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THE BURMA CAMPAIGNS - 1942-1945.

A HISTORY OF CASUALTY EVACUATION

by

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Abbreviations Used in the Text

M.D.S.	<i>Main Dressing Station (of Field Ambulance).</i>
I.S.S. ..	..	<i>Indian Staging Section.</i>
C.C.S. ..	..	<i>Casualty Clearing Station.</i>
I.M.F.T.U. ..	..	<i>Indian Malaria Forward Treatment Unit.</i>
I.G.H. ..	..	<i>Indian General Hospital.</i>
F.T.U. ..	..	<i>Field Transfusion Unit.</i>
I.S.D.M.S. ..	..	<i>Indian Sub Depot Medical Stores.</i>
M.S.U. ..	..	<i>Mobile Surgical Unit.</i>
M.A.S. ..	..	<i>Motor Ambulance Section (approx. 33 vehicles).</i>
E.A.M.A.C. ..	..	<i>East African Motor Ambulance Convoy (approx. 75 vehicles).</i>
L.C.M. ..	..	<i>Landing Craft.</i>
L.C.T. ..	..	<i>Landing Craft.</i>
L.C.I. (D) ..	..	<i>Landing Craft Infantry (Depot Ship).</i>
E.T.A. ..	..	<i>Expected Time of Arrival.</i>

INTRODUCTION

The object of this article is to give a brief historical account of the evacuation of casualties during the campaigns in Burma from 1942 to 1945. The fighting in this Far Eastern theatre was unique in many ways. In variety, from the mountain warfare of Eastern Assam, the open warfare of the Central Burmese Plain, the combined operations along the coast of Burma, to the long drawn out fatiguing and hitherto unexperienced type of fighting in tropical jungle. It saw the development of air evacuation used for the first time on a large scale in modern warfare, a whole army being entirely dependent upon the evacuation by air of all its sick and wounded. Finally, in the type of country and the distances involved it was again unique, the front from Northern Burma and Assam to the Arakan being longer than the Russian front in Europe.

Another important feature of the campaigns was that the Supreme Commander, Lord Louis Mountbatten, was able to plan the reconquest of Burma over the "impossible" land routes, and through one of the most unhealthy belts of country in the world, knowing that his medical services were so much superior to those of the enemy and that his air forces could supply the troops and evacuate all their sick and wounded.

General Sir William Slim, Commander-in-Chief of the 14th Army, has commented on the reduction of sickness in the Imperial Forces in S.E. Asia, from the calamitous figure of eight per thousand per day in 1942 to less than one per thousand per day in 1945 - a rate which would be considered reasonable in a large industrial undertaking in this country.

In the evacuation of casualties, the most notable advances were made in speed of evacuation, especially of the urgently sick and wounded. The time period for evacuation to Base Hospitals fell from weeks in 1942 to days in 1943 and finally to hours in 1944 and 1945. This was achieved at the same time as the Army was advancing into Burma and lengthening its Lines of Communication, and was largely the result of increasing use of air evacuation and the selective evacuation of the more serious and urgent patients.

Phase One

The Retreat from Burma - 1942

The Japanese forces invaded Southern Burma in the early weeks of 1942. The invasion followed their occupation of French Indo-China and Siam, and their rapid conquest of Malaya. The 17th Indian Division formed a defence line on the Salween river to stem their advance but after severe fighting the Japanese succeeded in breaking through and the evacuation of Southern Burma became necessary. From the fighting line casualties were evacuated by ambulance train and ambulance car to Prome. Limited hospital shipping was used for the evacuation of casualties from the Rangoon hospitals to India and medical units were withdrawn along the axes of withdrawal which were the Pegu, Toungoo, Mandalay road and railway, and the valley of the Irrawaddy.

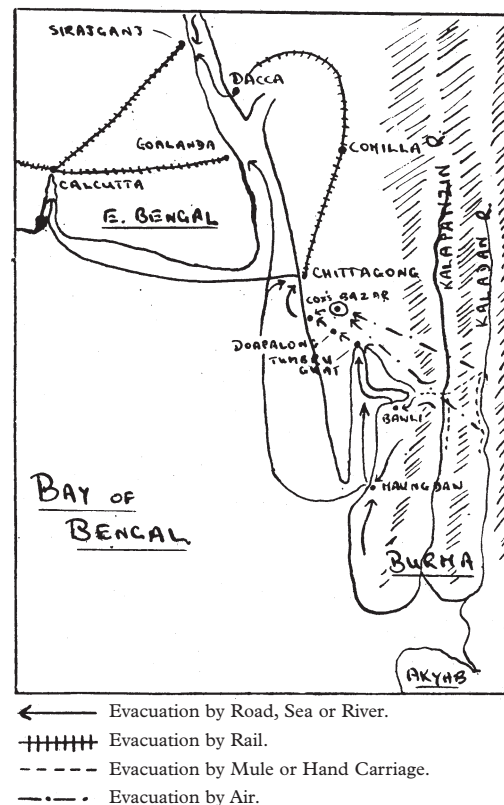
Ambulance river steamers evacuated casualties from Rangoon to Prome and later from Prome and the oil belt to Mandalay, when these areas had to be abandoned. Communications became disrupted, and organized casualty evacuation became almost impossible. Formations in retreat northwards frequently had to carry their sick with them.

Ambulance trains did invaluable work. The crews had to be armed for protection against looters, they frequently had to do

their own signal and point shifting, and they were called upon to render first aid at bombed wayside stations. One train evacuated over 1,000 casualties from forward areas to Prome. They operated as far forward as the M.D.S. of the Field Ambulance on at least two occasions near the Salween river, being in great danger of being cut off by bombing of bridges. One train was derailed but was rescued and worked up to Mandalay before the Japanese overran it. Ambulance cars were machine gunned from the air, but ambulance trains seemed to have immunity from these attacks.

The first air evacuation of casualties was from Magwe, in the oil belt, to India, but the numbers were small. A further evacuation by air was made from Shwebo in Central Burma when the retreat from this area became necessary. The majority of sick and wounded were, however, moved by ambulance train and ambulance steamer from the hospital areas at Maymyo and Mandalay to Myitkina in the extreme north. From Myitkina further retreat by surface routes was impossible, but sufficient aircraft were available by this time to evacuate the casualties from Myitkina to bases in north-eastern India. In ten days during April 1942 ten C.47 Dakota aircraft evacuated 1,900 sick troops and civilians to hospitals in Assam. This was the first moderately large-scale evacuation of casualties by air, and it was accomplished across the mountainous barrier which separates Northern Burma from the Brahmaputra valley in India. The peaks of these ranges are often over 10,000 feet high.

Diagram of Casualty Evacuation The Arakan - Burma 1942-44



Phase Two

The Defence of India's Eastern Frontier. Assam - 1942

Streams of refugees and the remnants of the defeated forces from Burma trekked into north-eastern India by way of the Kabaw and Hukawng valley tracks. These valleys are highly malarious and the sickness and death-rates from malaria, dysentery, cholera, etc., were high. Hospitalization was difficult. An improvised ambulance train distributed the sick to hospitals in Manipur Road, Shillong and other areas in Assam. The remainder were evacuated into the interior of India to hospital centres as remote as Calcutta, Ranchi, Lucknow, etc. Evacuation was by the improvised ambulance train to Gauhati, ambulance river steamer for two days down the Brahmaputra river to Sirajganj, and again by ambulance train for one or two days to Calcutta or Lucknow. The flow of sick refugees from Burma was quickly followed by the monsoon and this in turn caused a great increase in sickness, especially malaria, amongst the troops stationed in Assam. Additional improvised ambulance trains were made available to cope with the rate of evacuation and steps were taken to make corridor ambulance trains, properly equipped with staff quarters and kitchen cars, available at a later date.

The First Arakan Campaign

After the 1942 monsoon and in the early months of 1943 offensive action was begun by our troops in the southern sector in the form of an advance into the Arakan. A divisional attack aiming at the capture of Akyab was launched from the eastern Bengal base and port of Chittagong. The problems of casualty evacuation in this tract of country were tremendous. Roads, where they existed, were atrocious, and aircraft were not available. Evacuation by river, chaung, creek and sea was the most comfortable means of transport. Even where this was practicable it was extremely slow and the number of suitable craft available was inadequate. The main feature of this evacuation was improvisation. A fleet of wooden barge-like Akyab sloops was obtained, together with smaller country craft of the sampan type. The former were used on the larger rivers and the latter on the smaller rivers and chaungs. Although slow and frequently dependent on tide, these craft were a great improvement on evacuation by ambulance car along the dusty unmetalled Arakan roads. The improvised Akyab sloops were replaced first of all by three creek steamers, and later by large metal flats capable of carrying up to 200 patients. The latter were stifling in the heat of the day, but no alternative was available, and the sickness rate was so great, especially from malaria and dysentery, that

the larger craft had to be used.

For the brigade advancing along the Naf river and the coastal belt at the foot of the Mayu range of hills, water evacuation was always practicable, and the small and large river ambulance craft concentrated all sick and wounded at the head of the Naf river estuary, from where they could be conveyed by ambulance car to the forward hospital sited at Doapalong.

For the brigade advancing down the Kalapanzin river valley across the Mayu range of hills, the only practicable means of evacuation was by mules of the Field Ambulance Troop, and hand carriage by Indian Bearer Companies and local villagers. This was the method of evacuation in the Kalapanzin valley and across the Goppe Pass in the Mayu range. From the foot of the pass it was possible to evacuate by ambulance car to the forward hospital at Doapalong.

Even more difficult from the point of view of casualty evacuation was the position of a column of troops which crossed yet another range of hills from the Kalapanzin valley into the Kaladan river valley. For these troops river evacuation in small local country craft was occasionally possible, but the bulk of the evacuation was by mule and hand carriage. The local inhabitants of this remote valley, the Mogs, were experts at the improvisation of bamboo stretchers and slings, and carried patients with great care and skill over long distances. At Kyauktaw and Apaukwa this column improvised two light airstrips, and two Lysander aircraft, the only ones available for casualty evacuation in the Arakan at this time, evacuated a small number of the more seriously sick and wounded, until one of the aircraft crashed and the Japanese captured the strips.

Under these difficulties of evacuation, where distance came to be measured in hours of travel rather than in miles, the idea of siting small medical units or detachments along the line of evacuation for the purpose of "staging" casualties overnight was developed. These units provided rest, refreshment, medical attention and cover at night. Evacuation from Kyauktaw in the Kaladan valley by mule would take four days' journey to reach Taung Bazaar in the Kalapanzin valley, and a further two days to reach the foot of the Goppe Pass, where an ambulance car would take the casualty along bumpy tracks to the forward hospital at Doapalong.

In a similar way, and again owing to the nature of the country and means of communication, it was frequently necessary to stage casualties in hospitals sited at suitable distances along the line of evacuation from the fighting to the main base hospitals, sited in India. As many casualties as possible were held in hospitals

at Cox's Bazaar, Chittagong and Dacca, but many had to be evacuated to bases in Northern and Southern India. Such patients would have staged in probably four hospitals and possibly numerous other field units, travelled in at least five different forms of transport, covered perhaps 1,000 miles, and taken from two to four weeks or longer.

The incidence of malaria during this campaign reached unimagined proportions. Medical units and the evacuation system were strained. Various medical units were improvised as an emergency measure, and these were later replaced by a unit called the Indian Forward Treatment Unit (I.M.F.T.U.). Their function was to hold, treat and rehabilitate up to 600 malaria patients in each unit.

The Development of Dacca as a Hospital Centre

To reduce long-distance evacuation to Northern and Southern India, a hospital centre was planned and sited in Eastern India, at Dacca. 5,200 British and Indian hospital beds were sited at Dacca, and later a further 1,000 African beds were added. The choice of Dacca as the hospital centre for operations along the Eastern frontier of India was mainly for logistical reasons. It was centrally situated for the Assam and the Arakan fronts. Good accommodation was available. It could be reached by river both from the mouth of the Brahmaputra in the south, and from Assam in the north. The metre gauge railway system connected Dacca with Chittagong in the extreme south-east of Bengal, and via the hill section with Manipur Road and North-East Assam. An excellent airfield was available a short distance from the hospital centre, and was connected by a good road. Climatically, Dacca was not by any means ideal for a hospital base, at any rate for British Troops. However, Shillong, the only area in E. Bengal and Assam with a cool climate suitable for such a hospital base, was completely inaccessible, except by long and difficult road journeys.

Wingate's Expeditions : Air Evacuation

At the beginning of 1943, Wingate's first experimental long range penetration force set out from Imphal and crossed the Chindwin to attack the Japanese L of C from Mandalay to MYITKINA. For this force there was no possibility of evacuating casualties other than carrying them with the column. In the case of one column, however, a Dakota transport aircraft was sent in to evacuate 17 casualties from a clearing in the teak jungle near BHAMO. This clearing was later selected as the "Piccadilly" landing area for the second (1944) Wingate expedition. In spite of the fact that the clearing was 400 yards short of the desired 1,200 yards minimum for a

Dakota aircraft, the evacuation was successfully accomplished. General Wingate's experiences in this campaign prompted him strongly to recommend a fleet of ambulance aircraft for the evacuation of casualties. Having to abandon casualties in the jungle was too great a strain on the men and especially the commanders concerned. The effect on morale of an efficient and rapid casualty evacuation system, especially in long-range penetration behind the enemy lines, is very great.

At the Quebec conference in 1943 it was envisioned that all casualties should be evacuated by air from the second Wingate expedition into Burma. The Air Commando Force provided by the U.S.A.A.F., for the second (1944) Wingate expedition included L1 (Vultee Vigilant), L5 (Stenson Reliant), C64 (Norseman) and C47 (Dakota) aircraft equipped for this purpose.

Development of Comilla as a Centre of Communication and H.Q. 14th Army

During 1943, COMILLA became an important focal point in Eastern Bengal for operations against the Japanese. Its central position between the Arakan and Assam fronts, its location on the B. & A. railway from Chittagong to Manipur Road and Dacca, its suitability as a centre of signal communications and for airfield construction, were tactical reasons for its selection as H.Q. of the 14th Army and 3rd T.A.F. and for Reinforcement Camps. Hospital cover was made available for the number of troops in the camps and garrison only. Hospital areas were established for the Assam front in Imphal and for the Arakan front mainly at Dacca, with additional cover at Cox's Bazaar, Doapalong and Chittagong. When air evacuation from the Arakan was planned, Comilla was already the base for aircraft which would take supplies in and bring casualties out. Hence Comilla was destined to develop into the forward hospital area for the Arakan front for those patients who could be evacuated by air.

The Second Arakan Campaign

The second Arakan campaign began after the monsoon of 1943. The objective was again AKYAB, with a Corps attack instead of the divisional attack of 1942. Owing to a last minute withdrawal of landing craft for use in Italy, the combined operations attack from the sea had to be cancelled. For this reason, the attack followed the pattern of the 1942 campaign. One division advanced along the coast, west of the Mayu range, with MAUNGDAW as the first objective. A second division crossed the Mayu range at the GOPPE and NGAUKEDAUK passes and advanced down the KALAPANZIN valley with BUTHIDAUNG as a first objective. The 81st West African Division

entered the KALADAN river valley via the SANGU valley. The latter was an extremely difficult journey by river and track.

Casualties were evacuated from the SANGU line of communication by river, using small country craft and staging overnight in I.S.S.s sited along the valley. The nearest hospital was at DOHAZARI, where there was a rail connexion with Chittagong. During the journey by river, the ambulance sampans had to negotiate a series of rapids. Once the division crossed the range from the Sangu valley into the Kaladan valley the country was suitable for the construction of landing strips, and air evacuation became possible. Strips for light aircraft (300 yards) were constructed in about three days, and for Dakota aircraft (1,200 yards) at the more important centres in about seven days. Evacuation of casualties by air became the only method of evacuation for this division. It was the first time that the sick and wounded of a division had been evacuated entirely by air, and the experiment was a complete success. Over 1,000 casualties were evacuated. The light aircraft and some of the Dakotas took casualties to aerodromes in the Cox's Bazaar area, and other Dakotas evacuated direct to Comilla.

The main feature of casualty evacuation from the divisions in the KALAPANZIN valley and west of the Mayu range was the development and use of jeep ambulances, capable of carrying two stretcher cases. This was made possible by the engineers constructing jeep tracks to the forward areas and over the passes in the Mayu range. It represented a tremendous advance over the mule and stretcher-bearer evacuation of 1942-43.

Another feature of this campaign was the concentration of medical units for the treatment and holding of uncomplicated malaria and light sick on the Naf peninsula. This lay close to, and at some stages opposite, the fighting. Three I.M.F.T.U.s and three C.C.S.s were sited in this area and these units made possible : (i) a very great saving in movement of the sick, and (ii) earlier treatment and more rapid return to duty of a large proportion of the sick.

The Naf river provided a smooth means of transporting the sick to these units and also protected the latter from Japanese attacks. The Japanese tactics of outflanking attacks on the L of C resulted in medical units often being overrun. The use of the Naf peninsula provided a solution to this problem.

The general lines of evacuation, apart from the above modifications, were similar to those of 1942-43, i.e. R.A.P. to A.D.S. to M.D.S. to C.C.S.s or M.F.T.U.s sited on the Naf peninsula. Fewer staging sections were required along the L of C owing to the more rapid evacuation obtained by using

jeep ambulances. From the Naf peninsula the evacuation was by river to TUMBRU GHAT, by road to 125 I.G.H. at DOAPALONG and by river and road to the Cox's Bazaar hospitals. Here more patients were held (300 B.T., 1,700 I.T. and 1,000 W.A. beds). Evacuation from Cox's Bazaar was by sea to Chittagong as in 1942-43, with greater use being made of the increased hospital cover in Dacca.

reached the CHINDWIN by the end of the month. The main part of the operation was the fly-in by glider of two brigades, to selected landing areas on the Mandalay-Myitkina L of C. The landing areas were "Broadway" (North-East of Indaw) and "Piccadilly". The latter was the jungle clearing near Bhamo from which 17 casualties of the original Wingate expedition had been evacuated by Dakota aircraft. On March 5 "Piccadilly" was found to have been obstructed by the Japanese and all troops were diverted to "Broadway".

During the twenty-six days preceding D-day, light aircraft evacuated 700 casualties from the advance guard of the ground troops during their advance to the Chindwin. These patients were evacuated to the forward hospital area at Imphal, from improvised air-strips. L1 aircraft (Vulzee Vigilant) were used mostly and they were called up by wireless to land on prepared paddy fields and jungle clearings to evacuate sick. Casualties would frequently be in hospital within four to six hours of being wounded. A number of casualties from a Commando force air-landed on the banks of the Chindwin, to the south of the main crossing, were evacuated by glider. The gliders were snatched up and towed to Imphal by Dakota aircraft.

The main force which landed at "Broadway" by glider sustained casualties during the night landing. By the next day, a strip suitable for Dakota aircraft had been improvised and these casualties were the first of many to be evacuated by Dakota aircraft from the 3rd Indian Division during its operations in Burma. A further landing was made by General Lentaigne's force near Inywa, 50 miles south of "Broadway", at a landing area known by the code name "Chowringhee".

As the Chindit columns moved north, harrying the Japanese L of C, to Myitkina, the Japanese launched their bold offensive across the Chindwin, surrounded Imphal and Kohima and threatened the base and railhead at Manipur Road. Hospitals forming the forward hospital area at Imphal and Kohima had to be rapidly withdrawn and deployed. They were divided into two groups, one group being withdrawn to Comilla and AGARTALA, where the aerodromes which were to supply Imphal were sited. The other group was withdrawn to the Brahmaputra valley in north-east Assam, to cover the fighting at Kohima and Manipur Road, and also to cover the evacuation from the Chindits, which had now to be switched to DINJAN, MARGHERITA, CHABUA and SYLHET aerodromes.

As the Chindits spread their area of destruction on the Japanese L of C south of Myitkina, further landing strips were constructed near strategic points.

“Aberdeen” and “White City” were two such strips. The latter was sited near the rail block at HENU, which was the key position established by the Chindits. Considerable fighting took place for the strip itself and, during one period, ambulance aircraft were taking off with casualties, under fire from the Japanese who were holding the far end of the strip.

By early May, the strips “Aberdeen” and “White City” were evacuated and the strip “Blackpool” was developed in the Mogaung valley. By the middle of May, Stillwell was in charge of the operations designed to capture Myitkina. His American-trained Chinese, the American Maruders and British Kachin levies converged from the north, and the Chindit columns of the 3rd Indian Division from the south and west. The Air Commando Force was dissolved and General Old’s Air Transport Command took over the task of supply and provision of aircraft for casualty evacuation for the Chindits. Aerodromes in North-East Assam were used by A.T.C. aircraft and all Chindit evacuation was now to hospitals at Panitola, Dibrugah and Ledo. The monsoon restricted evacuation to the all-weather strip at Myitkina, which was captured at an early date. The plight of the Chindit columns operating in the area west of Myitkina became serious when light aircraft could no longer use emergency paddy field and jungle landing grounds. The solution was arrived at by transferring British Sunderland flying boats from Coastal Command in Ceylon to the Brahmaputra at Dibrugah. Magnificent work was done by these flying boats, which were flown across the mountain barrier between north-east Assam and Burma to the Indawgyi Lake, west of Myitkina. Although these aircraft have a low “ceiling” they were flown across the mountains through monsoon cloud and storms. Some sorties were abortive owing to poor visibility and flying conditions. Frequently the pilots had to take their aircraft through cloud-filled gaps in the chain of mountains. On numerous occasions, the weather conditions were too bad to allow their fighter escort to accompany them.

During the period from the end of May to the beginning of July over 500 sick and wounded, collected from the Chindit columns and brought to Indawgyi Lake by mule and hand-carriage, were evacuated to safety by this means. Amongst these evacuated were seriously ill cases of “scrub” typhus. The casualties were loaded on to the flying boats from collapsible dinghies. Only one flying boat was lost during these hazardous flights and that was wrecked by floods whilst moored on the Brahmaputra river during a monsoon storm.

During July, the Chindits were withdrawn, having successfully completed

their role, and they were replaced by the 36th British Division. Evacuation from the 36th Division was by A.T.C. aircraft, from Myitkina to north-eastern Assam.

The Battle of Imphal and Kohima - Development of Comilla and Agartala as Hospital Centres

The Japanese offensive against Imphal and Manipur Road was probably launched with the object of capturing the Chindit base and cutting the L of C to North-Eastern Assam. April and May of 1944 were critical months. The medical planning for the Northern front had to be completely reorganized. As mentioned above, the hospitals forming the Forward Hospital Area in Imphal and Kohima had to be withdrawn to Comilla, AGARTALA and North-Eastern Assam. The decision to form hospital areas at Comilla and AGARTALA had to be made because these were the base aerodromes from which Imphal was to be supplied. Transport aircraft returning with casualties could not be diverted and therefore hospitals had to be sited near the aerodromes. Again, owing to shortage of “Engineer” facilities, and to the enormous commitments with which the engineers had to compete, hospital sites and roads had to be improvised. Even so, improvised hospital and road construction took many weeks to be completed. As a result, only a portion of the casualties could be held at Comilla and AGARTALA, and the remainder had to be staged and further evacuated by ambulance train to the Dacca hospitals.

Thus the ideal of concentrating hospitals and bringing all casualties by air to Dacca could not be achieved, owing to the acute shortage of aircraft, and to the fact that the medical authorities had no ambulance aircraft which could be diverted at will. Throughout the battle for Imphal, one squadron of Dakota ambulance aircraft could have covered the evacuation of all sick and wounded into Dacca. The aircraft could have back-loaded supplies from Dacca airfields and peak periods of evacuation could have been covered by small evacuations in supply aircraft to Comilla and Chittagong, where hospitals were already available for garrison cover.

It was at this stage that the movement of troops and casualties by air on a large scale developed. Two divisions were flown from the Arakan to Imphal. Base installations, including hospitals, were evacuated from Imphal by air and No. 3 British Neurosurgical Unit was flown to Comilla. The latter move was unique in that the Unit did not cease to function. One aircraft carried 18 of the more seriously ill neurosurgical patients and treatment was continued immediately, by part of the unit, on arrival at Comilla.

Throughout the siege and battle for

Imphal, the number of casualties evacuated by air averaged over 1,000 per week. In the early days of this evacuation, the tendency was to arrange mass evacuations at intervals, which invariably caused a certain amount of chaos and congestion at the receiving end. A smooth flow of evacuation was soon arranged. This did much to avoid a situation which occurred at Comilla, where, at one stage, a 1,000-bedded I.G.H. was holding 4,000 patients. The next difficulty to be overcome was the indiscriminate loading of aircraft, irrespective of destination, which had resulted in the Chittagong hospitals becoming grossly overcrowded. This obstructed the evacuation of long-term cases to Indian base hospitals, as all the cases from the Arakan and from Comilla and Dacca had to be staged in the Chittagong hospitals, preparatory to evacuation by hospital ship.

This overcrowding also caused the evacuation from Chittagong of slightly ill patients to make available empty beds. Casualties were eventually evacuated only to Comilla, with an overflow to Agartala when required. This enabled a more careful sorting of types of patient to be made. Long-term cases, who required more than two months' hospitalization, were evacuated by ambulance train to Chittagong to await further evacuation by hospital ship to the base hospitals in India Command. Patients who required less than two months' hospitalization were evacuated by ambulance train to the Dacca hospitals, and the shorter term sick were held, whenever possible, at Comilla and Agartala, near to the convalescent depots and reinforcement camps, through which they would eventually be returned to their units.

The Establishment of Air Evacuation

From this point, air evacuation became the established and only practical method of evacuation. The acute shortage of aircraft and the lack of control of the destination by the medical authorities had a very great influence on medical planning in the succeeding stages of the Burma campaign. Its influence in the establishment of hospital centres at Comilla and Agartala, instead of the ideal concentration of these hospitals at Dacca, has been outlined above. The outstanding achievement of air evacuation was the hospitalization of casualties far from the battle areas within a matter of hours. Air evacuation reduced the time lag in evacuation from the days required during 1943 to hours. This, compared with weeks required in the 1942 campaigns, represented a considerable advance.

Such concentration of large numbers of patients raised great difficulties in sorting, both forward at Imphal and at Comilla. A directive on the evacuation and distribution

of sick and wounded was issued by the medical branch of the 14th Army. This directive was an attempt to improve the sorting of casualties throughout the line of evacuation. The objects aimed at were :

(i) The retention of all sick and wounded who could be expected to recover within a period of three weeks, in Forward Hospitals and Malaria Forward Treatment Units.

(ii) The efficient and rapid evacuation of all longer-term cases to Comilla, Agartala or Dacca, where all patients who could be expected to recover within two months were to be retained.

(iii) The rapid evacuation of all patients who would require longer hospitalization than two months to the base hospitals in India Command.

(iv) The early selection of certain special types of serious and urgent cases, such as gunshot wounds of the head, maxillo-facial, penetrating eye wounds, severe burns, fractures of the femur, etc., and their rapid selective evacuation to the specialist units where they could be treated most efficiently.

These cases demonstrated, more than others, that air evacuation, when efficiently organized and skillfully used by those selecting patients for evacuation, was a life-saving measure. The Air Surgeon of the U.S.A.A.F. classed air evacuation with blood plasma, penicillin, etc., as a means of saving life during battle.

The correct use of air evacuation is important. Evacuation at the wrong stage, for example, in burns cases, where secondary shock is likely to develop; or, typhus patients after the fifth day and before convalescence, may be highly dangerous. The list of contra-indications for air evacuation includes the following :

- (i) Shock.
- (ii) Abdominal and thoracic wounds.
- (iii) Acute abdominal conditions.
- (iv) Recent severe haemorrhage, including haemoptysis and haematemesis.
- (v) Gas gangrene.
- (vi) Chemically gassed.
- (vii) Pneumothorax.
- (viii) Pneumonia.
- (ix) Angina pectoris.
- (x) Coronary occlusion during the first month.

It is suggested that air evacuation should be regarded as another instrument placed in the hands of the medical services with which to reduce mortality and morbidity and extend the availability of highly specialized medical treatment. To achieve the above, it is essential that aircraft should be available on the request of the surgeon or physician in charge of patients. An aircraft is frequently required urgently, and it is essential that, at least, a proportion of the aircraft allotted for casualty evacuation should be reserved *primarily* for a casualty

evacuation role.

For such urgent use, the Norseman aircraft, produced by the Noorduin Aircraft Company in Canada, has many advantages. This aircraft was used by the American Air Commandos in Burma as a medium transport plane, and was known as the C64. It is capable of easy conversion to carry two or three stretcher patients, suspended by modifications of the standard webbing slings from the roof of the cabin, or it can carry five sitting patients. The Norseman has been used in Canada for snow landings with skis, it can also be fitted with floats, and was used to evacuate casualties in Burma during 1944-45.

The peacetime use of this type of aircraft as an ambulance plane in India and the Far East would greatly extend the area and increase the speed of availability of highly specialized medical treatment. The aircraft is a high-winged monoplane, giving easy access for stretcher bearers from all angles, with wide doors on each side of the cabin at stretcher hand-carriage height.

Phase Three

The Liberation of Burma. Introduction and Casualty Evacuation Scheme 1944-45

With the defeat of the Japanese offensives in the Arakan and at Imphal and Kohima, during 1944, largely by the use of air power, the stage was set for the third phase in the campaigns for Burma. This was the final reconquest of Burma by the 14th Army, the 36th Division and the 15th Indian Corps. The 15th Indian Corps in the Arakan and the 36th British Division in North Burma were placed directly under the command of H.Q. Allied Land Forces S.E.A., whilst the large L of C areas of the 14th Army, 15th Indian Corps and 36th British Division, in Assam and Bengal, were administered by an L of C Command. All hospitals were sited in L of C Command, whilst each Corps developed Corps Medical Centres, in duplicate, from Casualty Clearing Stations and Malaria Forward Treatment Units. Field Medical Units were attached to

Divisions in the usual manner. The Central Group of hospitals in L of C Command at Comilla, Agartala and at Dacca were designated Advanced Base Hospitals and totalled approximately 12,000 beds.

A directive on the evacuation and distribution of casualties was issued by D.D.M.S. L of C Command on the instructions of D.M.S.A.L.F.S.E.A. The line of evacuation of casualties was to be as below left:

Air evacuation had already become the most important method of casualty evacuation in 1944. In the advance into Burma it was the only practical method and was used on a greatly extended scale. The medical planning was based on all-air evacuation from forward areas, whilst full use was to be made of the other surface methods of evacuation in rear areas.

The divided nature of the Advanced Base Hospitals Group, with hospitals sited at Comilla, Agartala and Dacca was not ideal, but the reasons for it have been traced in Phase II above. Shortage of aircraft and of engineer facilities sufficient to rebuild accommodation for 12,000 hospital beds at each move of the air supply base, even if this were desirable, and lack of control of the destination of casualty carrying aircraft by the medical authorities still made it impossible to centralize all the Advance Base Hospital beds in one area.

The Advance from Imphal to the Chindwin

The third phase began after the defeat of the Japanese army besieging Imphal, with Lord Louis Mountbatten's decision to fight on through the monsoon and pursue the defeated remnants of the Japanese forces from Imphal to Tamu and down the Kabaw Valley. Apart from the difficult mopping-up operations around Imphal and Kohima and along the hill tracks towards the upper Chindwin valley, the main drive took the form of two columns, one along the Tamu road to Sittaung on the Chindwin and down the Kabaw valley and the other along the hill road to Tiddim into the Chin Hills and then into the lower part of the KABAW valley.

Evacuation of casualties was difficult. Owing to the mountainous nature of the country and the rains precluding the use of other than all-weather strips, casualty evacuation by light aircraft from forward areas was impracticable. The evacuation service was thrown back to the methods used during the early Arakan campaigns, in country which was much more mountainous and was often more difficult to negotiate. The old methods of evacuation by hand carriage, mule carriage and jeep ambulance were resorted to. The unmetalled roads were soon churned to mud and, frequently, lengths of road

R.A.P. -

FIELD AMBULANCE	CORPS MEDICAL CENTRE	ADVANCE BASE HOSPITALS	BASE HOSPITALS
(A.D.S. sometimes split off and forming additional link in chain). <i>Function</i> First Aid and Emergency treatment.	Unusually 2 C.C.S.s and 2 M.F.T.U.s with some special units, e.g. Ophthalmic Units, Head Injury Unit, Corps Psychiatrist, etc. <i>Function</i> Major Emergency treatment - holding all cases expected to be fit within 3 weeks.	<i>Function</i> Definitive treatment of all except long-term cases and treatment of special cases, e.g. Head Injuries, Gunshot Wounds of Femur, Maxillo-Facial Injuries, Severe Eye Injuries, Psychiatric Cases, Severe Burns. Holding all cases expected to be fit for discharge within 2 months (altered in 1945 after main battles to 3 months).	<i>Function</i> Long-term treatment of all kinds. Receiving all patients not expected to recover within 2 and later 3 months.

became completely impassable to wheeled traffic. The continuous heavy monsoon rain caused frequent landslides along the hill sections of the roads, which were cut as ledges into the steep slopes. In the valleys, especially the KABAW valley, the wheels of the ambulance vehicles and jeeps would sink to the axles in the deep, sticky, black, alluvial clay. The four-wheel drive of the ambulance jeeps and cars could not compete and manhandling of the vehicles over the worst sections was resorted to by the East African, Indian and British troops. To quote a specific example of the difficulties encountered : A jeep ambulance convoy took two days and two nights to travel from Sittaung on the Chindwin river to Tamu, the nearest air-strip. This journey could normally be completed in a few hours, but mud and landslides caused the delays. From Sunle to Tamu, along the Kabaw valley stretches of the road were completely impassable to wheeled traffic. Stretcher carriage was resorted to from Pantha to Tamu, a distance of 7 to 10 miles. A section of river from Sunle to Tamu was found to be navigable and "Dukws" were brought up to evacuate the casualties by this route.

"Dukws" had already been used to evacuate casualties on stretches of the Pruma Chaung and the Naf River in the Arakan. They proved extremely valuable over short distances and avoided change of transport at road-river junctions along the

line of evacuation. Stretchers could be placed on the decks of these vehicles. The main disadvantages were difficulties of maintenance, their large size and, in Burma, the difficulty in obtaining them for casualty evacuation work.

As the monsoon ended and the ground dried, it became possible to construct light aircraft strips along the Tamu-Kabaw valley road, but owing to the nature of the country, this was not possible along the mountainous Tiddim road. The aircraft evacuation made it possible to evacuate almost all serious cases. Hitherto, the very ill patients had been held forward in Field Medical Units as they were totally unable to withstand the physical hardships of the evacuation line. It was still necessary to hold the very ill casualties along the line of the Tiddim advance. Unfortunately these troops ran into one of the worst of the scrub typhus belts and the congestion in the forward units was extreme.

Along the Kabaw valley axis of advance, light aircraft strips were constructed at intervals of approximately 50 miles, and evacuation by L5 and Moth light aircraft was then possible. Evacuation of casualties by glider was also carried out during this advance, where absence of trees made it possible for the Dakota aircraft to snatch the gliders from the ground by means of nylon ropes. For instance, WAYCO CG4A gliders were used to evacuate casualties from Khampat to Imphal until four gliders crashed on landing. There was no loss of life or major injury to the patients in this accident, but the aircraft were rendered unserviceable. The "Wayco" glider was able to carry up to 15 sitting patients, or four lying patients in double-tier stretcher slings and five or six sitting patients. The patients were accommodated in the cabin with the stretchers slung along the long axis of the aircraft on either side, immediately behind the pilot's cabin. The nose of the aircraft dropped to allow the loading and removal of the casualties.

The attached diagram shows the methods of evacuation which were used during the advance down the Kabaw valley. It will be noticed that whilst the troops were operating just forward of YAZAGYO, a light strip was being constructed near this village. Evacuation by mule from the troops attacking MAWLAIK was necessary owing to the lack of jeepable tracks and the impossibility of constructing a light strip at that period. The evacuation by stretcher bearer from Pantha to Tamu and by "Dukws" from Sunle to Tamu was necessary until light strips were built and the roads became passable after the monsoon.

For the drive to capture KALEWA, 33 Corps sited the Corps Medical Centre in the area YAZAGYO-INBAUNG. The

centre consisted of two I.C.C.S.s, one I.M.F.T.U., two I. X-ray units, one F.T.U., one Dental unit, one I.S.D.M.S., a Corps Psychiatric Centre, an M.A.S., an E.A.M.A.C., and three sections of American Field Service jeep ambulances. Here all casualties who were expected to be fit for discharge to duty within a period of three weeks were held and treated. Surgical cases were concentrated in the C.C.S.s, whilst all malaria and the majority of the medical cases were treated at the M.F.T.U. Casualties came in by light aircraft from MAWLAIK, NANZALEIN, KALEWA, etc., and "over three weeks" types of patients were re-evacuated in Dakota and Commando transport ambulance aircraft to the Advance Base Hospitals at Comilla. This Corps Medical Centre was a prototype of the Corps Medical Centres established throughout the advance into Burma. Approximately 60 per cent of casualties were held and treated at this level, and a considerable saving in man-power and casualty movement was achieved. Of the remaining 40 per cent which were evacuated to the Advance Base Hospitals, it was found that 25 per cent (i.e. 10 per cent of the total) required further evacuation to Base Hospital level for hospitalization longer than three months.

The Advance into Southern Arakan and across Central Burma

With the capture of the bridgehead on the Chindwin River at KALEWA, the 14th Army was now prepared for the bigger operation, the advance across the plains of Central Burma to cross the Irrawaddy and capture Mandalay. Further south the 15th Indian Corps was given the task of advancing down the Arakan coast by combined operations with the Navy and Air Forces. After air and sea bombardment, AKYAB was occupied by land from the Kaladan valley and by a landing from the sea. Ramree Island was captured. Having secured these two vital air bases, further landings were made on the mainland opposite Ramree Island behind the Japanese forces. Pockets of Japanese were cut off from their supplies and destroyed repeatedly until they were driven from Taungup into the Irrawaddy valley at the time that the 14th Army troops were advancing south from MEIKTILA to cut off their retreat.

Some of the fiercest fighting in the 15th Corps campaign was during the landings south of Akyab at MYEBON, KANGAW and AN, etc. The evacuation from the beaches was planned to take place in three echelons. Casualties were collected at a Beach Dressing Station formed by a Beach Medical Unit, where "first aid" surgery was carried out. They were then evacuated by L.C.M.s and L.C.T.s to an L.C.I.(D),

commencing after the third wave of L.C.M.s and L.C.T.s came in. On this Depot craft there was a M.S.U. plus 100 beds where "emergency" surgery could be done. The third echelon in the forward evacuation from the beaches was to a hospital ship which ideally would come to within two miles of the shore. It will be appreciated that owing to the nature of the coast, with its long, tidal chaungs and shallow mangrove swamps, this ideal arrangement was not always practicable. Coastal ambulance steamers (the "Nulcher" and "Badora" - capacity 175 patients) and ambulance creek steamers "Agni", "Vanu" and "Lali" (capacity - 40 lying and 60 sitting patients) were used. In emergency, as at KANGAW all manner of craft were pressed into use. The creek steamers operating with the 82 W.A. Division, between the remote chaungs and creeks at TAUNGUP and GIWA Creek and Ramree Island were equipped with radio to give information of arrival and numbers of patients, etc. This was extremely valuable and improved despatch and reception arrangements.

After the beach-heads were established, an attempt was made to "filter" the short-term cases (under three weeks) and evacuate them by coastal ambulance steamer to the Corps Medical Centre established at Akyab and later at Kyankpyu on Ramree Island. Light aircraft strips were constructed and the more serious cases flown quickly by L5 aeroplanes to the Corps Medical Centres. At Kyankpyu, the light aircraft strip was sited immediately adjacent to one of the C.C.S.s in the Corps Medical Centre, and casualties would be hand-carried from an aircraft taxied to within a short distance of the wards. After treatment here, the patients were evacuated by Dakota aircraft to the Advanced Base Hospital area at Comilla. Patients were also evacuated by ocean-going hospital ships ("Karoa", "Karapara", "Amarapoor", "Ophir", "Vasna", "Melchior Treub" and "Wu-Sueh") and were taken to Chittagong. At this port, the Advanced Base Hospital types of patients (prognosis indicating recovery with three months) were off-loaded to be despatched by ambulance train to Dacca, Agartala and Comilla, whilst long-term patients remained on board, and other long-term patients concentrated at Chittagong from the Advanced Base Hospitals and the Northern front were embarked for Base Hospitals in India Command.

In the North, the main drive into Burma developed across the Chindwin. The 33rd Corps advanced to the line of the Irrawaddy, opposite and north and west of Mandalay. The 19th Indian Division crossed the Chindwin at Sittaung, marched across the jungle-covered mountains of North Burma to link up, near Wuntho, with

the 36th Division advancing south along the Irrawaddy from MYITKINA. Both these divisions drove south to take Mandalay from the north, the 36th Division taking the more easterly route across the Schweli river and through the Southern Shan States. Evacuation in the 33rd Indian Corps was almost entirely by air, taking the pattern of light plane evacuation to the Corps Medical Centre, and Dakota evacuation from this centre to the Advanced Base Hospitals at Comilla. The two Medical Centres of this Corps leap-frogged over each other during the advance. The main fighting took place at the battles for the bridgeheads over the Irrawaddy. During March 1945, 4,052 casualties were evacuated from the 33rd Indian Corps Medical Centres to the Comilla Advanced Base Hospitals.

Whilst 33 Corps was advancing towards the Irrawaddy the 4th Indian Corps put in a large-scale armoured thrust across the Irrawaddy, south of Mandalay, captured MEIKTILA and cut the L of C and line of retreat of the Japanese forces in Mandalay. Evacuation was again by light aircraft to the Corps Medical Centres and Dakota aircraft to the Advanced Base Hospitals. During April, 3,736 casualties were evacuated from 4th Corps Medical Centres to Comilla. The total light aircraft evacuations for the two corps were 8,309 in March and 4,950 in April ; and for Dakota aircraft, 6,608 in March, and 4,720 in April.

Organization of Air Evacuation

The organization of the air evacuation was briefly as follows :

- (1) Medical branches of the formations

concerned estimated the approximate number of casualties which would require evacuation each day : (a) by light aircraft to the Corps Medical Centre ; (b) from Corps Medical Centre to the Advanced Base Hospital Group.

(2) These figures were transmitted to the Army Air Transport Organization at fortnightly intervals and aircraft allocations made accordingly. Any operational variation from the planned requirement was signalled immediately to this organization, who requested diversion of R.A.F. aircraft accordingly.

(3) E.T.A.s of transport ambulance aircraft (1(b) above) were signalled to the forward evacuation units on the strips and the formations concerned.

(4) Light aircraft normally worked on direct request from formations, i.e. the Division or perhaps Brigade to the squadrons concerned.

(5) The Casualty Evacuation Units used on the airstrips in Burma were mostly Indian Staging Sections (could handle efficiently 200 patients per day) and occasionally Indian Field Ambulances (could handle 1,000 patients per day). Towards the end of the campaign, R.A.F. Casualty Air Evacuation Units were used to reinforce the I.S.S.s, and were admirable units for dealing with British Troops. These units were responsible for staging the casualties whilst awaiting the arrival of aircraft and loading the aircraft. An ambulance pool was attached to these units.

(6) At the receiving aerodrome, an aircraft carrying casualties, on approaching the circuit of the airfield, informed the control tower by radio of the number of lying and sitting patients carried. This was passed on to the evacuation unit, together with the unloading bay number. The aircraft was unloaded and the patients given food, rest and any necessary medical attention before being distributed to the appropriate hospital in the Advanced Base Group.

(7) No additional documentation other than the Field Medical Card 3118 and 3118A was considered necessary. Manifests were prepared in triplicate for the number of patients making a Dakota load and were distributed to the dispatching and receiving units, the third being retained by the pilot.

Final Stages of the Reoccupation of Burma

After the defeat of the Japanese forces at Mandalay, the 4th Corps and 33rd Corps of the 14th Army advanced along the Mandalay railway line and down the Irrawaddy valley respectively, to Rangoon, whilst the 15th Indian Corps mounted a combined operation from Ramree and Akyab. During this advance, the troops outdistanced the economic pay load of a Dakota aircraft from the Comilla airfields. In addition, large numbers of transport aircraft were withdrawn and it became necessary to stage casualties through Akyab

and Ramree, and later, to stage them at Chittagong and evacuate to the Advanced Base Hospitals by ambulance train from this point. This unfortunately prolonged the evacuation time considerably, but by this time all the more severe fighting had finished and the numbers to be evacuated fell considerably.

Phase Four

The Occupation of Burma and After The Establishment of an Advanced Base Hospital Group in Rangoon

The medical planning for the occupation of Burma and subsequent operations against the Japanese, included an Advanced Base Hospital Group consisting of 10,000 beds at Rangoon. Owing to the early conclusion of the fighting in South-East Asia, this number of beds was only reached as an emergency measure to cope with the sudden influx of Recovered Allied Prisoners of War and Internees.

Approximately 16,000 R.A.P.W.I. were evacuated from Siam and French Indo-China by air to the hospitals in Rangoon, during the last week of August and September 1945. The large majority were flown from Bangkok. Those evacuated from Saigon in F.I.C. were staged at Bangkok *en route* to Rangoon.

The proposed evacuation plan for the occupation of Burma is shown in the diagram. The Advanced Base Hospital Group at Rangoon was designed to hold patients whose recovery was expected within three months and included special units for the treatment of such highly specialized types of case as maxillo-facial, head injury, severe burns, gunshot wounds of the femur, severe eye injuries and certain psychiatric patients. Hospitals sited at MEIKTILA and KALEWA were

Diagram of Evacuation of Casualties and Sick Recovered P.O. Ws, Oct 1945

Evacuation by Air.
Evacuation by Hospital Ship.
Evacuation by Rail.
Airfields.
Advanced Base Hospital Centres.

Casualty Evacuation Plan for Burma, 1945

Evacuation by Sea or Road.
Evacuation by Rail.
Evacuation by Air (Transport Aircraft).
(Light Aircraft).
Airfields.
Garrison Hospital Centre at Meiktila.
Advanced Base Hospital Centre at Rangoon.

designated Garrison Hospitals and held "up to three months" patients apart from the highly specialized cases listed above.

The Occupation of Malaya and South-East Asian Territory Held by the Japanese

A similar plan to the one for Burma outlined above was envisaged and put into operation for the evacuation of R.A.P.W.I. in September 1945. An Advanced Base Hospital Group was built up in Singapore. The aim was eventually to site 8-10,000 hospital beds in Singapore. Evacuation was by transport-ambulance aircraft and hospital ship from the Garrison Hospitals sited in Java, Sumatra, Borneo, Malaya, Siam, French Indo-China, Hong Kong and Japan, to the Advanced Base Hospital Groups at Singapore and Rangoon. This plan was in operation for R.A.P.W.I. and other sick for all the areas mentioned above, with the exception of Japan, in October 1945.

In this way, considerable saving in manpower loss from sickness, hospital beds, and certain specialists and specialist equipment was effected.

Appendix

I would like to express my thanks to Lieutenant-General T.O. Thompson, D.M.S. Supreme Allied Command South-East Asia, later D.M.S. in India, for kindly

Air Evacuation Statistics for 1944 and 1945 (January to September)

Date	Evacuated by light aircraft from battlefield to Corps Medical Centres	Evacuated by transport ambulance aircraft from Corps Medical Centres to Advanced Base Hospital Groups	Evacuated from Advanced Base Hospital Groups to Base Hospitals	Evacuated by transport aircraft from base areas of Bengal and Assam to Advanced Base Hospital Groups	Evacuation of sick R.A.P.W.I. by transport aircraft	Grand totals
1944	2,363 +	67,321	5,897	-	-	75,581
1945	20,818 +	43,113	7,265	13,012	18,578	102,786
	<u>23,181</u>	<u>110,434</u>	<u>13,162</u>	<u>13,012</u>	<u>18,578</u>	<u>178,367</u>

N.B. + = figures very incomplete.

allowing me to refer to his personal notes of the early stages of the Burma Campaigns and for other assistance, also to Major-General W. Tyndall, D.M.S. Allied Land Forces, South East Asia, and to Brigadier H.G. Winter, formerly D.D.M.S. 14th Army and L of C Command. I wish to thank the D.G.A.M.S. for permission to publish this paper.

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