CHAPTER 4

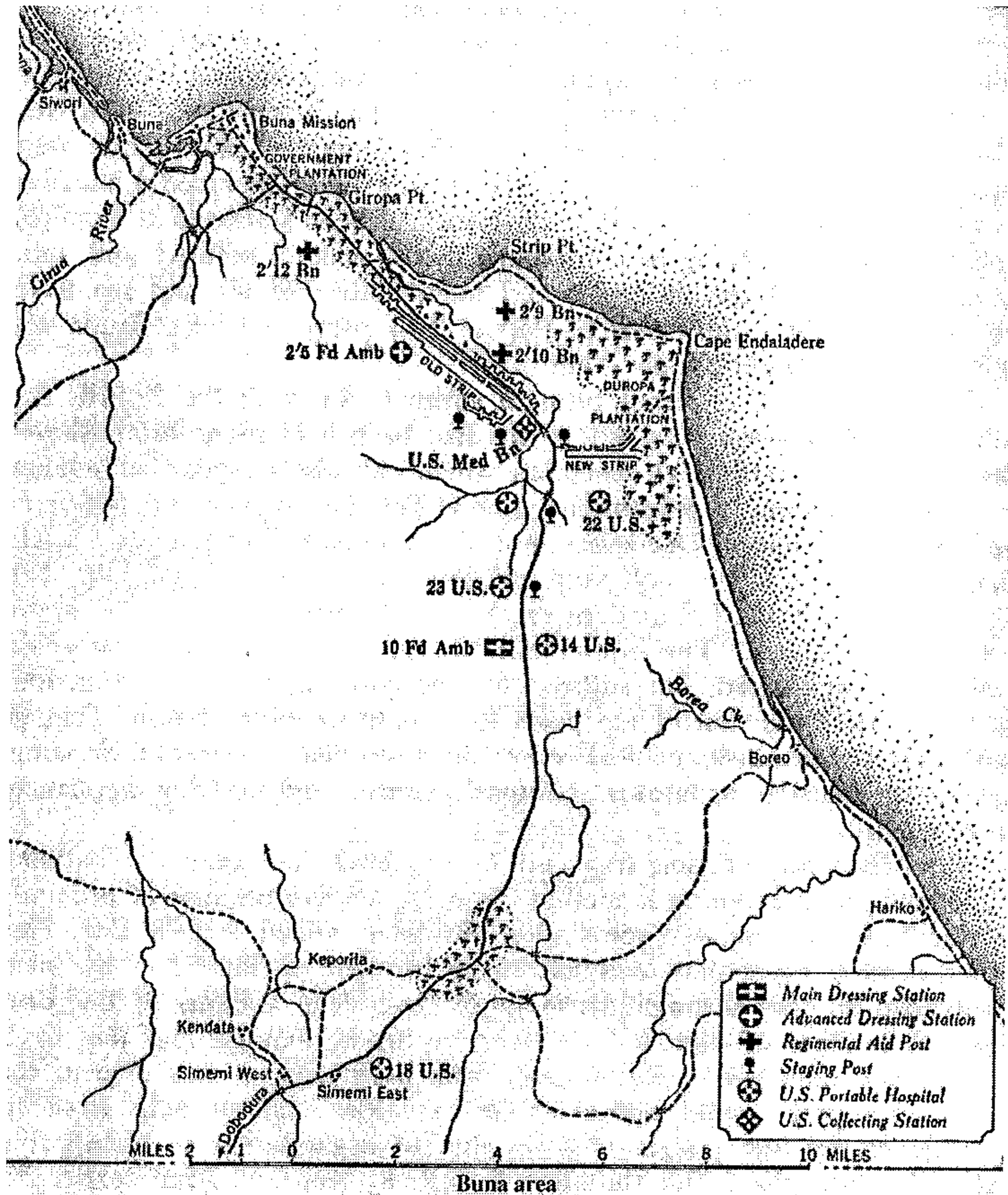
BUNA CAMPAIGN

(17th December 1942 to 4th January 1943)

About the middle of December orders were received from the D.D.M.S. (Deputy Director of Medical Services), New Guinea Force, that a detachment of 10th Field Ambulance personnel were required to be attached to **HAMMER FORCE**. Hammer Force consisted of 18th Brigade Headquarters and the 2/9th and 2/10th Battalions. They were later joined by the 2/12th Battalion. The object of the force was to dislodge the Japanese from the Buna, Cape Endaidere area. The small detachment of the 10th Field Ambulance were required to assist the medical units in the area and to provide surgical facilities for the wounded as close as possible to the action.

They were allotted two planes for personnel and equipment and were to fly from Moresby to Dobodura and proceed by land from there. The party consisted of Major Gavin Johnson and Captain Colin Copland, (medical officers) and 28 other ranks with a surgeon, Major J.M. Yeates attached from N.G. Force. The C.O. and Lieut. Jack McGill and thirty six stretcher bearers followed about a week later. It is difficult at this point of time to give the complete list of those who were on the first two planes. The following were known to have been at Buna and it is thought that the majority were in the first contingent who set up the operating tent and A.D.S.

Sgt.	Jack Caldwell	Sgt.	Harry Cowan
Cpl.	Andy McHattie	Cpl.	Allan Williams
Pte.	Phil Aylwin	Pte.	Ted Lee
Pte.	Ray (Pop) Cook	Pte.	Bill Dickson
Pte.	Harold Hay	Pte.	Dick Holmes
Pte.	Doug Potter	Pte.	Ron Roberts
Pte.	Ken Sutherland	Pte.	Ted Tyrell
Pte.	Steve Langton	Pte.	Alf Phillips
Cpl.	Stan Lucas	Pte.	Jim Loveridge
Pte.	Don Braine	Pte.	Bruce Pascoe
Pte.	Eddie Mott	Pte.	Bill Allen
Pte.	Don Ludlam	Pte.	Jack Standerwick
Pte.	Bill Jones	Pte.	Dick Jones
Pte.	Bill Sturge	Pte.	John Lawrence
Cpl.	Jack Bacon	Pte.	Merv Blow
Pte.	Stuart Smith		



Map.

Major Johnson's party emplaned several times at Ward's drome on the 16th of December but had to turn back owing to either cloud over the "Gap" in the Owen Stanleys or enemy activity and so returned to camp that night. On the 17th they were at the 'drome early and conditions were better. The first plane left shortly after midday and the second followed later. The planes, U.S. C47, or as we knew them DC3, flew low to avoid detection by enemy fighters giving a good view of the rugged country and mountain villages which could be clearly seen through the missing rear door opening. The trip only took 40 minutes and the planes landed at Dobodura on the wet kunai grass strip where they slewed and slithered and eventually came to rest.

The pilots always kept the engines running for a quick getaway in the event of a Japanese air raid and with the aid of New Guinea natives the planes were

quickly unloaded and took off again. Doug Potter recalls the pilot saying, *"Get out as quick as you can, I don't want to be caught on the ground."* and reckoned that as soon as the last leg was out of the plane the pilot was off. His further comment was that all of those DC3 pilots should have been given some kind of an award. Stores and personnel were moved to the cover of trees at the side of the air strip and then to the camp of the 2nd U.S. Field Hospital near the Girua River.

Major Johnson was anxious to get to his destination as quickly as possible and with stores loaded on two jeeps he and a party of four O/R's set off to march to the coast along the Simeni road stopping for the night at Simeni plantation. The remainder of the party were accommodated overnight and fed at Dobodura by the American 2nd Field Hospital. They followed by foot the following day to Simeni. For the advance party it was dark for most of the way and following the man in front along a narrow jeep track, muddy and full of pot holes they eventually reached the plantation and "flaked out", sleeping where they could as there was no camp prepared.

The next day the advance party moved further towards the coast road via Hariko to a position 3 miles behind Cape Endaidere and next to the U.S. 22nd Portable Hospital. A Dressing Station was set up here and preparations made to erect the theatre tent. However when the remainder of the detachment arrived Major Johnson discovered that there was already a detachment of 2/5th Field Ambulance men under Major Lavarack located at a dressing station about one mile behind Cape Endaidere and it was decided to site the the surgical team alongside the 2/5th Field Ambulance A.D.S. so as to be able to treat the wounded at the earliest possible time.

The Attack on Cape Endaïdere.(Dept. of Information Photo)

The march to the coast is very well described by Dick Holmes as follows :-
"At 6 a.m. on Friday 18th we set off with as much gear as we could carry on a 16 mile trek. Little did we realise what was ahead of us. Major Johnson had

advised us earlier that if we must drink, only have sips occasionally - otherwise you will feel debilitated. Our trek was to take us to the coast, to the village of Hariko. Approximately half of the track was reasonable, and could take jeeps. High kunai grass on either side gave good protection from the enemy. The second half was through swamp land, through which a corduroy track had been laid by the engineers. The uneveness made walking difficult, and a big strain on our ankles.

During our trek through the kunai grass we passed through a clearing intended as a dropping zone for stores from aircraft. As we were unaware of the reason for this clearing we were caught by surprise when a DC3 plane approached us at a very low height and suddenly discharged bag after bag of food. We had to run for our lives. Each bag contained two large tins containing army ration biscuits. The bags hit the ground with such velocity that they bounced several times over a considerable distance before stopping.

And so we finally reached Hariko in the late afternoon, all having drunk too much water, the result being we were greatly fatigued. Here we spent one night in a coconut plantation. Ken Sutherland and I set up two man tents for Major Yeates and Major Johnson. On Sat 19th we packed up and moved two miles closer to Cape Endaiadere where a site was chosen in dense jungle. It was necessary to slash a track through the vines and creepers and then make a clearing for the pyramidal tent for the operating theatre, also recovery tent, reception tent and cook house. Our two man tents were located as close as possible wherever we could find suitable locations.

This site was approximately three miles from Buna and approximately thirty yards from the beach and the unit became known as the first Australian Portable Hospital. Our most important tasks were the preparation of the operation theatre and wards to receive the injured and sick. As we had not been provided with a portable operating table we had to make do with an ambulance stretcher mounted on four forked poles which were set into the ground. An army blanket was then put over the stretcher.

During the erection of the theatre tent, Major Yeates spoke to me and asked me if I could make some tables and stands for instruments, the primus stove, and other equipment. It so happened that I had bought a hammer and nails at Maryborough, Queensland in Aug 1942 and so was able to tell Major Yeates that I would willingly do what I could. I went straight to the cook and asked if any wooden boxes could be spared - and was given all I needed. In a short time the job was done and the "furniture" was handed over to Ted Tyrell who placed them in position and covered each with a white hand towel. He then placed kidney dishes, instruments, sterile dressings and other gear, on the tables. In addition he lit the primus stove and soon had boiling water for steri-

lising the instruments. For lighting we acquired two jeep headlights and a car battery.

In due course after approximately two hours Major Yeates returned to our site and expressed his real pleasure in what had been done. He asked me if I would like to join their surgical team. I immediately said "Yes".

On Saturday the 19th December our first casualty was admitted, a young soldier with a bullet shattered hand. After careful consideration Major Yeates decided there was no way we could save the hand, so we witnessed our first operation. After the amputation my first and abrupt shock was to be handed without warning the hand wrapped in a white towel. Major Yeates, whether knowingly or not, did me a great service - he jolted me into the reality of what we were at and my next experience, far worse, was therefore much easier to take.

A copy of Major Yeates report entitled "A REPORT ON THE ACTIVITIES OF A SURGICAL UNIT IN THE BUNA AREA" is reproduced at the end of this chapter. In it Major Yeates states, *"The next morning we started making operating tables and other necessary items of theatre equipment. For this purpose we had brought a carpenter with hammer and nails."* Major Yeates must have thought Dick the unit carpenter and Allan Walker repeats the misapprehension in his book, "The Island Campaigns" when he writes of *"a carpenter brought for the purpose"!* When the Major asked Dick to join the surgical team perhaps he was thinking of his expertise with a saw, as in another part of his report he lists the limited equipment which they were allowed to bring and under Amputations shows simply - A Saw. "Carpenter Dick's" equipment was very limited also. A small hammer and a few nails !

Doug Potter was on picket duty that first night in the coconut plantation and his recollections make interesting reading:

" I remember the first night at the deserted village. I was on picket duty. It was all a bit scary. There were all sorts noises and loud thumps every now and again. I just wonder what we would have done if any Japs showed up. We discovered the loud thumps were coconuts falling. I don't know if anyone got hit by one."

Unfortunately as the detachment marched to their site the first casualties of the battle were passing them on the track. Until the 10th Field Ambulance theatre was operating, the first medical post where the wounded could obtain surgical assistance was the U.S. Field Hospital at Dobodura. The camp was set up the following morning and the first operation performed that afternoon, the 19th of December, 1942.

Casualties were heavy as the 2/9th Battalion were striking fierce resistance from the Japanese who had strongly fortified their positions. The Japanese defending the Gona - Buna - Sananda beachheads were not the tired sick troops who had been pushed back across the Owen Stanley Range - they had been sent to Rabaul to rest. Fresh troops had been brought in from Rabaul and they had sufficient time to dig themselves in by building elaborate bunkers behind coconut tree logs.

Gona had fallen on the 9th of December to the 2/14th and the 39th Battalions, now under command of the 7th Division. These were the very battalions who had first faced the Japanese attack on Kokoda and fought them all the way over the range until they were halted at Ioribaiwa.

Some of the 10th Field Ambulance detachment worked with the 22nd U.S. Portable Hospital and others assisted at the A.D.S. of the 2/5th Field Ambulance under Major Lavarack, mainly treating the sick. Malaria was thinning the ranks of the fighting units and orders were given that patients with a temperature under 104 degrees would not be evacuated but be treated at aid posts or in their lines. Patients whose temperature was over 102 degrees were not sent out on patrol. Others of our detachment worked with the surgical team nursing the post operative cases and attending to preparation for surgery and recovery and finally evacuation. On the 24th of December the A.D.S. was moved up to the 2/5th Field Ambulance site alongside the surgical team camp. The American portable hospital also moved forward. All three detachments

The Operating Theatre Tent at Buna Major Jim Yeates, Surgeon, Major Gavin Johnson, Anaesthetist, Sgt. Jack Caldwell and Cpl. Andy McHattie assisting.

Dec. 19.

S.X. 5899.	Sgt.	Kettley. H.S.	Sigs	Bullet L. Forearm.
N.X. 118031.	Pte.	Murray H.W.	2/9 Bn	Pen. L. Foot.
		Graham B.D.	2/9.	
QX 262		McLeod R.	2/9.	R. Arm Pen. F.B. removed.
QX 1365.	Pte.	Doyle R.H.	2/9.	F.B. removed. Arm & wrist

December 20. 1942

QX. 1257.	Capt.	Taylor. R.	2/9.	R. Shoulder Perf. wound.
QX 23517	Pte.	Castles A.J.	2/9	L. Arm Penetrating No. F.B.
	Pte.	Allan.	2/9.	Thoracic Abdominal Lap. Died.

December 21. 1942

NX 10996.	Pte.	Sutherland R.	2/9	S.W. R. Leg. Amputated. 3" below knee
QX 8838.	Pte.	Nicholson	2/9.	Compound, Fracture, Femur (Died).
QX 11462.	Capt.	Parbury.	2/9.	S.W. R. Leg. (Splinted and evacuated).
QX 3610.	WO2.	Donnelly V.J.	2/9.	Lac Scalp. (excised + [illegible]).

December 22 1942 wounded 8 a.m. Operation 10 a.m.

NX 53450.	Gnr.	Reid S.	2/5 Fld Regt.	G.S.W. Penetrating R. upper Arm & Chest. Both wounds excised. No apparent injury of Pleura. Anaesthetic. Pentothal.
QX. 3432	Pte.	Clay J.V.	2/9.	G.S.W. L. Ankle. (Amputated, 1' below Knee (man. G.A.)
NX 27747	Pte.	Kelly. E.J.	2/9.	Comp. fract. R. Humerus, Amputated, 4" below Shoulder
Capt.		Roberts, S.W. Rt Eye. Excision of Eye.		S.W. L. Forearm. Excised
"		Macgregor GSW. Both thighs. Excision of wounds		S.W. R. Leg. Excised

December 23 1942

Wounded 10 a.m. 22. Operated 9.30. 23/12/42

QX. 7440	Pte.	James. J.	2/9.	S.W. R. Leg. Excised & Piece shell removed from rear of middle of femur.
QX 2163.	Lieut.	Macintosh W.F.	2/9.	S.W. Rt. Knee. Excised. S.W. Rt. Upper arm. Dressing applied.
QX 12259	Pte.	Bambling H.A.	2/9.	S.W. Rt. Buttock. F.B. Lodged near scrotum. Removed & wound excised.
NX 129716	Pte.	Bale C.T.	2/9	S.W. Rt. Buttock. Wound excised F.B. located 8" down inside thigh & removed

Jack Caldwell's Diary of Operations Performed December 19th to 23rd 1942.

co-operated with each other and worked in together to give an efficient service, the wounded needing surgery being operated on within a few hours of being wounded. A copy of Sgt. Jack Caldwell's diary for the first five days is shown.

Cpl. Andy McHattie was a member of Major Yeates surgical team at Buna and remembers Damien Parer, a war correspondent and photographer filming Major Yeates operating on a wounded soldier. In Andy's words he recalls the

incident, *"We were half way through a job. Picking little bits of lead and copper out of a bloke's stomach when a buzzing noise started near my left ear-hole. Major Yeates said "Don't look around. We are making history. That's a movie camera". Damien Parer was using my bare back so the actual operation would not be seen. I had quite a yarn to him later. His knowledge of the fighting in New Guinea was enormous. Incidentally I saw that film much later when we were in Lae. Back and all".*

Andy was known in the surgical tent as the "puff" man because it was his job, among many others, to puff sulphanilamide powder into the wounds before closure. Scientists were working on the development of Penicillin but it was not yet available. Jack Caldwell's mother also saw the film and requested a copy of that segment from Movietone and although the interior of the operating tent is rather dark, Major Yeates operating with Major Gavin Johnson giving the anaesthetic and Jack Caldwell and Andy McHattie assisting can be plainly seen.

The surgical team consisted of Major Jim Yeates, Surgeon, Major Gavin Johnson, anaesthetist, Sgt. Jack Caldwell, Cpl. Andy McHattie, Ted Tyrell, Phil Aylwin and Dick Holmes. They became multi skilled very quickly, each being able to assist either the surgeon or anaesthetist as well as attend to preparation of patients and their recovery after surgery plus sterilization of instruments, bandaging, splinting etc.

The 2/10th Battalion arrived on the 19th December and aided by tanks succeeded in crossing Simeni Creek through seemingly impassable swamp countery and tightened the circle around the entrenched Japanese at Buna. To detract from the arrival of tanks the Brigade Commander, Brigadier Wootten had arranged for Australian Wirraway aircraft to circle the area just above the tree tops. The slow Wirraways, essentially only a training plane, were attacked by Japanese Zeros and one Wirraway pilot claimed to have brought down a Zero.

Snipers were active in the area, many of them operating from "nests" in trees making it unsafe to use the tracks during daylight. The result was that most evacuations were made at night. The small number of medical officers were finding it hard to cope with the volume of casualties. A trial was made operating two shifts, Major Yeates with Major Gavin Johnston anaesthetist by day and Capt Scott with Major Lavarack anaesthetist at night. This did not work as when the officers were not operating they were required either to admit new patients or attend to those already being held, which virtually meant they were working around the clock. With evacuations and admissions being mostly at night this meant long hours for cooks, orderlies and all hands. There was also the difficulty of completely blacking out the operating tent which was stationed only 30 yards from the beach and the Japanese still held the beach.

On the night of the 23rd December an attack was made by Japanese "E" boats on a U.S. schooner off the coast. The "E" boats were engaged by coastal defence guns and there was a fair amount of gunfire and bullets were hitting our camp. Rumours were rife of a Japanese landing in the rear of our forces and preparations were made to move back to a 25 pounder troop of artillery. There was however no landing but there was evidence of infiltration of Japanese through our camp as Dick Holmes picked up a leather wallet containing Japanese money the following morning. Ray (Pop) Cook returning to his tent after dark was accosted by Harold Hay who was on sentry duty and not being quick enough with his password received a blow to the head from Harold. Pop of course had a different story and loved to recount how he single handedly fought off "x" number of Japs, the number varying or increasing as time went on. This incident has been a topic at our reunions now for over fifty years.

"Did I tell you", he starts off rather loudly for the benefit of those around, "how I slew 40 Japs that time single handed ?" so off goes Pop on his fantastic 'story'. Don Ludlam gives us 'the real yarn'.
"It was one of those nights, so pitch black that even the bats were afraid to come out for fear of getting lost. We were new-comers to the forward area and everybody was seeing Japs, hearing Japs, smelling Japs, and in Pop's case he had a battle with some according to him. However, this is my yarn. Now the most sensible thing to do on nights such as that, was to go to your tent before dusk and stay till daybreak, but Pop who is not at all sensible ended up trying to feel his way home through the undergrowth of solid blackness - yes he became hopelessly bushed. You can easily picture the poor frightened fellow crawling round, scarcely daring to breathe and expecting any moment to be jumped on by sixty five thousand Japs which he imagined were all around him. It wasn't very long before he was pounced on - One of our privates who happened to be on guard duty that night, sitting all alone and cursing the pounding beats of his timid heart, fearing he might not hear any warning sounds about him, and also experiencing the same imagination as to the number of Nips surrounding him, when suddenly he hears a movement right by his side which cements the blood in his veins.

Remembering his duty to his country, his responsibility to his sleeping cobbers he leapt out of his trance and SMASH, CRASH, WHOP ! Arms, legs, boots, skulls and false teeth became suddenly involved in a whirlwind jumble and two forms thump on the ground. In a dazed bewilderment they sort out their scattered limbs and brains and sit up gazing at each other. Pop still declares that he was jumped on by a whole battalion of Japs and seeing that he survived to find no Japs around him he boasts that he belted them into nothingness. The sentry sitting beside him was just a coincidence.

Doug Potter also records his experience as follows : *When we moved further up*

we pitched our small tents in the dark wherever we could find a spot. I was just lying down to try to get some sleep when there was a terrific bang!! I was lifted off the ground. The cause was a 25 pounder just a few yards away. The next day I developed a swollen arm and a beaut big boil was coming up so I had my arm in a sling for a few days and consequently did not do any stretcher bearing, except on one occasion. One night most of the unit was up the front and there were just a few of us at the aid post when a couple of fellows came in and said "We need some help." I think Allan Williams was one of them. They had been carrying a big chap, over 16 stone and had come as far as they could and were stuck in the mud. So I went with the other one who was there and between the six of us we managed to bring the stretcher in. The soldier had sprung a booby trap and was terribly knocked about. The medical officers did what they could for him but he passed away in the morning.

In spite of my inability to do stretcher work Colonel Palmer found a job for me. He handed me a pair of scissors and said, "Here cut off all these bandages on the wounded so that I can have a look at them and decide whether they need immediate attention or can go on to Dobodura. I was also a member of the burial team at Buna."

Capt. Copland was detached from the unit and sent as R.M.O.(Regimental Medical Officer) to the 2/9th Battalion in place of Capt. McGregor who had been wounded. We were sorry to lose him, a really "good scout" and an excellent doctor. He was familiarly known in the unit as "Jiminy Cricket" and Jack Standerwick tells the following story of him; *"Captain Colin Copland, familiarly known as "Jiminy Cricket" was shaving with a mirror hung on a tree. The mirror must have reflected the sun and the result was a machine gun burst through the top of the tree. Jack reckons the Captain sure hopped up to his name"!*

Another incidence Jack recalls whilst at Buna at the 2/9th Battalion R.A.P. was when they were again fired on by a Japanese machine gun. Capt. Cook of the 2/9th set out and successfully destroyed the Jap M/G post and was awarded a bar to his Military Cross. He had earned the Military Cross at Tobruk in 1941. He again distinguished himself at Sananada by wading with his company through chest deep water to clear a Japanese stronghold which had been holding up the allied advance on Sananada for 36 hours.

On Christmas Day our detachment received a small tin of fruit salad for Christmas dinner !

The area was very short of stretcher bearers but this was relieved when on Christmas Day our C.O., Lieut. Col. Palmer arrived with 12 more. He also became the Senior Medical Officer in the area. On 28th December a further 24

stretcher bearers arrived in charge of Lieut. Jack McGill. Stretcher bearer squads were posted to each of the 2/9th and 2/10th Battalion R.A.P.'s and the 2/5th Field Ambulance stretcher bearers were relieved. The bearers would bring the wounded back to relay posts from where it was possible to use jeeps to transport the casualties back to the A.D.S.

On the 27th of December, in order to shorten the evacuation line from the 2/10th Battalion and also shorten the track for jeeps a new site was with difficulty chosen for the A.D.S.. Most of the country was either kunai grass clearing which was too exposed or sago swamp which gave some cover but was low lying and swampy. It was hard to find a spot sufficiently elevated to enable tents for personnel, patients and cooking to be erected. Particular difficulty was experienced with siting latrines which easily became water logged.

The 10th Field Ambulance detachment now consisted of the original party with Major Johnson, Major Yeates and 28 other ranks, the C.O.with another 12 stretcher bearers and Lieut.Jack McGill with his 24 bearers. The stretcher bearers were stationed at the various R.A.P.'s and mainly only returned to the A.D.S. to sleep. The move to the new site involved an interruption to operating of only half a day.

Evacuation from our new A.D.S. of lying cases was by native carriers using stretchers improvised from blankets and poles. Walking wounded and sick were transported by jeep to the 2nd U.S. Field Hospital at Dobodura for eventual evacuation to Port Moresby.

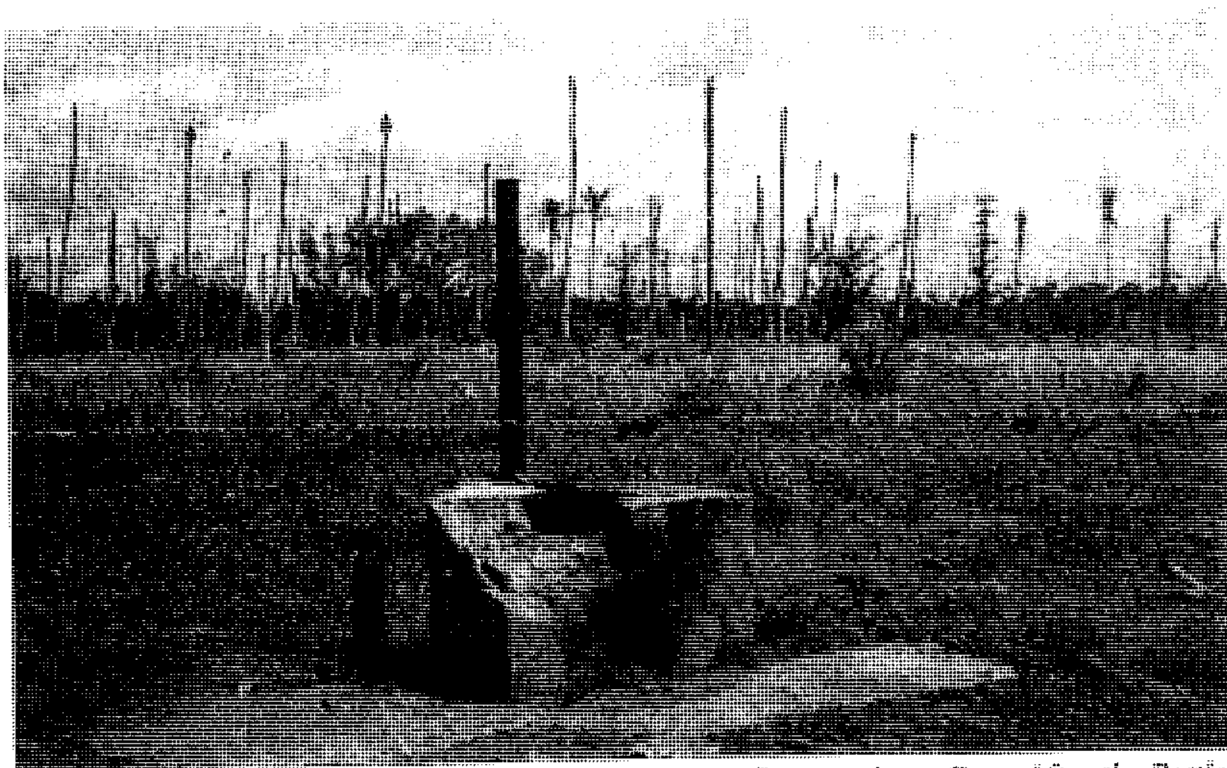
The Japanese were still resisting strongly and the Australian battalions and the US 127th Regiment kept the pressure on them but still had not been able to break through and take Buna Mission. On 30th December the 2/12th Battalion arrived from Goodenough Island and took over the attack from the 2/10th Battalion which by now was weakened by sickness and malaria.

An attack by the 2/12th Battalion was planned for the 1st January and a Dressing Station of the 10th Field Ambulance was set up in the vicinity from which the 10th Field Ambulance stretcher bearers were responsible for evacuating patients to what had now become virtually our M.D.S. where the operating teams were working. Jack Caldwell recalls it also being known as the 1st Australian Portable Hospital.

On the 1st January 151 casualties were handled with stretcher bearers working day and night. The carry was a long one and the ground very swampy and difficult to negotiate. The surgical teams were only able to handle a fraction of the battle casualties and the remainder were evacuated to Dobodura for transfer to Moresby. A certain amount of transport was saved by holding patients likely to make a quick recovery and then returning them to their units.

The planned attack was successful with the 2/12th Battalion, assisted by artillery and tanks, and despite the swampy conditions, driving right through to the beach. This allowed the U.S. 127th and 128th Regiments to capture Buna Mission which had up till now resisted all attempts at capture. By the 2nd of January the main Japanese resistance was over and enemy troops were withdrawing where they could. The allied offensive had been strongly resisted by the Japanese and casualties had been heavy.
The long working hours began to tell on the staff and the strain on the surgeon, anaesthetist and theatre staff working 18 hour stints became evident. In normal conditions these hours may have been tolerable but with the heat and humidity, mud ankle deep and poor lighting, concentrating on the operation in hand as well as keeping a watchful eye on the patient on the recovery stretcher was a mammoth task. Nursing staff on duty day and night and the cooks who may be called on to provide hot food for a patient at all hours, the hygiene man who had to keep the latrines working even after a tropical downpour were all as it were "in the same boat" - Flat out !

Care of patients at Simeni along the evacuation route from the M.D.S. to Dobodura for which the 18th US Portable Hospital was responsible became a problem and on the 1st, 2nd and 3rd of January the 10th Field Ambulance sent one orderly (all that could be spared) with a driver to Simeni Plantation to intercept the native bearers and jeep patients and to give hot drinks, check and adjust dressings and give morphia if necessary.



Devastation. Buna After the Battle.

On 2nd January there were 62 admissions to the M.D.S., 37 battle casualties and 25 sick. With only 25 being able to be evacuated to Dobodura the M.D.S. was holding and caring for 77 patients, 27 wounded and 50 sick, a mammoth task with limited staff. On the night of 2nd and 3rd January heavy rain fell and the whole area became a swamp with all the tents under water greatly adding to the difficulties of the limited staff as well as adding to the discomfort of both patients and staff.

Tents and flys had to be used separately to try to protect and make the patients comfortable. The staff's two man tents leaked and were useless in the conditions. However, the situation improved after several fine days and the new site of the M.D.S. proved its worth by providing rapid evacuation to Dobodura.

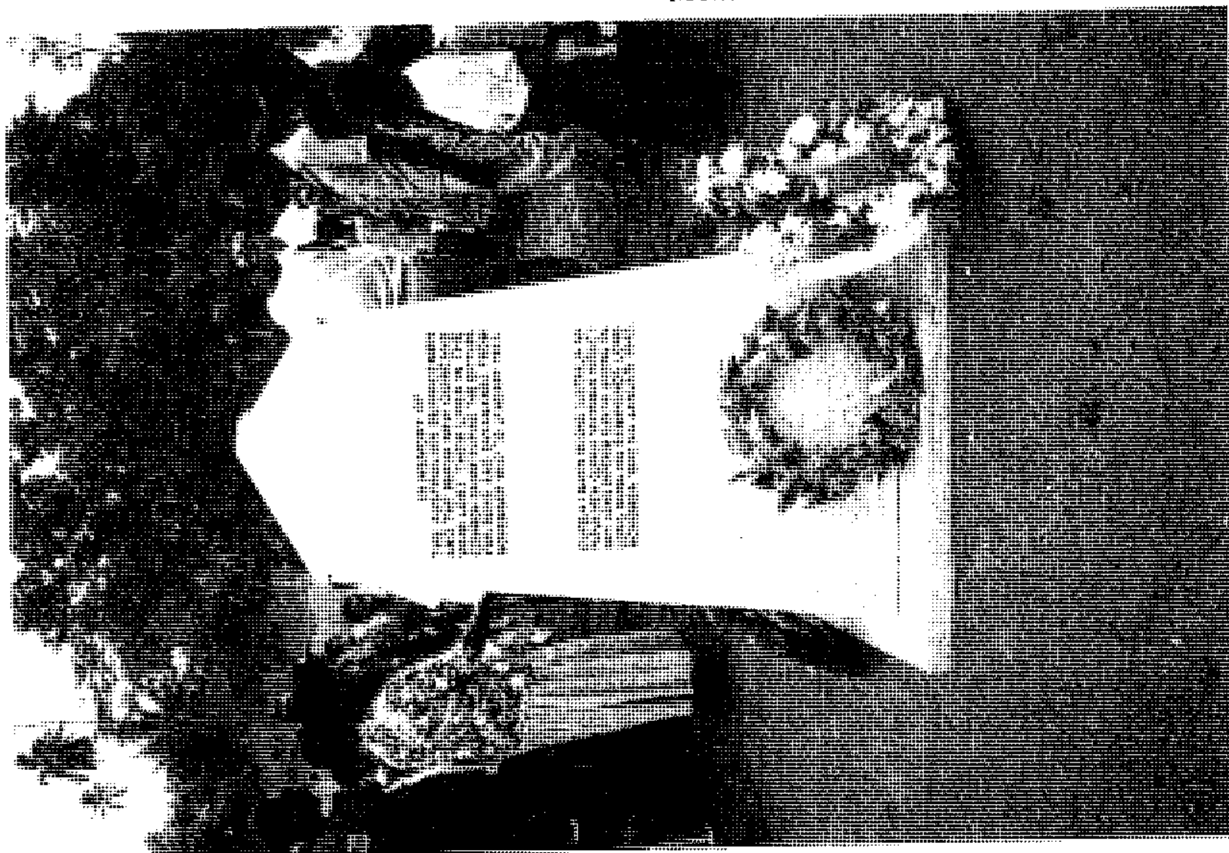
By the 2nd January the Japanese had been cleared out of the Buna area. The 18th Brigade under Brigadier Wootten, to which the 10th Field Ambulance sections were attached, together with the US 127th and 128th Regiments had been continuously engaged in this action from 18th December 1942 to the 2nd January 1943. Dr Allan S Walker wrote in his book, "The Island Campaigns", *"The combined forces fought hard and continuously, facing great difficulties and hardships in the formidable obstacles of nature and the determined resistance of a strongly defended enemy."*

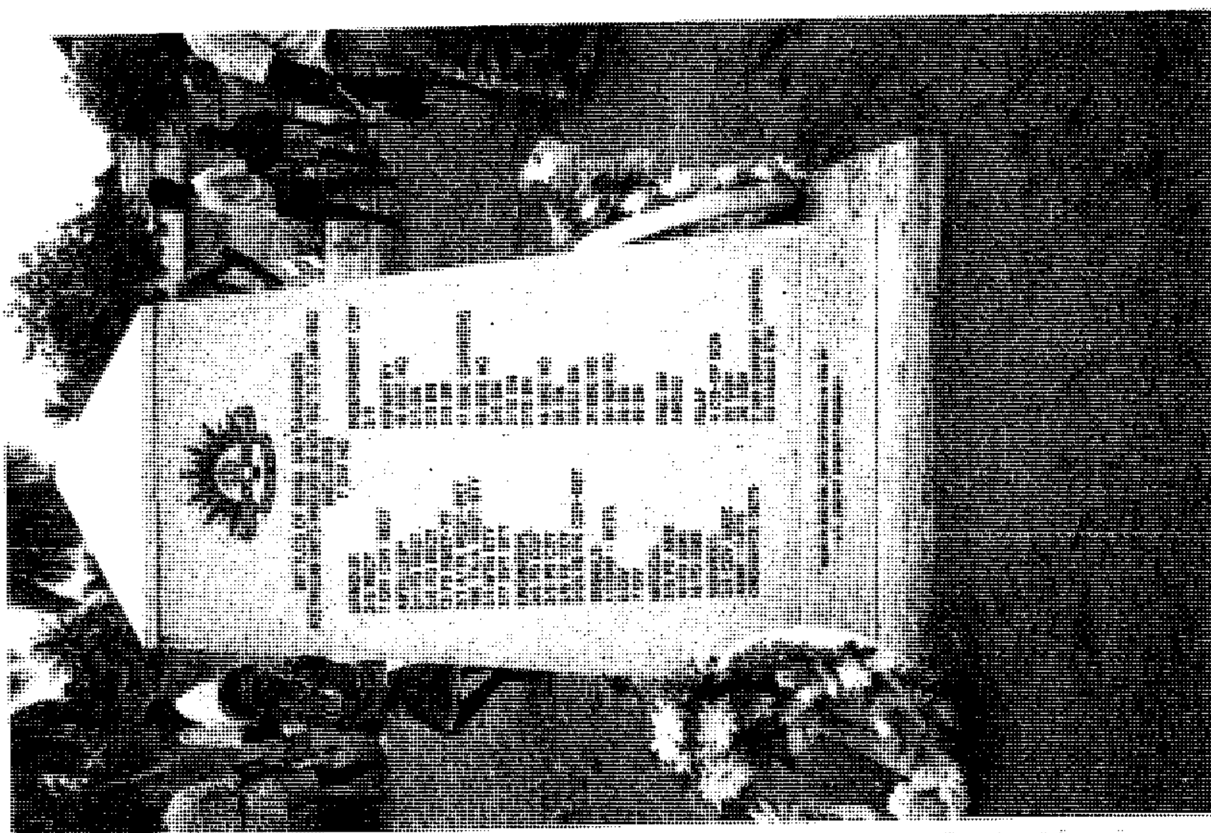
A memorial has been erected on the Buna battlefield by the 2/12th Battalion which names all the Australian units which participated in the Battle for Buna, including the 10th Australian Field Ambulance. The memorial is right on Giropa Point, which was the focus of the 18th Brigade attack and can be clearly seen from the sea by passing vessels. The unit also erected a first aid centre and a residence for a medical orderly at a cost of $50,000. The centre is the primary source of medical care for 10,000 Papua, New Guinea residents. A photo of the memorial is shown on page 64.

Medical Centre, Buna.

The nursing and operating theatre staff derived great pleasure from seeing a patient recover. Dick Holmes recalls one patient who had severe head wounds which required a special instrument called "Bulldog bone nibbling forceps" which had to be borrowed from the 18th U.S. Portable Hospital. The operation went fine and the patient was nursed by Ted Lee and Ken Sutherland but remained

Memorial Cairn Erected at Buna. (Front)





Memorial Cairn - Back with unit names.

unconscious for three or four days. His name was Jock and finally about the fourth day he responded to the question as to his name and said what sounded like "Yock". Dick's comment, "What a victory".

Wherever we were working in conjunction with American troops we found them most co-operative and generous in helping out with equipment or supplies.

JUNGLE FUNERAL

There were times of course when injuries were so severe, that despite all that surgeons and nursing staff could do, it was obvious that patients were not going to recover. These had to be respectfully buried.
Allan Williams confirms the diverse duties which the limited staff at Buna had to perform by writing of his own experience as follows :-

"In addition to recording the Admissions and Discharges my duties included-
Helping in the Operating Tent with sterilizing and as general assistant.
Feeding and settling down patients in the makeshift wards.
I remember staying with one patient most of the night; he was noisy and restless and realized he was going to die - which he did early next morning.
Sgt. Harry Cowan and I buried him later. We both carried out the duty of a burial party and we buried all the dead here. We dug a shallow grave alongside the track to Semini and sewed the body in a blanket. Harry Cowan read the burial service from a small army book which he had obtained. One morning we had two burials but got through it quickly by having the one service for the two. We placed a small wooden cross on each grave with the name and regimental number.

The Admissions tent was also the store for surplus equipment including blankets. I was able to sleep here but did not get much sleep as there were patients arriving all day and until very late evening and there were always other tasks to be done.
Often we went out to the track and stopped jeeps returning to Dobodura and asked them to take back sick patients.
On the 2nd of January we had 62 admissions 37 wounded and 25 sick. Some days there would be more some days less; a busy time for the 30 of us.

The following poem was penned by a unit member whilst in New Guinea and it may be appropriate to include it here.

JUNGLE PATROL

The camp is all astir tonight
The enemy is seeking fight
The midnight peace is shattered by a message firm and blunt
That fifty men, two score and ten
Are going to the front.

Then through the mind of every man
Fond thoughts of home and loved ones ran
And more than one brave warrior dried up a would be tear
As fifty men two score and ten
Hurriedly pack their gear.

There are those who were so bright and gay
Have now no joke or word to say
While others mask their inward thoughts with an outward merry smile
As fifty men two score and ten
March off in single file.

The comrades who are left behind
Have troubled thoughts and anxious mind
And many a silent prayer goes up for God speed on their way
As fifty men two score and ten
Toil on towards the fray.

The danger from the East is past
The ragged men return at last
But comrade look - the third last file the missing spaces there
As forty eight two score and eight
March in with bowed heads bare.

Two lonely mothers sit and cry
And wonder why their sons must die
And the warm winds sigh as they're passing by,
The graves where the two men lie
Where two brave men two upright men
Sleep 'neath a tropic sky.

REMAINDER OF UNIT ARRIVES

On 29th December a further detachment from our unit of 2 Officers and 47 O/R's left Port Moresby on the S.S. *Both* under Major Harry Francis and arrived at Oro Bay (On the north coast of New Guinea east of Buna) on 31st of

December with considerable stores. Their instructions were to move to Buna with medical panniers, extra tents and cooking gear.

Leaving a picket party to guard the stores and load them on to a barge, the remainder left Oro Bay on the 5th of January. They marched along the coast to Hariko and then inland to Simeni where they stayed the night with the 18th U.S. Portable Hospital. The stores were loaded on a barge to be brought around by sea but the barge sank with the loss of all the stores and much personal gear. From Semini Major Francis contacted the C.O. at Buna. As the Buna detachment were about to move out they remained at Simeni until the 8th of January when they joined the Buna detachment on their march to Soputa in preparation for the attack on Sanananda.

The remainder of the unit left Port Moresby on 4th January on the SS *Van Heutz* and proceeded to Oro Bay arriving there on 6th January. There they joined the U.S. 1st Portable Hospital at Eoro Mission and assisted the Americans. The U.S. 1st Portable was the only medical unit in the area at the time. Captain Emmett Spring and a surgical team assisted with operations there.

On the 8th January the *Van Heutz* was tied up at a steel pontoon wharf and 10th Field Ambulance men were unloading stores. At midday the men were eating their lunch on the wharf when the peculiar whine of a Japanese plane was heard. Out of the sun appeared four Zeros at close enough quarters to see their pilots and by the look on the face of the pilot of the leading plane he was experiencing obvious pleasure at having surprised the lunching troops.

They strafed the wharf with their machine guns and the sound of the clattering bullets on the steel decking was suddenly surpassed by the explosion of a bomb as they scored a direct hit on the vessel. There were three killed and 14 wounded. There were two of our men on board the ship, Pte. Ivan Goldsmith and Cpl. Ray Frith who were both slightly wounded by shrapnel. Some of the men on the wharf jumped into the sea and their ears were affected when bombs intended for the *Van Heutz* exploded in the sea. Our orderlies and doctors assisted the 1st U.S. Portable Hospital in the treatment of casualties.

On the 10th January the unit's transport section arrived at Oro Bay on the *Both* from Milne Bay without their vehicles which had been commandeered by 11th Division at Milne Bay.

After the fall of Buna the Japanese were still holding out in the Sanananda - Killerton area and preparations were made immediately to dislodge them from this, their last stronghold in the Buna region. The 18th Brigade together with the 30th and 14th Brigades coming under the control of 7th Aust. Division were to undertake this task.

MAJOR YEATES REPORT ON ACTIVITIES OF SURGICAL UNIT IN BUNA AREA

INTRODUCTION

In the New Guinea campaign the evacuation of the wounded proved a hazardous undertaking. The reasons are so obvious that they require no mention here.

On this account, it was decided by the DDMS and Consultant Surgeon that operations would be performed as far forward as possible. This usually meant a small "surgical team" becoming attached to the local MDS - a practice which had worked well in the Middle East and was found to work equally well here.

As regards the Buna engagement, it was correctly anticipated that the difficulties of transportation would be acute. For this reason a more compact and more portable unit was sent forward. This was designed to function, if necessary, without further reinforcement of personnel or equipment. The team consisted of two medical Officers and twenty-eight O/R's provided by a Field Ambulance. To this the writer was attached as Surgeon.
(Mjr. Johnson, Capt. Copland of 10 Fd Amb.)

EQUIPMENT

Two Douglas planes, each lifting some two tons, were placed at our disposal. The personnel weighed something over two tons. This left only 4000 pounds for our total equipment, surgical and ordinance.

The latter was the bugbear. Many hours were spent in juggling figures on paper. We could afford to carry only one complete tent (US Pyramidal for operating theatre) and six 12' by 14' flies to be used as wards.

We had to be prepared to hold cases for a day or two. Each fly could be made to hold eight patients. This gave us a capacity of forty, allowing one fly for *Q* stores. We therefore took forty each of blankets, ground sheets and mosquito nets.

Our own personnel had to rely on the rather inadequate "two-man" tents - by no means waterproof !

Cooking utensils, tools and other essential items quickly consumed hundreds more of our valuable pounds. This meant leaving such luxuries as operating tables, autoclave etc.

One was forced to stick to the bare necessities. These were chiefly instruments, anaesthetics, dressings, drugs, plaster of paris, medical, surgical and blood transfusion paniers, one case of wet serum, "Soluvac" and four "Primus" heaters.

Ether we found extravangant regarding weight on account of the heavy bottles (a sealed metal can or winchester bottle would seem a good idea.) For this reason, we took plenty of "Pentothal" which is extremely light to carry and will tide one over nearly every difficulty (even laparotomies).

The classical army fracture panier was emptied entirely and filled with "Cellona" plaster (4" and 6").

Our personal gear was also reduced to the bare bones, - blanket, mosquito net, ground sheet, webbing equipment and a few spare clothes.

JOURNEY

We were ready and waiting on the aerodrome on the morning of the 16th December, but after a long delay it was found impossible to carry us that day. The following morning we were more fortunate and had a splendid trip over the Owen Stanleys (forty minutes).

We arrived at the local aerodrome soon after midday. Here we learned that our troops were to begin the attack the following morning at a spot some seven miles away. Enquiries revealed that the road was nothing more than a muddy track, along which "Jeeps" could go when the weather was favourable. It was regarded as absolutely essential that we receive our casualties within eight to twelve hours. For this reason we decided to push further forward.
(Dobodura, 18th Inf. Bde.)

The transport problem was acute and we had to wait until evening before our gear could be moved (by American "jeeps"). Late that night we finally took delivery of our own "jeep" which had been appropriated by another branch of the army. (In charge of Mjr Johnson and party)

Early next morning the remainder of the party set out, and after a strenuous day in the mud, we arrived with our equipment at a convenient position scarcely a mile from the front. Here we contacted a small detachment of another Field Ambulance. (Maj. Lavarack and 10 O/R's from 2/5th Fd. Amb.)

Unfortunately, the first casualties of the battle were passing us on the way. This stimulated us to greater efforts so that by sunset our theatre tent was erected and unpacking of stores well under way.

The next morning, 19th December we began making operating tables, instrument tables, and other necessary items of theatre equipment. For this purpose we had brought a carpenter with hammer and nails. By noon we were ready and during that afternoon five operations were performed.

It was gratifying to find that these patients had received their wounds only a few hours previously, and a pleasure to treat them at such an early stage.

DETAILS OF PROCEDURE

(1) Sterilization.

Prior to setting out, this matter had been carefully discussed. It was decided that "primus" heaters would be the most suitable. We carried a four gallon drum of kerosene for the purpose. Unfortunately, we were badly let down by our "primus" stoves. These were not the genuine Swedish pattern and all four of them developed troubles - possibly due to unsuitable kerosene.

The wood in the area was plentiful, but always sodden. A standard Army "Hydra" burner, which we had brought for cooking was thereupon seized from the outraged cook and was found to work like a charm. It certainly consumed a colossal amount of kerosene (or petrol) but by this time we were good friends with the ASC. It was soon found that there was adequate room for cooking as well as sterilising so everybody was happy.

Sterilization of instruments was simple, but dressings proved a problem.
We finally cut our rolls of gauze into various sizes and so manufactured swabs, large and small, glove bags etc. Later we managed to make large "combined "dressings and baked these in a steel cartridge case. Sterilization was considered complete when the paper wrappings were scorched (usually half an hour). These were necessary for amputation stumps and laparotomies.

Vaseline gauze was made on the spot and then boiled for forty to sixty minutes. The local product compared favourably with the best hospital pattern.

Wet sterilization of swabs and towels etc., seemed somehow improper at first, but at any rate they were certainly sterile. Gauze swabs were done up in bundles of ten and boiled in lint wrappings.

(2) Sutures

Fairly fine white linen thread was used for nearly every type of suture and ligation. It has many advantages. It is easy to sterilize and particularly easy to handle and tie. It saves repeated wasteful opening of cat-gut ampoules. Lengths

of this (approx, ten feet) were rolled on to short wooden cylinders and boiled with the instruments. This was found a great time-saver. The type used was Barbour's Irish linen size 60. This is fine enough for all purposes, yet cannot be broken by hand.

(3) Linen

The material known as "jaconet" was found of great value. It is waterproof, can be boiled dozens of times and is easily washed. We used it to cover all tables and for making Surgeon's aprons. Ground sheets were used to place under the patients. They served admirably.

Ordinary huckaback towels - usually two or three - were used for all cases. Our stocks were very low (only eight). This necessitated much washing and boiling. After a week their color was so much against them that they had to be discarded. We recruited our stocks splendidly after every laparotomy, because for these cases. we opened special sterile drums containing a complete "major" outfit. On these occasions our primitive theatre approached a little nearer to the real thing.

The usual form of dress consisted of shorts and shoes, "jaconet" apron and boiled gloves, the latter being used for every case. Caps and masks were not worn usually.

(4) Lighting

This proved difficult on account of the strict blackout. The blackout was secured by army blankets sewn to the sides of the tent. These were rolled up during the day. A good three feet of overlap is important for success.
Layers of palm leaves were thrown over the roof. There were also thick trees overhead.

We had set out with two "Tilly" lamps. These give a splendid light when they feel disposed to work. But they are as frail as human nature, particularly the glass globe and incandescent mantle. Incidentally, they are perfectly safe when kept a few yards from the ether bottle. On the whole they were not satisfactory.

We were fortunate in securing two "jeep" headlamps and storage batteries from the local "Sigs" (always an obliging crowd). These gave a really brilliant beam, which could be fixed or moved at will. The batteries lasted a good eight hours without recharging. This is definitely the answer to the lighting problem, although it places a severe strain on the blackout.

A really good headlamp (surgeon's pattern) and several ordinary electric torches

are most useful. By their aid one can continue operating when aircraft are actually overhead.

(5) Theatre

The US Army Pyramidal tent proved particularly suitable. Instead of propping it up on the central pole provided, we placed it much higher by using a sawn off tree. This enabled us to spread out the sides in line with the roof. This gave an admirable floor space with only one pole to annoy us. On the whole this was more convenient than either the EPIF with it's two poles, or the "marquee" form of tent. The colour of our tent was khaki. The dark green variety is far preferable from the blackout point of view.

We had two fixed trestles on the extreme edge of the brightest side of the tent - really open air. These were made of a convenient height to take an army stretcher. This constituted the fair weather operating table. The patient was always placed so that the wounded side faced the light.

Two movable trestles were also made by our carpenter. These accommodated a second stretcher used for preparation, or for operation, during rain or black-out. (There was rarely rain by day). The remaining items in the theatre were a couple of small portable tables, one fixed table for stock of sterile articles, a washbench, and a couple of boxes for seats. These items were all made by the carpenter. All our stocks of drugs, dressings etc. were packed neatly in packing cases which were arranged along one side of the theatre in the form of shelves.

(6) Preparation

This important task was performed by an orderly on the second table. There is a surprising amount of work involved as the patients arrive covered literally in mud and blood with field dressings trailing from most odd situations. The full length green uniforms proved more difficult than the clean scanty garments of the Middle East. Without exception they were saturated in sweat and mud. When one considers that some 80% of all wounds are of the extremities, it seems possible that the high incidence of aerobic infection is associated with the extra clothing.

As the weather was always warm, patients were first stripped completely, then quickly washed with warm water and soap (unless severely shocked). The wounded area was then carefully washed and shaved. Then Dettol and iodine were applied to the skin. As much as possible was done prior to anaesthesia. These patients were always extremely well under morphine, and usually this [illegible] could be completed, except in severe fracture cases.

(7) Anaesthesia

The standard pre-medication was HT Atropine, Gr 1/100. Morphine was never required.

"Pentothal" was found even more valuable than had been expected. It was used for many of the less serious wounds but sometimes was continued for an hour when necessary. It was ideal for wounds of the skull and chest. No difficulties were encountered once the needle was successfully inserted into the vein. Sufficient was given to keep the patient from moving. This was always achieved without causing excessive respiratory depression.

The patients were unanimous in their approval of this form of intoxication.

For the more severe cases of fracture, buttock wounds and abdominal injuries, ethyl choride plus ether on the open mask was used.

Nitrous oxide and oxygen were not available. They were not missed.

(8) Resuscitation

Warmth was rarely necessary. Morphia had always been given. There remained fluids. On the whole, shock was not a prominent feature except in really severe cases. These of course, required intravenous fluids.

Various forms of wet and dry serum were used (American, Australian Red Cross and Army issue "Soluvac"). The one litre Soluvac flasks of wet serum proved easily the most useful. They were ready for immediate use without mixing processes, a litre was a satisfying volume, and serum itself was amazingly efficient as regard improvement and maintenance in pulse volume. Occasionally blood was necessary. No stored blood was available, but a donor from the unit was never lacking. The "Soluvac" apparatus was very satisfactory. The time factor was important and a small stock of stored blood would have been very useful.

Intravenous saline was used only as a post-operative measure in perforations of hollow viscera. For this, it was of great value. The usual amount was three litres of Ringer's solution daily for two or three days. It is considered essential in the equipment of a forward surgical unit.

(9) The Team

Of our twenty-eight O/R's, the majority were used for "general duties", nursing, cooking etc. Four were chosen for theatre duties. Their previous training

was almost negligible although one, a sergeant, had received some training in blood transfusion. He became the assistant for operations. He also kept an eye on the stocks and indented for more when necessary. A second orderly took care of the sterilization - a full-time job. The third prepared the patients for operation and did minor tasks in his spare time (if any). The fourth was the water orderly. He dug a well (3' deep was sufficient), sterilized the water by chlorination, kept the wash basins always full and clean, washed the soiled linen and had plaster of paris ready when indicated. The fifth man (corporal) took turns with the sergeant at assisting for training purposes as a reinforcement if required.

The first few days were harrowing, the gross breaches of asepsis frequent. After a week these lads were absolutely splendid. Their improvement was amazing and their eagerness gratifying.

The sergeant in particular was brilliant. He became a real assistant. He later learned to give anaesthetics, both ether and "Pentothal", also blood transfusions including collecting of blood. (Sgt. Jack Caldwell, 10 Fd. Amb.)

The sterilization man also became really expert and could produce almost any desired article with the aplomb of a head-waiter.

To summarise : - two really trained orderlies and two general men are required. The latter, need only be intelligent and keen on work.

(10) <u>Instruments</u>

Very few were used. The "standard excision set" comprised knife and forceps, towel clips, blunt probe, six artery forceps, two Morison tissue forceps, curved Mayo scissors, one malleable metal tongue depressor (very useful for many purposes). Nearly every operation can be done with these alone. Necessary additions were : -

(1) For amputations - a saw.
(11) For skulls - Horsley's bone nibbling forceps, Cushing's silver clips with forceps, trephine (never used), needles for suture.
(111) For laparotomy - retractors, bowel clamps, needles with sutures, drainage tubes.

OPERATIONS

(a) <u>Soft Tissue Wounds</u>

The rountine practice was <u>excision.</u> (The foreign expression "debridement" is

deliberately avoided as being unnecessary and confusing.) "Incision" and "excision" are English and precise.

In nearly every case, operation was performed within the 24 hours from injury. When cases began to come later than this, we moved our whole unit further forward (28th December).
One standard text-book gives 18 hours as the time limit for excision. The appearances of the wound and patient would seem more reliable criteria than the clock. In actual fact, a few cases were excised after 48 hours with good results. It is possible that the risk of spreading infection has been over-emphasized.

By excision is meant a complete removal with the knife of all damaged tissue except obviously vital structures. In general, this meant skin, fat and muscle. Naturally any foreign material was removed in the process.

This was faithfully performed even for the tempting "clean through and through" wounds, because some of these cases had previously been seen to develop gas infection. It was surprising how often one found fragments of Japanese bullets, bits of clothing, or badly lacerated muscle in these "clean" perforations. Japanese bullets were observed to have a strong tendency to leave a trail of satellite fragments in the track even when the main body had passed out the exit wound. On the other hand, some really were reasonably clean and no doubt would have done well without operation. A compromise sometimes adopted in excision of skin and transverse division of fascia. But in the flat swampy areas of Papua this is a risky procedure.

Occasionally the ideal of 100% excision would not be achieved and one was forced to be satisfied with a sub-total operation, notably in really extensive compound fractures of the femur and in certain anatomical areas such as the Adductor region of the thigh and axilla. In the former, haemorrhage from so much divided muscle is decidedly serious, in the latter venous bleeding can be extremely troublesome. The two cases in the series which later developed gas infection, had had only a sub-total excision (a femur which died and a humerus which required amputation.)
Both cases had multiple wounds.

The sign of adequate muscle excision is bleeding from the cut end. This is obviously a sound doctrine, but implies good and rapid haemostasis - sometimes not so easy when the muscle retracts.

Firm pressure for a few minutes with a large hot pack was as valuable here as in civilian surgery for controlling all but the larger vessels, which are then easily identified.

(b) Fractures

In all cases the corresponding wounds were treated as described above. Detached bone was not removed unless contaminated or driven far from its parent shaft.

The only difficulty experienced was shock in compound fractures of the femur. The operation of excision is fairly formidible, involving inevitable jarring of fragments, despite every care, in moving the limb, considerable bleeding, and disturbing of patient during application of spica.

After a few such cases, it was decided -

(1) a more conservative operation was imperative,

(11) even more serum or blood was necessary,

(111) the Thomas Splint was definitely preferable to the spica

by virtue of ease and rapidity of the application (with shorter anaesthetic) greater safety where anerobic infection was rife, and general comfort of the patient. Minor advantages are that the splint is lighter to carry, easier to remove and can be used repeatedly.

As regards fractured humerus, many forms of immobilisation were tried. A spica is out of the question at this stage, and anything less in plaster is not very satisfactory. The simplest and best method is apparently the "two-binder" technique without any plaster or splints. Radial nerve palsy was extremely common but rarely due to more than crushing.

The conclusion is that plaster of paris is NOT so essential after all, although it is still hard to beat for forearms and below-knee fractures.

(c) Amputation

The usual indication was gross destruction of all tissues. In only one case was there complete circulatory arrest. The section was done through really sound muscle, leaving adequate skin flaps which were somtimes sutured back, but never together.

"Elastoplast" is ideal for fixing the dressings. It is regretted that more amputations were not performed. The temptation to conservation is very real.

All wounds were given a "hoar-frost" coating of sulphonamide powder. Any cavities were filled with vaseline. Vaseline gauze was used for surface dressing. A firm copious cotton wool dressing was then applied.

CHEMO-THERAPY

Each patient was given his own box of seventy-two sulphonamide tablets when he was reasonably recovered from operation (usually the next day).

He was instructed to take six tablets twice daily for six days - thus completing the full course of grams 36. This system was adopted in order to ensure a level haemo-concentration during the rather precarious evacuation days.

On enquiry at the hospital later, it was found that nearly all patients had religiously carried out orders. Several even refused to hand over the residue !

EVACUATION

One hundred native bearers arrived each morning at 9 a.m. It required eight bearers for each stretcher case. Other cases went by jeep or walked. Some of these had not received operative treatment. The destination was the aerodrome some two or three hours away. Some mornings all patients were flown to Moresby almost immediately. Sometimes several days were spent at an American field hospital on the aerodrome. One particular case was wounded at 7 a.m., had operation at 9 a.m. and was in bed at hospital by 2 p.m..

CASE ANALYSIS

Only ninety-six operations were performed; eighty in the first two weeks and the remainder during the "mopping up" processes. These were all selected as being the most serious. Eleven abdominal cases were included. Of these, four subsequently died. Two had massive retroperitoneal haemorrhage with a condition of the colon sometimes described as "Infarcation". One had injuries of pleura, colon, spleen and kidney. The fourth had a buttock wound with perforation of rectum and ileum (five lesions). Of the seven survivors, one had only a small retro-peritoneal haemotoma. Two cases had liver damage, one showing a free piece of liver lying near the hepatic flexure which was grazed but not perforated. Another patient was wounded in the buttock and responded well to removal of coscyx and colostomy for his extra-peritoneal wound of rectum. A patient who arrived with a long piece of omentum protruding from between his ribs on the left side, had sustained perforation of stomach and diaphram. These were sutured. The remaining two cases were found to have multiple lesions of small gut. These were both interesting. One was diagnosed only after careful observation for 24 hours. Finally, operation seemed the safer course. There were two wounds of jejunum containing foreign bodies. These were completely covered by omentum without any soiling of peritoneum.

The last laparotomy case arrived at 11 p.m. in a tropical downpour. On removing his dressing, a large gaping hole, a prolapsed loop of small bowel and a cuff of omentum made the diagnosis crystal clear. He had been shot on the beach only a few hours previously. He was wet through and completely covered in course sand including his extruded intestine. His condition was really surprisingly good. Removing the sand and mud proved a trying task.

At operation, there were seven perforations of jejunum arranged in three groups, each some three or four feet apart. His convalescence was not particularly stormy. (He also had a very large perforating wound in the left arm.)

Only three major operations for head wounds were performed. In each case there was extensive bone damage with tearing of the dura. In one case brain tissue, was evident on the dressing. The treatment was excision of scalp, removal of all loose bone and nibbling of the bony margins until normal dura was exposed all round. Damaged and contaminated brain tissue was gently removed. Cushing's silver clips proved most useful. The final step was complete suture of the scalp.

One case died at the hospital two weeks later. The other two survived, although one developed hernia cerebri, probably due to abcess formation. Seven amputation cases made good recoveries.

Thirteen patients with compound fractures of the humerus progressed satisfactorily except one, which required amputation for gas infection.

By far the most disappointing cases were fractures of the femur. Of seven cases only four recovered. The three fatalities were certainly very severely wounded. On reflection, it is considered that for really extensive shattering of the femur, primary amputation may be the best line of treatment.

There were ten buttock wounds. Five of these had serious complications. (Two perforations of rectum, two sciatic nerve palsies and one fracture of the femoral neck and acetabulum. The fractured femur was not diagnosed at the time. It was found as a surprise on routine X-ray. The physical signs were by no means conspicuous.)

In one remarkable case, a large shell fragment entered the upper edge of the buttock. Its track was followed through the ischio -rectal fossa to the superficial peroneal pouch where it was located and removed. There were no complications.

Buttock wounds were all treated with greatest respect and were given a high priority in selection of cases for operation. Very thorough excision was per-

formed. The results were satisfactory.

The remaining cases call for no particular comment save that early operation produced the expected results in that nearly all wounds were beginning to heal with little or no infection (when seen later).

In conclusion, one is bound to remark that battle casualties in New Guinea demand early and very radical surgery.

COMMENTS

(1) If weight is a factor, the US pyramidal tent (green colour) makes the best theatre.
(2) Plaster of paris is less important than was thought.
(3) "Pentothal" can nearly replace other forms of anaesthesia.
(4) Stored blood is desirable.
(5) Intravenous saline is still necessary - for abdominal cases after operation.
(6) For sterilization something between a "primus" and a "Hydra" burner would be ideal.
(7) A large headlamp (motor car type) and storage battery is most desirable.
(8) Linen thread could replace catgut if necessary.
(9) The average number of operations per day was only seven for three reasons: - (a) Only major cases were selected.
(b) Necessity for training assistants.
(c) Necessity for surgeon to examine cases prior to anaesthesia- thus preventing the use of the "two-table" procedure in its fullest sense.

(This, of course, can only be avoided by the presence of a second surgeon in the admission tent.)