



Military Helicopter Operations in Malaya

By

WING COMMANDER W R WILLIAMS,

O B E , D F C

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DR G S HISLOP (*Chairman of the Executive Council*), in the Chair

The CHAIRMAN, in introducing the Author, said that Wing Commander WILLIAMS joined the Royal Air Force in 1936 and, after serving in Bomber Command at the beginning of the war he was unfortunate enough to be shot down in a Halifax bomber and taken prisoner. After the war he spent some time on instructional duties, and in 1952 he attended the Royal Air Force Staff College. In 1953 he was sent to Malaya to form and to command the Helicopter Wing, which also included a Naval Squadron. He had, therefore, been very closely associated with helicopter operations for two and a half years. Wing Commander Williams was now serving at the Air Ministry, in the Directorate of Air Transport Operations. He is a Member of the Association.

WING CMDR W R WILLIAMS

Introduction

In presenting this paper to the Helicopter Association I do not intend to go into any technical details but generally to cover the operational side of helicopter operations in Malaya. There has been very good liaison between the R A F technical staffs and those of the aircraft firms involved. Much has been achieved to the benefit of the users and manufacturers by this liaison. On the operational side however it has not been so easy to put over details of our operating conditions and I hope that the broad outline of operations which I am going to describe will be of some benefit to the members of the Association, all of whom are so enthusiastic about the helicopter and its future.

Malaya is the ideal hunting-ground for the helicopter and under the conditions encountered there the best use can be made of the helicopter in its true characteristic—an aspect of helicopter operating which is too often overlooked. Before talking on the operations in Malaya it would be of interest to outline the background to the present emergency.

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BACKGROUND TO THE EMERGENCY

The emergency in Malaya began in 1948. It was on the 18th of June that the Government of the Federation proclaimed the state of emergency and took extraordinary powers to deal with the outbursts of violence which were taking place. The Communist Party of Malaya, consisting of the Malayan Races Liberation Army and the armed forces of the Min Yuen (People's Movement), was declared an unlawful society.

The terrorists (C T's) are a full time organisation based on normal military lines. They consist almost entirely of Chinese with a small percentage of Malays, Tamils and Indians. The Min Yuen is the main source of intelligence, food and medical supplies and arms.

The C T are mostly young and are well versed with life in the jungles of Malaya. They can withstand the hardships of such a life although they remain dependent on the Min Yuen for their medical supplies. Within the organisation promotion is slow and great difficulty is experienced in recruiting men (or women) likely to make good leaders. Those who do reach the higher ranks are well protected and seldom move without a strong escort. The C T lives in deep jungle in temporary camps which are well hidden and protected. Small parties occasionally emerge to contact the civilian population or to carry out acts of terrorism directed against the armed forces, the communications system or against the planters or workers in the tin mines.

The picture, then, is one of an organised force of young and fit terrorists living in and off the jungle in temporary camps difficult to locate.

METHOD OF FIGHTING THE ANTI-BANDIT WAR

How has the Government of Malaya been facing its problems? First, by taking on wide emergency powers, second, by calling on the military in aid of the civil power and third, by reorganising the police force and introducing a Home Guard in the Chinese villages and Malay kampongs. Militarily, the first aim was to restore law and order and the second aim was to destroy the guerilla army.

By 1953 law and order had been restored. The life of the country, commerce and communications carried on with few serious interruptions. Furthermore, successes on the military side had started to bring over to the Government more and more people who previously had some sympathy towards the C T. It became increasingly difficult for the terrorists to obtain their supplies from the local population and the C T started to retire into deep jungle and to grow their own food supplies. This was the situation in Malaya at the start of 1953 when the helicopter force was built up and troophilting operations started on a large scale.

DESCRIPTION OF THE COUNTRY

A short description of the nature of the country in which the anti-bandit war is being fought will show the special advantages of using helicopters. Malaya is a peninsular 400 miles long and 200 miles across at its broadest point. It is, therefore, approximately the size of England without Wales. A ridge of mountains, rising up to 7,000 feet forms a backbone of the country. Four-fifths of the country is jungle covered, the trees being about 200 feet high, on average, with some 'jungle-giants' rising up to 300 feet. The

remaining fifth of the country consists of tin mines, rice fields and rubber plantations

In the lowlands of the jungle there are vast areas of swamp through which movement is impossible. Away from the main roads and railways, therefore, ground communications are non-existent and once our troops are inside the jungle all movement has to be made on foot under conditions which are extremely fatiguing. Under average conditions a patrol can cover about 6 miles in a day. Thus it can be seen that a patrol going to an objective 30 miles into the jungle could take up to five days to reach the operational area. The patrol has to carry all its equipment with it and at the end of the five days, when the troops are likely to run into opposition, they are fatigued and nearly out of rations.

THE CASE FOR THE HELICOPTER

Advantages

By using the helicopter this useless 'jungle-bashing' can be avoided. Not only is the effectiveness of our troops greatly increased, for they can be dropped or landed in their operational area fresh and with full rations but also the whole operation can be completed in a much shorter time. A further advantage of the helicopter in this respect is that it can relieve a patrol of its casualties, thus maintaining the mobility of our troops on the ground.

It can be seen that, in a country like Malaya, there are three main advantages in using the helicopter to lift troops into and out of the jungle.

- (a) We increase the effective strength of our forces. A force lifted in and out by helicopter can carry out three or four operations in the time that they could do one if they had to walk.
- (b) We can move troops quickly into areas where they are required for a follow-up after a contact or on 'hot' information.
- (c) Mobility of our patrols can be maintained by lifting out casualties or prisoners.

Disadvantages

While the type of country in Malaya is ideally suited to the helicopter, unfortunately there are certain disadvantages which arise from the climate and operating conditions. First of all, the heat and humidity have a far greater adverse effect on the helicopter than they do on fixed wing aircraft. Secondly, the type of clearing, which is invariably in mountainous terrain where extreme turbulence is encountered, calls for flying right up to the limits. One can say that the temperature in Malaya is 80°F with little variation throughout the year. Humidity can be taken as 80%. Under these conditions the present-day helicopter lifts approximately half the load for a temperate climate. Matters are made worse by the type of clearing encountered in the jungle. With trees between 2-300 feet high the pilot is forced to make a near vertical take-off or approach. This has to be done with no assisting breeze. To achieve the necessary performance and to allow some degree of safety in the event of trouble the pilot has to cut down on his load. A further disadvantage is the reduced performance with altitude. Many of the clearings are above 3,500 feet and the loss of performance calls



*The main military hospital in the Federation
A Sycamore of 194 Squadron brings in a casualty*

for a further reduction in the load carried

The result of all this is that a helicopter designed to lift eight people in the U K under temperate conditions lifts four to five passengers in Malaya when operating from one large L Z to another. By a large L Z I refer to an area approximately the size of a football field. Under the worst conditions only two passengers can safely be carried into the high mountain clearings. This loss in payload is serious because it greatly increases the cost of operations, especially troop-lifting.

However, in spite of these shortcomings—and here I should stress that the limited performance of the helicopter under tropical conditions has been the main factor affecting the planning of operations—the helicopter has proved invaluable in Malayan operations.

INTRODUCTION OF THE HELICOPTER

Helicopter operations in the Far East were first carried out by the Casualty Evacuation flight, which was formed in Singapore in 1950. In 1953 the force was augmented by a Naval squadron, No 848, with American-built S 55's and by the formation of No 194 Squadron R A F with Dragonflies. The two squadrons were formed into a helicopter wing. In 1954, a second R A F squadron was formed with Westland Whirlwinds Mark 4. At the same time No 194 squadron was re-armed with Bristol Sycamores.

METHOD OF CONTROL AND FACTORS AFFECTING OPERATIONS

The helicopter wing is situated at Kuala Lumpur, the main operating base for transport support aircraft in Malaya. It can be seen from a map

that it is an ideal position because it is in the centre of Malaya and it is also alongside the joint Army/R A F/Police Headquarters. Demands for all types of transport support are passed to the combined headquarters where they are vetted by a joint Army/R A F staff. Requests which are accepted are passed to the station, where the pilot is briefed. If detachments are in being the request may be passed to one of them.

Positioning

Detachments are operated in order to save 'dead' flying or positioning time and to speed up emergency operations where time is vital, as in the case of battle casualties. The peninsula can, very conveniently, be divided into three operational areas, the area to the south, the north-west and the north-east, the latter being reached through one of the passes just north of Kuala Lumpur. Whenever possible a detachment is sent into one of these areas. Without such a detachment a helicopter required to lift out a casualty, say 10 miles from GRIK, will fly approximately four hours to carry out the operation, the actual casualty being in the aircraft for 10 minutes. Similarly, 6 medium helicopters positioning to carry out a troop-lifting operation near the Siamese border will complete a total of thirty-six hours dead flying.



*Typical jungle clearing used for troop-lifting ,
trees in this case are almost 200 ft high*



*A Dragonfly of 194 Squadron drops leaflets
into a typical jungle cultivation*

Such wasteful flying must be avoided as much as possible and this is done by operating detachments, by making the pick-up or assembly point as near as possible to the area of operations and by substituting, wherever possible, a suitable fixed wing aircraft of the Auster/Pioneer type

Refuelling Arrangements

To increase the flexibility of the helicopter and Pioneer force, fuel has been placed at about 50 points throughout the Federation. Supplies are the responsibility of the ground forces in the particular area. For large scale trooping operations the Army ensure that the required amount of fuel is available at the emplaning point. Fuel is usually supplied in four-gallon flimsies but occasionally only the 40 gallon drums are available. Away from base, refuelling is carried out entirely by hand and with practice it can be made a very quick operation in spite of all the fuel having to pass through a filter or chamois. The ability to refuel quickly at various fuel positions has done away with any problem of range and has allowed the helicopters to fly with the minimum amount of fuel.

Navigation

As far as Malaya is concerned there has been no problem over navigation, especially for the short range aircraft. From the start of operations a rule

has been followed that helicopters fly along the features such as rivers and roads wherever possible. The main object of this rule is that, in the event of engine or other failure, the areas alongside the features give a better chance for a successful autorotative landing. Further, in the event of an aircraft being overdue the search area can be narrowed down. Up-to-date, helicopters have been required to operate only in conditions of good visibility. The usual practice is to follow a feature as far as possible and then to steer a compass course from a known point. From a reasonable height, say 1,500 feet, clearings, forts, etc., stand out well. In any case ground forces will usually put up smoke when they hear the aircraft approaching.

Night Flying

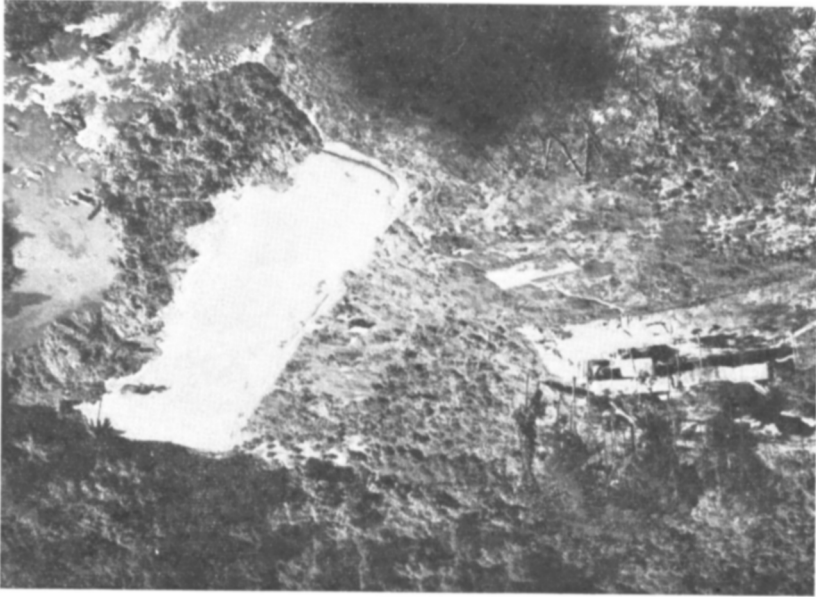
While there has been no requirement for night flying as far as the emergency is concerned pilots carry out a small amount of local night flying. It is an advantage to keep in practice so that a pilot returning from a late evening sortie can ensure getting his aircraft back to base, rather than night stopping *en route*.

Size of Clearing

The minimum requirements for a clearing are (a) an area 30 yards in diameter cleared to ground level and with no loose rubbish or stones (b) A further 10 yards all round cleared to 2 feet (c) No branches overhanging the area (d) An angle of approach to the L Z not greater than 30 degrees



*Typical scene at an emplaning point during
a small scale troop lift*



Another typical fort now with its PIONEER strip The helicopter landing zone can be seen on the left just by the huts

ROLES OF THE HELICOPTER

The roles in which the helicopters are mainly used can best be described by taking each type of aircraft in turn

The Light Helicopter

The Dragonfly which was first introduced in 1950 in the Casualty Evacuation flight was used mainly in the casevac and light communication role although some small scale trooplifts were carried out The aircraft was replaced by the Bristol Sycamore in 1954 This rearming took place after trials had been carried out on a Sycamore sent to Malaya in 1953 As a result of the trials fourteen modifications, mostly of a minor nature, were incorporated in the aircraft The Dragonfly and the Sycamore have both given excellent service in Malaya

Casualty Evacuation

The primary role of the light helicopter is the evacuation of casualties Since the introduction of helicopters into Malaya one aircraft has always been on immediate stand-by to bring out from the jungle a battle casualty or a sick man Apart from the high morale value of knowing that a rescue helicopter can be called at any time, the advantages to a patrol of being able to get casualties off their hands are enormous Briefly, an operation works on these lines

A member of a patrol becomes a casualty (I would like to emphasise here that throughout the Malayan emergency the number of battle casualties

has been comparatively small. It is the degree of tropical sickness, such as malaria which has caused a demand for helicopters for aeromedical evacuation. However, to a patrol, a battle casualty or a sick man are equally embarrassing and without some means of relieving the patrol of their burden their sortie must be abandoned. The patrol leader immediately contacts base by W/T and requests a helicopter. He then looks for and starts planning the helicopter landing area. If he is in deep jungle the task of making a clearing is enormous and A O P /L L recce will most probably be called for before work starts. The Auster pilot, having located the patrol, will tell them of the nearest natural clearing or the area in which a clearing could most easily be built. Explosives may have to be dropped but the patrol leader informs the Auster pilot of the E T A at the natural clearing or the time he expects to have the new clearing ready. Finally, when the clearing is complete a message is passed and the helicopter, which has been waiting at the nearest convenient place (usually the A O P base) takes off for the clearing, sometimes being accompanied by the Auster. The casualty is picked up and is flown to the nearest British Military Hospital. These hospitals have all constructed helicopter landing areas. In the Dragonfly the casualty was carried in a basket, and on a stretcher in the Sycamore. Casualties have been brought out from jungle forts, Police Posts and remote



Fort Dixon, a hill top jungle fort with a PIONEER strip now constructed on the top of the hill

villages and up to the end of 1956, 194 Squadron had lifted over 1,600 casualties

Light Communication

Another role of the light helicopter is that of communication flying. It is, of course, uneconomical to use the helicopter in the pure transport role where a small fixed wing aircraft can do the task. In every flight, with the exception of positioning sorties, the helicopter must be used in its characteristic form—vertically—otherwise an aircraft of the Pioneer or Auster type must be used. However, by using the helicopter it is possible for Army commanders to visit their units at their jungle bases and to discuss the tactical situation on the spot. It has proved to be a valuable use for the helicopters in Malaya but it is an aspect of helicopter operating which requires close supervision if it is not to be abused and valuable hours wasted.

Many unusual passengers and types of freight have been carried by the helicopter squadrons—sick aborigines, their wives and children, rice and in one case a baby elephant. On another occasion, when a survey was made of the incidence of T B amongst the community of a small Malay village, deep in the jungle, refrigerated vaccine to protect those found susceptible to the disease was flown in by helicopter.

Crop Destruction

In the past the Dragonfly and now the Sycamore and the Whirlwind are used for crop destruction. With its ability to fly slowly or at the hover, the helicopter has proved very valuable for the task of airborne spraying. When the C T withdrew into deep jungle they were forced to grow their own food supplies, no longer being able to obtain their needs from the local population. At first, identification of a C T clearing was easy and it could be distinguished from the cultivations of the aborigines. The Chinese, being a methodical race sow their crops in neat and tidy rows while the aborigines merely scatter the seed haphazardly. The C T now copy this method. When a clearing has been identified, a patrol is sent into the area where they hope to make a contact. At the same time helicopters are employed to destroy the crops. Spraying equipment was designed and manufactured locally and a strong type of weed-killer is used. The helicopter flies round the clearing, the mixture being forced out through twenty nozzles in a spray boom underneath the aircraft. The down-wash from the rotors helps to break up the liquid and to swirl it around amongst the crops which eventually die. The equipment and spraying techniques used are very similar to those used by fixed-wing aircraft of the Federation air services for spraying large areas of rubber.

Carriage of Captured, Surrendered, Wounded or Dead C T s

The light helicopters are used for the carriage of dead, wounded, surrendered or captured enemy personnel. When a patrol has made a contact and perhaps killed one of a party of C T quick identification is most important. Documents, too, must be examined immediately by experts if they are to be of any use. When required a helicopter is called and the dead or captured C T is then flown out for identification. Dead bodies are carried externally in cargo nets and on the Dragonfly the Squadron designed a "Bod-carrier" which fitted conveniently underneath the aircraft.

Reconnaissance

Limited reconnaissance flights are carried out by light helicopters and the aircraft has proved invaluable for special reces where it has been necessary to fly really low, perhaps along a river, in order to see into or under the jungle canopy. On one occasion boats were spotted below water. The C T had been making their river crossing by night and sinking the boats during daylight hours to avoid detection. Helicopters have been used with great effect on searches for missing aircraft and lost ground patrols.

The Medium Helicopter

The medium helicopter in use at present is the Whirlwind Mark 4. The first aircraft of this type were brought out to Malaya and operated by No 848 Squadron, Royal Navy. Their aircraft were American-built and were given to the U K under M D A P. It was on these aircraft that the first large scale trooplifting operations were carried out.

Trooplifting

The main role of the medium helicopter is trooplifting. The procedure on a typical trooplift is as follows.

Having positioned at the emplaning point, the helicopter crews unload their refuelling gear, the maintenance equipment and the oils and greases, etc. The officer in charge of the detachment and the Auster pilot responsible for receiving the clearings discuss the operation with the commander of the ground forces. Other helicopter pilots brief the troops, if they are new to helicopters and the groundcrews prepare their equipment for quick refuelling.

The helicopters, having emplaned the first load of troops, take off on the first lift. A slightly reduced load is carried to provide the pilot with some reserve of power should the L Z prove difficult. The helicopters fly in a loose formation and on sighting the L Z the leader immediately lets down. If the L Z is a good one he lands well forward to allow other aircraft to land at the same time. When the pilot is ready for the troops to deplane he sounds a hooter.

At this stage of the lift, with sufficient troops to secure the L Z the pilots return to the emplaning point individually continuing the shuttle in their own time. If several L Z s are used in the course of one trooplift it is usual to put down a maximum effort into each and then allocate helicopters for subsequent lifts.

There are various types of tactical operation which involve trooplifting helicopters. For example, troops have been lifted into L Z s following large scale bombing operations. This has allowed a quick follow-up by ground forces often with good results. All lifts are not quite as simple as the one I have described. As an example, it is sometimes necessary to lift troops from one jungle L Z to another. In such a case fuel has to be dropped by Valetta before the operation can start. In other cases the clearing may be large enough for only one helicopter at a time. This calls for very strict timing to avoid keeping helicopters circling to await their turn to land.

Each month approximately 1,000 troops are being lifted by medium helicopter. When one recalls that 800 to 1,000 yards per hour is good going through the undergrowth you will see that the effort provided by the trooplifting helicopters has greatly increased the effectiveness of our ground forces.

Troops arrive fit, fully equipped and with full rations in the area of operations. There they can remain for weeks on end being maintained by air drop.

Deplaning

In some of the L Z s it is not possible to land, especially for the first few lifts and until ground troops have been able to clear a flat area. Under such circumstances troops jump out while the helicopter hovers at about six feet. If the ground is uneven, rough or if there are tree stumps about, a knotted rope, about 20 feet in length is used. Troops can be deplaned very quickly and the helicopter should be on its way again in 5 seconds. Hovering for loading or unloading is avoided as much as possible to reduce the use of maximum power and pilot fatigue.

The average distance between the assembly point and the L Z is between 12 and 15 miles. The average height at which trooplifting operations have been taking place is 2,500 feet, although quite a few have been requested at heights above 3,500 feet.

Paratrooping

Another use for the Whirlwind is the carriage of paratroops, usually of the Special Air Service Regiment. The helicopter forms a steady platform for jumping and it has proved very popular. At first sight it seems odd to use a helicopter for parachuting but it offers many advantages over the fixed wing aircraft, especially when jumping into a confined space. The main and obvious advantage is the short distance covered between each exit and consequently smaller separation on the ground. This is of special advantage when jumping into trees. The technique for jumping is perfectly straightforward, the parachutist sits at the cabin door with his legs outside. On the signal to jump he merely rolls forward. No effect is felt from the downwash of the rotors and it does not affect the functioning of the parachute in any way. The best forward speed is ten knots, thereby making use of the helicopter's ability to fly slowly.

Salvage

Medium helicopters have been used on several occasions to salvage as much material as possible from crashes. In one case, possibly unique in the history of British Aviation, an S 55 of the R N was lifted piecemeal from a paddy field to a nearby road where it was placed on a 'Queen Mary' and was taken by road to the maintenance unit. On another occasion a segment of the mainplane of a crashed Brigand was lifted out of deep jungle. Removal by other means would have called for the construction of a special road.

ESTABLISHMENT OF JUNGLE FORTS

In Malaya there are between 50,000 and 60,000 aborigines who live far remote from any civilisation or contact with the outside world. When the C T were driven into the deep jungle they made use of the aborigines as security screens to warn of the approach of security forces. The Government has now established in the various areas jungle forts in which the police live for months at a time in contact with the aborigines.

The object of these forts is to dominate the areas, to gain the confidence of the aborigines and to bring welfare services to them. Without the helicopter it would not have been possible to build these forts. After a recon of the area, usually by helicopter, the construction party of the Royal Engineers is lifted to the nearest LZ. They walk to the selected site and immediately construct a helicopter landing area in order that supplies and equipment can be lifted in. When the fort is completed regular visits are made by helicopters bringing in doctors, interpreters, special equipment, etc.

Pioneer strips have now been constructed at most of the forts and helicopters relieved for more operational tasks. Helicopters were used to assist in the construction of the strips and they have been used to lift in tractors of the Ferguson type, suitably broken down. Helicopters have also proved useful for checking the approaches as work on the strip continues. By making slow flights along the landing and take-off path, the R A F advisers are able to show the R E representatives where further clearance is necessary.

These are a few examples of the role played by Helicopters. There are many more which could be quoted — *Leaflet Dropping, Target Marking, Winching Operations, Carriage of Awkward Freight, Use as an Aerial Crane* — are tasks which I have not described. Many special operations have been omitted, such as the time when 4 R N helicopters and one R A F Dragonfly were used on an assault on a house far out on a peninsula which was known to be occupied by a high ranking C T and a body-guard. The troop lifting helicopters landed their troops to rush the house while the Dragonfly, with a Bren gunner as a passenger, covered the only escape route.

I have not spoken on pilot training, although I hope I have shown the degree of skill and judgment which is required of the pilots there. They have shown this skill and the greatest credit is due to them all. So is credit due to the crewmen and the ground crew who have, and I presume still do, worked long hours to provide serviceable aircraft.

CONCLUSION

This account of helicopter operations covers a period of 2½ years. There are, therefore, many aspects which it is impossible to cover in a paper of this nature. Especially so when it is realised that, over the period, not a day passed when the helicopters were not in operation. Every operation was of a different nature and each one brought its own problems. The troop-lifting aircraft have carried the war into the deep jungle thereby disrupting the bandit organisation. Helicopters generally have helped to improve the morale of our ground forces who have derived great comfort from knowing that a helicopter is always ready in case of casualty or sickness.

To finish I would like to quote from an editorial written by Colonel William B BUNKER, President of the American Helicopter Society. "It has been said that times of stress and difficulty bring out the true character of a man and perhaps the same philosophy can be applied to mechanical devices. It is certain that the helicopter has a recurring penchant for proving itself an indispensable vehicle in times of real difficulty."

How true this is, Korea, Malaya, Algiers, Cyprus and Suez are examples. So, too, are some of the national disasters which have brought

urgent calls for the helicopter We read almost daily of dramatic rescues in the search and rescue role I hope I have demonstrated how helicopters have proved their worth in the type of operation we have witnessed in Malaya over the past 7 years

Discussion

The **Chairman**, opening the discussion, said that they had listened to an intensely interesting lecture, which had raised a large number of points in his mind He asked whether the Author could give any idea of the utilisation rate of these aircraft in the course of a year

Wing Cmdr Williams, in reply, said that basically they worked on getting something like forty hours a month out of each helicopter When the aircraft were first established it was a difficult target to achieve, since theirs had been the first large concentration of helicopters in the Forces and, although they had many skilled technicians, squadron commanders had to ensure that the aircraft were kept in a fully serviceable condition and they had to analyse all the snags For instance, the Dragonfly had a number of vibration troubles and although these did not render the aircraft unserviceable, it was not advisable to send it away from base on operations

A point to be borne in mind is that, when operating in the conditions encountered in Malaya, a helicopter cannot be sent away from its base unless one is 100% sure of its serviceability If there is any likelihood of some minor fault developing, the aircraft could not be used on operations because a helicopter stuck out in a clearing in Malaya is a very expensive matter A technician has to go out to examine it, and then a working party has to be lifted into the clearing to make the aircraft serviceable, usually working under very primitive conditions

He paid credit to the ground crews who entered into the spirit of operations frequently working all night to keep their machines serviceable and who occasionally were called to service aircraft in the wilds of Malaya

Mr L S Wigdor (*Rotorwings Ltd*) (*Founder Member*), said that the Author had stated that a Communist Terrorist had avoided capture, having got wind of the operation, presumably due to the fact that helicopters had first to get to an emplaning point If it was necessary for these machines to get within a striking distance before the forces could be mustered, a certain amount of the surprise value of the operation was lost Would it not, therefore, be better to employ helicopters with a longer range?

The **Author**, in reply, said that for the type of operations in which they were engaged, the range limitation of present-day helicopters was no handicap Increasing the distance over which troops were lifted might have resulted in some advantage from the security angle, but to achieve the requisite build-up of troops more helicopters would be needed They were all conscious of the cost of operating helicopters and the greatest economy was needed

Referring to the incident in which a C T had avoided capture, he said that the security screen was a difficult matter It was difficult to move troops around Malaya without word travelling around by some incredible means That fact had to be taken into account when operations were planned When troops had to be lifted to a particular area there was hardly any warning of the movement They moved to their emplaning point in the early morning, the helicopters positioned, and the lift started with little delay and was invariably completed before mid-day

There were various types of troop-lift There was the long-term operation in which troops went into the jungle on patrol They established a jungle base from which they operated There was the quick follow-up type of operation (like the one the author had illustrated with a short film) "laid on" at short notice In the case illustrated, the troops mustered along a road and were picked up by helicopter To have carried them by helicopter from the main operating base into the jungle would have added to the complications of the operation and would have involved a very long