Allan to Colonel Finn in Wellington in late July, an Air Mobile Dental Section was officially formed on 4 August 1943. Captain Allan was given the temporary rank of major and confirmed in his appointment as Group Dental Officer, responsible through Group Headquarters for the dental health of all Group personnel except those in Fiji and Tonga. He was also Officer Commanding the Mobile Dental Section and adviser to the Air Officer Commanding on dental subjects. His position was similar to

that of the ADDS of 2 NZEF (IP) as described in a previous chapter.

The Air Force in Fiji had its own dental service which had been working satisfactorily since 1942, and the detached flight in Tonga was included in this service. In the original memorandum of August 1943 it was the intention of the DDS to add this service to the command of the Group Dental Officer, but written corrections added to the typewritten script make it clear that he changed his mind and decided to retain the Fiji dental services under his own control. Possibly he was influenced by the fact that in Fiji the dental service to the Air Force was so intimately bound up with those to the Army and the Navy that he feared a change in command might upset the delicate balance between the services. Fiji and Tonga, therefore, although included in the No. 1 (Islands) Group under the command of Group Captain Wallingford, were excluded from the dental services under his Group Dental Officer.

When the Air Mobile Dental Section was first formed it was divided into two:

(*a*) A headquarters section consisting of two officers and eight other ranks.

(*b*) No. 1 Sub-section consisting of one officer and three other ranks.

Actually this organisation was a change in name only as already Major Allan and Captain J. Hawksworth [1] were on Espiritu Santo and a section under Captain H. W. Washbourn [2] was operating on Guadalcanal. It did, however, give facilities for expansion within the framework of a Mobile Dental Section by the addition of subsections. Actually, until May, only one sub-section was added, but it was reasonably certain that the Air Force was going to expand and disperse and the dental organisation was ready to meet this.

All reinforcements and replacements for the Corps were sent direct to Group Headquarters in the first place. Postings for duty were then made by the Group Dental Officer. The tour of duty within the Group area for dental officers and other ranks was to be a minimum of twelve

months, with the exception of the Group Dental Officer where a maximum of two years was recommended. The reason given for the longer tour of duty for the Group Dental Officer was that it was considered better to interfere as little as possible with the official relationship with the Americans, especially regarding stores.

Despite this arrangement, however, Major Allan handed over his command to Major W. M. Cunningham [3] on 15 March 1944 and returned to New Zealand. His report on the activities of the Air Mobile Section, the dental condition of the men, supplies, and the health and morale of the Corps, gives a picture of the position at that time:

> **R.N.Z.A.F. personnel on arriving at Espiritu Santo, where the headquarters section was located, were immediately examined and, as far as possible, those going to forward areas were made 'Dentally fit' before leaving. The ... men were more readily available for treatment at Base....**
>
> **The dental condition ... was, on the whole, excellent. Number 3 Squadron had been without treatment for six months before N.Z.D.C. facilities were available and on examination needed only one filling per man....**
>
> **Later, when the establishment of the R.N.Z.A.F. was being increased and reinforcements and replacements were arriving frequently, a number of drafts required treatment on a scale that was higher than average. This state of affairs was soon rectified in New Zealand and then the necessity for examining drafts on arrival disappeared.**
>
> **Throughout my tour of duty in the Pacific I observed that the standard of dental health was particularly high and maintenance, in my opinion, was less than that needed in New Zealand. It was anticipated that, owing to the lack of fresh fruit and vegetables, there would be a relatively high incidence of gingival conditions but this was not the case. From February 43 to April 44 not one**

case of Vincent's Stomatitis was reported while the number of cases of simple gingivitis was very low....

The health of all ranks was excellent. During the period February to May 43 Dengue Fever was rife at Espiritu Santo.... Dysentery, sinusitis and a transitory type of Migraine were prevalent.... Malaria control units throughout all the islands were exceptionally efficient....

The morale of all N.Z.D.C. personnel was excellent and all ranks were willing and conscientious in the performance of their duties. One of the most pleasing results of my tour of duty was to note the way in which all ranks turned their hands to carpentry and constructed the dental hospitals in the areas. It is not boasting to say that all the dental hospitals were a credit to the New Zealand Dental Corps.

As at April 1944 the establishment of the Air Mobile Dental Section was as follows:

1. **Headquarters Section at Base Depot, Espiritu Santo, consisting of two dental officers, one of whom was the Senior Dental Officer, an administrative NCO, five dental clerk orderlies and one dental mechanic. There were approximately 1250 men stationed at the Base, representing a ratio of 625 to each officer, although the Senior Dental Officer, by reason of his administrative duties could not spend much time at the chairside. There was a monthly intake of 500 transient personnel which makes the figure 1250 an underestimate.**
2. **Sub-section 1 at Guadalcanal consisting of one dental officer, two clerk orderlies and one mechanic. There were 1300 men to whom must be added 225 of No. 6 Flying Boat Squadron and 75 of the Royal New Zealand Navy based at Tulagi, making a total of at least 1600. At this time they only needed maintenance but it was still a large number for one dental officer.**
3. **Sub-section 2 at Bougainville was similarly staffed to that at Guadalcanal. There were 1200 men of the RNZAF but, in addition, there was a Fiji Battalion for whom urgent treatment had to be available. Later the scope of treatment for this battalion was enlarged as described in the chapter on Fiji.**

There were therefore four dental officers, or more accurately three and a half, responsible for the full treatment of 4050 men and limited treatment of over 2000 of the Fiji Military Forces, mostly natives.

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[1] **Capt J. Hawksworth; Gisborne; born NZ 20 Dec 1908; dental surgeon.**

[2] **Lt-Col H. W. Washbourn, OBE; Timaru; born Timaru, 8 Apr 1909; dental surgeon; ADDS (Navy, Army and Air) 1944–46.**

[3] **Maj W. M. Cunningham; Dunedin; born Dunedin, 29 Aug 1908; dental surgeon; CO Mobile Dental Sec, No. 1 (Islands) Gp, RNZAF, 1944–45.**

THE NEW ZEALAND DENTAL SERVICES

NO. 1 RNZAF MOBILE DENTAL SECTION, NZDC

No. 1 RNZAF Mobile Dental Section, NZDC

Headquarters No. 1 (Islands) Group, RNZAF, drew attention to the fact that the title ' Air Mobile Dental Section, NZDC' was not accurate and suggested substituting ' RNZAF' in place of the word 'Air'. In April 1944 it was decided to adopt this suggestion and, at the same time, to redistribute the sections and sub-sections with an increased establishment.

There was to be a Headquarters Section with five sub-sections, consisting of six officers, i.e., one major and five captains, and nineteen other ranks, of which thirteen were dental clerk orderlies and six mechanics. This gave the greatest flexibility both for distribution throughout the Group and for further expansion. There was to be an Advanced Base Dental Store attached to the Headquarters Section in a similar manner to that in the dental service attached to 3 Division.

About this time it became known that the No. 1 (Islands) Group was to move its headquarters from Espiritu Santo to Guadalcanal. To keep in close touch with the situation it was essential that the Senior Dental Officer move too, even though the Base Depot and some squadrons were remaining at Espiritu Santo. The proposed date of the move was 1 June 1944, so on 22 May Major Cunningham left for Guadalcanal to make arrangements for building a store and office. On arrival he found everything in a turmoil as word had been received the day before that all RNZAF units west of the 159th parallel of longitude had to be withdrawn by 15 June. This meant that all units at Bougainville, the sawmill at Arundel in New Georgia and some radar units would arrive in Guadalcanal. A large camp was to be built on the site of the Casualty Clearing Station, about ten miles from the RNZAF camp, to accommodate 1300 men and the existing camp had to expect another 600. He arranged for an office and store to be built near the existing

section and for one of the wards of the Casualty Clearing Station to be fitted out to accommodate sub-sections 2 and 3. Majors McCowan and Jolly of the NZDC attached to 3 Division helped him out with benches and lathes and he returned to Espiritu Santo on 27 May to ship the panniers for the new sub-section. On arriving again in Guadalcanal, this time with his section, he found that the move out of Bougainville had been postponed for three months, when the position would be reviewed.

The RNZAF in the Pacific was steadily growing in size and complexity and it was essential that the Senior Dental Officer should know enough of the functions of its several units to place his subsections to the best advantage. The original distribution of No. 1 RNZAF Mobile Dental Section as at 1 June 1944 shows the variety of units to be serviced and emphasises the necessity for careful study in the making of appointments for dental treatment.

1. Headquarters Section. Attached to Headquarters at Guadalcanal. Headquarters No. 1 (Islands) Group. Headquarters RNZAF Station, Guadalcanal. Bomber Reconnaissance Squadron. Bomber Servicing Units.
2. No. 1 Sub-section. At Guadalcanal. Fighter Squadron. Fighter Servicing Unit. Flying Boat Squadron. (At Halavo Bay, Florida.) Royal New Zealand Navy. (At Tulagi.) Radar Squadron. Works Squadron.
3. No. 2 Sub-section. At Bougainville. RNZAF Fighter Wing.
4. No. 3 Sub-section. At Bougainville. TBF Squadron. [1] TBF Servicing Unit. SBD Squadron. [2] SBD Servicing Unit. Fiji Military Forces.
5. No. 4 Sub-section. At Espiritu Santo. No. 5 Sub-section. At Espiritu Santo. Headquarters Base Depot. Base Depot Workshops. Bomber Squadron. Bomber Servicing Unit. Transit Camp.

By the end of September 1944 it was apparent that instead of withdrawing units from forward areas to Guadalcanal, the RNZAF was about to spread its tentacles over many islands, even as far as the Admiralties. Major Cunningham's letter to Colonel Finn dated 23 September 1944, on completion of six months as Officer Commanding the Mobile Dental Section, gives a picture of the situation at the time and the problems of organisation he had to face:

The first three months were rather difficult because of the uncertainty of what would be the future role of the R.N.Z.A.F in the Pacific.

Since 1 June, when the Headquarters Section moved to Guadalcanal and the establishment was increased, the work has proceeded much more smoothly although it has been difficult to plan ahead because of the lack of a definite

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[1] **Torpedo Bomber Fighter.**

[2] **Scout Bomber Dive.**

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policy for the R.N.Z.A.F. in the Pacific. This of course was due to factors over which Air Department and No. 1 Islands Group had no control.

However, the policy for the next few months is now fairly well defined and I think it is quite evident that we will need a substantial increase in our establishment.

The total number of men in the No. 1 Islands Group will, I understand, increase to 8,000 or 8,500. When I wrote on 30 August about an increase in establishment it was thought that squadrons would be established on Emirau and Green Islands. A few days later it was decided that a squadron would also be located at Los Negros in the Admiralty Islands.

Another complication has arisen at the seaplane base at Halavo, Florida Island. In the past the squadron there has been treated each six months and casualties in the meantime have been treated by the United States Dental Officer attached to the Base. I am now told that the United States squadron will be withdrawing so we will have to visit Halavo frequently in future. As 450 men are involved they are too big a unit to leave for any length of time.

Halavo is half a day by ship from Guadalcanal.

The same position will occur at Los Negros. There will be about 300 to 400 men and they will have to be visited frequently, probably by the dental officer at Emirau.

Under the new organisation there will be 700 to 800 men at both Emirau and Green islands and about 400 to 500 at Bougainville.

The number at Espiritu Santo, now 1,350, will soon be increased to 1,800 by the arrival of No. 5 Flying Boat Squadron from Fiji.

As I visualise the developments in the next few months, I think our establishment should be increased to nine or ten officers and three should be posted as soon as possible.... As the size of the section grows, more and more of my time will be taken up with administrative work and I will no longer be able to spend a full day in the clinic.

As a result of Major Cunningham's recommendations a new establishment, consisting of a Headquarters Section and ten subsections, was authorised on 14 November 1944.

Assuming the number of men in the group to be about 8500 and excluding the Senior Dental Officer, the ratio worked out at one dental officer to 850 men. This was low compared with other theatres of war and with New Zealand, but units were small and scattered, sometimes into groups of no more than 400 to 700 men long distances apart. Groups of this size could not be left without a sub-section for any length of time, so it meant that more subsections were needed than if the men had all been congregated together. They had all been treated either at an Air Force station in New Zealand or at the Port Depot before embarkation and their tour of duty in the Pacific was short. Their problem was therefore one of maintenance. The combination of these factors made the task of the dental section with the Air Force in the

Pacific less arduous than that of its counterpart with the Army in the same area.

In operations such as those in which the RNZAF was engaged in the Pacific, conditions changed rapidly and the Dental Corps establishment had only been in existence for about six weeks before Major Cunningham suggested that it could safely be reduced in size. The senior and one other dental officer, the administrative NCO, one mechanic and six orderlies were due for repatriation at the beginning of March 1945 in accordance with the agreed length of service in the Pacific. With the wide distribution of units, some sub-sections were responsible for from 400 to 500 men, while in other cases two or more sub-sections would be working together in the same building. In all cases reasonable facilities such as running water, electric light and power were available. The ratio of two orderlies to each officer therefore seemed excessive. As the war moved farther north, the squadrons at Espiritu Santo and Guadalcanal were no longer needed for garrison duties so could be reduced in size and split up among the operational units. Although this meant that the stations at Bougainville, Nissan Island, Emirau and Los Negros would be increased to about 1100 men each, one dental sub-section would not find such a station beyond its capabilities. It was thought by the Senior Dental Officer that the Royal New Zealand Navy would probably withdraw from the area about April 1945, releasing a dental officer, who would then be available to accompany any squadron that moved to a new location or to reinforce a station where routine examinations were falling behind schedule. His recommendation was not approved.

On 3 May 1945 Major J. C. M. Simmers [1] (promoted lieutenantcolonel on 27 May) replaced Major Cunningham and held the appointment until the end of hostilities in the Pacific.

During its existence from June 1944 to October 1945 No. 1 Mobile Dental Section, RNZAF, covered a wide field, as can be seen from the following locations:

[1] Lt-Col J. C. M. Simmers; Rotorua; born 4 Dec 1905; dental surgeon.

[2] Commander, New Zealand Air Task Force.

Guadalcanal:	Camp Waitemata
	Henderson Field
	West Cape
Bougainville:	Camp Waitemata
	COMZEAIRTAF [2]
	Camp Rata
	Camp Hinemoa
	Camp Kiwi
Florida Island:	Halavo Bay
Emirau Island	
Los Negros Island	
Espiritu Santo	
Green Islands	
New Britain:	Jacquinot Bay
Russell Islands:	HMNZS *Kahu*

Until the end of hostilities the dental organisation continued to be a Mobile Section with varying numbers of sub-sections. On 12 October 1945 the following cable was received from the DDS:

> Authority given to cancel establishment No. 1 RNZAF Mobile Dental Section with effect from 20 October 45 and to establish three self-contained dental sections as advised.

Three self-accounting sections were formed, stocked with adequate supplies for four months and stationed at Espiritu Santo, Bougainville and Jacquinot Bay. Surplus personnel and stores were then ready to return to New Zealand. Actually these sections were not required for long and on 14 November 1945 instructions were issued for them to return to New Zealand. The stores were given an air transport priority No. 3 and arrived in Auckland in mid-February 1946.

THE NEW ZEALAND DENTAL SERVICES

TREATMENT

Treatment

A high standard of oral health was maintained for all men by systematic examination by units. The average airman was made 'dentally fit' three times during his twelve months' tour of duty: once before leaving New Zealand and twice by the Mobile Dental Section. It was very rare, therefore, to find extensive caries and few extractions were necessary. The health of the gingival tissues was good, and although there was a marked prevalence of salivary calculus, as was noted in other tropical stations, the tissues soon regained their tone when the calculus was removed. The few cases of Vincent's infection were all recent arrivals from New Zealand. Major Cunningham reported on 15 March 1945 as follows:

> **It is considered that the good health of the soft tissues is due in no small measure to the large quantities of citrus fruit juices and the vitamin concentrates B1 and C which the men were encouraged to take each day. All the dental officers consider that the gingival tissues are healthier here than in New Zealand and the increased amount of vitamins B1 and C must be given some of the credit.**

This opinion was endorsed almost word for word by Lieutenant-Colonel Simmers in a report dated 31 July 1945.

While giving due credit to this diet, it is felt that the strongest emphasis should be placed on the necessity for constant vigilance against the mechanical irritation of salivary and seruminal calculus, the main etiological factors in periodontal disease. It is significant that in the Middle East, where the supply of citrus fruits was negligible, there were no cases of Vincent's infection. Admittedly vitamins B1 and C were available in tabloid form but there is little evidence that they were

regularly taken. The Dental Corps in the Pacific can take much of the credit for the general healthy state of the gingival tissues because of its declared war against calculus in any form. This is shown by the number of scalings carried out.

From March 1944 to March 1945, 11,530 patients were treated, and of this number 2134 were scalings. From March 1945 to the end of July of that year 6641 were treated, of which 1085 were scalings—that is, about 18 per cent and 16 per cent respectively. When it is remembered that the number of denture wearers was high in the New Zealand Forces and that these men would not need this treatment, the percentage would be nearer 30.

Fillings required per man were between 0.7 and 0.9 and extractions were never above 0.06 per man. The bulk of the denture work was remodelling and repairing, although a certain number of new full and partial dentures were made. From this it can be seen that most of the work was maintenance, with oral prophylaxis demanding much of the dental officer's time. In the United Kingdom there is a scheme whereby women are given some months' training in the purely mechanical operation of tooth scaling, and after satisfying a board of examiners that they have the requisite manual dexterity, are registered as dental hygienists with the right to perform this work. During the war the dental service in the Royal Air Force used dental hygienists and it would appear that there could be a considerable saving in trained manpower if similar use were made of them in the New Zealand Dental Corps. As the law stands in New Zealand there would have to be alterations before anyone other than a fully qualified, registered dental surgeon could carry out this work. For the protection of the public it would be essential to define very clearly the exact nature of the work to be sanctioned, especially in view of a popular misconception that the construction of artificial dentures is also a purely mechanical procedure. It cannot be too strongly stated that the two operations are not analogous and that the inclusion of the dental hygienist in a strictly limited capacity bears no relation to the claims of the dental mechanic to the right to carry

out work for which he has not had adequate training.

One interesting problem arose in connection with the Air Force in the war which was new to the dental profession. Under certain conditions of pressure and strain, met with in high flying and divebombing, cases of acute toothache developed. On examination it was often difficult to find any reason for this as the tooth in question appeared to be sound, although it was found that it only occurred in teeth that had been filled. It appeared, therefore, that what was, under normal conditions, a sound filling needed something else to withstand the abnormal conditions to which aircrew were subjected. In most cases if the filling was taken out and reinserted with a greater pulp protection there was no further trouble. Research by Beryl Ritchey, Balint Orban, Warren Harvey and others led to the conclusion that disturbance of circulation at high altitudes caused pain in certain vital pulps which had previously been the subject of tissue changes. In many cases a lining of Eugenol mixed with zinc oxide was sufficient to protect the pulp, and this was used in the case of most deep cavities for men who were likely to meet the abnormal conditions. For convenience of discussion the subject was called Aerodontia.

The men were quartered and rationed by the Americans and were eating food to which they were not accustomed, and which was perforce under the existing conditions lacking in full vitamin content. This may have been the cause of some of the post-extraction haemorrhages noted by Major Washbourn. That at least was his opinion, and he went so far as to adopt preoperative medication as a routine, although no mention can be found of this being done by other dental officers in the Group.

When it came to making appointments for treatment there were certain important factors to be considered. The average patient in the Air Force was not trained to the same degree of physical hardness as his counterpart in the Army and was often living under a great strain. He could be compared to the University student at examination time, a young man with taut nerves. He was therefore not the best subject for dental operations and responded best to short appointments. Some men

were highly trained personnel whose time was exceptionally valuable, so it was essential that they be absent from their duties as little as possible. It was usually possible for the dental officer to make his appointments in such a way as to avoid interfering with the duties of any individual, yet still have a full book, by calling on men from the less specialised units. Fortunately unit commanders were well aware of the importance of dental health and were fully co-operative.

THE NEW ZEALAND DENTAL SERVICES

STORES AND EQUIPMENT

Stores and Equipment

Most supplies were through monthly indent on the Army Base Dental Store in Wellington. Through the excellent co-operation of Air Movements, it was possible at all times to keep these up to requirements.

Certain stores were available from the United States Medical Supplies, but too much reliance could not be put on this source as it was short in dental stocks. Any stocks bought from the Americans were issued on the lend-lease system, but since Wellington was also buying stocks under the same system and held them in fuller supply, there was little advantage to be gained except in emergency.

As many stores from Wellington were sent by air transport, certain modifications in the method of packing had to be made. In the first place, weight was a primary consideration and the wooden boxes in general use were unacceptable to the Air Force, which repacked the stores into cardboard cartons. This led to some damage from rough handling until instructions were issued that all fragile goods were to be suitably marked as such. Secondly, the reduced atmospheric pressure at high altitudes made it necessary to wire down all corks of bottles containing liquids. One package in the early days was ruined by bottles of chromic acid and absolute alcohol blowing their corks.

The same trouble was experienced in keeping certain stores and equipment as was seen in Fiji and with 3 Division. An American dental officer made a small 'hot-box' for his instruments and burs which proved very satisfactory. It was a simple box containing one or more electric light bulbs. By reason of the humidity, synthetic porcelain fillings were not fully satisfactory, Units of acrylic resin were of little use unless the monomer could be kept in a refrigerator to prevent it solidifying. As acrylic resin was only used by the New Zealand Dental Corps for isolated

cases, this mattered little, but the Americans, who had adopted its use more fully, must have had considerable difficulty if away from their base.

Spirit lamps and primuses were used in surgeries and workrooms instead of bottled gas, which in February 1943, when the sections were equipped, was in short supply in New Zealand. It is interesting to note that while all reasonable demands for supplies were met by Wellington, the Dental Corps was not pampered and had to rely on initiative to meet exceptional circumstances. One dental officer sent the following request to Army Base Dental Store:

> **Matches are very scarce and a packet or two would be very useful if they could be included in the indent. Sufficient draught to keep the place cool plays havoc with the spirit lamp and a considerable number of matches are used.**

The answer from Headquarters, Wellington, was 'No. Improvise lamp shield.'

Later, when the supply of electricity was better, some electric sterilisers and water heaters were supplied. Other electrical equipment such as polishing lathes and fans followed shortly afterwards. Such things as electric lathes and fans had been considered as luxuries, but Major Cunningham on his return to New Zealand in May 1945 had a personal interview with Colonel Finn in which he was able to prove that they were definite aids to efficiency. This interview smoothed out many small difficulties in connection with stores administration in the Islands Group.

Up to this time, all unserviceable equipment had to be returned to New Zealand before it could be written off the charge of the Senior Dental Officer. Similarly, there were no local facilities for writing off missing equipment. Authority was now given for all equipment, other than glassware, which had become unserviceable through fair wear and tear, to be written off by a local Board of Survey consisting of two dental

officers other than the accounting officer. It was suggested that this board meet every three months. Items of glassware broken in use were to be entered on Form 138 (an army form which was an application to write off stores) and not returned to Army Base Dental Store.

On account of the lack of air freight, supplies of workroom plaster, artificial stone and other items of a high weight-to-value ratio were procured locally under lend-lease. This countermanded an order of April 1945 that no further supplies were to be obtained from United States sources. Another item got from lend-lease sources was X-ray films. The films supplied from the Army Base Dental Store were unsuitable for the climate and the United States Medical Depots had slow X-ray films in a special tropical pack.

THE NEW ZEALAND DENTAL SERVICES

BUILDINGS

Buildings

There were no standardised plans for the building of dental accommodation in the Islands Group with the result that there was a variety of structures. All contained the essentials but differed according to the ingenuity of section commanders. Environment and the character and availability of materials, as well as the limitations imposed by lack of experience in construction, influenced the choice of design. Most were erected by the Dental Corps men themselves, except for certain special work such as plumbing and electricity and a general expert supervision.

Rain and heat were constant companions and buildings had to be constructed with this in mind, although it was found to be impossible to shut out all the rain and keep cool as well.

THE NEW ZEALAND DENTAL SERVICES

WORKING CONDITIONS

Working Conditions

As has been stated earlier, the dental section with the Air Force in the Pacific was seldom confronted with the large volume of work met with in the Army. There was always plenty to do, but neither the same banking up of arrears nor the desperate urgency. Consequently there were more leisure hours and an obligation to occupy these hours to some purpose, a highly important factor in the maintenance of morale.

Books, magazines and digests were sent to the forward areas from time to time and current issues of the principal dental journals of the world were circulated among the officers. A monthly newsletter was also started to keep closer touch between Headquarters and the scattered sub-sections. Hobbies were encouraged and were numerous and varied.

Some idea of the conditions and of the general life can be gleaned from the following excerpts from narratives supplied from dental officers who were there:

Espiritu Santo:

Number 5 Flying Boat Squadron Camp is situated beside the sea at 50 to 100 feet altitude so there is a cool breeze to make living conditions pleasanter. The camp itself is in the middle of a coconut plantation and consists, for the most part, of Quonset huts. The administration is American so the food to a large extent consists of American dishes. These were enjoyed as a novelty but were not really palatable to us. Facilities are available for swimming, basket ball, volley ball and table tennis and in addition there is a good library and outdoor picture show. Launch trips are always a great delight....

At the Base depot there is a well established camp, very clean, with well-constructed buildings, good roads and all possible conveniences such as electric iron and hot and cold showers. This camp compares very favourably with those on Air Force Stations in New Zealand.

The hours of duty are 0730 to 1130 and from 1330 to 1615. This leaves two spare hours in the middle of the day for reading, relaxing in the shade of a palm or swimming. Gardening and boat building are other forms of recreation. Fresh milk is one of the things missed most.

Guadalcanal:

... a beautiful spot just like a tourist's guide to the South Seas. Jungle in the background, palms, coral sand beach, coral reef with breakers on the outer edge and deep blue sea beyond.

We established the section in one end of the medical hut with the chair in the open doorway to get the best light and began work under the curious gaze of an audience of natives.

On the Saturday evening a native arrived from the Catholic Mission about twelve miles away with a note from Father LeClark ... requesting my assistance with a maternity case, a delayed placenta. We went there on the Sunday and were greatly relieved on arrival to find that our services were not required.

During off hours we built a raft of oil drums and bamboo and using a viewing glass spent many hours examining the underwater life of the reef. Also, wearing goggles and armed with bows and arrows we hunted fish to the advantage of our general education but with little increase to our rations.

Halavo Bay, Florida Island:

Halavo Bay is on the Western shore of Florida facing

Guadalcanal and about 15 minutes by launch from Tulagi. It was formerly a Melanesian mission station but, with the advent of the Japanese, the natives fled inland.

We shared a Quonset Hut with the American Dental Officer. Living conditions were good and food excellent and there were pictures every night and an occasional travelling concert party. We had our own vegetable garden with plenty of tomatoes and cucumbers.

Los Negros:

The experience of erecting our own building was thoroughly enjoyed. Everything was done by the men of the section except cutting the rafters and the lighting and plumbing installations. The kit of tools was a Godsend as the Works Section could only spare one hammer and a rip saw.

The camp site was well chosen on clean coral with rapid drainage. The climate is good, the average temperature being about 85 to 90 degrees.

The study and hunting of butterflies can be followed to some extent and some beautiful specimens were obtained.

Russell Islands:

H.M.N.Z.S. 'Kahu', the New Zealand Naval Base on the island is attached to an American Naval Unit and the camp is situated in the midst of a coconut plantation at the head of Renard Sound. Climatic conditions are good with the Anopheles mosquito not in evidence.

Excellent swimming is obtainable at Lingatu, an American Recreation Centre on the opposite side of the island. Launch trips to neighbouring atolls interspersed with deep sea fishing for bonita

or tuna help to pass our leisure hours.

Bougainville:

The section is well known for its interest in queer insects of which there are great numbers, especially butterflies of all colours.

The climate is one of the best in the area, the temperature remaining much the same all the year round, i.e., 90 degrees in the daytime and 72 at night. The soil is sandy so the rain which is daily and often heavy soon drains away. Very few fruits grow on this part of the island.

Emirau:

The ship steamed into Hamburg Bay, Emirau Island, situated in the St. Matthias Group.... The island is small, some 7 miles by 4 at its widest part. It is the island where the survivors of the sinking of the ' Rangitane' were landed.

The heat is intense, particularly with the glare off the coral strip and shoreline but against this, the rains and storms bring welcome relief from the incessant dust and cloudless skies.

The camp site was cleared out of the dense jungle. Timber as we understand the word does not exist but there are many young saplings which are invaluable for our type of tropical building.

Green Island:

The camp, abandoned two months previously by the Americans, was a dilapidated affair of broken down buildings and rotting tents, the whole place overgrown with rank weeds, vines and creepers. Snakes abounded and the small barking toads made sleep almost impossible. Scores of pigs wandered about as if they owned the place. However these were only first impressions. As the weather improved and the mud hardened, the weeds were cleared,

the tents made habitable and the pigs driven away, more or less, and we found we had a camp as good as any on the island.

The following figures give details of the treatment afforded by the Air Mobile Dental Section and No. 1 RNZAF Mobile Dental Section from 4 August 1943 to 20 October 1945, when hostilities were over:

Patients presenting	23,495
Patients rendered dentally fit	13,614
Extractions with local anaesthetic	1,601
Extractions with general anaesthetic	32
Amalgam fillings or inlays	16,345
Synthetic fillings	2,492
Root fillings	32
Scalings	3,958
Full upper dentures	229
Full lower dentures	101
Partial upper dentures	273
Partial lower dentures	93
Dentures remodelled	1,377
Dentures repaired	1,487

Knowing that the RNZAF was to be demobilised, every attempt was made to make all personnel dentally fit as late as possible in their tour of duty. To assist this an extra officer and orderly were transferred to Jacquinot Bay, where the work was behindhand owing to the protracted changeover from Nissan Island earlier in 1945.

In conclusion, it would appear that the Mobile Dental Section with its headquarters section, advanced base dental store and subsections was the best organisation to service a scattered force such as No. 1 (Islands) Group. It is also clearly shown that without individual initiative, no amount of organising would provide a satisfactory dental service under conditions such as existed in the Pacific. Judging by the amount of construction done by the officers and men of the Corps, a good kit of tools is an essential part of equipment. Transport is not so important, as in many cases there are no roads. The specially converted truck can

seldom be used in the Pacific and in many cases was dismantled by the sections themselves so that its equipment could be moved into buildings. When trucks are needed, there is a strong argument in favour of the use of standard types which can be easily fitted with specialised equipment and just as easily dismantled. A certain number of trucks could then be allotted to the Dental Corps, but not necessarily used by it unless conditions warranted it. It is not economical for any unit to keep to itself transport that cannot be fully employed and which in bad climatic conditions tends to deteriorate rapidly. One dental tender was released by the Senior Dental Officer in November 1944 at the request of the Chief Supply Officer, but the Senior Dental Officer made it clear at the time that he had no intention of parting with any others. It is difficult to see how any of his transport could have been fully employed on dental business. The fear that transport released to the common pool would not be available if required under different circumstances should not influence a decision that should only be based on a co-operative attitude for the efficiency of the whole force. It should not be difficult for a Senior Dental Officer to justify demands for transport, specialised or otherwise. His Commanding Officer is usually in a better position to assess the priorities of the units of his force.

The remarks of Lieutenant-Colonel Simmers on 26 October 1945 make a fitting ending to this chapter:

> **I wish to record my appreciation of the service rendered by all ranks. At all times their general conduct has been very good. They have worked consistently well under trying conditions and the results of their efforts have been evident in the dental service rendered to the R.N.Z.A.F. and in the number of excellent sections which were constructed by their own efforts and initiative.**

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 30 — NO. 1 AERODROME CONSTRUCTION UNIT, RNZAF

CHAPTER 30

No. 1 Aerodrome Construction Unit, RNZAF

IN May 1941 applications were invited by the Royal New Zealand Air Force from the Public Works Department in New Zealand for men to form an aerodrome construction unit for overseas service. It was to consist of 16 officers and 132 other ranks, divided into a headquarters and three specialist flights or sections. It was neither the first of its kind to be formed in New Zealand during the war nor was it the last, and there was nothing essentially different in its composition from any others. That is to say, it was an engineering unit carrying out work usually done by the Public Works Department, but for convenience coming under the control of the RNZAF. There was, however, one noticeable difference. It was perhaps the seal of secrecy set on its destination or possibly the baldness of its official title, 'Unit 24 RNZAF', that immediately lifted it from the common rut and clothed it with a mysterious mantle of excitement. There was a promise of something out of the ordinary for the officer, orderly and mechanic of the dental section chosen to accompany it. This was better than working on the assembly line in a mobilisation camp or Air Force station.

The unit was assembled in Rongotai aerodrome in July 1941 and there Captain A. I. McCowan was able to glean something of the nature of the unit and of the dental problem he would have to meet. He found a collection of men of above the average age of troops going overseas, key men from contracting companies, engineers and tradesmen. Large numbers of artificial dentures could be expected, some carrying the full burden of mastication and some leaning on shored-up buttresses, strained to the limit of endurance. A closer examination bore this out and the DDS laid further stress on it:

> **It will be remembered that 66.9% of the personnel are wearing artificial dentures and must rely on these, and in some cases a few well-filled natural teeth, to assimilate their daily rations, apart from being middle-aged men serving under severe climatic**

conditions. Under such conditions artificial dentures are readily broken and as easily lost and the wearers must be considered as potential casualties unless facilities for the supply and repair of dentures are available as close as possible to the sphere of activity. The same applies to recurring dental caries for there is nothing like dental pain to weaken a man's morale.

The destination of the unit was revealed as the Far East or, more specifically, Malaya. There were a number of squadrons of the Royal Air Force already in Malaya with certain dental sections attached to them, so that it is not surprising that representations were made from there that it would be unnecessary for a dental section to accompany Unit 24 from New Zealand. The DDS, however, insisted and wisely so as will be seen later.

The section was equipped with panniers and chair case containing a full NZDC field dental outfit and three months' supply of expendable stores. Included in this was a bottled rock-gas pannier containing two cylinders, each of 20 lb. content, and fittings all ready for use. This gas was a product of the Imperial Gas Company of Los Angeles, but it was found that refills of a similar type of gas could be got through agents in Singapore. As a precaution kerosene primus stoves were carried also in the surgical and prosthetic panniers. There was some difficulty in getting refills of exactly the same type of gas in Malaya, but it mattered little because of the rapid retreat from that country. The establishment of the section included a 30–cwt covered lorry but, in fact, this was never provided. Actually, in contrast to most other theatres of war at that time, there was ample transport available for the asking. Replacement of equipment and expendable stores was to come from the nearest Advanced RAF Base Medical Store.

The control of the section was vested, as far as practicable, in Air Headquarters, Wellington, and it was to be administered by the Commanding Officer of Unit 24, Squadron Leader E. C. Smart, RNZAF, [1] and on the advice of Captain McCowan would be allocated as circumstances and facilities permitted.

The unit left Wellington in SS *Narbada* and, after five and a half days of atrocious weather, arrived at Newcastle in Australia. Here it left the *Narbada*, which was to undergo a survey, and was sent to No. 2 Embarkation Depot at Bradfield Park, Sydney. Here it stayed for about a month. As Captain McCowan reported to the DDS:

> **Due to an outbreak of parotitis and rubella the greater portion of the unit is still in Australia and the date of embarkation is still indefinite.**
>
> **Seventeen patients have had urgent treatment since leaving New Zealand, eleven have been denture repairs, four acute apical conditions, one osteomyelitis, which I am treating in hospital, and one serious ulcerative stomatitis which has since developed parotitis and has been isolated at Prince Henry Hospital.**

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[1] Sqn Ldr E. C. Smart; Wellington; born NZ 11 Jun 1903; aerodrome engineer.

The medical officer of the unit, Captain N. H. North, NZMC, [1] had gone ahead with the first party to Singapore. When, therefore, No. 3 Advance Party and men from Unit 25 were to sail for Malaya, they were without a doctor for the voyage. Instead of providing one, the RAAF asked Captain McCowan to accept the responsibility. It would have been difficult for him to refuse, although it was unreasonable to expect him to shoulder such a responsibility. Apparently he acquitted himself well for all fifty-three of his charges arrived in Singapore in spite of a case of dengue fever, four of tracheitis and tonsillitis, one of rubella and a suspected fracture of the forearm.

The voyage took eighteen days and began in SS *Bontekoe*, a Dutch ship of unimpeachable standing until she took on a deck cargo of cattle at Soembara Besar. Fortunately the British agent at Sourabaya managed to transfer the New Zealanders to a KPM ship which landed them in

Singapore via Samarang and Muntok, on the island of Bangka, on 13 October 1941.

On arrival the dental section went to Tebrau, about seven miles from Johore on the Kota Tinggi road. Headquarters for the unit was established there and it was decided to set up a general hospital with medical and dental sections, with sick quarters detached from it.

Having regard to the opposition from the RAF to the sending of an NZDC section to Malaya, Captain McCowan, as soon as he had set up his equipment, invited Group Captain Bodie, commander of medical and dental personnel in the Far East, to come and inspect. He also extended an invitation to Squadron Leaders Grey and Jessop, RAF dental officers at Seletar.

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[1] **Wg Cdr N. H. North; Dunedin; born Chandpur, East Bengal, 7 Feb 1908; obstetrician; medical officer No. 1 Aerodrome Construction Unit, Malaya, Aug 1941–Mar 1942; OC Malaria Control Unit, 3 NZ Div, Sep 1942–Aug 1943; SMO Northern Group, RNZAF, Aug 1943–Jan 1945.**

McCowan to Finn, 27 November 1941:

> **He [Group Captain Bodie] was agreeably surprised at the type, standard and degree of mobility of the equipment.**
>
> **In view of the difficulties ... I quote, with his knowledge, the view Group Captain Bodie took of this matter. He accepts responsibility for the signal to the effect that the dental treatment could be done here, purely because he would not admit otherwise. He (now) expresses pleasure at its inclusion because, situated as we are, he realises it could not have been given satisfactorily, if at all.**

Certainly the RAF dental sections seemed to be poorly supplied with stores and equipment and would have been of little use to a unit such as the New Zealand one with its high percentage of denture wearers, where

materials were a *sine qua non*. Captain McCowan refers to the supply position, which affected him acutely, in his report of 27 November 1941:

> I have established contact with the RAF and attached dental personnel throughout the command, the headquarters being at Seletar on Singapore Island. I have also investigated the replenishment of stores position. The system is most unsatisfactory, the position being roughly as follows:—
>
> All equipment and stores are indented six monthly direct from England as they have no medical or dental depot in the Far East Command. The requirements are eighteen months in arrears and, generally speaking, I am in a better position as regards stores and equipment than the whole of the RAF at Seletar.
>
> For requirements of C class [1] stores I associated myself with the Principal Dental Officer at Seletar in requesting power of local purchase, and in this matter the position is satisfactory.

In view of this alarming position and by virtue of being fully equipped for at least three months, the NZDC was able to make an offer to the Principal Medical Officer for the Far East to undertake responsibility for the treatment of all New Zealand personnel in Malaya as some relief to the RAF dental sections. The New Zealand unit was made dentally fit in ten days and the section then looked about for more New Zealanders. Squadron 488, RAF, were all New Zealanders and 243 Squadron had New Zealand pilots and British ground staff. Captain McCowan therefore moved his operating equipment to these squadrons, sending the prosthetic work back to Tebrau for processing.

The first few weeks in Malaya were not concerned with active enemy interference except for the nuisance of continual alerts and warnings. In December, however, things began to warm up and even the dental section bristled with Bren guns and Brownings in defence of the Clearing Station and morgue at Kallang. It does not appear that any ruling was given to the NZDC in Malaya about its right of protection under the

Geneva Convention as was done in the Middle East. If there was, its observance was spurned as a custom to be honoured in the breach. Sergeant E. A. J. Goodwin, [2] the dental clerk orderly, had had training in Bren and Lewis guns and he and Private D. A. Ward, [3] the mechanic, were even seconded for transport duties and works protection for a short time after the beginning of hostilities. Ethically they should have been sitting under the carapace of the Red Cross, but if there was any doubt about the rights of their tenancy it was only human that they should prefer the sporting chance dependent on their own prowess to the trust in a moral shield dependent on the integrity of the enemy.

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[1] Consumable.

[2] WO I E. A. J. Goodwin; Stokes Valley, Wellington; born Wellington, 30 Jun 1917; salesman.

[3] Sgt D. A. Ward; Wellington; born NZ 25 Oct 1919; dental technician.

On 11 January 1942 the section was working on New Zealand troops on Singapore Island. The surgery was at Kallang in an evacuated private house on the boundary of the aerodrome, but the laboratory was still at Tebrau. Theirs was the only dental section still in Singapore. Work was confined to the afternoons as there was too much enemy aerial activity in the mornings. On 18 January they were bombed out of their surgery but found another for the time being, and on 24 January Private Ward was told to pack up at Tebrau and join them on Singapore Island. The Construction Unit left Johore on 28 January and made camp at the Dairy Farm, off Bukit Timah Road on Singapore Island. From then on the initiative was with the enemy and the scurrying of the New Zealand Dental Section can only be imagined from Captain McCowan's report of 23 March 1942:

Sergeant Goodwin and I remained at Kallang till 31 January 42

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[1] Gp Capt T. M. Wilkes, CBE, MC, m.i.d.; Upper Hutt; born Thames, 24 Mar 1888; Regular soldier; NZ Rifle Bde 1915–19 (Maj); seconded to RFC Sep 1917–Jun 1918; Director of Air Services 1925–37; Controller of Civil Aviation 1933–40; NZLO Melbourme 1940–46.

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

IN May 1941 applications were invited by the Royal New Zealand Air Force from the Public Works Department in New Zealand for men to form an aerodrome construction unit for overseas service. It was to consist of 16 officers and 132 other ranks, divided into a headquarters and three specialist flights or sections. It was neither the first of its kind to be formed in New Zealand during the war nor was it the last, and there was nothing essentially different in its composition from any others. That is to say, it was an engineering unit carrying out work usually done by the Public Works Department, but for convenience coming under the control of the RNZAF. There was, however, one noticeable difference. It was perhaps the seal of secrecy set on its destination or possibly the baldness of its official title, 'Unit 24 RNZAF', that immediately lifted it from the common rut and clothed it with a mysterious mantle of excitement. There was a promise of something out of the ordinary for the officer, orderly and mechanic of the dental section chosen to accompany it. This was better than working on the assembly line in a mobilisation camp or Air Force station.

The unit was assembled in Rongotai aerodrome in July 1941 and there Captain A. I. McCowan was able to glean something of the nature of the unit and of the dental problem he would have to meet. He found a collection of men of above the average age of troops going overseas, key men from contracting companies, engineers and tradesmen. Large numbers of artificial dentures could be expected, some carrying the full burden of mastication and some leaning on shored-up buttresses, strained to the limit of endurance. A closer examination bore this out and the DDS laid further stress on it:

> **It will be remembered that 66.9% of the personnel are wearing artificial dentures and must rely on these, and in some cases a few well-filled natural teeth, to assimilate their daily rations, apart**

from being middle-aged men serving under severe climatic conditions. Under such conditions artificial dentures are readily broken and as easily lost and the wearers must be considered as potential casualties unless facilities for the supply and repair of dentures are available as close as possible to the sphere of activity. The same applies to recurring dental caries for there is nothing like dental pain to weaken a man's morale.

The destination of the unit was revealed as the Far East or, more specifically, Malaya. There were a number of squadrons of the Royal Air Force already in Malaya with certain dental sections attached to them, so that it is not surprising that representations were made from there that it would be unnecessary for a dental section to accompany Unit 24 from New Zealand. The DDS, however, insisted and wisely so as will be seen later.

The section was equipped with panniers and chair case containing a full NZDC field dental outfit and three months' supply of expendable stores. Included in this was a bottled rock-gas pannier containing two cylinders, each of 20 lb. content, and fittings all ready for use. This gas was a product of the Imperial Gas Company of Los Angeles, but it was found that refills of a similar type of gas could be got through agents in Singapore. As a precaution kerosene primus stoves were carried also in the surgical and prosthetic panniers. There was some difficulty in getting refills of exactly the same type of gas in Malaya, but it mattered little because of the rapid retreat from that country. The establishment of the section included a 30–cwt covered lorry but, in fact, this was never provided. Actually, in contrast to most other theatres of war at that time, there was ample transport available for the asking. Replacement of equipment and expendable stores was to come from the nearest Advanced RAF Base Medical Store.

The control of the section was vested, as far as practicable, in Air Headquarters, Wellington, and it was to be administered by the Commanding Officer of Unit 24, Squadron Leader E. C. Smart, RNZAF, [1] and on the advice of Captain McCowan would be allocated as

circumstances and facilities permitted.

The unit left Wellington in SS *Narbada* and, after five and a half days of atrocious weather, arrived at Newcastle in Australia. Here it left the *Narbada*, which was to undergo a survey, and was sent to No. 2 Embarkation Depot at Bradfield Park, Sydney. Here it stayed for about a month. As Captain McCowan reported to the DDS:

> Due to an outbreak of parotitis and rubella the greater portion of the unit is still in Australia and the date of embarkation is still indefinite.
>
> Seventeen patients have had urgent treatment since leaving New Zealand, eleven have been denture repairs, four acute apical conditions, one osteomyelitis, which I am treating in hospital, and one serious ulcerative stomatitis which has since developed parotitis and has been isolated at Prince Henry Hospital.

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[1] Sqn Ldr E. C. Smart; Wellington; born NZ 11 Jun 1903; aerodrome engineer.

The medical officer of the unit, Captain N. H. North, NZMC, [1] had gone ahead with the first party to Singapore. When, therefore, No. 3 Advance Party and men from Unit 25 were to sail for Malaya, they were without a doctor for the voyage. Instead of providing one, the RAAF asked Captain McCowan to accept the responsibility. It would have been difficult for him to refuse, although it was unreasonable to expect him to shoulder such a responsibility. Apparently he acquitted himself well for all fifty-three of his charges arrived in Singapore in spite of a case of dengue fever, four of tracheitis and tonsillitis, one of rubella and a suspected fracture of the forearm.

The voyage took eighteen days and began in SS *Bontekoe*, a Dutch ship of unimpeachable standing until she took on a deck cargo of cattle at Soembara Besar. Fortunately the British agent at Sourabaya managed

to transfer the New Zealanders to a KPM ship which landed them in Singapore via Samarang and Muntok, on the island of Bangka, on 13 October 1941.

On arrival the dental section went to Tebrau, about seven miles from Johore on the Kota Tinggi road. Headquarters for the unit was established there and it was decided to set up a general hospital with medical and dental sections, with sick quarters detached from it.

Having regard to the opposition from the RAF to the sending of an NZDC section to Malaya, Captain McCowan, as soon as he had set up his equipment, invited Group Captain Bodie, commander of medical and dental personnel in the Far East, to come and inspect. He also extended an invitation to Squadron Leaders Grey and Jessop, RAF dental officers at Seletar.

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[1] Wg Cdr N. H. North; Dunedin; born Chandpur, East Bengal, 7 Feb 1908; obstetrician; medical officer No. 1 Aerodrome Construction Unit, Malaya, Aug 1941–Mar 1942; OC Malaria Control Unit, 3 NZ Div, Sep 1942–Aug 1943; SMO Northern Group, RNZAF, Aug 1943–Jan 1945.

THE NEW ZEALAND DENTAL SERVICES

MCCOWAN TO FINN, 27 NOVEMBER 1941:

McCowan to Finn, 27 November 1941:

He [Group Captain Bodie] was agreeably surprised at the type, standard and degree of mobility of the equipment.

In view of the difficulties ... I quote, with his knowledge, the view Group Captain Bodie took of this matter. He accepts responsibility for the signal to the effect that the dental treatment could be done here, purely because he would not admit otherwise. He (now) expresses pleasure at its inclusion because, situated as we are, he realises it could not have been given satisfactorily, if at all.

Certainly the RAF dental sections seemed to be poorly supplied with stores and equipment and would have been of little use to a unit such as the New Zealand one with its high percentage of denture wearers, where materials were a *sine qua non*. Captain McCowan refers to the supply position, which affected him acutely, in his report of 27 November 1941:

I have established contact with the RAF and attached dental personnel throughout the command, the headquarters being at Seletar on Singapore Island. I have also investigated the replenishment of stores position. The system is most unsatisfactory, the position being roughly as follows:—

All equipment and stores are indented six monthly direct from England as they have no medical or dental depot in the Far East Command. The requirements are eighteen months in arrears and, generally speaking, I am in a better position as regards stores and equipment than the whole of the RAF at Seletar.

For requirements of C class [1] stores I associated myself with the Principal Dental Officer at Seletar in requesting power of local purchase, and in this matter the position is satisfactory.

In view of this alarming position and by virtue of being fully equipped for at least three months, the NZDC was able to make an offer to the Principal Medical Officer for the Far East to undertake responsibility for the treatment of all New Zealand personnel in Malaya as some relief to the RAF dental sections. The New Zealand unit was made dentally fit in ten days and the section then looked about for more New Zealanders. Squadron 488, RAF, were all New Zealanders and 243 Squadron had New Zealand pilots and British ground staff. Captain McCowan therefore moved his operating equipment to these squadrons, sending the prosthetic work back to Tebrau for processing.

The first few weeks in Malaya were not concerned with active enemy interference except for the nuisance of continual alerts and warnings. In December, however, things began to warm up and even the dental section bristled with Bren guns and Brownings in defence of the Clearing Station and morgue at Kallang. It does not appear that any ruling was given to the NZDC in Malaya about its right of protection under the Geneva Convention as was done in the Middle East. If there was, its observance was spurned as a custom to be honoured in the breach. Sergeant E. A. J. Goodwin, [2] the dental clerk orderly, had had training in Bren and Lewis guns and he and Private D. A. Ward, [3] the mechanic, were even seconded for transport duties and works protection for a short time after the beginning of hostilities. Ethically they should have been sitting under the carapace of the Red Cross, but if there was any doubt about the rights of their tenancy it was only human that they should prefer the sporting chance dependent on their own prowess to the trust in a moral shield dependent on the integrity of the enemy.

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[1] Consumable.

[2] WO I E. A. J. Goodwin; Stokes Valley, Wellington; born Wellington, 30 Jun 1917; salesman.

[3] **Sgt D. A. Ward; Wellington; born NZ 25 Oct 1919; dental technician.**

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THE NEW ZEALAND DENTAL SERVICES

CHAPTER 31 — MAXILLO-FACIAL INJURIES

CHAPTER 31
Maxillo-Facial Injuries

THE treatment of maxillo-facial injuries requires a close cooperation between the medical and dental professions for, apart from the usual surgical procedures connected with gross tissue destruction and bone fractures, there are special factors in injuries to the face and jaws that are intimately associated with the teeth. It can in fact be said that the key to a successful restoration of facial harmony often lies in establishing correct relationship of the jaws, the one to the other. There is a dental problem here requiring a high degree of manipulative skill and an intimate knowledge of dental prosthesis. The infinite variety of injuries ranging from the simple mandibular fracture to the destruction of half the face makes it impossible to label a case as medical or dental. The best results are got by working as a team in which the plastic surgeon, dental surgeon, dental mechanic and many others play their parts.

In the First World War when casualties of this type were numerous, such a team was working at Sidcup in England under a New Zealand plastic surgeon and dentist, Major H. P. Pickerill, NZMC. These New Zealanders were associated at Sidcup with similar teams from England and other Dominions. At an early stage of the 1939–45 War an organisation for the treatment of maxillo-facial injuries was developed in England but, unlike the arrangements at Sidcup, was decentralised. Throughout England and Scotland nine or ten centres were set up under the Emergency Medical Service (EMS) scheme. These were controlled by the Ministry of Health and catered for civilian as well as service casualties. Sir Harold Gillies, a New Zealander practising in England, was appointed consultant adviser in plastic surgery to this organisation and Mr Kelsey Fry, MC, consultant adviser in dental surgery.

It was not until October 1940, when the Second Echelon of New Zealand troops was on duty in England, that the Director-General of Medical Services in New Zealand instructed its ADMS to discuss with Sir

Harold Gillies the possibility of forming a New Zealand plastic surgery and maxillo-facial injuries unit. As a result, two medical officers and one dental officer stayed behind when the Second Echelon left England in January 1941. The dental officer was Captain F. R. Brebner, NZDC. In the meantime Major J. J. Brownlee, NZMC, [1] was sent from New Zealand to join them and to become plastic surgeon in charge of the unit when it was formed. In December 1940 Captain G. H. Gilbert, NZDC, [2] and in June 1941 Captain W. R. Hamilton, NZDC, [3] accompanied by two mechanics each, also went to England.

At the time these arrangements were being made the New Zealand Expeditionary Force in the Middle East had not been welded into a division and had not taken part in campaigns where many maxillo-facial injuries could have been expected. The intention was that medical and dental officers and dental mechanics would be trained in England for periods up to twelve months. Those who started earliest were to be available for despatch to the Middle East as soon as the Division went into action, but it was hoped that the others would be able to finish their twelve months' training before becoming attached to field and base medical establishments according to future developments.

The plastic surgery and maxillo-facial hospitals to which the New Zealanders were attached were at Basingstoke, East Grinstead and St. Albans. They worked under the permanent dental staff. The officers were allotted cases for which they became responsible and the mechanics, after making splints and appliances for hypothetical cases, took their full share in making them for cases under treatment. An account of the methods of treatment and of the types of cases seen in these hospitals is too technical for inclusion in this history, but the reader who is interested is referred to an article by Captain Gilbert published in the *New Zealand Dental Journal* of October 1942.

While these men were training in England, 2 NZ General Hospital at Helwan was receiving its quota of casualties from General Wavell's offensive which drove the Italians out of the Western Desert and Cyrenaica. Amongst these casualties were a number of British and

Australian maxillo-facial cases. Major E. B. Reilly was dental officer of this hospital and his management of them, including some of the utmost severity and involvement, fully earned for him the congratulations he received from the Australian Director of Medical Services who visited the hospital at the end of the campaign.

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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; dental surgeon; dental officer, 2 NZEF, Dec 1940–Mar 1943; Plastic Surgical Unit, Burwood, Apr 1943–Jun 1944.

[3] Maj W. R. Hamilton; Christchurch; born Dunedin, 4 Apr 1910; dental surgeon.

When the New Zealand Division suffered its first battle casualties in Greece and Crete, those with jaw and face injuries were treated in the field ambulances. Because of the complications of the evacuation this treatment was in most cases the last received before they reached base hospitals in Egypt or, as prisoners of war, hospitals in Athens. It is difficult to estimate the incidence of jaw and face injuries from this campaign as many did not survive. Of those who reached Egypt, only a proportion arrived at 2 General Hospital at Helwan, which was the only New Zealand hospital then operating in Egypt. The others went to British hospitals. At 2 General Hospital Major Reilly again carried out all the dental treatment. Although only five were admitted to his hospital from Greece and Crete, he was kept busy with many non-battle injuries of this type, several of them from English, South African and Australian units. The maxillo-facial cases taken prisoner in Greece and Crete eventually arrived at the reconstituted 5 Australian General Hospital in Athens, to which were attached four NZDC officers captured with the New Zealand Mobile Dental Section. [1] One of these, Captain P. Noakes,

did excellent work under difficult conditions, a fact that was revealed when these patients were repatriated after their time in the prison camps.

In October 1941 Captain Brebner and Sergeant V. Mullany, [2] having completed their training in England, arrived in Egypt and were attached to 2 General Hospital. The hospital was at Baggush as an advanced field hospital for the Libyan campaign of November-December 1941. There were few maxillo-facial injuries from the New Zealand Division but one case treated by Major F. Hutter, NZMC, [3] and Captain Brebner may be said to have made history. It was probably the first time that the pin fixation method of immobilising a fractured mandible was used under field conditions and, what is more, the appliance was improvised. This method of treatment had only recently been introduced in the English maxillo-facial centres and an efficient form of appliance for the actual fixation of the intra-osseous pins was still in the developmental stage. Briefly, the method was to insert two sharp-pointed pins through the skin surface into each of the bony fragments, the pins being set at a converging angle to prevent displacement. The fracture was then reduced and the bones held in alignment by rigidly joining the ends of the pins by a system of connecting rods. Under normal conditions the apparatus was already made as part of

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[1] See pp. 184– 5.

[2] Sgt V. Mullany; Christchurch; born Palmerston North, 30 Jul 1914; dental mechanic.

[3] Lt-Col F. L. Hutter; Wellington; born Auckland, 6 Feb 1910; surgeon; 5 Fd Amb 1940; 6 Fd Amb 1941–44; surgeon in Gen Hosps, 1944–45.

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standard equipment. The bar connecting the pins was easily adjusted by a system of universal joints, making it applicable to any case. This

apparatus had not yet been issued.

When Major Hutter and Captain Brebner were confronted with a casualty with a shattered mandible whose general condition was rapidly deteriorating through pain, sepsis and the inability to take nourishment, they decided that unless the mandible could be quickly immobilised the patient had little chance of living. Ordinary methods of treatment such as splints or wiring were impracticable and the only hope was to use the pin fixation method. If there was no apparatus provided in the equipment, then they must make their own. With the help of a nearby Royal Air Force repair unit, and from the metal parts of a wrecked aeroplane, an appliance was quickly made. It differed from the universally adjustable type, being made to order for that particular case. Cardboard patterns were cut to indicate the estimated reduced position of the bony fragments and the appliance was made so as to fix the position of the pins according to this pattern. The operation of inserting the pins and getting a satisfactory reduction was extremely difficult but the result was good. The jaw was immobilised in position with immediate relief to the patient, so that in a few days his general condition began to improve and his life was no longer in danger. Subsequently this patient needed a bone graft, but it is unlikely that he would have survived to receive it but for the success of the improvised appliance. The full details of this case, together with two treated by Major Reilly, are recorded in the *New Zealand Dental Journal* of January 1943.

When 2 NZ General Hospital went to Baggush it was replaced at Helwan by 1 NZ General Hospital, with Major Reilly as maxillo-facial dental officer. Most of the cases treated at this hospital at that time were non-battle casualties. It was already becoming noticeable that this war was not producing as many jaw and face injuries as the previous war. New Zealand was estimating the establishments required to treat these injuries on the figures provided by the First World War. It was time to review the whole situation and to decide if perhaps the specialist service was being made too large. The training of medical and dental specialists withdrew officers from general duties from which they could

ill be spared. It was essential to know if the small number of maxillo-facial injuries was a true indication of what would happen in the future. A reason was sought for the disparity between the figures in the two wars. The conclusion reached was that there were two. The first was the change from trench to mobile warfare as, in the former, the head was a more common site for wounds. The second was the increased destructive force of missiles, resulting in a larger number of jaw and face injuries being fatal.

The delicacy of the decision was briefly this. Should many be withdrawn from general duties to concentrate on a specialty which could employ only a few or should those few partially train enough of their colleagues to ensure a satisfactory chain of treatment in the force? The latter decision prevailed, and although only four dental officers received full courses of training, a large number of others were intimately associated with maxillo-facial treatment in its various stages.

In January 1942 Captain Gilbert and Sergeant L. St. J. Morgan [1] arrived in Egypt from England, becoming attached to 1 General Hospital. Major Reilly relinquished the duties of maxillo-facial officer and became general oral surgeon to the hospital. In addition to their specialist duties, these two officers carried out routine dental treatment of all patients and staff. The plastic surgeon at the hospital was Captain W. M. Manchester, NZMC, [2] who had just completed twelve months' training in England.

There were then two fully trained teams of New Zealanders working in the Middle East. Equipment was excellent, Captain Gilbert having brought with him from England enough to provide facilities almost equal to those in the dental departments of the hospitals in which he trained. This included four sets of the pin fixation appliance, now being produced by a surgical manufacturing firm in England. Captain Gilbert records that his first impression on taking over from Major Reilly was a sense of appreciation of the excellent work already done by the medical and dental officers of the Division, both in field ambulances and at base hospitals, without the advantages of special training or specialist

facilities.

The establishment of maxillo-facial injury teams was the nucleus of the treatment of this class of case, but the team could not function properly without the intelligent co-operation of medical and dental units in the field. The team was usually in a hospital many miles from the battle area. Cases needed treatment before reaching the hospital. Apart from the obvious need to get the patient to the hospital alive and reasonably comfortable, the nature of the treatment in the early stages largely influenced the degree of success to be expected at the hands of the specialists. The importance of this had been emphasised in England and a memorandum had been sent out by the Army Council in an attempt to standardise this preliminary treatment as far as possible. This preliminary treatment

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[1] Sgt L. St J. Morgan; Matamata; born England, 1 Aug 1906; journalist.

[2] Lt-Col W. M. Manchester; Auckland; born Waimate, 31 Oct 1913; medical practitioner; RMO 22 Bn 1940; 1 Gen Hosp 1942–43; asst surgeon, Plastic Surgical Unit, Burwood, 1944; OC Plastic Surgical Unit, 1944–47.

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was mostly carried out in field ambulances and the Casualty Clearing Station. To emphasise further the importance of this treatment, the ADDS arranged for Captain Gilbert to instruct the dental officers concerned in all phases of the work and to enlarge on the memorandum from the Army Council. The field ambulances and the Casualty Clearing Station also had special equipment added to their panniers.

In line with his policy of interchangeability of all officers within the Corps, the ADDS then asked Captain Gilbert to prepare a course of instruction so that all dental officers would know what to do in the field and would have a proper appreciation of the course of treatment at the

maxillo-facial centre. Demonstration models and diagrams were prepared to illustrate the various methods of fixation. Case histories with X-rays and photographs were assembled from actual cases seen in England. The course was given twice on occasions when it was possible to assemble the officers at the Base, so that eventually all dental officers with the 2 NZEF attended. Each course took three and a half days and included a discussion by Major Reilly of the cases he had treated and by Captain Manchester of the work of a plastic surgeon.

Fully organised plastic surgical and maxillo-facial units were attached to two British hospitals in Egypt at Alexandria and Helio-polis. These were responsible for the care of all British and, if necessary, any other maxillo-facial casualties, and had been extremely busy following the first and second Libyan campaigns and those in Greece and Crete. With the establishment of the New Zealand teams it was intended that, as far as possible, New Zealand casualties would in future be treated in New Zealand hospitals. Consequently, following the battles at Minqar Qaim and Alamein between June and October 1942, the number treated at 1 General Hospital was much higher than those following the earlier campaigns. The dental officers with the field ambulances fully justified the care taken in their training. For instance, during the battle of Alamein, Captain N. M. Gleeson, NZDC, of 4 Field Ambulance treated and evacuated a number of very serious cases.

In the meantime more New Zealanders were training in England. Major Brownlee, NZMC, the senior plastic surgeon of the New Zealand Military Forces, and Captain W. R. Hamilton, NZDC, with two mechanics left England for New Zealand in 1942. Captain Hamilton with one of the mechanics later joined 3 NZ Division in New Caledonia, forming the dental part of a maxillo-facial injuries section with that force.

New Zealand was proposing to form a plastic surgical and maxillo-facial unit in New Zealand, similar to those in England, to receive all cases evacuated from the Middle East for completion of treatment and as a centre for the more immediate treatment of any major cases from 3 Division or the RNZAF in the Pacific. Major Brownlee was promoted to

lieutenant-colonel and given the task of forming the unit, and in January 1943 Major Gilbert returned from the Middle East to work with him. This left Major Brebner as the dental specialist in the Middle East. Before taking up his appointment, Major Gilbert toured New Zealand on the instructions of the DDS to lecture to as many NZDC officers as possible.

The unit was established at Burwood Hospital, Christchurch, in April 1943. One ward was allotted for the purpose and extensive additions were made to accommodate an operating theatre, dental department, X-ray plant and other amenities. The dental surgery and laboratory were equipped to the same high standard as in all permanent NZDC sections in New Zealand. As Major Gilbert had not been able to bring any equipment with him, some had to be ordered from England although most of it was soon procurable in New Zealand. By the time the unit was established there was an accumulation of cases, mostly plastic surgical but some needing maxillo-facial reconstruction, especially bone grafts.

In maxillo-facial work it is possible to lay down certain fundamental principles but no instructions could possibly cover the infinite variety of injuries. Much must therefore be left to the ingenuity of the individual operator. During the later stages of the North African campaign the lines of communication were so long that it might be some time before a maxillo-facial casualty could reach a specialist centre. More had to be left to the dental officer on the spot, and in many cases it called for nice judgment at a Main Dressing Station or Casualty Clearing Station whether treatment should be extensive or merely palliative. It is greatly to the credit of the dental officers at these stations that, without the benefit of specialist training, their application to the task brought such good results. Some indeed seemed to have a natural aptitude for this class of work and it is a curious coincidence that the dental officer attached to the New Zealand Casualty Clearing Station, through whose hands passed a great number of casualties, not only from the New Zealand Division but from many English units, was Captain E. P. Pickerill, NZDC, son of the surgeon who was in charge of Sidcup in the

1914–18 War. His article on 'The Treatment of Maxillo-facial Casualties in a CCS' and one by Captain N. E. Wickham, NZDC, on 'The Treatment of Maxillo-facial Casualties in the Field', both of which appeared in the *New Zealand Dental Journal* of April 1945, were so concise and comprehensive that the ADDS included them as an appendix to his 'Notes and Instructions to Dental Officers' as a guide to all dental officers serving in the field.

The work of Captain P. Noakes, NZDC, at 5 Australian Hospital in Athens has already been mentioned. The work of another NZDC officer, Captain J. T. Dodgshun, at a prison camp in Germany also deserves mention. He was placed in charge of a prisoner-of-war hospital at Stalag IXC. This hospital became a centre for Allied prisoner-of-war maxillo-facial injuries, most of those treated being British and American Air Force casualties and, later, Army personnel from the Western Front. He had had no special training and there were very limited facilities with which to work. There was no equipment to make cast-metal splints, but for cases requiring this form of treatment he made splints of acrylic resin, a material with which, at that time, he would not have been familiar. He mastered the art of intermaxillary wiring, of which he could have had little if any experience as a student or civilian practitioner. In addition to this he made many prostheses of acrylic resin to retain the shape of eye sockets. The thirty-four cases he treated up to the cessation of hostilities included a wide variety of injuries. His work is recorded in an article, 'Jaw Injuries in a Prisoner of War Hospital', published in the *New Zealand Dental Journal* of October 1945.

Every officer of the NZDC who was in a position where he might be called on to render emergency or preliminary treatment for jaw injuries, whether overseas or in New Zealand, was equipped with a field maxillo-facial outfit. This applied to dental officers attached to field ambulances, Casualty Clearing Station, operational air squadrons, flying training schools, warships and hospital ships. The number of maxillo-facial casualties among New Zealand troops was proportionally small and cannot be accurately assessed for the future, but it is reasonable to

assume that there will always be a need for an organisation to treat this type of casualty. The increased lethal power of modern weapons makes more of these cases fatal, but the greater use of mechanical transport at higher and higher speeds must leave in its train many injuries of this type.

The experience of the 1939–45 War shows that it does not need many highly trained specialists to handle the work, but that it is essential that every dental officer should have at least a working knowledge of the science. The average dentist in civilian practice has no opportunity to see this type of work and might go through the whole of his career without treating a single case. It is from these men that the dental officers of the future will be drawn, and it is unlikely that without encouragement they will devote much time from their busy practices to give more than a cursory thought to a subject of academic interest only. The good results in wartime of the lectures and demonstrations in the Middle East and New Zealand suggest that a similar series might find receptive soil in peacetime. A stimulation of interest in the subject, while there are still enough dental officers with practical experience in the field and at base hospitals to speak with authority, would be an investment for the Corps of the future. The dental officer in time of war is primarily a dentist in uniform, holding his commission by virtue of his professional knowledge. It should not therefore be necessary to instruct him in any branch of that knowledge to fit him for the position after he has been appointed to it. By reason of the rare incidence of maxillo-facial injuries in the average civilian practice, this subject becomes the exception, and if the Dental Corps wants fully trained dental officers, it is its responsibility to fill that want. It can open the door to that fascinating subject or, at least, put a little oil on the hinges, with the reasonable chance that some will be interested enough in its attractions to study further. The time to train for war is in peace.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 32 — THE NEW ZEALAND DENTAL CORPS AS PRISONERS OF WAR

CHAPTER 32
The New Zealand Dental Corps as Prisoners of War

THROUGH the accident of capture of the complete Mobile Dental Section in Greece, the New Zealand Dental Corps played a large part in providing treatment for Allied prisoners of war. Eight dental officers, twenty-one other ranks and eleven attached Army Service Corps drivers were captured in Greece. One officer and two other ranks were picked up in Crete and two officers and four other ranks were taken prisoner in the Second Libyan Campaign. As it is the exception for more than an occasional dental officer to fall into enemy hands, a contribution of eleven with twenty-seven other ranks trained in dental duties imparted a distinct New Zealand flavour to the profession in captivity. There were others, of course, including British, French and Jugoslavs, but through sheer force of numbers the bulk of the dental work in the prison camps in Germany and Italy was carried out by the NZDC. As Major Mackenzie, Officer Commanding the captured New Zealand Mobile Dental Section, wrote after his repatriation to England in 1945:

> **It is probably no exaggeration to say that the Dental Officers captured in Greece and North Africa were of more value to the health of our troops as prisoners of war than on the other side of the wire. The majority of the men caught at Dunkirk had had no dental treatment at all before being sent to France. Prisoners coming in later were in a better condition but it was never possible to keep pace with the amount of work presenting. Generally speaking the German authorities were not interested in the health of the prisoners of war. There were one or two exceptions to this rule. As far as I know the bulk of the dental work done in Germany was carried out by NZDC officers and men.**

The German attitude towards dental treatment for prisoners of war varied in different camps according to the humour of the commandant. Generally speaking, in the early stages of the war it was one of indifference or even obstruction. Reports from dental officers bear out

many instances of antagonism from the German authorities. Captain J. G. W. Crawford, NZDC, writes:

> **On June 18th 1941 we began dental work in this camp (Oflag VB Biberach, 25 miles south of Ulm) which numbered about 800. The equipment was fair with collapsible chair and electric engine but materials were not over plentiful. A German Army Zahnarzt [dental surgeon] from time to time smuggled us in extra supplies especially local anaesthetic of which we were always short. Unfortunately for us this man committed suicide later but he had always been a good friend to us. Orders from the German authorities prevented us from using local anaesthetic on French and Slav prisoners. British officers were the only men who were granted the privilege of having local anaesthetic for extractions. There were many hectic scenes when we extracted teeth for the unfortunate French prisoners.**

It can readily be understood that because of the sadistic instructions of the Germans, the extractions for French or Slav officers were limited to cases of extreme urgency. The enforced prostitution of his profession must also have added considerably to the strain imposed on Captain Crawford. Later he moved to Stalag 383, where he found the artificial denture problem his greatest worry:

> **Since my arrival in this camp last December there has been no opportunity for making artificial dentures. Towards the end of May 43 a large number of teeth arrived from the British Red Cross Society. In addition several flasks and some wax were sent. I have endeavoured to get dentures processed at an outside laboratory but that has not been possible. I have also tried to get the necessary vulcaniser, polishing lathe etc., from the German authorities but they are unable to supply. I have in my books 200 men in need of either full upper and lower or full upper or lower dentures. This list does not include at least 100 men with broken dentures.**

It is inconceivable that the German authorities could not provide a

vulcaniser for the camp and this clearly shows their unsympathetic attitude in not allowing the dentures to be processed at a laboratory outside the camp. It was not until August 1943 that arrangements were made to send denture cases to a laboratory in Regensburg for processing. By this time denture materials of all kinds had begun to arrive from the British and International Red Cross. By April 1944 facilities were made available from the same source to do all denture work in the camp.

Captain R. D. Spencer, NZDC, described similar troubles about artificial dentures in his camp:

> **In Fort 13, very largely owing to Captain Cook's tact in dealing with the Germans and his organising ability, we gradually built up an excellent surgery with two sets of equipment and a very good laboratory. The German doctor was far from co-operative and much of the equipment was obtained by 'under the counter' dealing with a German dentist in Thorn. This was paid for with Red Cross funds and not infrequently with our own meagre cigarette supply. All the teeth were supplied by the British Red Cross Society as was rubber but the Germans supplied acrylic resin and also quite good filling materials.**
>
> **At Stalag 357 on my arrival on 14 July 44 there were approximately 100 men requiring dentures, many of them having been without teeth since the date of their capture as far back as 1940.**
>
> **All prisoners of war were entitled to be fed on the same scale as German Base troops. This clause of the Convention was flagrantly broken by the Germans and they did not attempt to conceal the fact that we were not being fed according to the Geneva Convention, in fact they admitted that we were being fed on the microscopic German civil non-workers' ration which was to begin with:**
>
> **1 lb potatoes per day.**

Dried peas or swedes (usually the latter).

300 grams of brown bread made from half rye flour and half potato flour.

6 ozs per month of fresh meat, usually horse.

About a level tablespoon of sugar and margarine per day.

The German doctor seemed powerless to increase the ration but he did try, when pressed, to provide facilities for me to make teeth for the many who had none.

Even this meagre ration was cut down early in 1945 as a reprisal for the alleged ill-treatment of German prisoners of war in Egypt, so that, although the facilities for making dentures were there by November 1944, the diet of weak soup of swede and water, with one kilogram loaf per day to eight men and possibly two potatoes each, hardly required teeth to assimilate.

Captain C. C. Cook, NZDC, who was captured in Crete and who worked with Captain Spencer at Fort 13, has something more to say about that stalag, but before that it is interesting to record his impressions of dentistry as a prisoner of war in Salonika:

June to November 41. I was attached to the staff of the Barrack set out for the sick. In no way could this be called a hospital and conditions were primitive. The German in charge, Major Shott, was unco-operative and rude. For dental work the only instruments available were:

1 pair upper root forceps

1 pair lower wisdom forceps

2 useless elevators

1 glass syringe

1 box Harvard cement

1 box Synthetic porcelain cement.

There were no facilities for heat sterilization and lysolat tablets were used.

This equipment was added to in September and by 20 November, when the whole camp was moved to Germany, Captain Cook had completed 234 extractions and 134 cement fillings. Considering that nearly 27,000 British troops alone passed through this transit camp and that Vincent's infection was rife, the provision for even urgent dental treatment was totally inadequate.

On arrival at Fort 13, Stalag XXA, Thorn, Poland, containing 6000 English and about 1500 French prisoners of war, Captain Cook found that dental treatment had been confined to urgent work only. Captain Blanthorne, a British Army Dental Corps officer, was much overworked providing even this amount of treatment. Permission was officially given to Captain Cook to work with Captain Blanthorne, but in itself this was little more than a gesture. Dr Weideman, the stalag doctor, was the controlling authority who gave permission to work but placed as many obstacles as possible in the way of fulfilment. To quote Captain Cook:

Weideman was most unco-operative and rude and made working conditions as awkward as possible for all officers. He shifted at least twelve medical officers from the Stalag at various periods and the only reason he left the dental officers was that he couldn't replace them. Theoretically he was in charge of all medical personnel but, in practice, he allowed dental treatment to be in charge of Dr. Lebrun, the German Army Dental Officer in Thorn. This worked admirably as Lebrun was more co-operative but unfortunately he was shifted about May and Weideman then ordered all dental requests to be referred to him. He was most scrupulous in inquiring into the use of everything ordered and quite often refused things. He was outwitted however by a very

good contact being made with the only large dental depot in the district and the best of everything was available for filling work.

The denture position all throughout 1942 was most unsatisfactory. Up to the end of February all denture work was paid for individually or by raffles. From then on the supply of dentures was controlled by the German Army through Weideman and up to the end of August, 32 Full Upper or Full Lower dentures were supplied out of a conservative estimate of 260 required. The German order was 'Only men suffering from stomach trouble caused by the absence of dentures are to receive them and workers are to have preference.' Non-working NCOs were therefore to be left without anything. The mechanical work was done by five British dental mechanics working for German civilian dentists.

The position of the edentulous prisoner of war was bad enough when his only qualifications for relief were to be a worker and become ill, but that was not all. Having reached the stage when his dentures were authorised, there was no guarantee that he would receive them expeditiously. Captain Cook reported that the processing of dentures from the camp by the British dental mechanics working for the German dentists was allotted the lowest priority. The German authorities would not supply wax, teeth or rubber, and Weideman would not allow a vulcaniser in camp until he was later persuaded to do so by a representative of the International Red Cross.

Mechanical equipment for a laboratory began to arrive at the end of January 43 and also a consignment of wax, teeth and rubber from England. On 23 February 43 the first denture was made in the Stalag and by March the laboratory was in full swing. It is convenient to mention here that the first lot of dentures made were a number sanctioned by Weideman under the German Army scheme for stomach cases as far back as the beginning of October 42 and held back by him for five months until the laboratory was opened. For some time the forms of these men were kept as evidence of his failure to look after the general health of prisoners

of war but they had to be left behind on movement from Thorn. At the time it was not thought prudent to have an open breach with him by demanding that the Germans should make the dentures as the laboratory was more than we really expected.

The British War Office gave instructions to dental officers to forward reports through the protecting power and on reading these it appears that, had it not been for the persistent nagging of the German authorities by the dental officer prisoners of war, there would have been few facilities made available for dental treatment of any kind. As it was, the artificial denture position was never satisfactory. Captain W. Skegg, NZDC, who was first in an Italian camp, stated that the position there was even worse, the Italians providing virtually no equipment. In many cases treatment which should have been provided by the Germans had to be paid for by the prisoners of war themselves. Captain J. M. Green of the British Army Dental Corps writes:

The first dental treatment for prisoners of war in this area (Kreis Cosel) was provided by a civilian practitioner who did fillings, extractions and dentures the cost being met out of camp funds (canteen profits). There is no record of the work but the total bill was 1773 Reichmarks. The first prisoners of war here being Arbeits Kommando E/3, Captains Warren [1] and Noakes, NZDC, were posted here in February and May 42, both bringing with them a few instruments. They obtained permission to buy materials and instruments from a private firm and gradually equipped the dental centre which consisted of a small hut, 9 feet by 12 feet, serving as a surgery, laboratory and, in bad weather, waiting room. Up to the time of leaving the camp, these officers made 90 dentures with the assistance of Staff-Sergeant Turner A.A.M.C.

In December 42 I came from Marlag and Ilag, Stalag XB and later Milag Nord where I had been in charge of the dental centres and relieved Captains Warren and Noakes. More material was bought including a Field Dental Chair and large stocks of

Palapont, Paladon [acrylic resin denture materials] wax and filling materials. Owing to the shortage of teeth a method was evolved of making stocks of teeth from Palapont and between 50 and 60 dentures were made before the Red Cross supplies arrived.

Men were charged 30 Rms [2] for dentures to cover all costs for materials etc., and the scheme worked excellently, the accounts being kept by the canteen at E/3. In May 43 the German authorities withdrew permission to purchase materials and paid the latest incurred so the nominal charge of 30 Rms has been stopped.

At Oflag VIIB where Captain D. Greenslade, NZDC, Captain R. B. Neal, ADC, and a Canadian dental student, Lieutenant J. Brick, were working, there was a similar reluctance by the Germans to honour their obligations. The Senior Medical Officer reported:

Prosthetic treatment cannot be carried out in this camp. Shortly after prisoners of war came here in September 42, permission for prosthetic treatment of any sort was refused by the German authorities on the grounds that there was a great shortage of dental rubber, artificial teeth and wax. An assurance was given, however, that if these materials were supplied by the British, prosthetic treatment could be carried out by a German civilian dentist in the locality, an arrangement which existed at Oflag VI/B. When the necessary materials were obtained from the British Red Cross Society, application to have dentures made locally outside the camp was refused on

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[1] Capt J. Le B. Warren; Dunedin; born Auckland, 15 Mar 1916; dental surgeon; p.w. 27 Apr 1941.

[2] Reichsmarks.

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the grounds of the great demands being made on the German

dental technicians. It was agreed that urgent repairs to dentures could be carried out, the British supplying the necessary materials, but of some twelve dentures sent for repair, only three were repaired after some four months and the rest were returned unrepaired. The extreme urgency of prosthetic treatment was discussed on several occasions by the Senior British Medical Officer, the Senior Dental Officer and the German Camp Doctor and on 5 June 43 it was agreed that the processing of dentures would be permitted in the camp. An indent for equipment was submitted to the German Camp Doctor together with a request for a British dental mechanic to be sent to the camp. The German camp doctor submitted the whole matter to the appropriate German authority. On 18 June a Senior German Medical Officer visited the camp hospital and in the course of his inspection made notes of the prosthetic position and it is hoped that it will not be long before a prosthetic department can be established. At the present time 53 officers require full dentures. This is due mainly to extractions which had to be carried out after capture. A much greater number require dentures remodelled or repaired. The supply of partial dentures for many cases is very necessary, many patients lacking the minimum number of teeth for adequate mastication. Nevertheless the greatest concern is for the edentulous and for those prisoners of war who must remain edentulous until repairs are carried out on their dentures.

At Reserve Lazarett Obermasfeld, Stalag IXC, conditions appear to have been more satisfactory. A dental centre was opened on 18 June 1941 under Lieutenant P. Francin of the French Dental Corps, first with a surgery and then, in September, with a laboratory as well. This camp contained prisoners of many nationalities. In February 1942 Captain J. T. Dodgshun arrived and reported as follows:

1. **Accommodation. 1 surgery and 1 laboratory—satisfactory.**
2. **Equipment—satisfactory.**
3. **Materials.**

(a) Surgery—sufficient. These have been supplemented recently by the British Red Cross.

(b) Laboratory. The supply of materials has been sufficient to cover the output of dentures. Early this year it was becoming more difficult to obtain artificial teeth. In March however a consignment was received from the British Red Cross Society. Oflag A/Z and the British Stalag IXC (Molsdorf) forwarded similar Red Cross consignments to this centre as the prosthetic work for those camps is carried out here. At first dentures were processed in vulcanite but now Paladon is used exclusively and sufficient rubber has been obtained to repair vulcanite dentures. With the arrival of Red Cross consignments the present stock of artificial teeth are adequate for future requirements. Providing that issues of materials by the Germans continue as they have to date, the dental position can be regarded as good.

There are many more reports from different camps, some good, some bad, but enough have been quoted to show that the German policy was indefinite, allowing the different camp authorities to interpret it as they wished. In most cases their attitude was antagonism or indifference. This is in marked contrast to the moral obligation accepted by the New Zealand Government whereby all enemy aliens, whether civilian internees or prisoners of war, were given dental treatment by the NZDC to the same standard as that provided for the New Zealand Armed Forces at no cost to the individual. The British Government protested but it is doubtful if the Germans took much notice as it was merely a reminder of an obligation of which they must already have been familiar. On 26 February 1944 the following memorandum was sent to Berne from the Foreign Office:

When delegates of the International Red Cross Committee visited Reserve Hospital number 128 (Stalag IIID) in June 43 it came to their notice that the conditions which had to be fulfilled before artificial teeth would be provided by the German authorities were:

(1) At least fifteen teeth must be missing.

(2) There must be proof that most of the missing teeth had been lost by the prisoner of war during his captivity.

(3) There must be from the absence of natural teeth incapacity to work. In the view of His Majesty's Government, insistence that artificial teeth can only be supplied where there is compliance with the above three conditions is entirely incompatible with the provisions of Article 14 of the Prisoners of War Convention which, in its second paragraph lays down that the expenses of the treatment of prisoners of war needing medical and surgical care, including the cost of temporary remedial apparatus (and artificial teeth are clearly apparatus of this kind) shall be borne by the detaining power.

His Majesty's Government therefore request the Swiss Government, on their behalf, to represent strongly to the German Government that the conditions mentioned shall be cancelled both at the Reserve Hospital number 128 and at any other hospital or camp where they are imposed and that henceforth there shall be in regard to artificial teeth and dental treatment, proper compliance with Article 14 of the Convention. They request to be informed in due course of the German response to these representations.

Notwithstanding the lack of co-operation from the Germans, a large amount of work was carried out by NZDC officers and men in captivity. Their enthusiasm and determination to work for their fellow prisoners made them invaluable in the camps and even the Germans recognised their worth, if only as an acquittance of their own obligations. Captain Carter of the Australian Army Medical Corps, the first Commonwealth medical officer to be repatriated from Germany, wrote to the DDS in New Zealand in December 1943:

Major MacKenzie and his Mobile Unit were split up after capture in Greece. The C.O. and one other being sent off to Belgrade and Lieutenants Noakes, Warren, Spencer, Crawford and Dodgshun remained in the main prisoner of war hospital at Piraeus. Here Lieutenant Noakes became responsible for all jaw injuries, doing work of a high order, the others doing routine dental work including dentures. They were still at it when I left the

hospital in late August. Owing to their industry, practically all patients were sent into Germany dentally fit. The value of their work is such that they have already been warned by the German authorities that they will not be repatriated till after the Armistice.

The practice of dentistry in a prisoner-of-war camp was not only affected by the limitation of equipment and facilities but was influenced by the conditions under which the men were living. As it was extremely difficult to provide artificial dentures, it was essential that as many of the natural teeth should be preserved as possible. Extractions were therefore carried out only in cases where general health was threatened or for the relief of pain. Some teeth which would normally be extracted were saved by root filling, even though the absence of satisfactory means of ensuring asepsis made this a doubtful risk. It was necessary to decide in each case whether the man was better off with a risk of focal sepsis from a devitalised tooth under conditions when resistance might well become lowered, or deprived of a valuable masticator. Prophylactic treatments such as scaling and polishing were important. With lowered resistance due to dietary deficiencies, especially of vitamin C, there was always a danger of outbreaks of Vincent's infection and it was imperative that the oral tissues be kept healthy. A constant watch had to be kept to ensure that teeth carefully preserved by filling were not lost from pyorrhoea. Toothbrushes, pastes and powders were unobtainable in the early days and the diet contained few self-cleansing foods. There was a vicious circle. Masticatory inefficiency and poor diet led to lowered resistance, which in turn threatened further to destroy the masticatory machine.

Some prisoners of war had had little dental attention before capture so, with the great demands on the dental officers' time, it was impracticable to attempt to make them dentally fit. All that could be done was to make them as comfortable as possible by judicious extraction and the insertion of temporary fillings. There was always more work for the dental officers than they could do. Their policy was therefore to examine all the men regularly and concentrate on what was

most urgent.

Although all the dental orderlies and mechanics were not employed as such, many of them were attached to dental officers in the various camps. One of the most remarkable examples of dental service to prisoners of war was provided by Bombardier J. F. Hooper [1] of the New Zealand Artillery. Some years before the war he had attended the Otago University Dental School with the intention of qualifying as a dentist. He had spent only a short time there, in fact so short a time as to have been able to absorb little more than the alphabet of prosthetic dentistry and a nostalgia for

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[1] Bdr J. F. Hooper; Tamahere, Hamilton; born Petone, 17 Jul 1904; chemist; p.w. Apr 1941.

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the smell of essential oils. He decided not to continue the course and took up other work. Enlisting at the beginning of the war, he went overseas with the First Echelon and was subsequently taken prisoner by the Germans. Finding that Stalag XVIIIA was without a dentist and that there were broken dentures among the prisoners, he recalled something of the lessons of the past. Gradually he began to be accepted as dentist to the camp and from 11 August 1941 to 1 June 1943 he reports that he did 1347 extractions, 4435 fillings and 10,021 pyorrhoea treatments for British prisoners of war within range of the camp. Eventually he presided over a fully equipped prosthetic laboratory, with two British mechanics working for him and with Dr Z. Njimirovsky, a Yugoslav dentist, as his assistant. In times of peace his action would be totally indefensible. Under the exceptional circumstances it is impossible to be other than struck with admiration at his self-confidence and impressed with the measure of his success. The host of serious consequences lurking in the shadow of his inexperience is frightening to contemplate and must have been clear to him before accepting the responsibility. The distress of his fellows weighed more heavily in the balance and he must be given full credit for a truly remarkable performance. In the absence of

the baker, half a loaf, even if unleavened, is better than no bread.

In some cases patients were sent from one camp to another for certain classes of dental work. Stalag IXC, where Captain Dodgshun was stationed, received the allocation of prosthetic materials from other camps in return for undertaking denture work for them. It also became a centre for Allied prisoner-of-war maxillo-facial injuries.

Though kept busy with routine treatment, some of the NZDC officers found time for research. As Major Mackenzie wrote in the preamble to an article for the *New Zealand Dental Journal*:

> **A Prisoner of War camp provides an excellent field for research work into the possible causes of dental caries. It would be difficult to find a similar institution so isolated from the outside world where the inmates are so ready to co-operate in experiments, where the exact diet is known and where it is so easy to keep them under observation. Furthermore, those interested in this work have the leisure to study and think unhampered by the distractions of normal life.**

Major Mackenzie studied the acidity of the saliva in relation to the incidence of caries among his fellow prisoners. He made a careful study of their daily diet and, with a home-made microtome, prepared several hundred sections of extracted teeth. His findings were published in the *New Zealand Dental Journal* of January 1945. Captain Dodgshun also wrote a technical report, chiefly on his maxillo-facial work, which though too technical to include here in full, contains some passages of general interest about the conditions at the hospital in which he worked:

> **The German policy was to use captured medical and dental officers and personnel to treat prisoners of war both in camps and special prisoner of war hospitals. As a general rule in this hospital [Reserve Lazarett Obermasfeld] the treatment was planned and carried out at the discretion of these officers.**

The general conditions of the hospital were not good, mainly due to overcrowding. Most of the wards had a full complement of double-deck beds with only about three feet separating each bunk. When it is considered that a big percentage of the cases were orthopaedic with infected wounds requiring prolonged treatment, the difficulties will be appreciated.

Diphtheria is a fairly common disease on the continent. An epidemic, fortunately of no great magnitude, broke out during the last few months. This was the greatest problem and worry as, although isolation within the hospital was possible for suspects, discharged patients had to go to allow for the constant inflow of admissions. This policy was adopted by the Germans on the grounds that admissions could not be diverted elsewhere.

Under normal circumstances many of the more serious jaw injuries would have been treated in a maxillo-facial centre. The repatriation of wounded was subject to much delay and did not exist at all until October 43. Usually the patient did not see a medical commission before four to six months' treatment had been completed. If passed, about six months elapsed before repatriation took place.

Since no elaborate treatment such as plastic operations or bone grafting could be undertaken, the patient's treatment was delayed for a considerable period before specialist services were available at home.

In the earlier part of his time at the hospital there were few maxillo-facial injury cases as most of them were treated at German hospitals. Later, however, he saw a number from the Anglo-American Air Force and from the Army on the Western Front. When the aerial warfare became more intense the casualties of this type increased, most of them having received only first-aid treatment before admission to the hospital. The average time from date of injury to admission was four weeks though some were as old as two months, while those occurring among the local

working parties were received on the first or second day after injury.

Psychologically the officers and men of the Dental Corps had an advantage over the average prisoner of war as they were spared the boredom of idle hours but, physically, the continual work under adverse conditions took its toll, especially in the form of anaemia. One New Zealand dental officer who suffered from severe anaemia throughout most of the period of his captivity describes something of the hardships of the life:

> **Captured about 20 miles on the Athens side of Corinth while endeavouring to make for the Corinth Beaches, where we had heard that a last evacuation was to be made by the Navy the following night, I was sent with three of my colleagues to help in a temporary hospital in Corinth. Here four overworked doctors under Captain A. N. Slater NZMC [1] were trying to bring some order out of chaos among the badly wounded men from the battle for the Corinth Canal Bridge. We worked here for ten days assisting the medical officers. Over half the patients had no beds and were on stretchers on the floor and even in the corridors. The only food brought into the place was that supplied by the Greek volunteers who came in to help the nurses. Captain Slater and I made several visits to the German Military Commandant of the town asking for food for the hospital and on each occasion were promised that something would be done. It was not however until the end of the sixth day that the remains of the soup left over from the dinner of a nearby German hospital arrived.**
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> **After that things began to improve until, a few days later, we were all transported to a very much better place in Athens which was being run, under the Germans, by the staff of the 5th Australian General Hospital which had been captured intact and had been allowed to keep much of its valuable equipment. During the time I was there (June to December) just under 2,000 wounded prisoners of war passed through, many of them having been flown from Crete.**

Until reinforcements of doctors arrived from Crete, I was assistant anaesthetist to Captain Slater but later was able to turn my attention to dental surgery. I kept details of my work in my diary but the Germans found it and confiscated it.

The Germans themselves were short of food in the Athens area owing to the destruction of all road and rail bridges into Attica from Salonica and the Pelopponese and the activity of Russian, British and Greek submarines in the Bay of Salonica.

Early in December the whole hospital staff and patients were transferred to Salonica on the deck of an oil tanker and, after a day or two, entrained for Germany. After eleven days in the train we arrived at Thorn in Poland and became attached to Stalag XXA on 1 January 42. I was living in Fort XV with about 600 other ranks, mostly NCOs, and held dental parades every day for the relief of pain, the only equipment available being my emergency kit.

He was appointed to Stalag 357 on 14 July 1944 and moved to Fallingbostel near Hanover on 24 July owing to the Russian advance. This was the camp referred to earlier as providing inadequate diet for the prisoners. On 24 March 1945, 2000 Americans arrived in an exhausted condition, having been on the road for three months from East Prussia. Together with the rest of the prisoners they were made to march east again when the spearheads of the 21st Army Group were about 25 miles from the camp. Of this march he writes:

I was in charge of a column of 1,500 men, half Americans, and we marched from 12 to 16 kilos a day, although the first day we had to go 22 kilos. The occasional tooth was extracted on the march but my duties were mostly medical. Twenty to thirty men left the column every day in a state of collapse. They were collected together later by a medical officer

[1] **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.**

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into three large barns. Chronic diarrhoea, dysentery and bad feet were a constant embarrassment. Of the four orderlies, two of them collapsed and had to be left behind before we crossed the Elbe. Two days after crossing the Elbe we received liberal supplies of Red Cross parcels and terrifying attacks by rocket-firing Typhoons on the same day. One column lost 42 killed and over 60 wounded in one attack. We learned afterwards that they thought we were Hungarians. We were liberated on 2 May by the 1st Airborne Division.

Such were the conditions and such were the men. They were given the opportunity to perform a valuable service and they grasped it with both hands. To them is due the credit of turning to the general advantage what at first appeared to be a tragic loss to the Corps. The prestige of the New Zealand Dental Corps has been enhanced by their devotion to duty.

THE NEW ZEALAND DENTAL SERVICES

CHAPTER 33 — THE UNITED KINGDOM RECEPTION GROUP

CHAPTER 33
The United Kingdom Reception Group

AFTER the Allied invasion of Europe in June 1944, it became evident that there would follow a liberation of prisoners of war from enemy camps, among them New Zealanders estimated at not far short of 10,000. As has been seen in a previous chapter, a quantity of work had been done for these men in the various camps, but it could not be expected that this valiant effort under difficult conditions could prevent a serious deterioration in dental health. It was essential for their physical and mental welfare that this be remedied as soon as possible and that it was the responsibility of the New Zealand Dental Corps to do it. It was reasonable to assume that the repatriated prisoners of war would be congregated in reception camps in the United Kingdom for an indefinite period.

The Military Liaison Officer in London favoured the use of a detachment from the Dental Corps in the Middle East and Central Mediterranean and suggested a Headquarters Section of 2 officers and 10 other ranks with four sub-sections of 1 officer and 2 other ranks each. He was not, however, in a position to see New Zealand's dental problem as a whole. The suggested detachment could have carried out little more than urgent treatment and maintenance, leaving the bulk of the work to be done in New Zealand, and the Corps in the Middle East and Central Mediterranean could spare few men, if any, until their own campaign was finished.

With the RNZAF serving with the Royal Air Force, estimated at 4400, with an effective strength of 3000 stationed in and operating from the United Kingdom, 2000 airmen in the Empire scheme for replacements and members of the Royal New Zealand Navy serving with the Fleet Air Arm or in Royal Navy seagoing craft numbering probably another 1000, there was an estimated total of 16,000. Taking this into account, with the experience that one dental officer to 800 men, with mechanics and orderlies in proportion, was the minimum to carry out

the task, the DDS suggested a headquarters, with Advanced Base Dental Store, consisting of an ADDS and eight other ranks and a Dental Corps Depot of 20 officers and 70 other ranks.

This establishment, based on sound experience, was the ideal but it was difficult to fill. The Corps still had many obligations, notably to the three services in New Zealand and the RNZAF in the Pacific. The Middle East and Central Mediterranean still required reinforcements for those they had sent back to New Zealand, most of whom were returned to civilian life as medically unfit for further service. There was also a proposal to discharge all dental officers over the age of 39, especially those with families, before the end of the year. As a compromise, therefore, the DDS recommended that 11 officers, including the ADDS, 16 mechanics and 36 orderlies be sent, leaving the remaining 10 officers, 4 mechanics and 20 orderlies to be provided from repatriated NZDC prisoners of war. This decision was practically forced on him by shortage of staff, but that he was reluctant to come to it is shown by a letter to Lieutenant-Colonel Rout on 11 May 1945:

> **I did hope that some of the prisoners of war would, when they had had a spell, welcome a job of work though, as you know, when I first put the proposition up to the Adjutant-General, I stated that it was not a fair thing to ask them to operate. He disagreed, hence the policy that they would come in and help and take their post graduate courses later, for it would seem that it will be many months before the prisoners of war get back.**

There was much criticism of this decision, firstly in New Zealand and later in England. It had already been announced in the press [1] that an organisation under Brigadier Hargest had been set up in England to deal with repatriated prisoners of war and that dental attention was included in this. Mr R. M. Algie, MP, received a letter suggesting that he ask a question in the House with reference to the proposal to send dentists to England to treat prisoners of war. The correspondent suggested that the expense was unwarranted and that urgent treatment could be provided by British dentists. Mr Algie referred the matter to the

Hon. F. Jones, Minister of Defence, who stated, *inter alia*, that the Government of New Zealand 'would leave no stone unturned or grudge any expense in providing our sailors, soldiers or airmen all necessary dental attention to restore them to normal health as soon as possible after their years of captivity'. The British Army and civilian dental services were confronted with their own problems and could not be expected to take in hand treatment of our men.

A more serious criticism came from an authoritative source. Major-General F. T. Bowerbank, [2] Director-General of Medical Services, wrote to the Adjutant-General:

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[1] Dominion, 12 Aug 1944.

[2] 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; /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) Sep 1939-Mar 1947.

On medical grounds I strongly oppose the employment, after their release, of officers and other ranks of the Dental Corps who are repatriated prisoners of war. They should be treated exactly the same as combatant officers and other ranks and should be returned to New Zealand.

In my 'Appreciation of Accommodation Requirements, New Zealand Prisoners of War' dated 20 May 1944 (while I was in England) I stated:

'I should like to emphasise here that all repatriated medical officers and other ranks should be given leave and should be treated exactly the same as combatant officers and other ranks. This I consider important.'

In the face of this it was not possible to get authority for the establishment as suggested, but it was decided to leave it to the ADDS in England to appeal personally to repatriated prisoners of war to assist voluntarily. In most cases this appeal was successful and only a small but vociferous minority requested immediate repatriation, and even this was short-lived.

The NZDC unit, comprising 11 officers and 52 other ranks, left Auckland on 6 September 1944 in TSS *Ruabine*, arriving in Liverpool on 29 October. It set up a section on the ship with the help of the Chief Engineer who provided, among other things, a cargo light and an adapted fan motor for use as a lathe. On arrival it moved to Dover and set up headquarters at Old Park Barracks under Lieutenant-Colonel Rout as ADDS.

Headquarters and Advanced Base Dental Store consisted of the ADDS, a WO I as sergeant-major, two dental clerks, one of whom was a staff-sergeant, a sergeant as head storeman, a corporal store-man, batman and two NZASC drivers. They had a light motor car and a covered 15-cwt truck as transport.

The Depot, under Major W. McD. Ford, had its own headquarters for assembly, training and distribution of personnel. It could provide sections to staff Wing Camps and other depots of the Navy, Army and Air Force. It could not be fully staffed until the arrival of the prisoners of war. The full number was 90: five majors and fifteen captains; a staff-sergeant in charge of training; thirty-nine orderlies, of whom ten were sergeants and five corporals; twenty mechanics, of whom three were staff-sergeants, six sergeants and three corporals; ten batmen, of whom one was a corporal.

As yet the unit could not be fully employed but it set up sections wherever New Zealand troops could be found, with the exception of those attached to the Royal Navy, who remained the responsibility of the Admiralty. Apart from their dental duties they made themselves generally useful in many other ways. Some assisted at the New Zealand

Fernleaf Club in London, some in the library of the Education and Rehabilitation Service and some were sent to Italy to the Central Mediterranean Force.

While waiting for the arrival of the prisoners of war their policy was to examine, render fit and maintain New Zealand servicemen and women, to train their personnel and to investigate dental refresher courses in the United Kingdom should the demand arise and the policy be approved.

In order to appreciate the problem it is necessary to outline briefly the plans of the Reception Group for handling prisoners of war on arrival.

The Group was formed in August 1944 and came under the command of Major-General H. K. Kippenberger [1] in October. The bulk of the repatriates did not begin to arrive until April 1945 although some, repatriated under normal exchange arrangements, were handled in the meantime. The Group consisted of wings located at seaside resorts in the South of England such as Dover, Folkestone, Birchington, Hythe, Broadstairs, Margate, etc. A New Zealand military hospital was also made available.

On arrival at the various wings according to their arm of the service, the men were to be medically and dentally examined, re-clothed and re-equipped, provided with pay, ration cards and gifts from the National Patriotic Fund Board. They were then free, if fit, to go on twenty-eight days' leave. Complete arrangements were made for study courses, university short leave courses, tours to places of interest, trade and agricultural attachments, garden parties, dances, etc. Hospitality was offered in private homes and well-stocked libraries were provided at the various wings. The Fernleaf Club gave facilities for those in London. Passages for New Zealand, although hard to obtain, were to be arranged as soon as possible. Actually 1500 men were embarked by 21 June 1945.

The ADDS began to have doubts about getting any men for long

enough to complete treatment. He had already finished work on all available service personnel and the staff in London of the Reception Group, and had cleared two RNZAF drafts for embarkation to New Zealand. His headquarters had moved to the West-cliff Hotel at Westgate-on-Sea and the Depot was close at hand in the same town.

In April 1945 the prisoners of war began to arrive. Detachments of the NZDC went to the Grand Hotel at Brighton, Ellingham House, Westgate-on-Sea, Cordova Courts in Folkestone, Fernleaf Club, London, Carisbrooke Hotel, Margate, Carlton Hotel, Broad-stairs, and Greenham House, Birchington.

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[1] Maj-Gen Sir Howard Kippenberger, KBE, CB, DSO and bar, ED, m.i.d., Legion of Merit (US); 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; GOC 2 NZ Div, 30 Apr-15 May 1943, 9 Feb-2 Mar 1944; 2 NZEF Prisoner-of-War Reception Group (UK) Oct 1944-Sep 1945; twice wounded; Editor-in-Chief, NZ War Histories, 1946–57; died Wellington, 5 May 1957.

Whereas the dental condition of the troops in England had showed 120 fillings and 24 dentures to each 100 men, the examination of prisoners of war showed 150 fillings and 46.5 dentures to 100 men, with 81 per cent requiring treatment. Fortunately reinforcements arrived. An officer, mechanic and orderly were annexed from the Hospital Ship *Oranje* and three officers arrived from the Central Mediterranean Force. The NZDC repatriated prisoners of war were not immediately available as operators but most of them began duty during June.

It soon became obvious that it would be impossible to make everyone dentally fit before embarkation for New Zealand. Most men could only be examined before going on leave. The few who did not go immediately on leave were allowed to stay only fourteen days in the Reception Group. The shipping position was uncertain and little warning could be given of the departure of drafts. The only solution was to work long hours when

the men were available and to send a dental section with each incompleted draft to work on the ship on the way to New Zealand. This was at least one way of granting priority of repatriation to NZDC prisoners of war.

By the end of the year most of the men had returned to New Zealand and the members of the dental detachment had either gone with them or had made their ways to a university in England or the United States for a post-graduate course. The total work completed in England up to 31 December 1945, in spite of the sudden embarkation of patients, is formidable:

Presenting for treatment	16,424
Made dentally fit	6,967
Extractions	1,923
Fillings	14,057
Scalings	2,911
Full dentures	819
Partial dentures	669
Remodels	738
Repairs	1,191

In addition, eight returning transports carried dental sections and, although figures of the amount of work done on board are not available, it cannot have been inconsiderable.

By 12 January 1946 only one section under Captain J. S. Beresford [1] was left in England, working at the Fernleaf Club. All equipment except a field dental outfit and three months' reserve stock had been returned to New Zealand. This last section finished work on 31 March, leaving the dental surgeons in the Royal Navy and Royal

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[1] Capt J. S. Beresford; England; born Auckland, 10 Jan 1920; dental student.

Air Force to look after the insignificant number of New Zealand cases remaining.

Reviewing the position as a whole, it must be accepted that there was full justification for sending a detachment to England; it was none too large for the task; the majority of repatriated prisoners of war welcomed the opportunity to aid in the work and the result was satisfactory. There are, however, some matters that deserve comment. The sudden and unheralded embarkation of troops could not be avoided and will probably be a similar obstacle in any future war, but there are other obstacles that might be reduced in the light of experience.

One concerned the provision of surgery and laboratory accommodation on the troopships returning to New Zealand. It took some persuasion to correct the opinion that a cabin 8 or 9 feet square, four decks down with no ventilation and a lamp screwed on the wall, was adequate for a busy dental officer. The first two ships made some improvements at the urgent instigation of the ADDS and in later ships the accommodation was good. The *Andes*, in particular, had first-class accommodation below the boat deck forward on the port side.

Another arose from the difficulty of sending accurate data back to New Zealand from the three services by the fact that the Navy Dental Service was under the control of the Admiralty, and the ADDS could but ask that Mr Skinner, Naval Affairs Officer, provide him with information which would fill in the gaps in his own report.

In conclusion, the granting of requests by dental officers for postgraduate study is something that could be better defined. It would appear that there was no set policy as to who was entitled to take these courses and no list of accepted schools. Quite often arrangements were made in all good faith, only to be cancelled on instructions from New Zealand.

This chapter may well conclude with a letter from Air Commodore K. L. Caldwell, [1] commanding Headquarters RNZAF, London, to Major-General Kippenberger, dated 1 November 1945:

> **I feel it is appropriate at this stage to place on record my**

fullest appreciation of the grand services rendered by Lieut-Col. Rout and his officers and other ranks to the members of the R.N.Z.A.F. Dental treatment of the R.N.Z.A.F. in the United Kingdom is primarily the responsibility of the R.A.F. but, owing to shortage of skilled staff, the R.A.F. has never been in the position to provide more than emergency treatment.

The N.Z.D.C. officers have met this deficiency to the fullest degree with the result that the dental welfare of our personnel has left nothing to be

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[1] **Air Cdre K. L. Caldwell, CBE, MC, DFC and bar, m.i.d., Croix de Guerre (Belg); Auckland; born Wellington, 16 Oct 1895; sheep farmer; RFC 1916–18; NZALO, India, 1945; AOC RNZAF HQ, London, 1945.**

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desired.... Lieut-Col. Rout and his officers have on all occasions co-operated to the fullest degree and I have no hesitation in expressing the satisfaction felt by our personnel. I would be grateful if you would convey my personal thanks to the personnel concerned.

A copy of this memorandum is being forwarded to D.D.S. at Army Headquarters, New Zealand.

APPENDIX I — GAZETTE NOTICE OF THE ORIGINAL FORMATION OF THE NEW ZEALAND DENTAL CORPS

Appendix I

GAZETTE NOTICE OF THE ORIGINAL FORMATION OF THE NEW ZEALAND DENTAL CORPS

(Extract from *New Zealand Gazette* No. 20, 24 February 1916)

REGULATIONS FOR THE NEW ZEALAND DENTAL CORPS

Liverpool, Governor

In pursuance and exercise of the powers and authorities conferred on me by the Defence Act, 1909, and its amendments, I, Arthur William de Brito Savile, Earl of Liverpool, the Governor of the Dominion of New Zealand, do hereby make the following additional regulations to those for the Military Forces of New Zealand made on the twenty-second day of December, one thousand nine hundred and thirteen, and published in the *New Zealand Gazette* on the twenty-third day of January, one thousand nine hundred and fourteen; and I do hereby declare that these regulations shall come into force as from the date of publication thereof in the *Gazette*.

SCHEDULE

Section XVI—The New Zealand Dental Corps

Establishment

692. The New Zealand Dental Corps shall consist of—

(1) Administrative Officers: (*a*) Director of Dental Services, ranking as Lieut.-Colonel; and (*b*) two Assistant Directors of Dental Services, ranking as Majors. The Administrative Officers shall rank as Staff

Officers.

(2) Executive Officers, ranking as Majors, Captains, and Lieutenants, shall be employed—(*a*) with the troops at the front; (*b*) with the New Zealand Expeditionary Force Reinforcements in camps or on His Majesty's New Zealand transports in such proportion as the Minister of Defence considers necessary; and (*c*) as principal dental officers of military districts. Under category (*2b*) as many dental mechanics as may be considered necessary may be appointed, with the ranks of Sergeant and Sergeant-major.

(3) Civilian dentists for duty in Districts: Civilian dentists will be appointed by the Director of Dental Services in each recruiting centre for service in connection with the dental examination of recruits for the New Zealand Expeditionary Force. These Officers may, on the recommendation of the Director of Dental Services, be granted honorary military rank.

Duties

693. The Director of Dental Services will be responsible for the efficient working and control of the Dental Corps, and all appointments thereto will be made by Defence Headquarters on his recommendation. He will be responsible for the organisation, training, and distribution of officers and non-commissioned officers of the Corps; the calling-up of officers for service with the troops, abroad and in camps; advice as to an examination of all dental stores and equipment; miscellaneous professional questions, dental statistics; arrangements for accommodation, operating-rooms, and tents; the allocation of civilian dentists to recruiting centres; co-operation with the New Zealand Dental Association in adopting a uniform line of minimum treatment, and in correlating the link between the districts and the camps. He will occasionally inspect the work done in camps and districts.

694. Executive officers will be responsible for the completion of dental treatment begun prior to men going into camps or embarking on troopships, the treatment of fresh cases as they arise, and the repair of dentures.

The necessary accommodation will be provided, and all requisite

materials supplied to dental officers in camps, who will receive no remuneration other than their salaries.

Executive officers appointed to camps will reside wholly in camp. In special cases only the Director of Dental Services may grant permission to reside wholly or partially out of camp.

695. Civilian dentists employed in districts for the examination of recruits: Recruiting dental officers will examine the teeth of all recruits, except those found to be permanently medically unfit, and will chart the teeth of each recruit found dentally deficient. They will hand each recruit a form, and refer him to the nearest branch of the Dental Association, which will allocate him to a dental practitioner for treatment.

696. Whenever possible treatment shall be completed before the recruit again reports at the recruiting centre for despatch to camp. Should this, however, be impossible through (*a*) exigencies of treatment, or (*b*) the inaccessible location of the recruit, the completion of treatment will be effected in camp.

697. If the circumstances of the recruit be such that he is unable to support himself whilst undergoing treatment prior to being attested, the Defence Department will endeavour to find work for him whilst he is under treatment. Every endeavour should be made by the dentists and employers of labour to co-operate so as to ensure that the hours of labour may be interfered with as little as possible.

698. When a dental surgeon concerned has treated the recruit he will fill in the forms as (1) dentally efficient; (2) requiring treatment; particulars of treatment to be specified.

The form (No. 3) will be returned by post to the Recruiting Office when the recruit is called up, and will be forwarded to the Senior Dental Officer in camp.

699. It is considered that recruits should, where possible, pay for

their own treatment, but in the case of those unable to do so the fees charged, which will be at the ordinary hospital rates, will be forwarded by the dental surgeon concerned to the Director of Dental Services, who will certify the claim and forward it to the Defence Department for payment.

700. The dental examination of a recruit will be made after the medical examination.

Appointments

701. Candidates for appointment to the New Zealand Dental Corps must be registered dental practitioners.

Appointments, except to the higher administrative ranks, will be made as follows:

(*a*) All appointments will, in the first instance, be to the rank of Lieutenant. If the circumstances indicate that a Captain's commission is desirable, the Director of Dental Services shall have power to recommend a dental practitioner, of not less than three years' standing, to be Captain.

(*b*) Promotion from Lieutenant to Captain will be by merit, on the recommendation of the Director of Dental Services.

Dress

702. The uniform for officers of the New Zealand Dental Corps will be as laid down in the New Zealand Dress Regulations for officers of the Territorial Force. Staff officers will be entitled to similar distinctions to those worn by Staff officers of other professional corps.

Discipline

703. Officers of the New Zealand Dental Corps will be subject to the regulations relating to discipline as prescribed for the Territorial Force.

Pay

704. Officers of the New Zealand Dental Corps will draw pay at Territorial Force rates when employed with the Territorial Force. They may be appointed to the Expeditionary Force or for duty in camps for the New Zealand Expeditionary Reinforcements, and will draw Expeditionary Force rates of pay.

Officers of the New Zealand Dental Corps who are dealing wholly or partially with organisation and administration during the initiation of the corps, and the present emergency, will draw such pay as may be from time to time approved by the Hon. Minister of Defence.

Civilian dentists, with or without honorary military rank, employed in the districts examining recruits, will receive remuneration at the rate of one shilling per head for each recruit examined.

Control

705. The New Zealand Dental Corps will be under the control of the Adjutant-General.

As witness the hand of His Excellency the Governor, this sixteenth day of February, one thousand nine hundred and sixteen, in the presence of—

J. Allen

Minister of Defence.

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

(Extract from *New Zealand Gazette* No. 20, 24 February 1916)

THE NEW ZEALAND DENTAL SERVICES

REGULATIONS FOR THE NEW ZEALAND DENTAL CORPS — LIVERPOOL, GOVERNOR

REGULATIONS FOR THE NEW ZEALAND DENTAL CORPS

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dentists to recruiting centres; co-operation with the New Zealand Dental Association in adopting a uniform line of minimum treatment, and in correlating the link between the districts and the camps. He will occasionally inspect the work done in camps and districts.

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697. If the circumstances of the recruit be such that he is unable to support himself whilst undergoing treatment prior to being attested, the Defence Department will endeavour to find work for him whilst he is under treatment. Every endeavour should be made by the dentists and

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J. Allen

Minister of Defence.

APPENDIX II — DENTAL STANDARDS, 1939

Appendix II
DENTAL STANDARDS, 1939

Dental standards required are set out in four groups:

(1) Armed Forces for home defence.
(2) Large Expeditionary Force.
(3) Small Expeditionary Force, for garrison duty abroad.
(4) Temporary employment in New Zealand.

1. ARMED FORCES FOR HOME DEFENCE

On mobilisation, candidates who are capable of being made dentally fit for general service and are willing to receive treatment, or are wearing satisfactory well-fitting artificial dentures to remedy a deficiency of natural teeth, will not be rejected for dental reasons.

The acceptance or rejection of a recruit will depend on the relative position of the sound or repairable teeth and his ability to masticate efficiently.

For convenience in determining masticatory efficiency, the teeth in the upper jaw which are in good functional opposition to the corresponding teeth in the lower jaw will be considered according to their functional value.

(*a*) Each incisor, canine, premolar and underdeveloped 3rd molar will have the value of one point.

(*b*) Each first and second molar and well developed 3rd molar will have the value of two points, e.g., if the whole of the 16 teeth are present in the upper jaw and in good functional opposition to corresponding teeth in the lower jaw, the total value will be 20 or 22 points according to whether the 3rd molars are well-developed or not.

The dental classification will be:

'F' Dentally fit.

'T' Dental treatment required.

'U' Dentally unfit.

Dentally fit ('F') means:

(1) Those who have normal dental occlusion, which may include soundly restored teeth or well-fitting dentures to remedy a deficiency of natural teeth, or requiring treatment which will not take more than *three* working hours to complete. *N.B.* Prosthetic work will be confined to remaking, remodelling and repairing which must be completed within twelve hours from impression taking, the recruit's presence only being required for a portion of the three working hours.

(2) Those who have a masticatory efficiency of not less than twelve points, e.g., they should have at least ten sound teeth in the upper jaw articulating with ten sound teeth in the lower jaw, of these teeth there must be two molars articulating on the right and left of each jaw, in order to masticate their food without the aid of artificial dentures. *N.B.* Well-filled teeth will be considered as sound.

Dental treatment required ('T') means:

(1) Those who are capable of being restored to normal dental occlusion or to twelve points of masticatory efficiency by conservative means and not by the provision of dentures.

(2) Those falling below twelve points of masticatory efficiency who are capable of being restored to normal occlusion by the provision of dentures, or requiring immediate extractions and subsequent provision of dentures after normal alveolar absorption is completed, provided always that they do not fall below a minimum standard of nine points. *N.B.* The distribution of the nine points must be left to the judgment of the dental examiner who will also take into consideration the physical condition of the recruit.

NOTES:

(1) An earnest endeavour must be made to assess the approximate time required for the necessary treatment on a *Working Hour* basis, and the dental examiner will record the estimated time on the form in the line provided under 'CLASSIFICATION'.

(2) None of the recruits classified in classes 'F' and 'T' should

normally require to be absent from military duty in camp for longer periods than those required for the actual treatment given.

Dentally unfit ('U') means:

(1) Those presenting with advanced stages of pyorrhoea or other septic conditions necessitating total extractions with extensive alveolar absorption.

(2) Those whose dental condition necessitates extractions which will cause them to fall below a nine point minimum standard of masticatory efficiency.

(3) Those presenting with ulcerative stomatitis in any stage. *N.B.* These men should be specially warned that they are suffering from an infectious disease and require immediate treatment by a dental surgeon.

NOTES: **Those classified 'U' are thus defined as those who, to be made dentally fit, would require considerable time off from military duty, over and above that required for actual dental treatment. They are thus NOT ACCEPTABLE for Home Defence in the first instance.**

2. LARGE EXPEDITIONARY FORCE

Such a force may be:

(1) Mobilised *de novo.*

(2) Formed from a home defence force already mobilised and in training camps, etc.

Standard: Only those classified as 'F' on NZ War 360 will be accepted primarily. Where, however, extra recruits are required to make up the requisite numbers a proportion of those classified 'T', who may be rendered dentally fit 'F' within a reasonable period (the actual time to be decided) may be accepted.

N.B. **In case (1) above, those classified 'F' who may require up to three working hours' treatment will be treated by civilian practitioners before they enter mobilisation camps. If any class 'T' are accepted later they will be similarly treated or they may be made dentally fit in camp dental hospitals if such exist.**

In case (2) above the necessary dental treatment will be carried out in the already existing camp dental hospitals.

3. SMALL EXPEDITIONARY FORCE

Only those recruits who are classified as 'F' or who can be made dentally fit within *Three Working Hours* will be accepted.

***N.B.* (1) Where fillings etc., are necessary, the operations should be capable of being completed within twenty-four hours of his acceptance by the Board if the exigencies of the service demand.**

(2) Prosthetic work will be confined to repairs, relining or remodelling, and in each case, utility is to be the only consideration. The patient's presence may only be required for a portion of the three hours, but the laboratory work must be completed during the next twelve hours, with a possible limit of twenty-four hours.

4. TEMPORARY EMPLOYMENT IN NEW ZEALAND

The fourth group, the standard required for men to be temporarily employed in New Zealand, was covered by an amendment of 26 September 1939, which, under 'Dental treatment required ('T')' added the following:

(3) In considering nine points as a minimum of masticatory efficiency the physical condition of the recruit, his vocation in life, combined with the length of time the loss of efficiency has been existent, must not be overlooked. If a man can do a hard day's work, eat three meals a day and be physically fit with only six incisors, a molar on one side and a premolar on the other side, all occluding, he can carry on in a mobilisation camp until the deficiency is remedied in camp, if found necessary.

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

Dental standards required are set out in four groups:

(1) Armed Forces for home defence.
(2) Large Expeditionary Force.
(3) Small Expeditionary Force, for garrison duty abroad.
(4) Temporary employment in New Zealand.

THE NEW ZEALAND DENTAL SERVICES

1. ARMED FORCES FOR HOME DEFENCE

1. ARMED FORCES FOR HOME DEFENCE

On mobilisation, candidates who are capable of being made dentally fit for general service and are willing to receive treatment, or are wearing satisfactory well-fitting artificial dentures to remedy a deficiency of natural teeth, will not be rejected for dental reasons.

The acceptance or rejection of a recruit will depend on the relative position of the sound or repairable teeth and his ability to masticate efficiently.

For convenience in determining masticatory efficiency, the teeth in the upper jaw which are in good functional opposition to the corresponding teeth in the lower jaw will be considered according to their functional value.

(*a*) Each incisor, canine, premolar and underdeveloped 3rd molar will have the value of one point.

(*b*) Each first and second molar and well developed 3rd molar will have the value of two points, e.g., if the whole of the 16 teeth are present in the upper jaw and in good functional opposition to corresponding teeth in the lower jaw, the total value will be 20 or 22 points according to whether the 3rd molars are well-developed or not.

The dental classification will be:

'F' Dentally fit.

'T' Dental treatment required.

'U' Dentally unfit.

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APPENDIX III — HONOURS AND AWARDS

Appendix III
HONOURS AND AWARDS

COMPANION OF THE ORDER OF THE BRITISH EMPIRE

Colonel B. S. Finn, DSO, ED

OFFICER OF THE ORDER OF THE BRITISH EMPIRE

Lt- Col J. F. Fuller

Maj A. I. McCowan

Lt-Col H. W. Washbourn

MEMBER OF THE ORDER OF THE BRITISH EMPIRE

Maj G. McCallum

Capt J. G. W. Crawford

Lt F. D. Sheppard

Maj W. G. Middlemass

Capt J. T. Dodgshun

WO II R. B. Radley

BRITISH EMPIRE MEDAL

S-Sgt W. R. Paine

Sgt R. H. Watson

MENTIONED IN DESPATCHES

Lt-Col D. W. Earle

Lt- Col J. F. Fuller

Maj J. G. Brown

Maj H. C. Colson

Maj C. C. Cook

Maj B. Dallas

Maj D. A. Greenslade

Maj G. McCallum

Maj J. A. S. Mackenzie (twice)

Maj W. G. Middlemass

Maj E. B. Reilly

Maj N. E. Wickham

Capt E. P. Pickerill

Capt W. T. Simmers

WO I N. W. McInnes

WO I R. F. McKillop

WO I S. G. Tonks

S-Sgt D. N. Anderson

S-Sgt E. J. S. Cox

S-Sgt C. A. Frater

S-Sgt C. F. Jackman

S-Sgt G. H. Ritchie

S-Sgt J. Russell

Sgt F. J. Haughey

Sgt G. Hughes

Sgt R. G. Patterson

Sgt A. A. Strawbridge

Cpl U. G. Eagan

APPENDIX IV — SOME STATISTICS

Appendix IV
SOME STATISTICS

A considerable number of statistics are given in the text of the history and it is not proposed to repeat them here. There are some, however, which may be conveniently grouped to give some idea of the condition of the men of the Armed Forces and the amount of work done for them by the New Zealand Dental Corps. They are approximate only as complete accuracy of recording is not possible under every condition of warfare. Suffice it to say that they are sufficiently realistic as a basis for study and errors would be of omission rather than exaggeration.

Dental Condition of Expeditionary Force Troops on Mobilisation

These figures are the result of an examination of the Second and Third Echelons and the 4th, 5th and 6th Reinforcements at Trentham Mobilisation Camp, and would be substantially the same as the figures for the other mobilisation camps.

Number examined	**15,005**
Number requiring treatment	**11,427 (76·1 per cent)**
Artificial dentures required	**4,785 (41·8 per cent)**
Fillings required per man	**3·91**
Extractions required per man	**1·1**

Dental Condition of Territorial Force

Number examined	**11,215**
Number requiring treatment	**9,322 (83·12 per cent)**
Artificial dentures required	**1,780 (19·09 per cent)**
Fillings required per man	**5·04**
Extractions required per man	**1·26**

A comparison of these two sets of figures points to the younger age of the Territorial group, in which fewer wearers of artificial dentures would be found, and consequently fewer fit mouths on examination with more filling work needed to achieve dental fitness.

Condition of 6th Reinforcements on Completion of Treatment

	Per cent
Dentally fit through conservative treatment	35
*Wearing artificial dentures	65

---

* Full upper and lower, 18 per cent

Full upper or lower, 30 per cent

Partial, 17 per cent

Comparison between Navy, Army and Air Force in New Zealand

	Navy	*Army*	*Air Force*
Requiring treatment	80·9 per cent	79·6 per cent	85 per cent
Fillings required per man	2·76	4·11	3·39
Extractions required per man	0·5	1·31	0·7
*Artificial dentures required	10·15 per cent	23·52 per cent	12·1 per cent

These figures are the result of striking an average from a large number of reports.

---

* Exclusive of remodels and repairs.

Volume of Work carried out by the New Zealand Dental Corps

September 1939 to May 1945 for Navy, Army and Air Force	
Fillings	1,340,117
Extractions	367,470

Prophylactic treatments	**165,333**
Full dentures	**46,869**
Partial dentures	**19,849**
Dentures remodelled	**54,081**
Dentures repaired	**76,779**

The total population of New Zealand at the end of the war was approximately 1,750,000. During the whole of the war 215 dentists were mobilised for service with the Armed Forces for varying periods, but at no time were all these serving together as executive officers. It took three years for the Corps to reach peak strength, after which there was a gradual retrenchment. Taking these facts into account, the volume of work is formidable.

THE NEW ZEALAND DENTAL SERVICES

[SECTION]

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

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THE NEW ZEALAND DENTAL SERVICES

GLOSSARY

Glossary

AA & QMG	**Assistant Adjutant and Quartermaster-General**
AAI	**Allied Armies in Italy**
AAMC	**Australian Army Medical Corps**
ADC	**Army Dental Corps**
ADDS	**Assistant Director of Dental Services**
ADMS	**Assistant Director of Medical Services**
ADS	**Advanced Dressing Station**
AFHQ	**Allied Force Headquarters**
AHQ	**Army Headquarters**
APR	**Awaiting Passage for Return**
ASC	**Army Service Corps**
BTE	**British Troops in Egypt**
CCS	**Casualty Clearing Station**
COMAIRSOPAC	**Commander, Air, South Pacific**
COMZEAIRTAF	**Commander, New Zealand Air Task Force**
COO	**Chief Ordnance Officer**
Coy	**Company**
CRASC	**Commander Royal Army Service Corps**
CRE	**Commander Royal Engineers**
DADDS	**Deputy Assistant Director of Dental Services**
DC	**Direct Current**
DCRE	**Deputy Commander Royal Engineers**
DDDS	**Deputy Director of Dental Services**
DDMS	**Deputy Director of Medical Services**
DDS	**Director of Dental Services**
Dent	**Dental**
DGMS	**Director-General of Medical Services**
DM	**Dental Mechanic**
DMS	**Director of Medical Services**
EMS	**Emergency Medical Service**
EPIP (tent)	**European Personnel Indian Pattern**

FDL	**Forward Defended Locality**
FMC	**Forward Maintenance Centre**
Gen	**General**
GHQ	**General Headquarters**
GOC	**General Officer Commanding**
GR	**General Reconnaissance**
GS	**General Service**
GSO I	**General Staff Officer, 1st Grade**
Hosp	**Hospital**
IC	**In charge**
Inf	**Infantry**
KR	***King's Regulations***
LCT	**Landing Craft, Tank**
LOB	**Left out of battle**
L of C	**Line of Communication**
LSBA(D)	**Leading Sick-Berth Attendant (Dental)**
M & V (stew)	**Meat and vegetable**
MDS	**Main Dressing Station**
ME (Company)	**Mechanical Equipment**
MP	**Military Police**
NCO	**Non-commissioned officer**
NZDC	**New Zealand Dental Corps**
NZEF	**New Zealand Expeditionary Force**
NZEF (IP)	**New Zealand Expeditionary Force (in Pacific)**
NZMC	**New Zealand Medical Corps**
OC	**Officer Commanding**
OICA	**Officer in Charge of Administration**
PDO	**Principal Dental Officer**
QM	**Quartermaster**
RADC	**Royal Army Dental Corps**
RAF	**Royal Air Force**
RAMC	**Royal Army Medical Corps**
RD (tent)	**Ridge, Double**
RMO	**Regimental Medical Officer**
Rms	**Reichsmarks**
RNZAF	**Royal New Zealand Air Force**
RNZDC	**Royal New Zealand Dental Corps**

RNZN	Royal New Zealand Navy
SBD (Squadron)	Scout Bomber Dive (Dauntless)
Sec	Section
TBF (Squadron)	Torpedo Bomber Fighter (Avenger)
UNRRA	United Nations Relief and Rehabilitation Administration
WAAC	Women's Army Auxiliary Corps
WAAF	Women's Auxiliary Air Force

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THE NEW ZEALAND DENTAL SERVICES

[BACKMATTER]

This volume was produced and published by the War History Branch of the Department of Internal Affairs

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Archives Officer **R. L. K AY**

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