HELICOPTERS AND JUNGLE RESCUE

Captain G. J. S. WEIR, M.B., Ch.B., R.A.M.C.

24 Field Ambulance, R.A.M.C. *

SUMMARY: The author's experiences with the Far East Air Force Parachute Rescue Team are recorded. Special mention is made of the technique of abseiling. The setting up of Independent Brigade Group Abseil Teams and their suggested tactical roles are outlined and discussed.

From July 1967 until my return to the United Kingdom in December 1968 I was lucky enough to serve as Senior Medical Officer to the Far East Air Force (F.E.A.F.) Parachute Rescue Team based on Royal Air Force (R.A.F.) Changi, in Singapore. In this article I have recorded some of my experiences with this team and tried to draw some conclusions of value to the tactics of our own Corps.

The F.E.A.F. Parachute Rescue Team consists of some twenty or so volunteers who to quote from its standing orders '... day and night are to be prepared to parachute anywhere, where it is considered by so doing aid will be rendered more quickly than by local forces or by civilians. The Team has been primarily formed for rescues from the jungle following aircraft crashes but aid is also envisaged for those in inaccessible places, on islands or even at sea.'

Leadership of the team is vested in the Commanding Officer of the F.E.A.F. Parachute and Survival School, and his officers and non-commissioned officers form the bulk of its members. The School has, in addition to its responsibilities to the team, two main functions: *firstly* it runs basic and continuation parachute training courses for all Commonwealth Forces in the Far East, including the Independent Gurkha Parachute Company; *secondly* it trains R.A.F. and Army aircrew in the elements of jungle survival craft.

A casual remark to an R.A.F. colleague that I always had a 'yen' to parachute (a convenient rationalisation of loud and persistent cries from my super-ego that I hadn't the guts to do it) brought the surprising reply that the team were, in fact, looking for a parachuting doctor. In the absence of any takers from the ranks of the Junior Service I was offered the job, and after completing eight descents on the Basic Parachute Course and some theoretical and practical instruction in jungle craft I became the team's doctor.

The Basic Parachute Course at Changi differs but little from its more famous relation at Abingdon. Students do not have to pass any of the physical-cum-psychological tests as in the United Kingdom, as these are personnel selection tests for the Parachute Brigade, and nothing to do with the gentle art of parachuting *per se*. Facilities at Changi lack the variety and the sophistication of training simulators available in Britain and there is, in consequence, less gradation between the theoretical and the real. The first two descents are made from a Twin Pioneer and not from a captive balloon: more practical if less frightening.

It is certainly an incalculable morale booster to have a team cemented together by the common experience of precipitating themselves out of aeroplanes. Apart from this, however, the parachute has little part to play in peacetime rescue missions involving

* Formerly Area Medical Officer, Singapore.

crashed aircraft in the jungle. With the exception of the sea and the desert, areas upon which it is comfortable to parachute are generally more readily accessible to surface relief parties. Jumping into trees is a potentially hazardous escapade and consideration must be given to the real possibility of serious injury in any rescue party trying to do so.

The jungle rescuer is spared these possible indignities by two post-war developments which have become the lynch-pins of modern jungle rescue techniques. The first of these, of course, is the helicopter and its widespread distribution throughout the areas in which the British Army serves. The tallest of the 'jungle giants' stands some one hundred and ninety to two hundred feet high and the longest winch in operation with the R.A.F. or Army Air Corps is considerably shorter than this. Because of this the helicopter alone leaves the rescuer seventy helpless yards above his patient.

Direct in line of descent from the apparatus developed by the Special Air Service (S.A.S.) for lowering themselves to the ground after their parachutes had snagged in the jungle canopy comes the second development: helicopter descent equipment, hereafter decried as 'abseil'. Abseil is, in fact, controlled friction retardation descent down a line suspended from a fixed point, in this case a helicopter.

Many applications of this principle have been tried with varying degrees of success and this is certainly not the place to detail them at length. In the version employed at the end of my time in Singapore by both the F.E.A.F. and Royal Marine teams this line was a one and three-quarter inch wide strip of flax webbing with a breaking strain of somewhere in the region of three thousand pounds. The friction-retardation takes place on a bottle-opener shaped piece of metal secured by way of a *carabinier* to a canvas 'bikini' (Fig. 1).

Fig. 1. 'Bottle-opener' showing the tape before tightening. Below the Carabinier (sometimes anglicised to Karabiner) in open and closed positions.

Once the helicopter is over the crash site the pilot nestles down as low as he can among the tree tops. After securing one end of the webbing to a strong-point the despatcher throws the remainder from the door. With his bergen on his back and his 'bikini' around his waist and the carabinier dangling from the 'bikini', the rescuer

leaves his seat and moves to the door where he hands his 'bottle-opener' to the despatcher. The latter then pushes a knuckle of tape through the large aperture of the 'bottle-opener' and then loops it around the shank. The tape is then pulled tight and the small aperture of the 'bottle-opener' connected to the 'bikini' by way of the carabinier. Once the screw on the latter is threaded shut the rescuer is ready, first, to ease himself into a sitting position on the aircraft sill with his legs dangling over the side and, then, to step off into space.

Stout leather gloves are worn for the descent. The left hand remains high to keep the tape from the face while the right acts as a speed regulator. If it grasps the tape to the side of the body with the elbow extended then the descent will be halted (Fig. 2).

Fig. 2. F.E.A.F. abseil rig from the side. the right hand is shown in the stop position.

If, however, the tape is raised upwards and outwards over the open palm with the elbow partially flexed the descent will be faster (Fig. 3). *Élan*, coinciding with a fast (dry) tape, can lead to excessive gluteal bruising but the system is all but fool-proof. It is certainly Weir-proof as my first two descents were on operational rescue missions, never having seen the equipment before. If on these occasions there was little *élan* there was no bruising.

Fig. 3. F.E.A.F. abseil rig from the front. The right hand is shown in the descent position.

In the early days of this technique the rescuers were lowered initially to the foliage canopy by winch and the abseil tape was secured to a stout branch preparatory to a secondary descent to the ground. It was soon found, however, that the downdraft from the rotors conveniently spreads the vegetation aside and permits easy passage to the ground in a single stage drop.

Some teams sling their bergens below them attached to their 'bikini' harness by a length of abseil tape. This can act as a shield against the odd branch or two that may come the rescuer's way. The R.A.F. team now wear a figure of eight sling of the same material around the shoulders. From this a second carabinier passes forward to encircle the descent tape. This acts as a safety precaution against falling backwards—which is especially prevalent when the bergen is worn on the back.

Once in the jungle and with his patient the rescuer is faced with the problem of evacuation. This can be done either by constructing a helicopter hovering or landing zone or by using one of the 'reverse abseil' techniques as described below. My own operational experience is confined to three crashes in West Malaysia during the period of my service with this team: a Royal Malaysian Air Force Twin Pioneer which came

down on Bukit Dyak near Kuala Lipis in Pahang, a Beverley which flew into Bukit Kendok near Mersing in Johore, and a Whirlwind which dropped in the Tenglu Swamp, also near Mersing.

In the first two cases the absence of survivors removed any undue urgency from the proceedings and in the third the very slightly injured aircrew had already been removed (using the multiple lift method described below) by a second helicopter in the area at the time of the crash.

In the case of the Pioneer the team abseiled into primary jungle from about one hundred and ninety feet to a spot some twenty yards from the wreckage. Using both explosives and power saws, the clearing of a hovering zone on the steep slopes big enough for an Alouette (Scout-sized) helicopter to come within winching distance, took about five hours. This figure could, doubtless, have been shortened had the presence of a severely injured man justified some disregard of natural and prescribed caution. The point remains, however, that the cutting of landing zones is a time-consuming and, often, an unnecessary business.

In both the Pioneer and Beverley crashes the bodies were located as quickly as possible, extricated from the debris, and placed in heavy plastic bags fitted with air-tight zippers for evacuation by winch. It is of obvious importance that the debris is disturbed as little as possible so that no possible evidence is denied to the Board of Enquiry which, reasonably, comes in the wake of the rescuers. Sketch maps and, ideally, photographs record the scene before any alterations are made. Of especial importance are the relationships of the bodies to recognisable personal articles, in particular, the circumstances relating to seat strap buckles and flying helmets should be recorded. Each body bag is marked internally and externally with a serial and the same identification serial is fixed to a cleft stick placed at the spot where the body was discovered. (Fig. 4).

Fig. 4. The Beverley crash. Scorched tree trunks are cut away to reach a body. The stick with the paper in its cleft indicates the position from which a previous body was removed.

The Beverley carved such a slice out of the primary jungle that it was possible to abseil directly onto the wreckage and winch out with only the most cursory of cutting of charred stumps. (Fig. 5).

Fig. 5. A Scout hovers over the scene of the Beverley crash.

In a tactical situation things are very much different and a speedy evacuation is the object of the exercise. Two methods are possible, and both are part of the capability of the Royal Marine Team in Singapore. If the helicopter is fitted with a hundred-foot winch then the abseil tape may be discarded and a ninety-foot lifting tape lowered on the winch hook. The patient (in a Neil-Robertson stretcher) and attendant can be winched upwards—as far, that is, as a point 90 feet below the helicopter. The lifting tape is then transferred to a strong-point inside the helicopter by means of a side strap, and the winch hook lowered to pick up the load and complete the ascent.

An alternative to this safe (if time-consuming) process is the 'quick snatch' in which the helicopter simply pulls away with the patient and attendant underslung by 200 feet of abseil tape. At the time of writing I have no personal experience of this method. However, as early as 1967, McMullen wrote in the *Journal* of his own Corps:—

'... the abseiler has both hands free and is constantly in contact with the pilot over his radio. As soon as the load is free of the trees he informs the pilot who flies off to a

suitable landing site. Surprisingly there is no whipping of the load in flight and speeds of 35 knots were reached in training without discomfort.

At the landing site the aircraft descends slowly until the two men are on the ground, then lands beside them and the casualty is lifted normally. The radio is of immense value and can be used by the abseiler while in flight. This method is extremely quick and the only time-consuming part is in getting the casualty into the stretcher. The aircraft could fly off while this was done and then lower another tape as soon as the abseiler radios that he is ready.

It is an alarming experience to 'fly' 200 feet below a helicopter on the end of a tape but until British helicopters get the 200 feet winch wire it is the only really quick way a casualty can be lifted from primary jungle."

The scale of medical stores and equipment devised over the years by the various doctors on the Changi Team has come to resemble pretty closely that carried by the Regimental Medical Officer. They are packed in four carefully padded metal boxes (in the order of 3' x 2' x 1') which can with equal ease be lowered on abseil tapes or made up into loads for dropping by parachute.

In addition to his personal effects the doctor is well advised to carry in his bergen a scaled down version of his boxed kit. It is surprising just what can be secured in, on, or under a bergen. My own load included a treatment canopy and an examination couch. Lest it be thought your author is of Herculean strength let it be said that the latter consisted simply of an open ended sausage of parachute silk requiring only two seven-foot and four four-foot bamboo poles to turn it into a rigid bed. It is equally useful for rigging improvised stretchers and no field medical officer in the tropics should be without one. Also carried about my person was a folding Thomas Splint, surgical instruments (including amputation saws), pentothal, chloroform, saline, dextran, as well as the commoner injectables, dressings and tablets. Blood was carried in the veins of the rescuers; the doctor carrying a plentiful supply of collecting/administering sets. This would have enabled the doctor at the very least to have begun to cope with multiple casualties while the rest of the team got his heavier kit onto the ground. It is stressed that I had only to be pulled on board an aeroplane and fall out of it at the other end on to a parachute or abseil harness: it was not proposed to carry this load through the jungle.

Samuel (1968) describes an admirable four part folding version of the Thomas Splint using the Airborne Shelter Joint and a simpler 'camp bed' joint version designated the *Reid Coomber Mark One*. Inherited by me from one of my predecessors, and apparently in use for some years, was a two part version of this simpler type. A Thomas Splint which splits in this way can be conveniently carried below the bergen in a ground sheet bundle.

Ross (1968) writing on the handling of mass casualties makes a number of practical suggestions which the members of the team found of value.

This is the lesson, then, for the R.A.M.C.: a doctor can descend to virtually any spot in primary jungle, administer first aid and execute an almost immediate evacuation. This abseil capability has been utilised by the Royal Marines and by the Royal Air Force. It does not seem to have found its way into the field tactics of the Royal Army Medical Corps at this time.

Despite the climate of economic and military restraint this lesson would appear to

suggest the establishment of a new field formation: the *Independent Brigade Group Abseil Team* or I.B.G.A.T. Such a team might be composed of a Medical officer/Team Leader and about five soldiers together with two drivers. The wartime establishment, of course, would be one per Brigade fighting in jungle country; and in peacetime a team in Strategic Command and with any other formation committed to a jungle role. A team of six would provide two groups of two (one to descend and one to despatch) standing by for 'quick snatch' operations with another group of two as tactical reserve at the vehicles. Alternatively a group of four men might be abseiled into a patrol position for a holding operation overnight. The tactical implications are discussed at greater length below.

The I.B.G.A.T. might well be administered by the Field Ambulance but would be under the operational control of the 'teeth arm' commander at a level appropriate to the tactical situation, i.e. Brigade, Battalion or even Company. For example, in a period of uniform activity on the whole front a two man party might well be positioned at the headquarters of each of the battalions ready to perform rescues resulting from actions in their respective areas. If heavy casualties were expected in a particular area then the team could be prepositioned with the appropriate battalion before the action. The possible combination and permutations are almost infinite.

Lassen (1968) has described the Field Medical Services in Counter Insurgency War and outlines the evacuation chain:—"Evacuation is effected by helicopter from a point nearest to where the casualty occurred, consistent with the safety of the aircraft, usually a landing zone at infantry company headquarters. Thence the casualty may be flown direct to the Advanced Dressing Station (ADS) there being no need to make an intermediate halt at Battalion Headquarters for further first aid treatment by Regimental Medical Officer (RMO)."

This, of course, is the rub. In jungle war the delay is in *getting* to Company Headquarters. In many instances, according to Wheatley (1968), over 24 hours elapsed between wounding and admission to hospital during the Borneo campaign. Surely the techniques mentioned above would improve this rather disturbing record.

Let us consider the practical advantages of the I.B.G.A.T. over conventional evacuation in just two typical jungle situations.

Suppose that at about mid-day a five man patrol some half-day's march through hilly jungle report that they have sustained three casualties: a gunshot wound of femur and two gunshot wounds of the arms. Under existing conditions the two fit men would either have to carry their comrades back to the Company position or cut a hovering from the jungle with their parangs—not an enviable task. A doctor, or an orderly, could abseil in with a Neil-Robertson stretcher, plaster the wounded arms and do whatever may be considered necessary to make their walk out more comfortable. The man with the femur wound could then be evacuated as described above. With no more than ordinary luck the patient could be on the operating table within a couple of hours of injury—and perhaps much earlier.

Suppose that at last light a patrol suffered similar or even heavier casualties. Under existing circumstances the wounded might well have to lie out overnight with the sketchiest of medical cover. If there proved insufficient time before dark to 'reverse abseil' as described above then a small medical party might well go in overnight with plasma and even, if indicated, perform minor but life-saving surgery.

The obvious life-saving potential of such a team might well justify a station on one of the Brigade radio nets but even if this were denied use might well be made of the Search and Rescue Beacon Equipment (S.A.R.B.E.) the BE 310 version of which contains both a powerful electronic homing beacon and a short range speech capability in a machine weighing slightly under five pounds.

There are, of course, numerous ways in which the abseil potential might be introduced to service. There is an argument in favour of making one Section of certain Field Ambulances take over this task. In addition to abseiling and a degree of first aid ability rather nearer that taught at Fort Bragg than that of State Registered Nurse, Assistant Male Nurse or even Medical Assistant, there are certain skills to be learned by any team of this type. These include the use of power saws and explosives, voice procedure, and, of course, jungle navigation and survival. Ultimately, as everyone knows full well, the tactics of the R.A.M.C. will depend upon the availability or not of helicopters for exclusively medical use. Equally obviously this would give any I.B.G.A.T. the fullest freedom possible.

Since this article was begun the Aeroplane and Armament Experimental Establishment at Boscombe Down 'grounded' F.E.A.F.'s bottle-opener due to unreliable engineering standards in its manufacture. The method is still in use by mountaineers using commercially produced 'descendeurs' produced to a more exacting specification.

Forces interest is now focussed upon a new set of helicopter descent equipment and standard operating procedures have already been produced. In this case the rescuer wears a body harness which hooks on (at chest level) to a metal lever. If the handle of this lever is pulled down then frictional retardation exerted around the line by a system of bobbins is reduced and descent begins. The speed of descent is proportional to the amount the lever is pulled down. If the lever is released it will spring back to its old vertical position and descent will end. Gloves are not required with this method as opposed to the 'bottle-opener' method. I have had no personal experience, as yet, with this newer method. The principle of friction-retardation, however, remains the same.

REFERENCES

- LASSEN, E. H. P. (1968). *J. roy. Army med. Cps.* **114**, 110.
MCMULLEN, N. M. (1967). *J. roy. Marines.* **75**, 252.
SAMUEL, C. M. (1968). *J. roy. Army med. Cps.* **114**, 43.
ROSS, W. M. (1967). *J. roy. Army med. Cps.* **113**, 40.
WHEATLEY, P. R. (1967). *J. roy. Army med. Cps.* **113**, 18

(The methods described in this article are not all officially adopted for Service use at the present time).