

CHAPTER 16

BORNEO

PREVIOUS accounts have shown how formations of the Australian Military Forces under command of the First Australian Army, were engaged in campaigns designed to destroy or neutralise Japanese forces in the Mandated Territory and the Solomons. Further tasks awaited a corps of two Australian divisions which was to share in the onward drive of the American forces under General MacArthur. By the end of August 1944, it was evident that these two distinct roles necessitated a change in the system of the Australian command. General Blamey as Commander-in-Chief had his Advanced Headquarters in Brisbane, and controlled operations of the oversea forces from this centre. Liaison with the General Headquarters of the S.W.P.A. was established by proximity of the two headquarters and close mutual discussion concerning planning and operational matters.

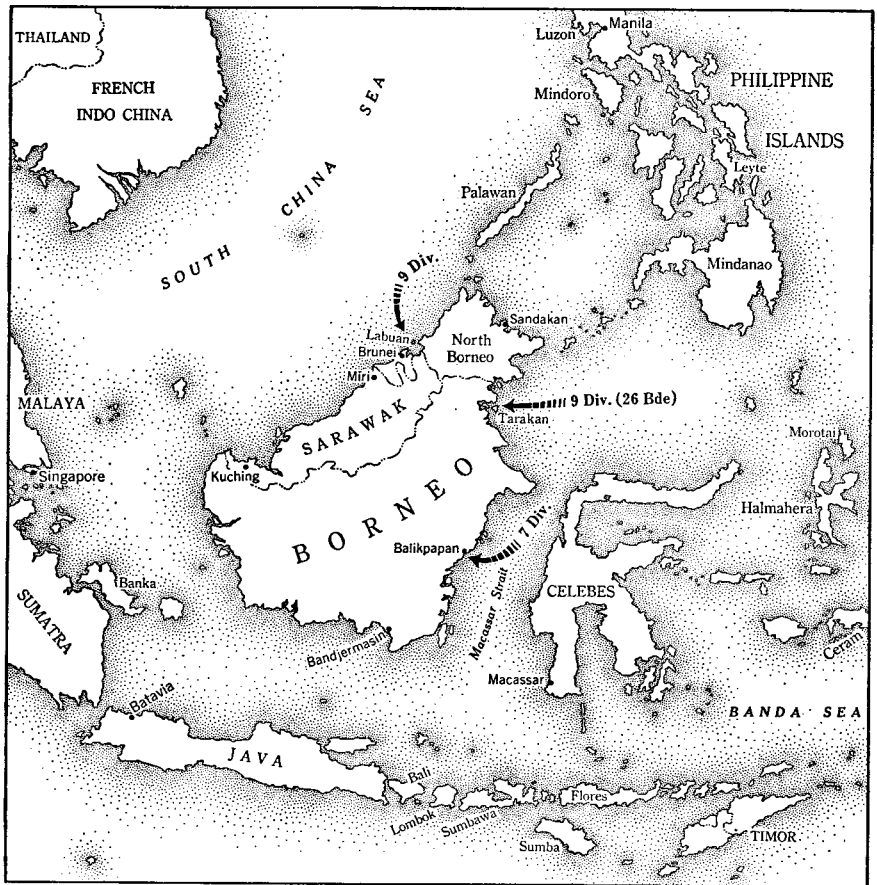
As the American forces were now about to advance to the Philippines, MacArthur moved his headquarters to Hollandia with the purpose of moving it still farther as his forces advanced against the Japanese. To ensure further close contact between the Allied forces Blamey moved part of his Advanced Land Headquarters to Hollandia, which was intended also to act as a staging area for I Australian Corps. Early in September a forward Echelon of Land Headquarters was opened in the Hollandia area to maintain liaison with MacArthur's General Headquarters, and by the end of the year the whole of the Advanced Land Headquarters had moved from Brisbane to Hollandia. This headquarters under Lieut-General F. H. Berryman, Blamey's Chief of Staff, controlled all operations of the Australian Military Forces outside Australia. Subsequent moves of MacArthur's headquarters were made as the American forces advanced into the Philippines, until in April 1945 it opened in Manila, followed by the Australian Forward Echelon Land Headquarters later in the month.

After gaining bases along the northern coast of Dutch New Guinea and on islands off that coast, MacArthur made a further advance to Morotai Island in the Molucca Group. This new base was soon under control with very little opposition, and gave the American forces a clear line to the Philippines, for the invasion of which extensive preparations were soon to be made. These movements left behind Japanese forces in New Britain, Bougainville and the Aitape-Wewak area, the neutralisation of which was to be placed in the hands of Australian divisions.

After several changes of plan the tasks finally allotted to I Australian Corps commanded by Lieut-General Sir Leslie Morshead were: a brigade group of the 9th Division was to capture Tarakan, the remainder of the division undertaking operations on Brunei Bay and Labuan Island, while the 7th Division would capture Balikpapan. Planning teams from I Australian Corps, 9th Division and 1st Base Sub-area were brought forward

to Morotai on 1st March. Morshead and the planning staff conferred with Blamey and his Chief of Staff at Leyte.

Decisive blows by the American and Allied naval forces had resulted in the capture of Manila in February, landings on Iwo Jima in February, and, on 1st April, American troops landed on Okinawa. This cut off Japan's

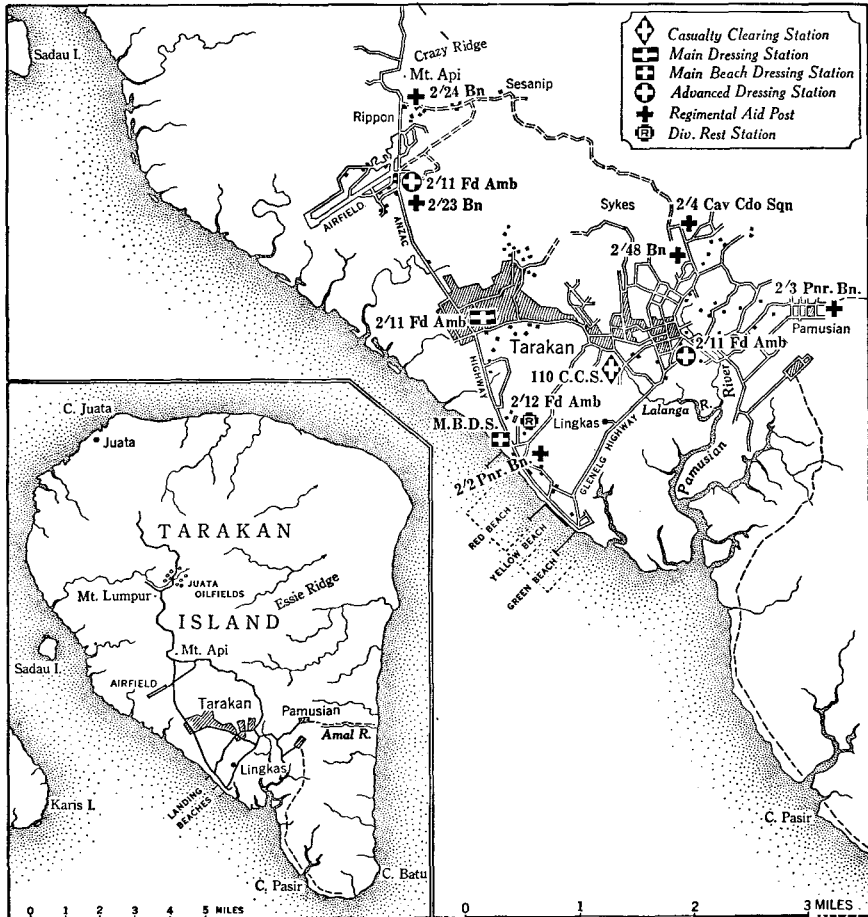


sea route to South-East Asia and the Netherlands East Indies, and restricted the role of the Japanese sea forces to defensive convoys and a certain degree of concentration in the Malay Archipelago. Further air bases on the western islands of the Philippines Group were secured by the Eighth United States Army and airfields were now held within fifty miles of the North Borneo coast.

The bases set down for attack by operations in Borneo were of great importance by reason of their value as sea and air bases and their oil refineries.

TARAKAN

Changes and postponements of dates were inevitable, as so many factors were involved in an Allied Combined Operation. Finally the target date for the invasion of Tarakan was set at 1st May (P-day), in order to take advantage of the higher tides, which would offset somewhat the shallow approach to the landing beaches over deep mud. I Australian Corps, using the 26th Brigade Group, was assigned the task of taking and holding



the island, and to overcome the enemy so that the Allied naval and air forces might be able to further the operations of the corps. On 11th April a final conference examined the coordinated plans of the three Services; these were approved by the commander of the I Australian Corps. A rehearsal of the main landing was carried out at Morotai on 19th April without beaching landing craft, as there was no suitable beach. All

operations were mounted from Morotai. The code name for this operation was Oboe 1.

Anti-submarine patrols were provided on the approach route and air support was given by strikes on appropriate targets for several weeks beforehand. Ground defences were attacked and such of the oil installations as would be used by the Japanese. In addition the Allied air forces provided cover for the Naval Task Force and convoys, and supported the landing and associated operations. The airfield on Tarakan was on a road of access, known as "Anzac Highway", which ran to the neighbouring Lingkas beach and was unserviceable owing to damage inflicted by Allied air attacks on the neighbouring airfield.

Sea approaches were treacherous, but it was essential that access be ensured early. This was of particular importance to the medical services, as the establishment of an L.S.T. area offshore was desirable during the early phases of the action, in order to provide for evacuation of wounded. Naval units in support of the Tarakan operation included the light cruiser H.M.A.S. *Hobart*, destroyer H.M.A.S. *Warramunga* and landing ships *Manoora* and *Westralia*.

A preliminary operation was planned for the day preceding P-day in which low-level attacks were made against obstacles, and on P-day medium and heavy strikes were directed against the beach area and known enemy gun positions.

The medical units allotted to the brigade were: the 2/11th Field Ambulance under command of Lieut-Colonel S. J. Douglas; the 2/12th Field Ambulance, commanded by Lieut-Colonel N. H. Morgan; the 110th C.C.S. under command of Lieut-Colonel W. V. Russell, and the 2nd A.A.M.C. Company, Beach Group. Two weeks before the operation began on Tarakan the 2/4th A.G.H. opened at Morotai.

Morgan acted as S.M.O. of the force, and the A.D.M.S. of the 9th Division was Colonel W. W. Lempriere. The beach maintenance area was under control of the 2nd Beach Group, and detachments from the 1st Base Sub-area were included to assist the development of a base until this could be handed over to a garrison force. The total strength of the land assault force was 11,804. The A.A.M.C. Company, Beach Group was a new type of unit introduced early in 1944 to meet certain needs felt in amphibious landing operations and had a War Establishment of five officers and seventy-four O.Rs. Two surgeon specialists were included in the establishment.

As a preliminary to the assault operation, the 2/4th Cavalry (Commando) Squadron and a field battery made a landing on Sadau Island, a small island between Borneo and Tarakan. This was designed to support the main landing to be made on the next day on beaches in the Lingkas area. It was unopposed by the Japanese.

LANDING ON TARAKAN

An hour before sunrise on 1st May, P-day, and preceded by a severe bombardment from naval ships and the 2/7th Field Regiment on Sadau

Island and strikes by aircraft, the 26th Brigade Group landed on Tarakan. A detachment of "B" Company of the 2/12th Field Ambulance accompanied the commando squadron in its landing on Sadau, but had no casualties to treat. No enemy troops were found on the island and the ambulance detachment moved to Tarakan two days later.

The assault landing on Tarakan was made simultaneously on Green and Red Beaches. All the tracked landing vehicles were allotted to the 2/23rd Battalion and the L.C.V.P. (landing craft vehicle for personnel) to the 2/48th Battalion. The facilities for a landing assault on Tarakan were few. The only suitable beach was about a mile in length, flat, soft and muddy, and at high water exposed only a strip which, though firm, was narrow. Lingkas beach was sub-divided into three parts, Green, Yellow and Red Beaches. The approaches were difficult, for the interior of Tarakan Island was hilly, and the Japanese had set many mines and obstacles on the beaches and farther inland.

MEDICAL ARRANGEMENTS

Two sections of "A" Company of the 2/11th Field Ambulance with Major R. A. Douglas and Captain A. G. Rowe landed with the battalions, but the sections with the 2/23rd Battalion were unable to land owing to beach difficulties. The beach area was very congested, especially in the part selected for the main beach dressing station. Major F. D. Williams established a medical post with "A" Company of the 2/12th Field Ambulance and a surgical team with the 2nd A.A.M.C. Company, Beach Group for urgent cases. This detachment was of help in relieving pressure on the medical company at critical stages. The S.M.O. directed that all casualties were to be evacuated to L.S.T., which had surgical teams, and were to be held at the beach dressing station only if unable to be moved.

In all areas the progress of the infantry was slow, as the enemy opposed them strongly with fire from well concealed positions. Next day resistance continued and shells were falling too close for comfort near the field ambulance. The collection of casualties was difficult and dangerous, and their number was heavy in some areas.

The M.B.D.S. was again hard pressed with work, and the 2/12th Field Ambulance had a surgical team attached to it. There were numerous small native cottages in the area, and in one of these the 2/12th Ambulance on 3rd May had set up a resuscitation centre, where a plentiful supply of stored blood was to hand. Some of these wounded required prompt transfusion and the Julian Smith direct blood pump was found very useful for rapid giving of blood. Two surgical teams were working there, and men requiring only minor surgery were sent back in L.S.T. surgically equipped. Jeeps were used for the transport of wounded, although the enemy were only 300 to 400 yards distant.

The numbers actually handled by L.S.T. were much below their theoretical capacity; they usually stopped receiving after taking fifteen surgical cases, and resumed after six to eight hours. The 2/24th Battalion advanced along the Anzac Highway towards their objective, the airstrip,

while the 2/48th Battalion progressed on the flank. When the situation was clear the M.D.S. was moved to a group of small native huts and set up in an old native hospital near the crossroads. The dressing station was still too close to the fighting but there was no alternative. During the evening of the 3rd, the 2/24th Battalion sustained over forty casualties near the airstrip. The road was under fire and collection of casualties was very difficult; tanks were used at first, until later, when jeep ambulances could be used to transport the remaining wounded.

The 110th C.C.S. had attempted to land its heavy section from an L.S.T. on Green Beach on P-day, but was thwarted by enemy artillery fire. Next day, the heavy section was successfully landed. On the 3rd, the C.C.S. was sited in the M.B.D.S. built up area, which contained a large number of small concrete cottages, and after spraying with D.D.T., occupied them for surgical work. Majors J. W. Sangster and C. H. Horsley were attached to the dressing station for theatre work. The close proximity of the enemy snipers on the ridge nearby and the possibility of infiltration made it necessary to cover all approaches at night. Major W. B. Dorsch of the light section was brought ashore and with Captain W. F. J. Cammack acted as assistant to the team, which was attached to the 2/11th Field Ambulance M.D.S.

On the nights of the 4th and 5th the Japanese came in as close as 200 yards to the M.D.S., and working conditions were most difficult. Small arms fire sometimes cut the power lines, and periodic outbursts of artillery added to the noise and discomfort. The diarist of the 2/11th Ambulance tersely remarked that "no M.D.S. could have been nearer the front line". The 2/23rd Battalion came up on the left flank to assist the 2/24th Battalion to capture the airstrip, and an A.D.S. was set up on the strip to control the handling of casualties from the battalions. The commando squadron was finding it hard to expel the Japanese from Tarakan Hill, and on 5th May Captain D. L. Thomas, R.M.O. of the unit, was severely wounded. By the end of this day Tarakan Hill was cleared, and the force thus gained control of the town area. On the same day the airstrip was taken after heavy opposition. The Japanese also had to be cleared from Mount Api in order to secure the airfield; this task was undertaken by the 2/23rd and 2/24th Battalions.

"A" Company of the 2/12th Field Ambulance opened a rest station on the 7th; on the same day Colonel Littlejohn, Consulting Surgeon, arrived and gave great assistance. He was able to reassure the surgical teams that patients were arriving at Morotai in good condition.

An added difficulty in the current situation was that the roads were heavily mined, and unsafe for vehicles. Japanese were still very close to the medical units. In spite of the posting of picquets there was continued danger of infiltration by the enemy: this was emphasised when a Japanese placed a bomb under an occupied bed in the isolation ward of the M.D.S., killing the patient.

Active patrols of the 2/24th Battalion were pressing to the north towards the Juata oilfield with slight opposition, though the 2/48th Bat-

talion encountered resistance in the central sector near the area known as "Sykes", which was only a little south of the Japanese headquarters at Sesanip. South of Sesanip the 2/4th Commando Squadron also had sharp encounters with the enemy.

The M.D.S. of the 2/11th Field Ambulance now ceased to admit patients; instead they were sent direct to the 110th C.C.S., which was more favourably sited in the old hospital. The military situation was rapidly coming under control, but there were still hostile episodes and the enemy held on to some strongly defended positions. A sharp engagement by the 2/3rd Pioneers produced a number of casualties, seven killed and seventeen wounded. Bearers found the task of carrying in the wounded most difficult and exhausting. On the 12th a series of attacks from the south made little impression on the enemy, but strong air strikes, followed by a battalion attack, forced a Japanese retirement and on the 16th the 2/3rd Pioneers reached the east coast at Amal. Patrols were then able to penetrate as far as Cape Batu without opposition, and the greater part of the Cape Batu Peninsula was cleared of enemy forces.

The headquarters of the 2/12th Field Ambulance was now going back to Morotai, leaving the divisional rest station to be taken over by the 2/11th Ambulance, while all casualties went direct to the C.C.S. The work of the medical units was centring chiefly on medical as contrasted with surgical work, as casualties dwindled in numbers.

The military picture changed, and the 2/24th and 2/48th Battalions carried out wide flanking movements with the object of confining the Japanese force and isolating it from all tracks leading to Sesanip. Towards the end of May the enemy still showed strong opposition in their defended areas; there was also a temporary shortage of ammunition, but at the beginning of June strong air strikes lowered the Japanese morale, and, though counter-attacks were made, they met with no success. Patrols blocked the main escape routes which the Japanese were likely to use, for Intelligence learned that a break-out was to be expected on 8th June. Air attacks were planned to block this move, but bad weather prevented them; counter-attacks were made by the Japanese on the night of the 10th, but these failed. Captured documents had suggested that the Japanese designed to do as much damage as possible in their expected break-out assault, and in anticipation of the possibility of the 2/24th Battalion being cut off in the oilfield area, special medical precautions were taken. Major J. P. Lyttle and Captain L. H. McMahon were sent to establish a surgical centre at Juata but the need did not arise. By the 14th, patrols discovered that the enemy had already begun to withdraw from their headquarters area, and had prepared reserve positions towards Essie Ridge. This feature was promptly attacked from all directions, thus hindering the enemy from establishing new positions, and the 2/23rd and 2/24th Battalions advanced along the ridge.

A detachment of the 2/48th Battalion proceeded by L.C.M. to the mouth of Amal River; this was accompanied by a detachment of the 2/11th Field Ambulance, but activities were limited to patrolling. From

this point onwards the campaign was virtually over. The enemy was dispersed over a very wide area, and land and water patrols attacked numerous small parties. Some of these were killed, some were captured, and hunger drove others to return to their previous haunts where they were ambushed or surrendered. During July and up to the time of general capitulation the enemy forces on Tarakan were steadily reduced.

During these last weeks the medical units on Tarakan carried on with the usual handling of casualties. Fortunately these were few, though during May and early June when the Japanese were more pressing and active, occasional clashes produced more casualties. On 28th May more attention was called for on the Juata oilfield, where numbers of a dengue-like fever were occurring. This need was met by an A.D.S. sent by the 2/11th Ambulance. Colonel Morrow, Consulting Physician, had arrived on the 22nd and was of great assistance in the disposal and handling of medical cases. He initiated an enquiry into cases of unexplained eosinophilia among the troops. On the whole the health of the forces was good; malaria, dysentery and other infections were well controlled. On 31st May the hospital ship *Manunda* arrived and embarked casualties.

By 1st July the airstrip at Tarakan was effective, and air evacuation began, mainly of patients from the Balikpapan landings by the 7th Division.

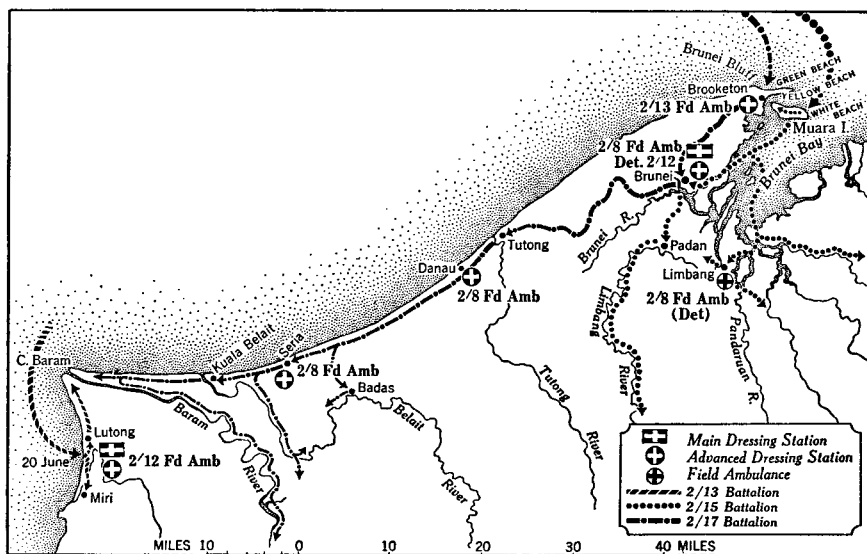
During July the operations on Tarakan were reduced to patrolling and general control measures, until the 15th August brought the collapse of the Japanese forces. The operations on Tarakan were of considerable intensity during the first active weeks, during which both the enemy and the Australian forces suffered many casualties. Australian casualties included 225 killed and 669 wounded; the enemy losses for the campaign as known were 1,540 killed and 252 taken prisoner.

BRUNEI BAY-LABUAN ISLAND

The second stage of the operations on Borneo, known by the code name of Oboe 6, was designed as a combined assault on Brunei Bay and Labuan Island, and was planned to take place in succession to the landing on Tarakan.

Topography. This area of north-western Borneo was particularly valuable for its rich resources of oil and rubber, and these natural advantages, together with its location and its possession of the best harbour along the north-west coast, made it most suitable for an advanced fleet base. The bay was thirty by eighteen miles in extent, and its entrances were commanded by the island of Labuan, with a town of some pre-war importance with port facilities at Victoria Harbour. Muara, another small island, lay off the mainland in the southern part of Brunei Bay; the town of Brunei, the largest in the area, was a few miles inland on the southern peninsula. The country along the coastline was flat and swampy; Labuan Island was hilly and covered with rain forest. There were several beaches suitable for amphibious landings in the area of Brunei Bay, and one on Labuan Island. Those selected were Brown Beach, near Victoria Harbour on Labuan Island, White Beach on Muara Island, and Green Beach on the

mainland at Brunei Bluff. A further beach was chosen, named Yellow Beach; its proximity to the waterfront at Brooketon with its wharves and jetties made it specially suitable for use in the maintenance of supplies. Plans made during April set the target date for the Brunei Bay operations on 23rd May, but lack of a serviceable airstrip at Tarakan and the time spent in assembling the assault force for Brunei at Morotai caused postponement. The final plan selected 10th June as Z-day, when simultaneous assaults would be made on Brown, White and Green Beaches.



These operations were assigned to I Australian Corps, which employed the 9th Division less one brigade. A rehearsal of the 20th and 24th Brigade Groups was held at Morotai on 31st May and 1st June, and on the following day a final conference was held of representatives of the three Services.

The convoy sailed from Morotai on the afternoon of 4th June, and covered the 1,100-mile voyage without incident. Preliminary mine-sweeping operations were carried out, together with sea and air bombardments, which were intensified during the week immediately preceding the beginning of the operation. The assault convoy arrived before dawn on 10th June and took up pre-arranged positions off the landing beaches.

LANDINGS ON BRUNEI AND LABUAN

After a heavy preliminary bombardment by naval and air forces, landings were made simultaneously at 9.15 in the morning on the three selected beaches, by the 20th Brigade on Green Beach, and White Beach and by the 24th Brigade on Brown Beach. The medical units assigned to the Brunei operation were the 2/8th Field Ambulance, commanded

by Lieut-Colonel Refshauge, a detachment of the 2/13th Field Ambulance, a small detachment of the 2/12th Field Ambulance, and the light section of the 2/1st C.C.S.

MEDICAL ARRANGEMENTS

"B" Company of the 2/8th Ambulance landed with the 2/17th Battalion on Green Beach. Arrangements were made for any early casualties to be transferred to L.S.I. *Kanimbla* by L.C.V.P., but the landing was unopposed. "A" Company of the same ambulance landed with the 2/15th Battalion at White Beach on Muara Island, here too there was no opposition. The 2/17th Battalion secured the beachhead at Brunei Bluff and later in the day began to advance along the road to Brunei town.

On the following day the advance continued with slight resistance from small parties of Japanese. The M.D.S. of the 2/8th Ambulance landed on Yellow Beach and was established in the Brooketon area. The headquarters of the 2/8th Ambulance set up in a building in a flat grassy area among palms and rubber trees. The Senior Medical Officer was assured by brigade headquarters that the M.D.S. staff and stores would be in the first landings after the taking of Yellow Beach. Actually the M.D.S. was among the last landed, a delay that might easily have been serious. Medical arrangements were further consolidated by the arrival of the light section of the 2/1st C.C.S., and the setting up of a beach dressing station by the detachment of the 2/13th Field Ambulance, and the settlement of the 2/12th Ambulance detachment in the M.D.S. area. Very few casualties required attention, but large numbers of natives came in to the beach dressing station, and the section in charge established a native treatment centre in a native compound.

Light sections of the 2/8th Field Ambulance went forward with the 2/17th Battalion and the 2/15th Battalion when this unit came over from Muara Island. One company of the 2/15th Battalion crossed the Brunei River near the town, and advanced towards the Limbang River; its medical care was also given by the 2/8th Ambulance. On the 12th, Brunei town was captured and on the next day was cleared. It had suffered extensive damage by air attack and enemy demolitions: air spraying of the area with D.D.T. was begun on the 11th and this and other preventive measures were continued in the town after its occupation.

Casualties from Brunei were sent by road to Brooketon, but in some discomfort as the road was bad, and the journey to the M.D.S. took four and a half hours. The rapid advance was imposing some difficulty on evacuation of sick and wounded; movement from Muara was being made by barge from Yellow Beach. The A.D.S. of the 2/8th Ambulance was forward with the battalions. The 2/13th Ambulance had landed a detachment at Labuan as well as Brooketon, and casualties waiting evacuation to Labuan were thereafter cared for at the 2/13th Field Ambulance beach post. The light section of the C.C.S. in the Brunei sector packed, and was ready to join the remainder of the C.C.S., while the M.D.S. at Brooketon was closed on the 16th ready for movement to Brunei.

COASTAL ADVANCE FROM BRUNEI

By the middle of June the 2/17th Battalion was advancing swiftly by motor transport along the coastal road and reached Tutong without resistance on 16th June. This movement was an important corollary of the landing at the Brunei area, as on the occupation of the part of the southwestern peninsula depended questions of supply of oil and rubber. On the 20th a force known as "Coconut" Force, comprising the 2/13th Battalion Group and the headquarters of a light section of the 2/12th Field Ambulance made an unopposed landing at Lutong.

The most striking medical feature of this movement was the condition of some 200 released Indian prisoners of war. More than half needed hospital attention, and in the words of the A.D.M.S. "their condition was pitiful. The main complaints were malnutrition and nutritional oedema, malaria, dysentery, helminth infection, beriberi and tropical ulcers of the legs, some of which required amputation."

Patrols of the 2/13th Battalion moving north made contact with the 2/17th Battalion patrols on the 27th at Cape Baram: other elements of the battalion occupied Miri, down the southern coast of the peninsula. When this movement was complete the area from Brunei to Miri was under control. Surgical attention was provided should any be called for in this sector; an A.D.S. was set up at Seria by the 2/8th Field Ambulance, and a surgical team was attached. Such arrangements were made necessary by the length of time which was needed to bring casualties from Tutong or farther down the coast.

Meanwhile the 2/15th Battalion had been sub-divided: one company accompanied by the R.M.O., Captain F. A. L. Bacon, went to Padan experiencing only slight resistance; a second company was taken by landing craft to the Pandaruan River and occupied Limbang on 18th June. Small detachments of the 2/8th Ambulance supported these parts of the battalion. In view of the possibility of further Japanese strength existing in the Miri sector, the A.D.S. was brought farther back along the coast to Kuala Belait on 6th July and the M.D.S., having closed at Brunei, took over from the A.D.S. on the 14th.

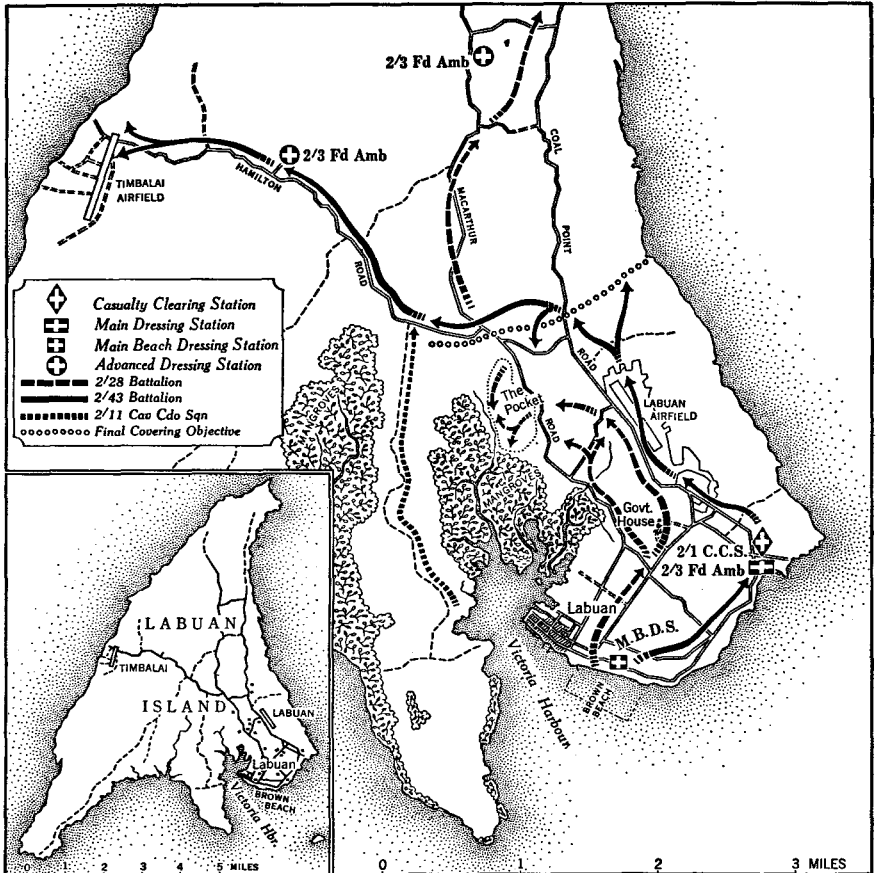
The 20th Brigade was occupied with extensive patrolling from three main battalion bases, Brunei, Kuala Belait and Lutong. The 2/8th Ambulance was responsible for the Brunei-Kuala Belait sector and the 2/12th Ambulance for the Miri-Lutong area. A post was established at Baram River by Captain L. G. Redgrave, and on the 18th three battle casualties were received from the 2/17th Battalion. Evacuation along the coast was on the whole simple, as both sea and land routes were practicable; from most areas casualties were transported by barge and distances imposed considerable delay in some places.

By the end of July the position was static. The medical arrangements were always adequate for the requirements, and could have coped with much greater tasks if necessary. In the 20th Brigade there were only thirteen battle casualties, forty-seven sick and twenty-five non-battle injuries.

THE ISLAND CAMPAIGNS

LABUAN ISLAND

The site selected for the landing on Labuan Island, Brown Beach, in Victoria Harbour was the only practical choice, since it was the only beach free of reefs. Full discussion and rehearsal prefaced the landing, and the order of battle provided for 29,361 troops. The plan was that the 24th Brigade should land on Labuan on a two-battalion front, with the 2/43rd Battalion on the right and the 2/28th Battalion on the left. The 2/13th Battalion was the brigade reserve and the 2/32nd Battalion remained afloat as a divisional reserve.



Naval and air support was provided for Labuan as for other landing areas, and preliminary bombardment was arranged for 10th June.

The task assigned to the 24th Brigade was the capturing of Labuan airfield, and a covering position to the north. This airfield was one of two on Labuan, the second was at Timbalai on the west coast north of the main settled areas. The 2/43rd and 2/28th Battalions were each accom-

panied by a section of the 2/3rd Field Ambulance; both battalions made an unopposed landing. Owing to successive arrivals on Brown Beach there was some congestion on the beach, but the 1st A.A.M.C. Company Beach Group set up a main beach dressing station. The two battalions advanced by roughly parallel roads towards the Labuan airstrip, with the 2/43rd on the right flank. On this flank the resistance was very slight, but the 2/28th Battalion met determined resistance in the Government House area. There were a few casualties in this unit; they were evacuated by the beach company to the L.S.I. *Manoora* and *Westrallia*. During the first twenty-four hours after landing and before an M.D.S. was established, evacuation to L.S.I. was found a valuable measure; so too was the placing of a surgical team on board for treatment of battle casualties during the first day. As the troops approached the airfield stronger opposition was encountered from the Japanese. By evening the airstrip was captured, though the 2/43rd Battalion was still under enemy fire from the western side.

The 2/28th Battalion sent a company to clear Labuan town, and advanced to the north-east less than a mile, when enemy fire caused a halt. The support of tanks enabled the troops to take the area eastwards to Coal Point Road, which ran to the north past the airfield. Further attempts to advance to the north evoked strong resistance. Next day this objective was gained without trouble, and the 2/28th Battalion advanced on two parallel axes west of the airfield. The going was difficult, but the columns made contact on a cross track and when evening closed down they confronted the Japanese in strongly defended positions.

MEDICAL ARRANGEMENTS

While the 24th Brigade was advancing, the 2/1st C.C.S. and the 2/13th Field Ambulance landed, and after spraying the area, set up an M.D.S. in a native hospital. On the 12th, patrols of the 2/43rd Battalion found strong enemy pockets along MacArthur Road, which ran north past the western lines of the 2/28th Battalion. The 2/43rd Battalion outflanked one strongly defended locality, and while one company with tanks dealt with this, pressed on to the north towards the Timbalai airfield, making contact with the 2/11th Cavalry (Commando) Squadron which had moved up from the coast opposite Victoria Harbour. The result of these manoeuvres was to encircle the enemy's main defensive line, thus keeping him contained while the rest of the island was cleared. The Timbalai airfield on the west coast was an important objective, against which the 2/43rd Battalion was employed while the 2/28th Battalion was engaged in pressing on to the northern tip of the island. The Japanese north and west of Labuan airstrip had meanwhile been concentrated in an area known as "the pocket", which could be dealt with by the two battalions once the Timbalai airfield was fully under control.

Medical cover for these operations was given by a section of the 2/3rd Field Ambulance, supporting the 2/43rd Battalion, while another section was assigned to the 2/28th Battalion. Evacuation to the main beach

dressing station was carried out by the 1st A.A.M.C. Beach Group. On the 11th the M.D.S. began to receive and hold patients. A surgical team was installed at the M.D.S. supplemented by another team from the 2/1st C.C.S.

The 2/1st C.C.S., under command of Lieut-Colonel R. G. Worcester, after landing on 10th June, had gone inland but were unable at first to reach the staging area as this was under fire. A week later the unit took over a site from the 2/3rd Field Ambulance, and on the 16th a rush of casualties kept the unit busy for some hours with help from Major D. C. Sword of the 2/6th A.G.H. surgical team. Over 150 patients had been admitted since midnight. The splitting of the C.C.S. into its two sections was regretted by the staff; it did not favour efficiency in spite of the willing help of other units. Numbers of recovered Indian prisoners of war were admitted with infections, malnutrition and tropical ulcers.

Air evacuation to the base was possible and three severe battle casualties were returned to Morotai by Catalina flying boat; two men with head injuries and one with a compound fracture of a thigh. In the assault waves landed at Brooketon with the 20th Brigade was "A" Company of the 2/13th Field Ambulance, this part of the unit formed a beach dressing station.

Once the general control of Labuan Island was gained two other objectives remained, the disposal of the enemy in the pocket, and the carrying out of landings on the mainland to the east of the island. The pocket was an area some 1,200 by 600 yards, consisting of wooded spurs surrounded by swamps. From 13th June intense bombardments were carried out from land, sea and air, and three days later a company of the 2/28th Battalion with tanks gained a dominating position, commanding all approaches. The enemy resisted attack for three more days, and on the 20th two parties of Japanese tried to escape, but most of them were killed. Heavy attacks on the next morning destroyed most of the defenders of the pocket. The Japanese lost over 100 in this action, and had suffered 389 casualties since the landing, while the 24th Brigade Group lost 34 killed and 93 wounded. On the 15th, the M.D.S. in dealing with casualties from the 2/28th Battalion unexpectedly admitted twenty-five battle casualties in a short time. The next day the A.D.Ss. moved forward and the M.D.S. was handed over to the 2/1st C.C.S.

Landings at Mempakul. Another landing was made on the 19th at Mempakul on Klias Peninsula on the mainland across the East Channel from Victoria Harbour. The 2/43rd Battalion and attached cavalry, known as Scarlet Force, was accompanied by "B" Company of the 2/3rd Field Ambulance which established an A.D.S. after the unopposed landing. Evacuations were made from here to the 2/1st C.C.S. on Labuan.

Moves to Weston and Beaufort. On the 23rd the 2/43rd Battalion advanced overland in the direction of Beaufort. Another section of the ambulance moved in support of this battalion, and the next day "A" Company embarked with a surgical team on an L.C.M. via Weston and Padas River. This part of the unit proceeded up the Padas River and



(Australian War Memorial)

Beach Dressing Station, 2/8th Field Ambulance on Z-day, White Beach, Muara Island.



(Australian War Memorial)

The M.D.S., 2/8th Field Ambulance, Brooketon, Brunei Bay.



(Australian War Memorial)

A stretcher case being moved back to the R.A.P., 2/43rd Battalion, Beaufort,
by hand trolley on the railway line.



(Australian War Memorial)

Casualty from Beaufort being brought down to L.C.M. for evacuation.



(Australian War Memorial)

Infantrymen who were wounded in the final mopping up operation on Labuan Island receiving medical attention on ambulance jeeps at a roadside clearing station.



(Australian War Memorial)

Adjusting patient's Thomas splint during operations on Labuan.



(Australian War Memorial)

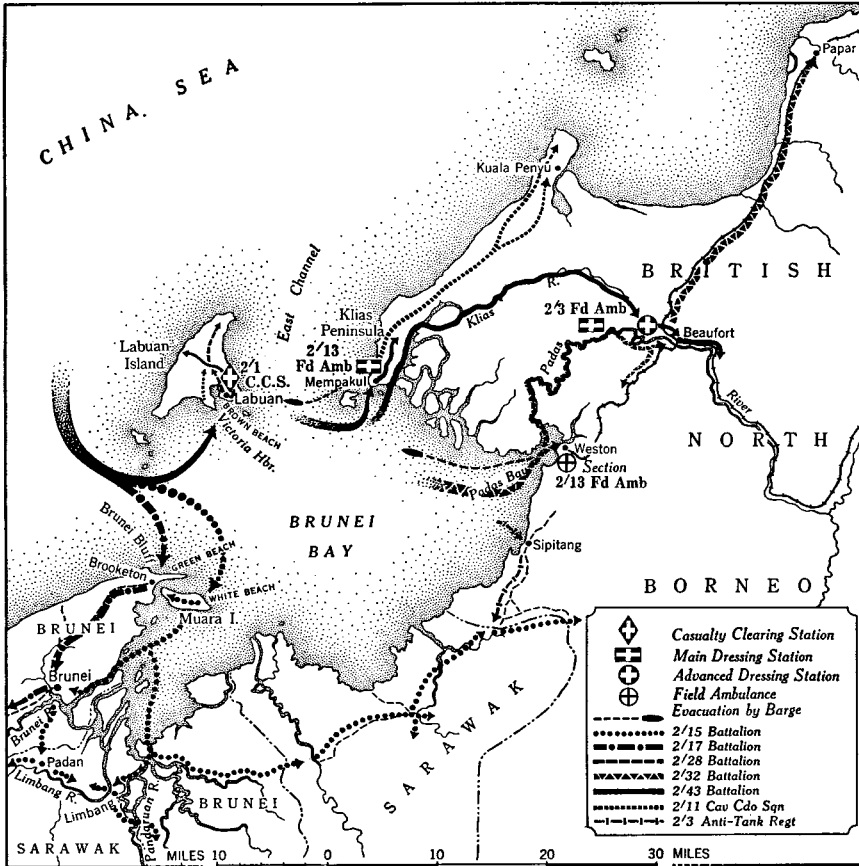
A tank driver, wounded in the advance west of Labuan airstrip, is carried back by stretcher bearers.



(Australian War Memorial)

Treating a stretcher casualty from the 2/43rd Battalion at Beaufort, north-west Borneo.

on the night of the 27th-28th the surgical team was very busy dealing with patients needing resuscitation and surgical measures. During this night and the succeeding day thirty-three battle casualties were dealt with.



An ambulance barge took patients back to the 2/1st C.C.S. at Labuan. On the 30th the M.D.S. was to move to Beaufort, leaving a small detachment to care for wounded men unfit for further immediate movement. These general moves illustrated the value of a field ambulance carrying D.D.T., as immediate occupational use of buildings was secured by prompt spraying.

After Beaufort was captured the enemy began to withdraw in small parties, many of which were destroyed either as they attempted to infiltrate past the company positions or by tanks sent up during the night. Further attacks with artillery disorganised the enemy who withdrew into the hills. The M.D.S. of the 2/3rd Field Ambulance moved into Beaufort, a settlement of industrial importance, and on 6th July a detachment of this ambu-

lance accompanied the advance of the 2/32nd Battalion into the village Papar along the railway line.

From this base patrols continued to discourage further activity along the river and to the north. A detachment of the 2/13th Field Ambulance set up an A.D.S. at Papar, and the position remained static. From Papar to Miri all the important portals of entry were now under Allied control, and the 9th Division's assignment in Brunei and Labuan was fulfilled.

Medical Work on Labuan

The medical units still had some work to do, and for the purpose of an occupation force had plenty of assistance. The 2/4th A.G.H., under command of Colonel T. G. Swinburne, went on from Morotai to Labuan on 16th June to select a site. On 5th July their nurses and physiotherapists joined the unit and on the 16th the hospital opened for patients. On 2nd August Littlejohn visited the unit and saw in consultation several men seriously wounded: there were then over 100 patients in hospital.

The 2/6th A.G.H. arrived at Labuan Island on 10th July, and the site was being developed on 9th August. Before the hospital could admit patients on the 27th the Japanese had capitulated.

Meanwhile in the hospital area the 2/1st C.C.S. had been working on: their nurses had arrived by air from Morotai on 26th June, but even with this help it was a relief to the unit on 5th July to send back 163 patients by the hospital ship *Wanganella*. The help of nurses of the 2/4th A.G.H. who arrived on the hospital ship was welcome. Early in July the commander moved out to a camp hospital at Timbalai. The number of coloured patients admitted and held was increasing: the white patients were transferred to the 2/4th A.G.H. or discharged.¹

When the news arrived of Japan's surrender the C.C.S. received instructions to expand to a bed state of 400, foreshadowing the return of prisoners of war from the eastern zone, to care for whom the 2/14th A.G.H. was being sent to Singapore.

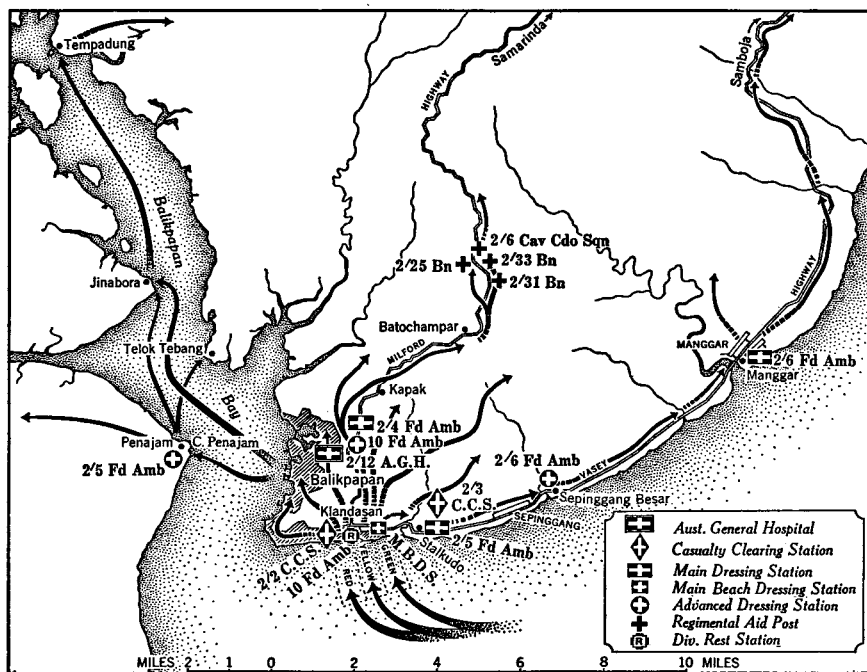
BALIKPAPAN

The final plan for the operations on Borneo assigned the landing on Balikpapan to the 7th Division. The code name for the operation was Oboe 2. Some delay could not be avoided in confirming a target date, but General Headquarters issued the operations instructions on 7th May, and in these set the date at 28th June. The movement of the 7th Division was authorised under the command of Major-General E. J. Milford. The 26th Brigade at Tarakan constituted the corps reserve for the operation, and arrangements for the landing at Balikpapan presumed the airfield at Tarakan to be then in working order.

Topography. The operations centred round the large and important oil refinery centre of Balikpapan to which oil was conveyed in pipe-lines for refining, and also from Java and elsewhere. The coastal plain was narrow,

¹ Australian casualties for Labuan and Brunei Bay areas: killed in action 9 officers, 105 other ranks; wounded in action 15 officers, 206 other ranks.

and the hills overlooking it rose steeply to 700 feet in height. Dense rain forest came close to the coastline and was intersected by rivers. Balikpapan Bay, consisting of several deep estuaries, afforded good anchorage. The



petroleum refineries were situated on the eastern side near the town of Klandasan, and were still in use by the Japanese before being destroyed by the preliminary bombardments. Near Klandasan there was one firm beach suitable for landing. There were two good roads; that known as Vasey Highway running along the coast, and Milford Highway traversing the hills. Two airfields were in the vicinity of the town area; the larger, Manggar, twelve miles to the east of the town; the smaller, Sepinggang, five miles from Balikpapan. Both were unserviceable from Allied air attacks, but capable of repair.

FINAL ARRANGEMENTS

Delays in movement of troops engaging in the Brunei operations affected also the naval units, especially cruisers and mine-sweepers, as these were needed for preliminary support in the Balikpapan action. Consequently General Headquarters set the final date of the assault at 1st July, and additional sea transport units (L.S.T.) were allotted to the force concentrating at Morotai where a rehearsal was held on 24th June. Two days later the 950-mile journey from Morotai to Balikpapan began. As in other amphibious operations preliminary mine-sweeping, sea and air bombard-

ments and underwater demolitions were carried out as a prelude to the assault. At the last minute it was found possible to include the reserve brigade and a reduced number of R.A.A.F. troops in the assault force, this brought the total on the order of battle to 33,446 men.

The medical units free to partake in this action comprised the 2/4th, 2/5th, 2/6th and 10th Field Ambulances, the 2nd A.A.M.C. Company Beach Group, the 2/2nd and 2/3rd C.C.Ss., 2/12th A.G.H. and 23rd Malaria Control Unit.

Landings. The assault landings began about 9 in the morning of 1st July on the beach between Klandasan and Stalkudo, sections of which were divided and were known as Red, Yellow and Green Beaches. The 21st Brigade under Brigadier I. N. Dougherty and the 18th Brigade under Brigadier F. O. Chilton landed simultaneously with one battalion forward on Green Beach, and two battalions on Red and Yellow Beaches. The task of the 21st Brigade was to advance coastwise along Vasey Highway to seize the Sepinggang and Manggar airfields. The 18th Brigade was to seize the high ground, destroy the enemy in the town, and free the harbour for early use. The first assault wave landed on all beaches simultaneously; the landing was unopposed. By the end of the first day most of the high ground overlooking the beachhead was under control, but the 18th Brigade encountered strong resistance north of Klandasan.

MEDICAL ARRANGEMENTS

When the assault troops landed, the surgical team of the 2nd A.A.M.C. Beach Group began work at the main beach dressing station, under Major C. D. Donald, relieved and assisted by Major H. B. Gatenby. Half of the light section of the 2/2nd C.C.S. helped with these arrangements, and part of the bearer company of the 10th Field Ambulance. There was no undue congestion on the beach.

On the following day the 25th Brigade landed to deal with the central sector, freeing the 18th Brigade for an advance north, and for over-water landings to the south. During the day the 2/5th Field Ambulance landed in small detachments and established an A.D.S. at the same site as the main beach dressing station. In addition dressing stations were ready for work on each beach. The 2/6th Field Ambulance, under command of Lieut-Colonel R. J. Humphery, also established an A.D.S. and this and other medical units found some difficulty in landing equipment and stores on account of the rough seas. Casualties were not held at the 2/6th A.D.S. but evacuated without delay to the main beach dressing station 1,000 yards away. There was adequate movement and no uncomfortable congestion on the beaches. On the second day Humphery, a commander of great experience, was accidentally killed; Captain R. J. Allsopp, R.M.O. of the 2/5th Cavalry (Commando) Squadron, had been killed in action on the previous day.

Opposition was encountered in some quarters, but on the third day less resistance was met in the capturing of Balikpapan town. "A" Company of the 2/6th Field Ambulance moved up the coast in support of

the 2/14th Battalion and the 2/3rd and 2/5th Cavalry (Commando) Squadrons. While "A" Company set up an A.D.S. at Stalkudo, "B" Company remained at a site near the beach area, and continued to collect and evacuate the casualties from the 2/16th and 2/27th Battalions. Anti-malarial measures were taken on the coastal strip by air spraying with D.D.T. from five Mitchell bombers.

On 4th July the 21st Brigade seized Manggar airstrip, while the 25th Brigade cleared the enemy from Klandasan. Many delays, some due to roadblocks and damaged bridges, were encountered along Vasey Highway when sending on casualties; as hitherto, all went direct to the M.D.S.

The rapid advance of troops with long distances between battalions made contact with the R.M.Os. difficult to maintain. A light section of the "B" Company of the 2/6th Field Ambulance moved up to the Sepinggang-Besar area. Casualties were light, but parts of the roads were bad and stretcher bearers had to be sent to jeepheads on damaged portions of the track to assist in transport.

The 2/4th Field Ambulance under command of Lieut-Colonel G. N. Young and the light section of the 2/2nd C.C.S. landed on the 7th, and on this day the 2/6th Field Ambulance opened its M.D.S. Meanwhile on the 5th, the 2/9th Battalion with "A" Company of the 2/5th Field Ambulance in support, moved over water from Balikpapan and landed on Cape Penajam, with artillery and tank support. An A.D.S. was established with a medical staging post through which casualties could be sent to Balikpapan by returning supply craft. Only one patient who was accidentally wounded needed treatment. Further unopposed landings were made later at Jinabora and Telok Tebang.

The 25th Brigade in its advance northwards towards Milford Highway at first met strong resistance, but overcame this and secured high ground near Kapak. Their left flank was covered by patrols of the 2/6th Cavalry (Commando) Squadron who made little contact with the Japanese.

Most of the patients admitted to hospital were not seriously ill, the commonest cause being upper respiratory tract infections; a few patients had pyrexia of unknown origin and there were only four cases of diarrhoea in the first week.

The L.S.I. *Kanimbla*, *Westralia* and *Manoora* arrived at the end of this week, and cleared the holding units on shore, taking twenty battle casualties and forty-two other transferred patients. The L.S.T. 777, equipped for surgical work, was enabled to clear its patients also. The 2/2nd C.C.S. opened for work on 8th July.

The 25th Brigade now went forward along the Milford Highway, towards Samarinda. Some strong opposition was encountered, but all was clear by the 9th. The next day more resistance was found at Bato-champar where strong defences had been prepared by the Japanese, apparently for a final stand in this locality.

Patrols located strong enemy positions, and artillery concentrations were directed into these continuously for the next three days. The Japanese made many attempts to infiltrate company positions but were driven off.

On the 9th the enemy posts were found empty. The 2/33rd Battalion after sharp clashes found the enemy making further withdrawals. There was heavy fighting in the Batochampar area on the following day. The 2/6th Commando Squadron outflanked the enemy, and the 2/25th Battalion, relieving the 2/31st, repulsed them and inflicted casualties. In view of this strong resistance at Batochampar the forces were redistributed, and advance continued on both flanks despite heavy enemy opposition. Some of his well defended positions were captured and destroyed, and the enemy was almost encircled on the night of the 21st-22nd when he broke away and withdrew.

Medical cover was given by "A" Company of the 10th Field Ambulance till 18th July when the 2/4th Field Ambulance opened its M.D.S. and the unit stretcher bearers took over from the 10th Field Ambulance attached to the 25th Brigade R.A.Ps. A surgical team comprising Major Donald and Captain W. L. H. Keller from the 2nd A.A.M.C. Company Beach Group was attached to the M.D.S.

Further medical units had arrived. The 2/12th A.G.H. arrived on 14th July but did not open; the following day the 2/3rd C.C.S. opened to receive casualties. In the meantime an advance was being made up the Vasey Highway by the 21st Brigade, by first the 2/14th Battalion and on the 11th by the 2/27th. The 2/27th Battalion occupied Samboja on the 18th without meeting opposition. Patrols received information from native sources concerning Japanese troops to the north and the 2/16th Battalion was brought forward. A light section of "A" Company of the 2/6th Field Ambulance had accompanied the advancing force, but there was little work to be done. The "B" Company was engaged in preparing an M.D.S. at Manggar, and on the 21st it was open for patients.

Captain R. E. R. Gillespie and two O.Rs. of the "A" Company light section went to Samboja on the 22nd to investigate the general health, treatment and medical supplies for immediate needs of the natives. On the following day "A" Company closed its A.D.S. and moved to the M.D.S. area.

Meanwhile members of the Australian Army Nursing Service had arrived at Balikpapan on 27th July, both for the 2/2nd C.C.S. and the 2/12th A.G.H. Though flares of action had, during the latter part of this brief operation, given periods of intermittent activity to the field medical units, there was latterly, little to do. A certain amount of epidemic and seasonal illness occurred, and at the end of July some increase of malaria was noted, but not to a degree which caused anxiety.²

General Milford notified the 28th July as a rest day to mark the conclusion of the campaign: this was followed shortly by the conclusion of hostilities.

Medical units were provided on a generous scale for the Balikpapan landing. Most of the work was done by the field ambulances, including the medical company of the beach group. The larger units, comprising

² Australian casualties for Balikpapan: killed in action 23 officers, 206 other ranks; wounded in action 44 officers, 590 other ranks.

the 2/2nd and 2/3rd C.C.Ss. and the 2/12th A.G.H., did comparatively little, and the cooperation of the landing ships saved the field units from the necessity to hold an increasing number of sick as had occurred in other actions of more intense and prolonged type. It may be noted that the nurses arrived at the larger holding units within some two weeks of the units' opening. The most important aspects of the medical contributions to the taking of Balikpapan were those relating to prevention.

MEDICAL ASPECTS

Though each of the operations in Borneo had distinctive features, the medical aspects had much in common, for this campaign was part of the Allied "grand plan". From the medical point of view this was important, for large strategical enterprises like these produced a flow of ample resources of personnel, supplies and transport. The forces engaged in the "Oboe" operations thus had certain advantages, but even so, their sickness rates were encouragingly low. (See table page 398.)

Diarrhoeal disease. During these operations nearly 1,100 cases of diarrhoeal disease occurred, but there were no serious outbreaks. A minor epidemic began early on Morotai, but it remained mild and did not attain any degree of prevalence in the field. The type responsible could not be ascertained in about half the cases; this was probably due in part to the routine use of sulphaguanidine in aid posts, thus aborting the disease in many instances and making the organisms less readily viable in cultures when the patient was admitted to hospital. Some of these strains appeared to be resistant to sulphaguanidine, but responded to sulphamerazine. Amoebic infection was rare, and most of the attacks were clinically of the mild bacterial kind.

The standard of hygiene was high in most areas, and all ranks throughout the corps were well trained. At the end of 1944 the D.D.M.S. I Australian Corps, Brigadier Furnell, was able to state confidently that the troops had attained a high standard. This standard was maintained at a sufficiently high level during the landings and the development phase of the actions to prevent any outbreaks of dysenteric infection, but some casualties due to this cause were observed in well-trained units shortly after setting up camp in staging areas.

Lieut-Colonel C. E. A. Cook, Assistant Director of Hygiene at Advanced Land Headquarters, reporting on the hygiene of the force during the Borneo operations, showed that 80 per cent of such cases observed during June were traceable to the transit camp, where a high fly population was discovered in garbage dumps left or still in use by Allied troops.

Further inspection of the Morotai Details Depot Transit Camp during June revealed a highly insanitary camp, swarming with flies, with dumps of unburned organic waste. The latrines were defective and not fly-proof, and soil pollution had occurred. In spite of strong recommendations that immediate reconstruction of the area be undertaken, great difficulties were found in remedying basic defects, and the dysentery rate rose. Further

vigorous efforts secured improvement, whereupon the rate steadily fell. This was an example of the risks run by troops staged in an infected area in a base where important combined operations were being mounted.

Infective hepatitis was infrequent in the corps, a fact which may be directly related to the standard of hygiene and sanitation of a force. Only thirty cases were reported; one death occurred in a case in which there were severe complications. Strict isolation was practised with these patients.

Malaria did not constitute a danger, as only 218 cases occurred during the operational period. Less than half of these (97) were of primary origin, though most of these were of the malignant tertian type. Mildness was a notable feature of the clinical illness, and no serious complications occurred during the operations.

Malaria control. The low incidence was in itself good evidence of efficient control, though had the physical conditions during the actions been less favourable the results might not have been so good. The 2/3rd Malaria Control Unit and the 6th Army Mobile Entomological Section were attached to the 20th Brigade and found the discipline good, and anophelines few in number, though *Aedes* were plentiful. Dengue was expected, and this forecast was realised. Air spraying was not always satisfactory, in fact at Labuan it was called a "farce", since the aircraft flew too high and did not spray the maintenance area of the beach. Much D.D.T. was wasted in this instance and the need for good organisation between Services was apparent. It appeared that the Japanese had carried out some degree of larval control in places. Adult mosquito control was carried out by the control unit.

Dengue was reported in 413 men, but, as is usual, it was certainly more prevalent than was at first apparent, owing to doubts in diagnosis. The "dengue-like" illness seen in the early stages of the Tarakan landing was surely dengue in most instances. Colonel Morrow, who reported on the medical features of the Oboe operations, thought that the incidence was more probably about 600.

Mite-borne typhus did not appear during the early operations, but twenty-six cases occurred in all. Most of these were mild, though there was one death. The majority of cases could be traced to the airfield areas on Balikpapan, thus illustrating the well-known regional incidence of the disease. Care was taken in the application of miticide, dibutyl phthalate before troops entered suspected areas.

Ankylostomiasis was expected, but only eighty-one patients were admitted to hospital with this primary diagnosis, though routine investigation of patients in hospital for other cases showed that its actual incidence was widespread, though usually symptomless. Other worm infestations were also found.

Respiratory Infections. The comparatively high incidence of upper respiratory tract infections was an unexpected feature. Most of these infections came from Morotai, and pursued the force into the Tarakan, Brunei-Labuan and Balikpapan areas. Symptoms were usually seen in such epidemics, but there were no significant complications.

Skin affections were an important cause of invalidity as in other areas. Dyshidrotic dermatoses were a common cause of evacuation, and to a less extent, mycotic infections, especially of the feet. Of 17,555 admissions to medical holdings units 12.32 per cent were due to skin diseases, whereas only 1,543 battle casualties (9.19 per cent) were admitted.

It was observed that 21 per cent of men admitted for skin affections were sent back to the mainland; these conditions were responsible for more casualties and more evacuation to Australia than any other cause during the Borneo campaigns. Lichenoid dermatosis was not of statistical importance as a casualty producer, causing only 77 out of a total of 2,748 dermatological affections. A research plan was formulated in July for investigation of tropical skin affections, but when hostilities were concluded this could no longer be pursued. Up to that point general agreement was found with previous work done on dyshidrotic conditions, such as those found in *miliaria rubra*. As a temporary measure undue washing of the skin with soap followed by the use of powder was discouraged, and instead the application of animal fat such as lanoline was encouraged. X-ray treatment was available at the 2/5th A.G.H.: this was helpful in securing return to duty in numbers of men with skin affections.

Psychopathic disabilities caused a smaller proportion of illness than was originally expected. Only 360 patients were admitted to hospital, with a ratio of psychoses to neuroses of 1 to 4. About two-thirds of the psychotic patients were of the schizoid group and had to be sent back to the mainland, but good results were obtained by the use of convulsive therapy before moving them back to Australia. Prompt use of this measure appeared to have a favourable effect on the mental state and to have some influence in preventing mental deterioration. Fear and exhaustion states were well handled by the R.M.Os., especially at Tarakan.

In general the Borneo operations were a striking lesson in the value of preventive medicine and surgery. The use of beach groups as well as field ambulances gave wider scope in the handling of battle casualties, and surgical teams provided ample assistance. Difficulties in evacuation of sick and wounded occurred of course, for the tactical difficulties inherent in the landings were considerable where the operations were resisted by the enemy. Special care was taken to supply blood for resuscitation, and other supplies as a rule were adequate.

Native population. Special problems emerged in connection with the native population. Not only were they very dirty, and a hindrance to those working in the forward areas, but there were no satisfactory surgical facilities for treating them ashore. This difficulty was enhanced by the fact that casualties often first occurred among the natives; to meet this it was recommended that a unit should land early, with surgical equipment, and be experienced in the handling of natives needing attention. Keeping the troops away from these natives was in the interests of hygiene in general. During the Brunei operations a compound was established on shore between the beach group and the M.D.S. Medical arrangements were in the hands of a company of the 2/13th Field Ambulance. Though only

a few natives suffered battle casualties, their injuries were severe; two lost limbs. Beriberi was prevalent, and so too was yaws. The spleen rate was high, and dysentery was endemic. The natives whose condition was poorest were the Javanese, who were the victims of slave labour. The Chinese were fairly healthy. The health of the inhabitants was regarded as most important by the medical services, and on 4th August a medical survey was distributed to medical officers by the D.D.G.M.S. of Advanced Land Headquarters. This suggested that natives in compounds should be examined for malarial parasites and micro-filariæ, and for organisms and worms parasitic in the alimentary tract. Anaemia, tuberculosis, pneumonia, frank vitamin deficiencies, tropical ulcer, yaws and venereal disease also demanded thought, and if necessary, investigation. A number of possible avenues of enquiry were mentioned, including the macrocytic and iron deficiency anaemias; it was pointed out that most of a recent group of Indian prisoners of war had haemoglobin levels below 10 grammes per cent. Medical officers were encouraged to initiate and pursue some line of clinical investigation among members of the indigenous population.

Stores. These were on the whole satisfactory. Where an advanced depot medical stores was set up close to the M.D.S. the arrangement was very convenient. Syringe packages for injection of morphine were not satisfactory: those of Australian manufacture were often faulty and could not be used. Drugs were in good supply, but at one time penicillin threatened to become scarce because of a strike of glass workers in Australia.

Blood and Serum. Daily supplies of thirty litres were sent by air to the Brunei-Labuan front; ten litres of this was ferried to Brunei by sea. The blood arrived in good condition, but some delay occurred in the return of empty box containers. Fuller supplies were planned, but were not required, as blood was obtained from local donors.

Surgical Work. Changes were rather in the means of organisation than in technical methods. Surgical teams were fully available, though sometimes the conditions favoured the sending on of wounded. In the past, treatment has been successfully given under sketchy conditions inevitable through the extent of time and distance. Nevertheless the difficulties imposed by amphibious landings did not necessarily invite primitive conditions. There are times to work and times to wait.

Colonel Lempriere, A.D.M.S. of the 9th Division, remarked in a report on Oboe 6 (Brunei and Labuan):

Heroic surgery under a gooseberry bush at the moment of landing, with a flask of serum dangling from a rifle, is picturesque but unsound. Until reasonable shelter and protection ashore are assured, treatment is limited to the relief of pain and shock and the arrest of haemorrhage and immobilisation of fractures. Evacuation to ships equipped for major surgery covers the initial phase until medical units are fully established ashore.

He further remarked after this operation that the splitting of units does not always increase efficiency. Though it has its place it can be over-done, and separation of the sections of a C.C.S. reduces the value of the heavy component.

The landings in the Oboe 6 operations were completely successful. The simultaneous landings were preceded by bombardment, and landing barges followed the ships covering the assault area. Shore installations were destroyed and the buildings in Brooketon were razed.

Surgical facilities were set up on shore as quickly as possible: occasionally the lack of resistance caused unexpected speed of advance, necessitating changes in the medical plans. Advanced dressing station equipment was complete, and included jeep and trailer, making the set-up more elastic.

Existing buildings could sometimes be used as they were on Tarakan. For example, the 2/8th Field Ambulance sent its advance party in with a surgical team from the 2/4th A.G.H., and used tents and buildings left by the Japanese. In spite of delays in transit due to trans-shipping to barges and to shortage of wheeled transport on land, the M.D.S. was set up in a suitable flat dry area, with all stores to hand by midday on the day after the landing.

Problems of evacuation of sick and wounded. In general these problems followed the usual pattern with certain differences. There were self-contained medical units in strategic areas which were equipped to deal with casualties, and to hold them till further movement was possible. As has been seen, a number of the landings were unopposed, but the later occurrence of occasional severe casualties called on the resources of the units. In the Oboe 6 operations evacuation was simplified by the fitting of two L.C.M. to carry eighteen stretchers, and attaching orderlies who could follow up treatment and attend to seriously wounded men on their way to hospital. These barges carried some equipment, rations and limited comforts; they were roofed and reasonably weather-proof. L.S.M. were used for longer distances, but had somewhat primitive conditions. Further medical facilities were provided by the L.S.I., and designed for use during the assault phases. *Manoora* and *Westralia* carried three medical officers each, and *Kanimbla* two, and could accommodate sixty, sixty and twenty bed-patients and sixty, sixty and fifty ambulatory patients respectively. These facilities were valuable in the early stages of Brunei and other landings before arrangements for medical care were adequate ashore. Some specialist surgical help was available in U.S.S. *Rockymount*, and there were also seven L.S.T., each with two or three medical officers and seventy-five beds.

From R.A.P. to A.D.S. At first patients were moved by stretcher bearers; and later, when advance had been made, by jeep ambulance. A.D.Ss. were established by light sections of a field ambulance company, each of which consisted of one medical officer, one bearer officer and twenty-four other ranks. On occasion, as at the landing on Green Beach on Brunei, there were no casualties, and the S.M.O. of the area decided not to unpack the A.D.S., but to let it move with the battalion with a jeep and a trailer. The equipment of each light section of a field ambulance company was carried by the personnel when on the assault scale, when the total weight was 460 pounds. The full scale with jeep and trailer

allotted to the main body of the company weighed 1,000 pounds. The assault scale provided equipment sufficient to treat 100 patients with a re-supply for two days. Coverage consisted of four 12 x 12 ground-sheets when available.

From A.D.S. The arrangement was that till the evening of the day of landing evacuation was to be direct from the A.D.S. to sea with L.C.V.P. to L.S.I.; during the night the A.D.S. would hold casualties or send on to the M.D.S.

From M.D.S. Road Evacuation. Jeep ambulance plied to the beach post; this was the method used in general for road evacuation. The patients found it comfortable though slow: on Klias Peninsula it took two hours to go nine miles owing to the sandy nature of the track, which was badly cut up by tanks.

Seaward evacuation. Four L.C.V.P. were available to run from Green Beach to L.S.I.; this worked well, the casualties were well looked after and congestion at the M.D.S. was relieved. Ferrying could not be done at night as the channels were too difficult. Of course the time possible for a L.S.I. to remain, depended upon the degree of enemy opposition. At Brunei and Labuan they remained till the afternoon of the day following the landing. Seaward movement of casualties was carried out by assault shipping where possible, and on 5th July the 2/2nd Australian Hospital Ship, *Wanganella*, arrived, and left the same day carrying 162 Australian, Indian and Allied sick and wounded.

Air evacuation was very satisfactory when practicable, but some delays and cancellation of aircraft were unavoidable owing to bad weather.

The outcome of the medical arrangements was very satisfactory. Even with the advantages of these well-wrought plans, the amphibious landings on Borneo were intricate in details, and involved a number of assaults by sea, air and land, and the occupation of some 200 miles of difficult country. Extemporisation was still of value: delays occurred due to lack of prompt transport, or to the problem of catching up with over-rapid advance, or to activity of the enemy. Such matters could be dealt with by experienced field units. Different and more subtle of value were the blessings of preventive medicine. Morrow in reporting on medical aspects of the operations said:

This campaign has been a tribute to preventive medicine. In a force which was never below 70,000 in strength the total number of admissions to all medical units during the five month period under review was approximately 17,000. The highest admission rate from all causes other than battle casualties was 14.3 per 1,000 per week.

The greatly reduced figures for diseases such as malaria, dysentery, typhus, dengue, and other infectious diseases, endemic and otherwise, represented a major advance in the saving of manpower. It must not be assumed that the medical services can take all the credit for this achievement, or that the combatant troops should not be credited with their good training in manner of living. Yet the medical services are responsible for the

standards set and maintained if health is to remain with a force living and fighting in the tropics.

AFTER CESSATION OF HOSTILITIES

Finally it should be noted that while cessation of hostilities put a term to much of the medical work with the forces, it also imposed further responsibilities in the care of prisoners of war of several nations. The professional calls were many to relieve the tragic condition of hundreds of these unfortunate victims of war, and on many fronts these victims of physical damage and spoiled metabolism were freely entrusted to the zeal and care of the medical services.

The medical problems of diagnosis and treatment often called for careful clinical and pathological investigation and other ancillary methods. In chronic infective states, such as dysenteric infections or tuberculosis, the interests of other potential or actual contacts had also to be studied. Amoebiasis, chronic malaria and other vector-borne tropical diseases had to be considered as possibilities, and tropical ulcers might require even drastic surgical treatment.

States of disordered metabolism and dietetic deficiencies often presented difficulties both of diagnosis and handling, and various degrees of starvation often demanded great care in feeding. Special instructions were compiled and circulated dealing with the requirements of ex-prisoner patients; these indicated the diagnostic methods which might be valuable, and gave directions for feeding patients with present or suspected defects of assimilation.

Many variants of vitamin deficiencies were seen, and in some instances required special investigations. Nutritional oedema required biochemical study; special examination of the cardio-vascular system, and the blood, and of the sensory functions were sometimes called for; in particular the existence of nutritional amblyopia was of great importance.

Many of these patients could be passed on to base hospitals on the mainland for fuller investigation, but it was desirable that the pathological bases of these conditions should be early understood. When numbers of repatriate patients were admitted for observation and treatment in a short space of time considerable work was cast on the medical and nursing staffs. This was particularly true of the keeping of medical records, since many of these patients were drawn from the armed Services and would probably require the surveillance of the Repatriation Department. These duties sometimes delayed the closing of medical units, and added to their administrative burdens for a time, but, as might be expected, this work attained a high standard of skilful and assiduous attention. In addition, a certain proportion of medical personnel were required for the routine care of troops still carrying out a defensive role. As far as possible length and type of service were considered in the release of members of the medical corps, and the usual principle was observed that consideration must be given to the patient first.

ADMISSIONS TO MEDICAL UNITS 6th APRIL-7th SEPTEMBER 1945

Admissions	Morotai Area	Tarakan Area	Brunei-Labuan Area	Balikpapan Area	TOTAL ALL AREAS
DYSENTERY					
Clinical	167	37	82	86	372
Bacillary	103	10	19	3	135
Amoebic	6	2	5	5	18
Enteric	4	—	—	—	4
Others	180	101	151	107	539
Whooping Cough	1	—	1	—	2
U.R.T.I.	1,011	109	221	231	1,572
T.B.	5	1	—	1	7
Influenza	—	—	—	1	1
Pneumonia	16	1	5	3	25
MALARIA					
Primary:					
B.T.	1	3	18	21	43
M.T.	1	—	33	17	51
Others	2	—	1	—	3
Subsequent:					
B.T.	21*	20	15	22	78
M.T.	1*	—	3	32	36
Others	5	1	—	2	8
Dengue	28	70	229	86	413
Typhus					
Endemic	1	—	1	24	26
Glandular Fever	1	—	—	—	1
P.U.O.	412	242	365	415	1,434
Skin Diseases	1,075	397	859	417	2,748
Battle Casualties	—	718	218	607	1,543
Non Battle Injuries	557	198	343	429	1,527
V.D.	17	—	19	1	37
Ankylostomiasis	1	41	30	9	81
Measles	4	—	—	—	4
Mumps	5	—	—	—	5
C.S.M.	—	1	1	2	4
Infective Hepatitis	9	2	7	12	30
Brucellosis	1	—	—	—	1
Weil's Disease	—	1	—	—	1
All other diseases	2,449	871	1,368	1,202	5,890
TOTAL ALL CAUSES:	6,084	2,826	3,994	3,735	16,639

Note: * Mixed Infection.