

## CHAPTER 1

### WAR THREATENS MORESBY

DECEMBER 1941 was the most fateful month for Australia since the outbreak of war in September 1939. The rapid and repeated blows of the Japanese in the Pacific and the Far East brought the threat of war to the immediate environment of Australia, and as was believed at that time, even the imminent risk of invasion. These dangers had been foreseen and measures had been taken to establish some defence organisation, at Rabaul and Port Moresby in particular. From the medical point of view both these centres were of great potential importance; therefore it is of interest to see how medical matters stood in the Territories of New Guinea and Papua during 1941.

Moresby was the most important centre in the Territory of Papua, which was under the control of the Commonwealth of Australia, though not included in it. Nationally the whole island of New Guinea was subdivided into a western and northern half, Dutch New Guinea, while the remainder comprised a northern and eastern part, the Mandated Territory of New Guinea, and a southern and eastern part, the Territory of Papua. After the 1914-18 war the northern portion had passed from the control of Germany, and came under the Mandate of Australia.<sup>1</sup>

Rabaul, in New Britain, had the status of the political capital of the Mandated Territory, and as an important outpost, was reinforced with troops in March 1941. Major-General R. M. Downes, as D.G.M.S., approached Dr E. T. Brennan, Senior Health Officer of the Department of Health in the Rabaul Civil Administration, for cooperation in the care of men who might need hospital treatment. Brennan's help was freely given, and his extensive tropical experience was of great value. The Rabaul force was of course self-contained and could supply all the ordinary medical care likely to be needed by a defence organisation.

Early in 1941 both a military and a civil administration existed in Port Moresby. The area was the 8th Military District, and the medical care of Moresby depended on the medical officers of the 9th Fortress Company and the 49th Battalion. In addition to the early attention to the defence of Rabaul, the strategic importance of Moresby was realised, and Downes inspected the medical arrangements personally, and had detailed reports made by several of his staff. Even at a time when war in the Pacific had not become a reality, and when the defence of Australia was not so urgent as it later became, an important principle was established that Australia would need a safe tropical base in the event of war in the islands. Further, no such base could be safe unless endemic diseases were controlled, and of these by far the most important was malaria. Though Moresby was in the tropics it was situated in a dry area, with

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<sup>1</sup> During military operations in the South-West Pacific the name "New Guinea" was commonly used to denote any part of these Territories.

a rainfall of less than forty inches a year, derived largely from the north-west monsoon between December and April. The infectious diseases occurring in the area included malaria, scrub typhus, hookworm and dysentery. Tropical ulcer and yaws occurred among natives, who also suffered from dietetic deficiencies, chiefly beriberi. By earnest application of preventive measures it was a healthy area, at least under the easier conditions of peaceful civil life; it had a good harbour, and was close to the Australian mainland. Moresby, if well controlled under conditions of military occupation, was thus eminently suitable as a base for Australia in the event of operations in the South-West Pacific.

#### *HEALTH CONDITIONS IN NEW GUINEA*

At the request of Major-General Downes, the Acting Director of Public Health in Rabaul had drawn up in 1937 a survey of the medical and hygienic aspects of the Territory of New Guinea. The technical staff of the department then numbered seventy-four, ranging from medical practitioners to lay medical assistants. The administration cared for the health of both European and native nationalities, though the hospital accommodation for the latter was somewhat primitive. Food resources were relatively small, and most European foods were imported. Adequate vitamins were contained in the diet scales for native labourers. There was an ample supply of water, and sanitation of conservancy type was established in settled centres.

Dysentery was not uncommon, though usually mild. It was predominantly of the Flexner type, and was carried by flies and possibly sometimes by water. The mild nature of the local disease encouraged carelessness, which was responsible for occasional outbreaks.

The most important endemic disease was malaria, which was widespread throughout the Territory. High spleen rates were found among the native children, and the proximity of native villages to some areas, in particular Moresby, tended to offset the value of prophylactic measures. Quinine was used perfunctorily as a suppressive, and since the subtertian type was common, and civilians usually treated recurrent attacks with only moderate dosage of quinine, blackwater fever was not a negligible risk. Some of the residents claimed that they acquired a relative immunity to malaria, but such a degree of resistance as was established varied with locality, owing no doubt to the existence of different strains of the parasite.

In March 1941 Downes arranged for huts to be used for a temporary hospital while a building was erected, and medical and nursing staffs were increased. In May the fortress troops numbered some 1,080: their health was cared for by four medical officers, and sick could be treated in a hut in the 49th Battalion lines and in the civil hospital, where the cooperation of a devoted Australian civilian nursing staff was very much appreciated. The R.A.A.F. had its own sick quarters.

Later in the year Colonel M. J. Holmes, Director of Pathology and Hygiene at Army Headquarters, reported that there had been a high rate

of sickness during the year, chiefly due to malaria, dysentery and dengue. Heavy anopheline breeding and high infection rates in native villages made a certain incidence of malaria inevitable. Active control measures were taken so far as possible with the limited labour available; valuable help in this regard was given by the civil administration. The appointment of a pathologist assisted greatly in diagnosis and control. Special measures were also inaugurated to control the *Aedes* responsible as a vector of dengue, since the habits of this mosquito called for a different attack to that used for the *Anopheles*. As further reinforcements were added to the force in Moresby the need for more direct army control of hygiene was felt.

Lieut-Colonel E. L. Cooper, assistant to the D.G.M.S., after an inspection reported that additions to the administrative staff were required. In assessing such needs the incidence of malaria was a good index, having in mind the entirely different aspects of malaria in a small civilian community in times of peace, and malaria in a non-immune military force which might at any time be committed to action. Though the malarial position had improved considerably in Moresby, fresh infections were still occurring in the area at the end of the monsoonal rains. Cooperation was good between the civil and military authorities, but in spite of this it could be seen that greater efficiency would result from unified control, particularly when the forces in New Guinea attained a greater size.

#### DEFENCE IN AUSTRALIA

In Australia during the latter part of 1941 home defence was in the forefront of planning. There was much to be done, and in August little more than one-quarter of the militia force was on full-time service; training was discontinuous and military equipment was limited, though Australia was still contributing some armaments to Allies. A Volunteer Defence Corps was organised, and provision was made for coastal defence and watching services. The question of command of the home forces caused some argument, and Lieut-General Sir Iven Mackay, who was appointed, found that the extent of his authority and command was restricted. Six divisions were envisaged as a mobile force for the defence of the important vulnerable areas on the eastern coast, and an armoured division, part of an armoured corps, was being formed and trained. In addition, the Government insistently stressed the great demands of manpower and material needed for wartime projects. By contrast with this spacious planning, for which incidentally the medical needs would be considerable, only small defence forces could be spared to send to the islands ringing Australia on the north and east. However, it was evident that the defenders of Australia would be fighting in the tropics, and responsible officers of the medical services were well aware that persistent endeavours would be needed to prevent the forces of nature from dangerously thinning the ranks of the fighting men. General medical organisation was furthered by bringing all the medical affairs of the 8th Military District under control

of the army: Lieut-Colonel E. T. Brennan was appointed A.D.M.S. on 23rd December 1941 and Major A. J. Foote, D.A.D.M.S.

#### WAR COMES CLOSER

January 1942 brought about a very difficult state of affairs in the Moresby area. The first few days of the month saw a strong Japanese attack on Rabaul, and before the month was out New Britain was held by the enemy. Events were ominous in Malaya, where the ability of the defenders to stem the Japanese invasion was already doubtful. In Timor and Ambon the defence forces were over-run, though Independent Companies in Timor were able for some considerable time to harass the occupying Japanese.

These events were reflected in the arrival of reinforcements in Moresby; the fall of Rabaul in particular brought the danger closer to the mainland and it was evident that Moresby was fast becoming a vital base. The increased number of Australian troops required more medical attention and more medical units were sent to the Moresby area.

#### ARMY MEDICAL UNITS IN MORESBY

The first of these medical units to arrive was the 3rd Field Ambulance, under Lieut-Colonel N. S. Gunning; this unit after hasty equipment and preparation left Adelaide on Christmas Day and occupied quarters in Murray Barracks, Moresby, on 3rd January. Nothing was prepared for the unit, some of whose members were immediately set to work on roads in the hospital area of the barracks, while others obtained and moved stores, and dug slit trenches.

The only other military medical service available was that of the "base hospital" of the 8th Military District, then in Murray Barracks under Captain W. E. King, who was shortly promoted major. Dysentery soon broke out among the troops and the base hospital was quite inadequate to house the sick. Therefore "B" Company of the 3rd Ambulance under Major J. R. Cornish set up a dysentery hospital several miles from the barracks. Conditions here were very primitive: there were no beds at first, patients slept on the ground on blankets and ground-sheets, tentage was very meagre, there were no nets, nor was there any supply of running water. Major W. R. C. Morris set up an A.D.S. across Napa Napa Bay for evacuating patients from the 53rd Battalion, and the M.D.S. was established at Murray Barracks to supply local requirements. These moves, completed on the 9th, supplied a real need, for by the end of the month nearly 200 men were in hospital with dysentery, and the M.D.S. was treating some 100 patients per day.

*Air raids begin.* On the night of 3rd February the Japanese attacked Moresby from the air: this was the first of over 100 air raids observed by the 3rd Field Ambulance while in Moresby. Only slight damage was done on this occasion. Daylight raids were begun three weeks later, and thereafter air attacks increased in intensity until later when vigorous and effective counter-measures became possible.

## ADMINISTRATIVE CHANGES

On 11th February the general administration of the Territory of New Guinea and of Papua was simplified by the suspension of the civil administration of both territories; as from the 12th military control was instituted. This date was a turning point, after which all matters of health and preventive medicine came under military control of the 8th Military District, and of other army formations which replaced it. As a corollary the Australian New Guinea Administrative Unit, or 'as it became known, Angau, was formed: its functions were to carry out the civil administration of Papua, and to assist the commander in operating against the enemy by the use of the special knowledge and experience possessed by their members. More will be said in due course about this unit, and in particular its medical section. At this time the force in the 8th Military District in New Guinea included the 30th Brigade, made up of the 39th, 49th and 53rd Battalions; the 8th Military District was under command of Major-General B. M. Morris.

February brought fateful decisions in both Australia and the Far East. The fall of Singapore, with the consequent loss of the 8th Division, took place on 15th February, and after a period of uncertainty the I Australian Corps was eventually recalled to Australia. The need for adequate defence was significantly underlined by the damaging Japanese raid on Darwin on the 19th.

## MEDICAL ARRANGEMENTS

There were important reasons why the defence of Papua should be backed up by an efficient medical service, since it could be seen that the Australian forces would be more widely separated than previously. Downes, now appointed as Inspector-General of Medical Services, visited Moresby in February with Lieut-Colonel J. B. Galbraith. Some expansions were then taking place. In March the base hospital was transferred to King's Hollow twenty-one miles up the Laloki River from the port, and became the 46th Camp Hospital. There was also a Red Cross convalescent home at Rouna, twenty-four miles from Moresby, and several miles farther up the river a site for the 113th Convalescent Depot was selected. The 3rd Field Ambulance had then moved its M.D.S. to Bomana Mission in the Twelve-mile Valley, and a new A.D.S. was being prepared a mile and a half from the Seven-mile aerodrome. The general health of the men was good; dysentery, previously a cause of considerable disability, was subsiding, but primary infections of malaria were now reported, showing obvious deficiencies in the preventive mechanism. Dengue was also occurring; post-febrile depression was not uncommon as a passing sequel.

During March Japanese bombers made thirteen fairly heavy daylight raids, one of which swept the valley where Murray Barracks was situated, rousing doubts as to the advisability of siting a medical unit there. Considerable damage was done but there were no casualties. A new site was found for one A.D.S. farther along the river at Rigo Road, known

as Eirama Creek, and another was moved to Frome Road: one of these had previously been stationed opposite a wireless transmitting station. The static nature of the defence of Moresby of itself tended to increase caution in the placing of medical units; so too did the limited air strength available, hitherto consisting of the Australian-manned Hudsons of the No. 32 Squadron. Welcome additions to the air forces were American bombers, and on 21st March four Australian Kittyhawk fighters of No. 75 Squadron arrived, though these latter were fired on at their first appearance owing to lack of recognition.

Enemy activity was evidenced early in March when the Japanese landed forces unopposed at Lae and Salamaua on the north coast. The only defence forces were two companies of the New Guinea Volunteer Rifles, whose existence was somewhat precarious, particularly in the matter of food, although dumps had been established. Their supply route was through Bulldog, along a difficult trail. The role of the force was one of active patrolling, with harassment of the enemy, hence when the Japanese came they withdrew into the steep hills behind Salamaua and the Markham Valley and demolished bridges and power houses. The maintenance of a small patrol force on the flank of the Moresby area was part of the deliberate strategy of defence, which included also the recognised possibility of operations in the Milne Bay area, and over the mountain trails through Kokoda from the north coast to Moresby. The expectation of further Japanese air activity over Moresby raised the question of moving the holding sections of the 3rd Field Ambulance to safer locations. The dysentery hospital was moved to Lux Lane above Rouna Falls, there to act as a hospital for infectious diseases. The M.D.S. was moved to a site seventeen miles along the river. Practically all the constructional work necessitated by these moves was carried out by members of the unit.

#### *General MacArthur arrives in Australia*

An outstanding event was the dramatic arrival of General Douglas MacArthur at Darwin on 17th March. About this time too the 32nd and 41st United States Divisions were beginning to land in Australia, and the I Australian Corps with the 6th and 7th Divisions A.I.F. were also arriving on the mainland from service in the Middle East. It was inspiring to the 4,000 to 5,000 troops then in Moresby that the defence force was growing, for this force, spread thinly over the coastal areas near Moresby, was small by comparison with that now assembled by the Japanese in other parts of New Guinea.

In New Guinea encouraging signs of progress were seen. The sea strength of the Allies in the South-West Pacific was growing, and, more evident to the force, increasing numbers of American servicemen were landing in New Guinea. Their own medical installations were not yet ready, and some of their sick were cared for by the Australian services. A coloured engineer unit gave prompt and most useful service to medical units in need of help.

## MEDICAL DEVELOPMENTS

Another valuable addition to the medical amenities of the Moresby area was the establishment of the 113th Convalescent Depot, commanded by Major J. H. Thorp. Before the end of March this unit had settled into a site in the Sogeri Valley, and had received 150 convalescents. During the course of the New Guinea campaign, this unit grew and extended so that by December 1943 over 3,500 convalescents were on the ration strength. The work of the 113th Convalescent Depot was not only directed towards the building up of convalescents: in the commander's words "while their physical welfare was of prime importance, it must also be stressed that their mental and spiritual welfare was also well catered for". In addition useful pioneering work in tropical hygiene was accomplished, and a high standard of personal and unit hygiene was set.

Perhaps staffs of medical units became sensitive to fluctuations of morale among those troops who came under their care; in the 3rd Field Ambulance a certain feeling of isolation among the men was detected; this was due no doubt to the lack of ability to supply the complete answer to the Japanese air attacks, and accentuated by an unwelcome period of six weeks during which no mail was received. Amends were made when great quantities of mail arrived in the middle of March, an event which vied in the eyes of the troops with the landing of the Kittyhawks.

During April the air attacks on Moresby slackened. Most of the raids were by Zero fighters; in one of these the Bomana M.D.S. was involved in an attack on the Bomana aerodrome, but no patients were hurt. The M.D.S. was sited between the fighter aerodrome and the water pumping station, and the unheralded attacks of fighters at low level were found to be rather more disturbing to patients than bomber raids of which longer notice was possible. The withholding of land-based bombers by the Japanese at this time was no doubt connected with their preparations for an assault on Moresby. Coming expansion of the Allied air forces was evidenced by the speed with which new airfields were laid down. The previous inadequate aerodromes in the Moresby area had grown into six first-class strips, but in the early days of small things the value of the contributions of the defence pioneers must not be forgotten, with their spirit undaunted by deficiencies in equipment or strength.

Commitments of the medical services were obviously growing too: Brennan was appointed A.D.M.S. of New Guinea Force on 15th April, with Foote as D.A.D.M.S. This new designation of the formation was involved in some confusion at this time.

On 17th April the 2/5th Independent Company arrived in Moresby; a decision was made to utilise this unit in a new force to be known as Kanga Force in the Wau-Salamaua area. The headquarters was to be raised from details in Moresby, and the force consisted of the New Guinea Volunteer Rifles, the 2/5th Independent Company, and a reinforcement platoon of the 2/1st Independent Company.

During this month the work of the field ambulance was increased greatly by the rising incidence of malaria and dengue, particularly among

the medical personnel, an experience afterwards repeated in other areas. As the wards were full this threw added strain on the staffs.

May opened with a feeling of anxiety about the expected enemy offensive, accentuated by a warning from the brigade Intelligence officers that a continuous air attack might early be expected, its objective being to keep the Allied planes on the ground. The Japanese had given evidence of activity in other zones; as we know they had made landings in Lae and Salamaua during March. Farther afield during April they made raids on Colombo and Trincomalee, though they were repulsed with heavy losses; these were less significant to the Moresby garrison than the successful enemy landings nearer home, on Bougainville and the Admiralties. Air reconnaissance revealed that the Japanese were concentrating two groups of vessels, carriers, cruisers and transports, but whether these were to be aimed at Moresby, or North Australia or both, there were no illusions about the present threat to Moresby.

#### *CORAL SEA BATTLE AND AFTER*

The high command, aided by decoded Japanese ciphers, decided that the enemy forces were aimed at Moresby, and possibly also against bases on the Cape York Peninsula on the Northern Queensland coast, and on 4th May began a remarkable sea-air action in which offensive thrusts were made by carrier planes. Heavy damage was inflicted on the Japanese forces, and between 4th and 9th May action ranged over hundreds of miles, mainly south of the Solomons, until the double prong of the invading fleets of carriers, cruisers and convoys was routed and thrust back.

The R.A.N. and R.A.A.F. played a significant part in this battle. Allied ships under Rear-Admiral J. G. Crace maintained an effective defence of Moresby and the islands south-east of New Guinea under heavy air attack, and Allied land-based bombers from Moresby located and attacked the Japanese western invasion force. As a result of this engagement Moresby remained firmly in Allied hands, a base invaluable in the defence of Australia and necessary for the prosecution of the coming land war against the invaders.

There was, of course, no under-estimation of the activity and aggression of the Japanese, for example in their submarine attacks on Allied merchant shipping, and their bold but abortive venture on the night of 31st May-1st June when midget submarines entered Sydney Harbour.

Since the Japanese held Lae, Salamaua and Finschhafen it was likely that they would attempt an inland drive from this part of the north-east coast of New Guinea, and an advance on Moresby over the mountain ranges was also possible. Welcome additions to the Allied land forces in New Guinea could be foreseen.

It is of interest to note that the 2/5th Independent Company, intended to be part of Kanga Force operating in the Wau-Salamaua sector, was held in Moresby until after the Coral Sea battle. Its function was the defence of Bootless Inlet, where it was suspected the Japanese might



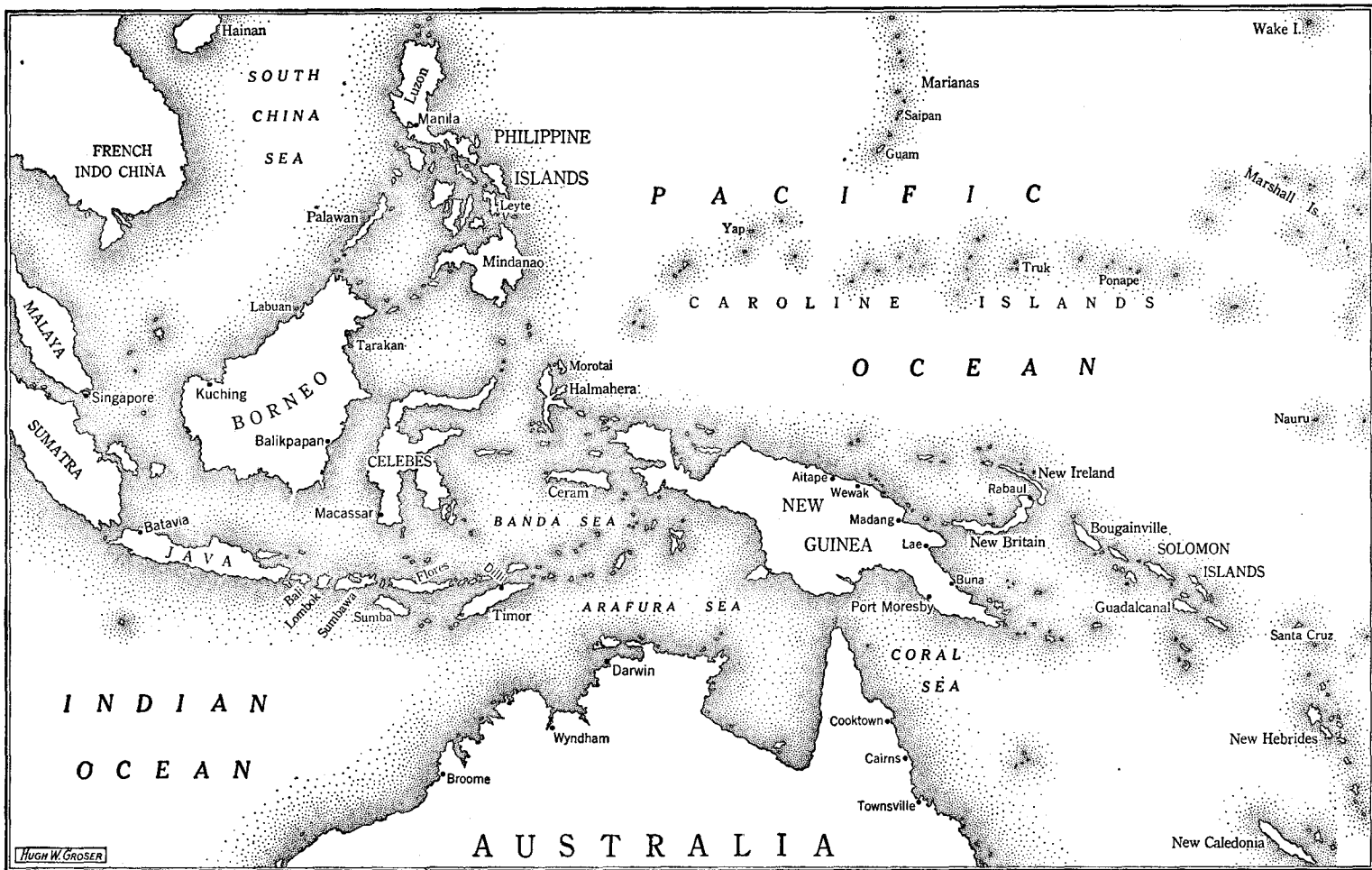
attempt a landing. After the sea-air battle was over most of Kanga Force including the 2/5th Independent Company, was flown to Wau. This was the first substantial movement of troops by air in New Guinea.

#### STRENGTHENING THE MEDICAL FORCES

A week after the Coral Sea battle reinforcements to the 30th Brigade in Moresby arrived, comprising the 14th Brigade, with the 3rd, 36th and 53rd Battalions, and the 14th Field Regiment. Additional medical services were also needed, both to care for the enlarged forces and to lift some of the burden from the 3rd Field Ambulance, a unit which had hitherto supplied medical cover for the whole of the defence force in the area, from aid posts to fixed hospitals. On 3rd June the 2/2nd Australian Hospital Ship *Wanganella* arrived in Port Moresby bringing the 5th Casualty Clearing Station and the 14th Field Ambulance. The 5th C.C.S., previously known as the 105th C.C.S., was the first medical unit to arrive in Moresby whose commander and senior officers had experience in the Second A.I.F. overseas. Lieut-Colonel T. G. Swinburne had been able to include Majors T. H. Ackland and R. R. Andrew as surgeon and physician respectively, and a "Q" staff transferred from the 2/6th Field Ambulance. From the first the value of experience was seen, as the unit needed all the advantages of a high priority at army headquarters and all the drive of its staff to have deficiencies of stores supplied, packed and shipped with the personnel of the unit in a few days. Soon after its arrival this unit set up near the Laloki River, seventeen miles from Moresby, and within a few days was starting a hospital.

The 14th Field Ambulance, under the command of Lieut-Colonel M. S. S. Earlam, had been acting in support of the 14th Infantry Brigade in New South Wales. Before embarkation plans had been made for members of the staff to receive special instruction in tropical medicine, but for lack of time they had to leave without this advantage. New Guinea Force decided that this unit would relieve the 3rd Field Ambulance of some of its responsibilities; officers and orderlies were detached for this purpose, which also enabled them to acquire first-hand knowledge of local medical conditions. The ambulance as a whole assumed the duty of servicing the 30th Infantry Brigade: the headquarters moved to the somewhat exposed site of the Bomana Mission, and there took over the care of some sixty patients, a number which rose to a maximum of 160 before the end of the year.

The 3rd Field Ambulance was assigned the task of supporting the 14th Brigade in the Bootless area. These arrangements were not made easier by an epidemic of measles, which broke out among late arrivals of the 14th Brigade. "A" Company of the 14th Ambulance set up a measles hospital in Murray Barracks to deal with the outbreak, which soon affected over 200 men. This unit, in addition to setting up action stations in the sites occupied in the Moresby area, also had the task of acting as an evacuation centre for patients being transferred to the mainland.



HUGH W. GROSER

Islands of the Pacific

## FURTHER PLANNING

Early in June the growing New Guinea Force was further encouraged by the news of another naval success; the American naval forces severely defeated Japanese naval and air forces threatening Midway Island. This came at an appropriate time, as during May a project had been conceived to provide more air facilities at Milne Bay.

*Milne Bay.* This strategically placed harbour at the southern tip of Papua had strong natural landward defences, and its possession was desirable as a stable land and air force base protecting the south-western flank of Moresby. During June the beginnings of a defence force at Milne Bay were made by the despatch of two Australian infantry companies and a machine-gun platoon to the area, with also a company of the 46th United States Engineer Regiment. These troops began to work on an airstrip at Waigani, west of the head of Milne Bay.

*Wau-Salamaua.* On the other flank there was increasing need to watch the movements of the Japanese round Lae and Salamaua, lest they should establish a connection with the high ground of Wau. Surveillance and harassment of the enemy were being carried out by Kanga Force, which, as we know, had been formed in May. The medical problems involved here were of interest. Before the expansion of this force, its organisation was self-contained, and only simple medical attention was required and carried out. More will be said of this aspect of the work, but it may be remarked here that the country over which these men ranged included cool climatic conditions at an elevation of 6,000 feet, and hot humid climate characteristic of lowland jungle and coastal areas. The malarial hazards were considerable in parts of this country.

*Owen Stanley Range.* June brought a great quickening of military preparation in those parts of New Guinea where there seemed likelihood of action. Months earlier Morris, following warnings from the Australian Army Headquarters, had watched for signs of Japanese activity on the north coast. After they had landed in Lae and Salamaua in March, because of their further interest in Buna and Gona the possibility of an enemy advance on Moresby over the formidable Owen Stanley Range was seriously entertained. Consequently, early in June Morris sent the Papuan Infantry Battalion, a small force of 300, to patrol from Kokoda on the foothills of the range to Awala where the hills flattened towards the coastal plain. Later the 39th Battalion and the P.I.B. were assigned the task of holding the "Kokoda Gap" against any Japanese forces attempting to cross the mountains.

*Moresby.* Meanwhile Moresby had its own problems. With a likelihood of a strong and determined enemy making a bid for Milne Bay, or infiltrating inland from Lae and Salamaua, or making a bold frontal advance on Moresby itself it was imperative that Moresby should be medically well equipped. Forward medical services would be required, and these would have to cope with all the hazards of tropical disease in a most difficult country. Base medical units would be needed in the

area, and all the arts of preventive medicine would be called upon to keep the base free of endemic disease and safe for considerable reinforcements. Of the various hazards the most dangerous were dysentery and malaria.

#### DEFECTS IN HYGIENE

When the 5th C.C.S. arrived Swinburne and his senior officers were soon aware that a firmer anti-malarial discipline was needed in Moresby, such as that applied during the later occupation period of Syria. Mosquitoes abounded, nets were inadequate and often inefficient; much more prophylactic work was badly needed, and there was reason for doubting if suppressive quinine was taken with any degree of regularity. Even in the headquarters of New Guinea Force there was obvious laxity, as judged by the incidence of malaria and the breeding of mosquitoes near the officers' mess. This state of affairs was due largely to insufficiency of officers who were experienced, young and physically fit. Swinburne discussed these matters with Brennan, who sent a signal to the D.G.M.S. asking for Colonel N. H. Fairley to come up and advise what should be done.

*Fairley's Visit.* On 26th June Colonel Fairley and Major I. M. Mackerras arrived to investigate the local position. They made a report to the D.G.M.S. shortly after their return to the headquarters in Melbourne. They pointed out that the Territory of Papua as a whole was a very wet area with a climate suitable for perennial mosquito breeding, and plenty of surface water; and a high endemic rate for malaria might be expected. Moresby, however, differed sharply from the rest of the island, having a well-marked dry season from May to January which should limit transmission of malaria during those months. Its rainfall was only about 30 inches a year, and a considerable degree of anopheline control had been previously achieved. Recently a disappointingly high rate of infection had existed not only among the natives but also among the troops.

The dispersal of troops along the Laloki River and for several miles on each side had increased the difficulties of control. Examination of children showed a splenic index of some 77 per cent in widely dispersed areas, and Major E. Ford found indices of 90-100 per cent in some of the islands near Samarai in the China Strait. The incidence of malaria in troops of New Guinea Force was disturbingly high, despite the adoption of the suppressive use of quinine. Up to June the force had a strength of 6,091 to 7,676 men, and in the first six months of 1942 1,184 cases of clinical malaria were treated. This gave a clinical infection rate of 149 per 1,000 for that period and if latent malaria was included the total infection rate was about 45 per cent. Test surveys confirmed these figures. The personnel of the 3rd Field Ambulance showed a figure of 34 per cent infection proven by films. Fairley and Mackerras considered that 50 per cent of all those in the Territory for six months were infected. Brennan had found that during 1940-41 benign tertian predominated, but malignant tertian appeared in February 1942. In June, 88 per cent of the malaria

seen at the 5th C.C.S. was M.T., and 73 per cent at the 3rd Field Ambulance. Diagnostic facilities, which earlier had been limited, were at this time satisfactory, since microscopes and stains had been distributed to the necessary centres. This had been made possible by the arrival of new medical units with the materials required. A mobile laboratory would have simplified this work considerably, but arrangements were made for the training of officers and technicians in diagnostic methods using thick films. The work of a staff sergeant technician in the 14th Field Ambulance was of great value.

There was no general hospital in the Moresby area and patients with malaria were held and treated in all medical units. The standard of treatment was not uniform and was incomplete, as plasmoquine was not available. This was important, because without the use of this drug as a gametocide carriers were created, and under existing conditions mosquitoes were readily infected, thus perpetuating the cycle. The most important anophelines found in the area were the *A. punctulatus typicus* and *var. moluccensis*, the latter being known as the significant vector. The commonest breeding grounds were clear pools, seepages from swamps and backwaters of streams; these mosquitoes were also known to breed in clear or muddy water in traffic marks, in tins and brackish pools. The problem of control was recognised as considerable. Therefore the report stressed the importance of control by all available methods, and pointed out that the position to date was unsatisfactory. Not only were the troops running risks as their forces spread out into uncontrolled areas, but were adopting a fatalistic attitude to personal protection. Fairley and Mackerras noted that difficulties in distribution and supervision of quinine contributed to poor results, but in view of the dry season (August to December) suggested that groups of men should be taken off quinine and watched for relapses. The saving of quinine thus gained would be welcome.

The departure of natives from the area since the bombing raids began had removed the natural reservoir of malaria, but unfortunately another reservoir had been established, the highly dangerous one of the troops themselves. It was therefore imperative that the carriers should be reduced in numbers by treatment, and a campaign against anophelines should be begun and intensified during the wet season, after which lavish breeding might be expected. Little destruction of adult mosquitoes was being attempted, though buildings were occupied in which they could be attacked, and sprays and nets were an urgent necessity. Protective clothing was not being worn, nor were repellents used. No educational schemes were being followed, and in fact the anti-malarial discipline of New Guinea Force at this time was poor.

Fairley and Mackerras submitted plans for the carrying out of the urgently needed measures, beginning on the mainland with adequate training and following on in New Guinea with all recognised means of prophylaxis. They concluded by warning that malaria was capable of destroying the effective force and could thus decide the issue of the campaign in the South-West Pacific.

*Dysentery.* The other disease of importance to the force was dysentery, of itself not severe, but, when widespread, a cause of serious wastage. As we have seen, part of the 3rd Field Ambulance laboured to provide hospital attention for men with this and other infectious diseases, though greatly handicapped by lack of staff and equipment. Even in June 1942 beds were rudimentary, without mattresses or nets, and flies could not be properly controlled. The 5th C.C.S. was able to help other units by expanding its scope; in particular by admitting men with dysenteric diseases, who otherwise would be held in a dressing station. Special fly-proof wards were constructed and the methods followed which had been laid down in the Middle East and there proved effective.

Some of the criticism of the medical conditions prevailing in Moresby at this time by medical officers and units entering the area was hardly fair, for it was not always realised what difficulties had to be surmounted in an area that was for a time a kind of military backwater. Moreover a number of those who had borne the load of pioneering in the early days, though experienced and competent, had not always the advantage of that type of technical and administrative experience demanded in the area, nor the greater advantage of youth. It must be remembered, too, that Moresby was subjected to frequent air raids, both by day and night, and up to the middle of 1942 retaliative action was not very effective. Other factors of importance which reduced the effectiveness of medical units were meagreness of transport and the very bad condition of most of the roads. But in spite of such difficulties, arrangements were made to cope with the medical needs of every day, and also military emergencies which would have arisen had there been an enemy attack. A surgical centre was kept prepared in the Murray Barracks, ready for use by the 5th C.C.S., and the 3rd Field Ambulance had set up a theatre at Eirama Creek, in case the threat to Moresby should become a reality.

#### CHANGES IN COMMANDS

General Sir Thomas Blamey recommended on 25th July that Major-General Morris should command the line of communication area and that Major-General C. A. Clowes command the field forces. On 1st August Clowes was listed as commander of New Guinea Force and Morris as commanding the New Guinea line of communication area. This was complicated by the arrival simultaneously with Clowes of Lieut-General S. F. Rowell, commander of I Australian Corps, and some of his staff. Rowell then became commander of New Guinea Force and I Australian Corps from 12th August, the date of his arrival. Two days later Clowes went to Milne Bay in command of Milne Force. With him went some staff officers previously attached to New Guinea Force, including Colonel G. B. G. Maitland, who thus became A.D.M.S. of Milne Force.

These arrangements held good until the end of 1942. Lieut-General E. F. Herring followed Rowell as General Officer Commanding I Australian Corps and New Guinea Force on 1st October.