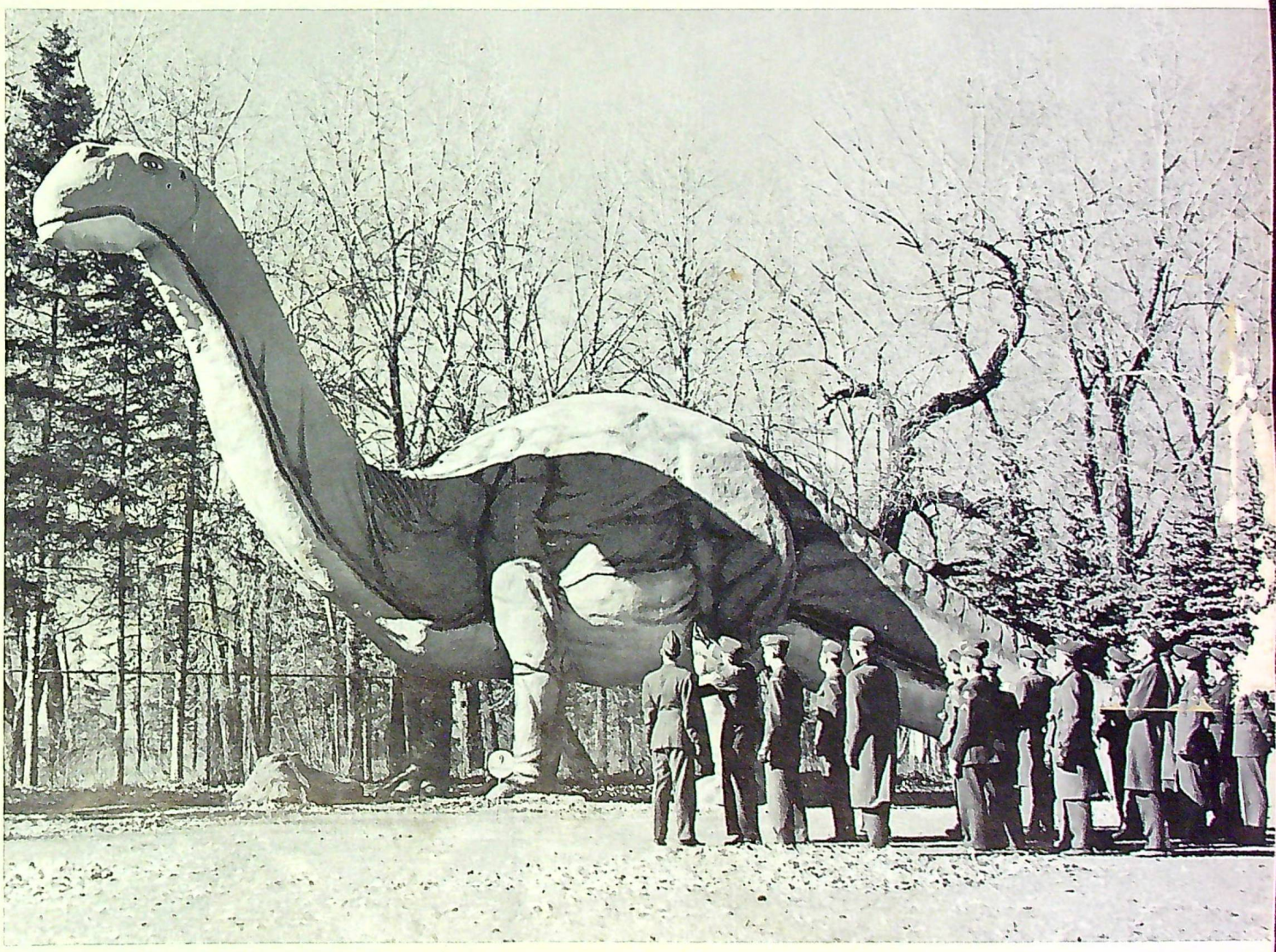
The ROUNDEL

Vol. 8, No. 4
MAY 1956



ROYAL CANADIAN AIR FORCE

THE Roundel

Issued on the authority of
THE CHIEF OF THE AIR STAFF
Royal Canadian Air Force

Vol. 8, No. 4

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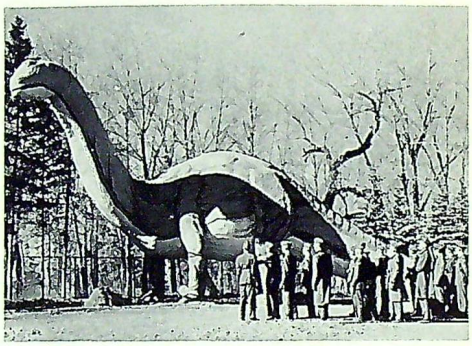

N.A.T.O. students gaze in awe at one of Canada's oldest inhabitants during a visit to Dinosaur Park, near Calgary.

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FEW ARE CHOSEN

CANADA'S AIRMEN V.C.s

BY SQUADRON LEADER C. L. HEIDE, D.F.C.

THE place: France. The time: 1917.

Just after dawn on the morning of June 2nd, a lone Nieuport scout cruised over a German aerodrome ten miles behind the front lines. The young Canadian pilot at the controls was searching for the enemy on their own doorstep. Finding no signs of activity, he flew to another aeodrome about three miles away, where seven enemy machines, some with their engines running, were on the ground. From a height of 50 feet, he raked the parked aircraft with machine-gun fire. The German pilots raced for their machines. The first enemy 'plane was just getting airborne when a short burst from the Nieuport sent it crashing to the ground. The second German to take off climbed only silghtly higher before 30 rounds fired from close range sent it into a tree. Two more of the enemy rose to attack. The Canadian quickly shot down the first of these, and then emptied his remaining drum of ammunition into the other. His 'plane out of ammunition and riddled by machine gun fire from the ground, the Allied flyer headed for home, dodging enemy patrol aircraft on the way.

Air Marshal W. Bishop, V.C., D.S.O., M.C., D.F.C. (Photograph taken during First World War.)

Thus "Billy" Bishop, later to serve his country in another World War as Air Marshal Bishop, V.C., D.S.O., and Bar, M.C., D.F.C., Chevalier of the Legion of Honour, and Croix de Guerre with Palm, became the first Canadian airman to win the coveted Victoria Cross His amazing total of 72 enemy aircraft destroyed was the largest of any British pilot.

* * *

This year marks the hundredth anniversary of the establishment of the Victoria Cross, and Her Majesty the Queen has invited Commonwealth and Empire winners to London in June to attend centenary ceremonies to commemorate the occasion. There have been two previous gatherings, also in London, of Victoria Cross winners. In 1929 the the Prince of Wales, now the Duke of Windsor, held a special dinner which was attended by 22 Canadian V.C.s; at the Coronation parade in 1953, a stand for winners of the award was erected outside Buckingham palace.

In 1855 Queen Victoria, her attention focussed on the many deeds of valour that had occurred in the Crimean War, recognized the need for an award that could be given for outstanding gallantry in action against the enemy; an award that could be given to all ranks, male or female, whatever their colour, race or creed, on the merits of bravery alone. On 29 January 1856, the Royal Warrant was signed which brought the Cross into existence, making its award retroactive to include 62 acts of bravery performed during the Crimean War.

Since that time it has been awarded to 1,380 persons, all men. Three officers (two Englishmen and one New Zealander) have had the unique distinction of winning a Bar to the V.C. It has been awarded to 94 Canadians, the first of whom was Lieutenant A. R. Dunn during the Battle of Balaclava in 1854, while he was serving with the British Army's 11th Hussars. Of the Canadian winners, seven were airmen, but of these seven only Air Marshal Bishop can attend the

Lt. A. McLeod, V.C.

ceremonies in London this year. He is the only survivor.

* * *

In the summer of 1913 Alan McLeod was 14 years old and already looking forward to a military career. Coming into Winnipeg from his birthplace in Stonewall, Manitoba, he persuaded the C.O. of the 34th Fort Garry Horse Regiment to accept him as a recruit; and he went for summer training. On the outbreak of war in the following year, however, his attempts to enlist met with failure. He was too young: the minimum age for enlistment was eighteen. On his eighteenth birthday, 20 April 1917, McLeod left to join the Royal Flying Corps.

Arriving in France in November 1917, McLeod quickly proved himself to be a cool and skilful pilot. Flying in reconnaissance aircraft, which carried an observer in the rear, he would often get out of a tight situation by sheer nerve and brilliant flying, and then turn around to his observer and laugh out loud with exuberance.

On the 27 March 1918, he and Lieutenant Hammond, his observer, were attacked while on a bombing sortie by a formation of Fokker triplane fighters. By superb manoeuvring, he enabled Hammond to fire at the enemy 'planes in turn until three were shot down, although the observer was wounded six times and McLeod himself five times. Finally a German incendiary bullet penetrated the gas-tank, setting the aircraft on fire. Fighting the flames and smoke, McLeod stepped out of his cockpit on to the bottom plane and leaned over to grasp the control stick. In that position he sideslipped from 5,000 feet to the ground, the wind pressure of the slip blowing the flames away from Hammond who continued firing until McLeod made a crash-landing in "No-Man's Land". Then, in spite of his wounds, he dragged his observer from the burning wreckage, being further wounded by a falling bomb in the process, until they were in comparative safety. He then collapsed from exhaustion and loss of blood.

This gallant action earned Lt. McLeod the Victoria Cross and Lt. Hammond a Bar to his Military Cross. But Alan McLeod never recovered from his wounds. After a long siege in hospital, he returned to Canada in September 1918. Here, his lungs weakened by smoke and flames, he died of influenza two months later.

* * *

The First World War was almost over on 27 October 1918, when Major W. G. Barker, having shot down 50 enemy aircraft and having been awarded the D.S.O., M.C. and two Bars, set out in his Sopwith *Snipe* with orders to return to England. This cross-country flight culminated in one of the most sensational fights of the war, for which Barker was awarded the Victoria Cross. Only rarely does an official citation describe in detail the action involved:

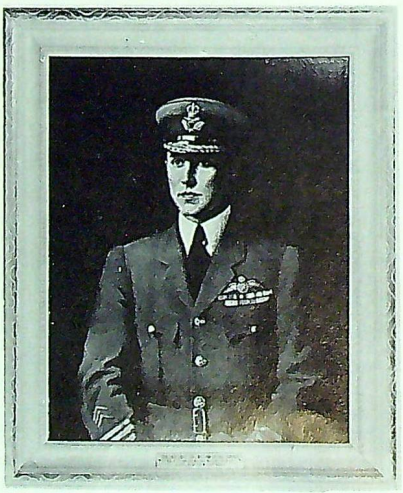
"On the morning of the 27th October, 1918, this officer observed an enemy two-seater over the Forêt de Mormal. He attacked this machine, and after a short burst it broke up in the air. At the same time a Fokker biplane attacked him and he was wounded in the right thigh, but managed, despite this, to shoot down the enemy aeroplane in flames. He then found himself in the middle of a large formation of Fokkers, which attacked him from all directions, and he was again severely wounded in the left thigh, but succeeded in driving down two of the enemy in a spin.

"He lost consciousness after this and his machine fell out of control. On recovery he found himself being again attacked heavily by a large formation, and, singling out one machine, he deliberately charged and drove it down in flames.

"During this fight his left elbow was shattered and he again fainted, and on regaining consciousness he found himself still being attacked; but, notwithstanding that he was now severely wounded in both legs and his left arm shattered, he dived on the nearest machine and shot it down in flames.

"Being gravely exhausted, he dived out of the fight to regain our lines, but was met by another formation which attacked and en-

Wing Cdr. W. G. Barker, V.C., D.S.O., M.C.



deavoured to cut him off, but, after a hard fight, he succeeded in breaking up this formation and reached our lines, where he crashed on landing."

Major Barker recovered from his wounds and returned to civilian life in Canada in 1919. Attracted by the Service, he was commissioned as a Wing Commander in the C.A.F. in 1922, remaining in the Air Force until 1926, when he again returned to civil life to join the Fairchild Aviation Company. But fate then dealt him a cruel blow. On 12 March 1930, he crashed to death over Rockcliffe aerodrome while demonstrating a new aircraft. A stalled engine did what the combined skill of many enemy pilots had failed to accomplish.

Thus at the end of the First World War three Canadian airmen were entitled to place the initials V.C. after their names, and to a lifetime pension of £10 a year—not an inconsequential sum in 1856.

* * *

During the Second World War many acts of outstanding heroism necessarily went unnoticed and unrecognized. The sudden and violent end of an aircraft, with its complete crew, often left without record deeds which deserved the award of the Victoria Cross. Many were worthy, few were chosen; and it seemed to some that, after almost five years of war, Canadian airmen were being denied the highest award for bravery. Then suddenly, over a period of seven weeks, the actions of three Canadians flyers resulted in the award of V.C.s. A fourth followed a year later. Unfortunately, all were posthumous.

David Hornell joined the R.C.A.F. in January 1940. He was 30 years old, and, had he delayed joining for three weeks more, he would have been too old for aircrew under the regulations then in existence. A native of Toronto, he was keenly interested in the young people of the community and taught in Sunday

Flt. Lt. D. Hornell, V.C.

School at the Wesley United Church in Mimico. He was always a strong favorite with the children, who nicknamed him "Bud".

More than four years later, on 24 June 1944, Flt. Lt. Hornell was captain of a *Canso* aircraft flying on anti-submarine operations from Iceland. A U-boat was sighted — fully surfaced and travelling at high speed. At once Hornell turned to attack. The U-boat's captain decided to fight on the surface, and opened up with fierce and accurate anti-aircraft fire. The *Canso* was hard hit. Big holes were torn in the wing and the fuselage, and the starboard engine caught fire. Hornell pressed home the attack, bringing the aircraft down very low and releasing the depth charges in a perfect straddle. The bows of the U-boat rose out of the water, toppling some of its crew overboard before plunging beneath the surface.

By this time the *Canso* was in a desperate state. The burning starboard engine vibrated off and fell into the sea. The captain turned into wind and landed safely in a heavy swell, but the burning aircraft quickly sank. With only one serviceable dinghy, the crew of eight took turns going into the icy water to ease the strain. Hornell's inspiring courage and leadership helped keep alive their spirits during the long hours of darkness. After 21 hours in the sea, during which time both engineers died from exposure, they were picked up by a rescue launch. Hornel, blind and suffering greatly from exhaustion, died shortly after being rescued.

For this display of "valour and devotion to duty of the highest order", Flt. Lt. David Hornell was justly awarded the Victoria Cross—the first such award to a Canadian airman in the Second World War.

* * *

On the night of 4 August 1944, the *Lancaster* pathfinder force marking the target at Trossay St. Maxim, came under heavy and accurate anti-aircraft fire. With several aircraft lost, including the deputy master-bomber, the success of the attack by the main force depended upon the master-bomber, Sqn. Ldr. Ian Bazalgette. Nearing the target, his *Lancaster* was hit severely; both starboard engines were put out of action, serious fires broke out in the fuselage and the starboard mainplane, and the bomb-aimer was badly wounded.

Despite the appalling conditions in the burning aircraft, Bazalgette pressed on to the target, marking and bombing it accurately. The *Lancaster* then dived out of control. By expert airmanship he regained control although the port inner engine failed and the starboard mainplane became a mass of flames. The mid-upper gunner was overcome by fumes. Ordering those of his crew who could do so to leave by parachute, Bazalgette fought to land the crippled and blazing aircraft and save the lives of the bomb-aimer and air-gunner. Skilfully avoiding a small French village, he landed

Sqd. Ldr. I. Bazalgette, V.C., D.F.C.

the aircraft safely. It then exploded, killing him and both his comrades.

Born in Calgary in 1918, Ian Bazalgette moved with his family to England at the age of nine, where he lived in New Maldon, Surrey. A quiet, studious person, his hobbies were books, photography, and classical music. He wrote many essays on the latter, although he played no musical instrument. His courage arose from personal character, a quality of heart and mind which set the lives of his crew above his own, a quality rewarded by a posthumous Victoria Cross.

* * *

Canadian airmen fought the enemy in all parts of the world as members of almost every Service that flew aircraft. Among some two hundred serving with the Royal Navy's air arm was Lieutenant Robert Hampton Gray of Nelson, British Columbia. He entered the R.C.N.V.R. in 1940 directly after graduation from U.B.C., where he had been an extremely popular and active student.

In April 1945, the British aircraft carrier H.M.S. *Formidable* joined the Pacific Fleet, and her airmen were soon in the thick of the battle. By July they were striking at Japan itself, Lt. Gray leading his flight with cool precision and courage. His inspired fighting during July resulted in the recommendation and subsequent award of the D.S.C., which was actually gazetted on 18 August. But on the morning of 9 August, six days before the end of the war against Japan, as he led his section away from the *Formidable*, he had no knowledge of the recommendation or of the forthcoming award.

As the pilots approached the naval base at Onagawa Bay, they could see five Japanese warships lying at anchor. The combined anti-aircraft barrage from the ships and shore batteries steadily increased in intensity and accuracy. Selecting a destroyer, Gray dived into the barrage. His 'plane was hit again and again. Weaving and ablaze, he held steadily to his course and bore down to within fifty yards of the ship before releasing his bombs. They struck amidships and the destroyer sank almost immediately, but, before it disappeared, Gray's riddled *Corsair* had dived into the waters of the bay.

"Hammy" Gray was a warm and friendly person, popular among his shipmates. Deceptively youthful in appearance, he was mature enough to be an inspired leader and to set his principles above life itself. His was the only Victoria Cross awarded to the R.C.N. during this war.

* * *

When the war ended and the prisoners of war were liberated, some oustanding acts of bravery previously unknown were revealed. Among them was one which brought a posthumous V.C. to Pilot Officer Andrew Charles Mynarski.

On the night of 12 June 1944, *Lancaster* "A-Able" took off from Middleton St. George to make a low-level attack on the marshalling-yards at Cambrai. Attacked by an enemy night-fighter, both port engines were put out of action and fires broke out in the port wing and in the mid-upper turret where Mynarski was the gunner. The flames soon became fierce and the captain ordered the crew to abandon the aircraft.

Making his way to the rear escape-hatch, Mynarski saw that the rear gunner was trapped in his turret, which was immovable. Without hesitation he made his way through the flames in an endeavour to release his friend. While he was doing so, his parachute and clothing were set on fire. His efforts were in vain, and the trapped gunner eventually indicated that nothing more could be done. Reluctantly going back through the flames, Mynarski stood in the escape hatch and, as a last gesture of farewell, stood to attention in his flaming clothing and saluted before jumping. He was seen descending, and was eventually found, by French people on the ground; but he was so severely burned that he died from his injuries. The gunner miraculously survived the crash to tell the story of what had happened.

An average Canadian boy whose hobbies were woodworking and

Lt. R. H. Gray, V.C., D.S.C.

Pilot Officer A. C. Mynarski, V.C.

painting, Mynarski was born in Winnipeg on 14 October 1916. After graduating from high school, he was a leather-worker for four years before joining the R.C.A.F.

* * *

Such are the stories of the seven Canadian airmen who have been awarded the Victoria Cross. Their valour was not the result of any special military training or the discipline imposed by any particular background. They came from all walks of life, from varying social strata. Within the age-limits of aircrew, they were both young and old. All that they had in common was the courage that won for them the Commonwealth's most honoured decoration.

In the words of the Royal Warrant: "Neither rank, nor long service, nor wounds, nor any other circumstances or condition whatsoever save merit of conspicuous bravery shall be held to be a sufficient claim for the honour."

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358 YEARS' SERVICE

At a recent gathering held at No.6 R.D., Trenton, on the occasion of the retirement of W.O.2 A. Burley, the years of service of the fourteen officers and airmen present totalled to 358. This group, which had served together as aircraftmen at Camp Borden from 1929 to 1937 (during the great days of W.O.1 Leonard John Dyte), averaged 25 years' service for each member.

In delivering the farewell address, the Commanding Officer of No.6 R.D., Group Capt. T.A. Sprusston, M.B.E., stated that he and Warrant Officer Burley had peeled potatoes together on duty-watch detail when they were both L.A.C.s in 1930. Warrant Officer Burley retired after 28 years' service as a cook and messing officer.

Shown in our photograph are (standing, left to right): Wing Cdr. J.M. Enstone, M.B.E., W.O.1 T.E. Watts, Flt.Lt. R. P. Williams, W.O.1 W.J. Ing, W.O.2 A. Burley, Sqn.Ldr. R.S. Davis, Group Capt. T.A. Sprusston, M.B.E., Flt.Lt. E. Dewsnap, W.O.1 E. Bartlett. Kneeling (left to right): Sqn.Ldr. R.F. Herbert, Sqn. Ldr. L. West, Flt.Lt. J.E.M. Laroche, Sqn.Ldr. H.N. Hinton, W.O.1 F. Hill.

HELICOPTERS

THEIR HISTORY, DEVELOPMENT, AND FUTURE

PART TWO

BY FLYING OFFICER P. H. CHRISTENSEN

(The first part of this article outlined briefly the history of helicopters in general from the time when Leonardo da Vinci envisaged the possibility of such machines. It then defined the true helicopter, and proceeded to list the advantages and disadvantages of the six commonly accepted types of rotor systems.—Editor.)

OPERATION

In order to take advantage of the helicopter's ability to hover and move in a vertical plane, one control is required in addition to those of a conventional aircraft. The following description and diagrams are not complete or detailed but will serve as a brief introduction to the various types of controls, their uses, and the way in which they operate the rotor system.

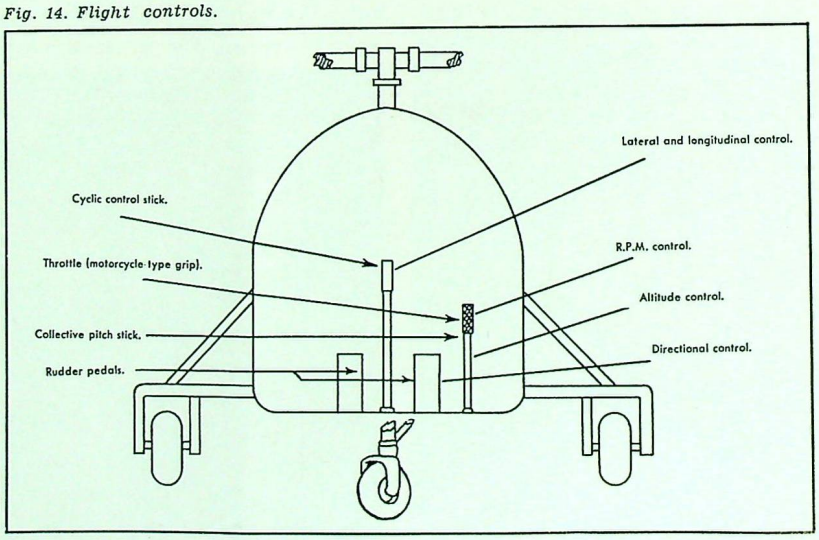
Fig. 14 illustrates the general arrangement of the flight controls in any helicopter, while a schematic layout of the collective and cyclic controls as they operate the rotor blades on a semi-rigid system is shown in Fig. 15.

Flight in the horizontal direction is accomplished by inclining the rotor axis to give a horizontal component of thrust. Since there is translational motion between the rotor and the forward component, each blade operates under different conditions as it rotates.

As the blade advances, it has a higher relative velocity than the retreating blade because the forward speed of the aircraft must be added to the tip-speed of the blade, while the speed of the aircraft is subtracted from the retreating blade, "resulting in a reduced blade-tip speed." As lift is a function of the speed of the aerofoil section, a differential lift is induced across the rotor, which sets up a rolling moment in forward flight when the blades are all at the same angle through the azimuth. Flapping and feathering are used to eliminate this rolling tendency. When the blade is hinged at the root it is permitted to flap, thus presenting a smaller lifting disc-area at that point and thereby reducing the lift and preventing an excessive force being transmitted to the rotor. Secondly, the blade is feathered by periodic changing of the blade's angle of attack during each revolution. The blade angle is at a minimum on the advancing blade and at a maximum on the retreating blade as it progresses in azimuth. A more detailed account of these phenomena will be given later.

The pilot obtains lateral and longitudinal control by means of the cyclic stick (see Figs. 16, 17, and 18). When the "cyclic" is operated, both moments and forces are applied to the helicopter which pro-

Fig. 14. Flight controls.



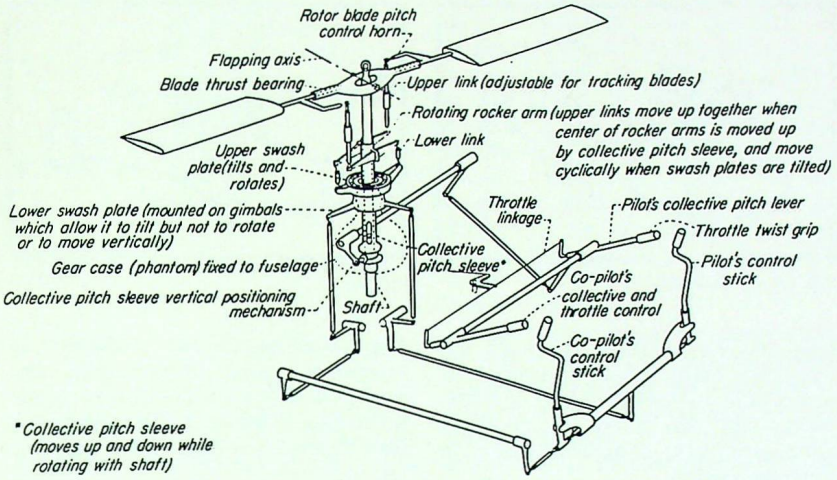


Fig. 15. Control system of conventional helicopter.

duce rolling moments about the centre of gravity, causing the helicopter to tilt. The tilt causes a component of the rotor thrust vector to act in the direction of tilt. The lateral and longitudinal control acts on the fuselage, tilting it and imparting a sideways motion to the helicopter in the case of lateral control, and a pitching motion for longitudinal control.

For flight in the vertical direction the pilot raises or lowers the collective pitch-control so as to increase the pitch on all blades. Collective pitch-change acts on all blades equally and simultaneously. As the pilot operates the "collective", he also operates the motorcycle-type throttle-control, thus making adjustments to the amount of engine power delivered to the rotors. While this operation might appear simple at first, it is in fact a very critical one, and its non-observance has resulted in needless accidents. If synchronization between the amount of power delivered to the rotors and the blade pitch is not controlled carefully, the rotors will either fall below the critical r.p.m., with a resultant loss in lift, or the r.p.m. will be too high, and overstressing and ultimate failure of the rotor hub and/or blades will ensue.

The directional control of the helicopter as it rotates about its vertical axis is obtained by operating the rudder pedals. The method of obtaining the forces for this control is governed by the type of rotor system in use. The single lifting anti-coning rotor is shown in Fig. 19, the tandem and lateral arrangements appear in Fig. 20 and 21, the coaxial is illustrated in Fig. 22, and the jet power rotor system in Fig. 23.

While there may appear to be a different method of blade attachment to the rotor hub on each type

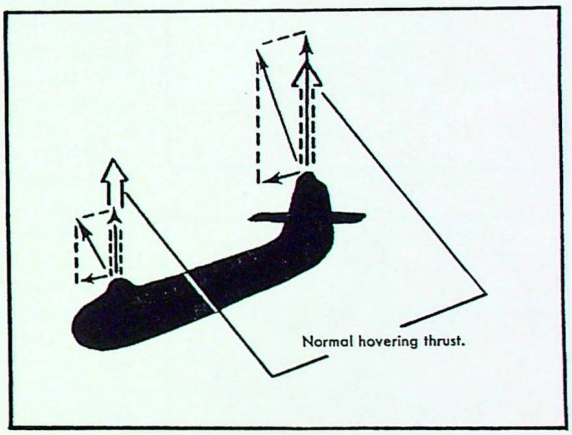
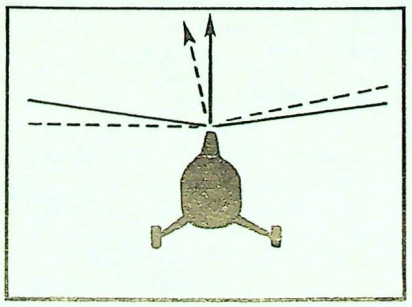
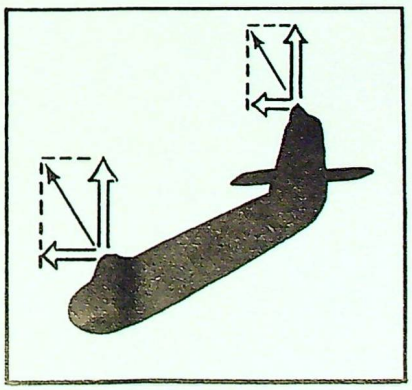


Fig. 18. Pitch.

Fig. 17. Tandem rotor roll.

Fig. 16. One lifting rotor roll.





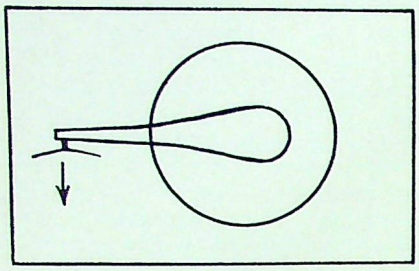


Fig. 19.

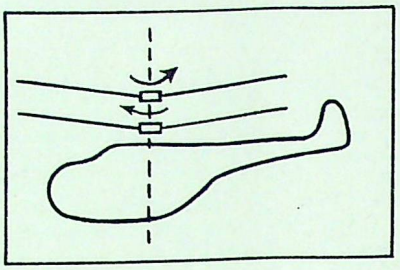


Fig. 22.

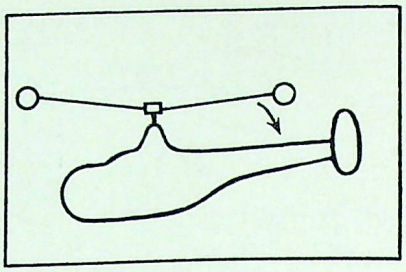


Fig. 23.

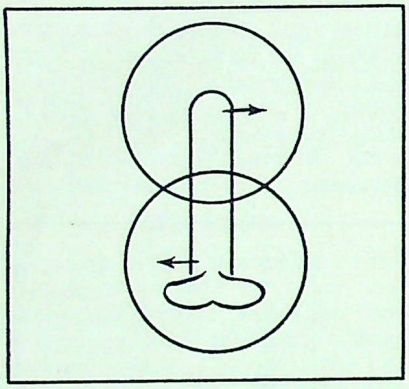


Fig. 20.

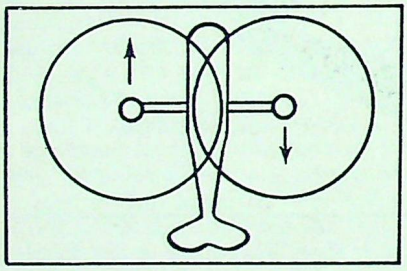


Fig. 21.

of helicopter produced, there are only three systems:

1. The fully articulated system, in which the blades are attached to the hub by hinges, leaving the blades free to move up and down on the flapping hinges and to swing back and forth in the plane of the disc on the lag hinges (see Fig. 24). This system is used in the Piasecki and Sikorsky helicopters.
2. The semi-rigid type, as in the Bell (see Fig. 25).
3. The rigid type, which is not employed on helicopters in large-scale production.

The fully articulated system is used most extensively, because the flapping hinge imparts properties important to stability and control, while the lag hinge is important primarily in the control of vibration characteristics.

In forward flight all the blades have the same pitch at the same place in the plane of rotation. Each blade advances into the wind for 180° and retreats from the wind for the remaining 180°. If the helicopter is travelling 100 m.p.h. and the blade-tip speed is 400 m.p.h., the advancing blade-tip speed will be 500 m.p.h. and the retreating blade-tip speed will be 300 m.p.h. Since the lift on any aerofoil section is a function of the speed at which it is travelling, it will be seen that, in order to equalize the lift all around the disc, the angle of attack (or pitch) of the advancing blade will have to be less than that of the retreating blade, because it is travelling faster. In fact, because of the variation in blade-tip speed in azimuth, the angle of attack varies as each blade advances, thereby equalizing lift over the whole rotor disc (see Fig. 26).

While, as mentioned in the preceding paragraph, there is a variation in the angle of attack of each blade, any increase or decrease of collective pitch affects all blades. To simplify the explanation of directional flight, the variation in the distribution of the angle of attack will be ignored. In hovering flight and at zero airspeed, the lift exactly equals the gross weight of the helicopter. In hovering flight conditions (see Fig. 27) all rotor blades have the same amount of collective pitch, and the angle of attack is assumed in this case to be 15°. The tip-path plane of the rotor is at right angles to a line perpendicular to the earth's surface.

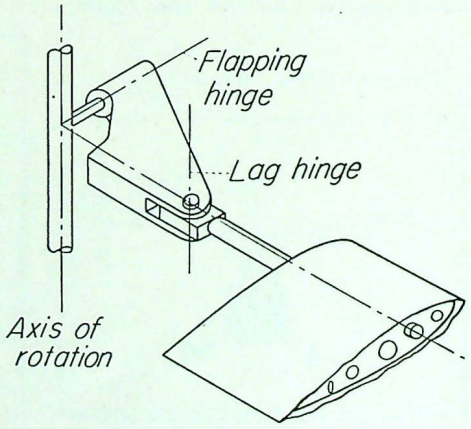


Fig. 24.

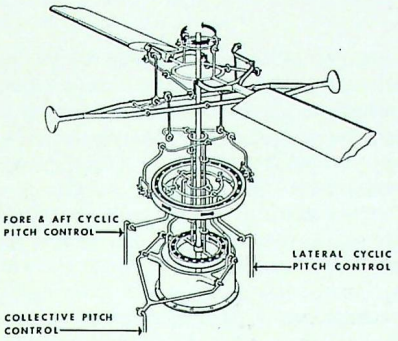


Fig. 25.

For directional flight, the tip-path plane is tilted in the desired direction, and when it tilts, the thrust component of the rotor tilts with it. Since the rotor thrust-component always operates at right angles to the tip-path plane when it is tilted for directional flight, it is resolved into two separate forces to act on the helicopter as a lift component and directional (or pull) component. Sketches of these operations are shown in Fig. 28.

For the hovering condition it was assumed that 15° of pitch would produce sufficient lift to equal the weight of the helicopter and keep it in hovering flight. By operating the cyclic stick, say, to the forward position, the tip-path plane is tilted forward and the highest point of the blade will be over the tail while the lowest is over the nose.

It will be seen from Fig. 29 that the blade with the greatest angle of attack is located, not over the tail as might be expected, but 90° before the blade reaches the tail position or (for other than forward flight conditions) the position where the highest part of the tip-path plane is desired. The advancement of the angle of attack is known as the "angle of precession", and it is the angle of rotation by which a change in pitch must be made to produce a change of the rotor disc either up or down in the plane of rotation.

This change of the blades up or down is referred to as "flapping up or down". When the tip-path plane is horizontal, the flapping motion of the blades is very nearly constant, and the average angle made by the blade is called the "coning angle". The coning angle (Fig. 30) increases with increased loads on the blades. It will remain constant during flapping up or down — provided that the collective pitch remains the same.

The coning angle is determined by two forces, lift and centrifugal force, which act on the blades. With respect to lift, each blade of a main rotor supports only part of the gross weight of the helicopter. For example, in a four-blade system, each blade supports ¼ of the gross weight. Since the coning angle must be kept small in order to obtain the greatest possible lift, centrifugal force is the largest force

Fig. 26.

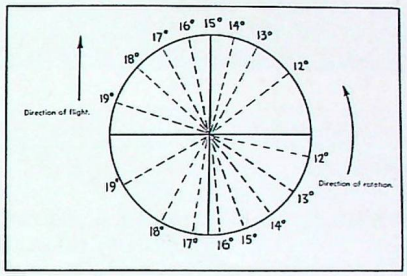


Fig. 27.

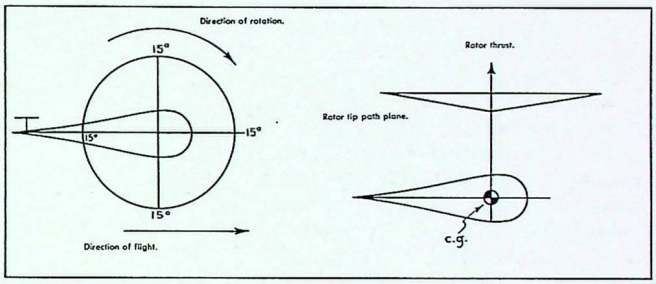
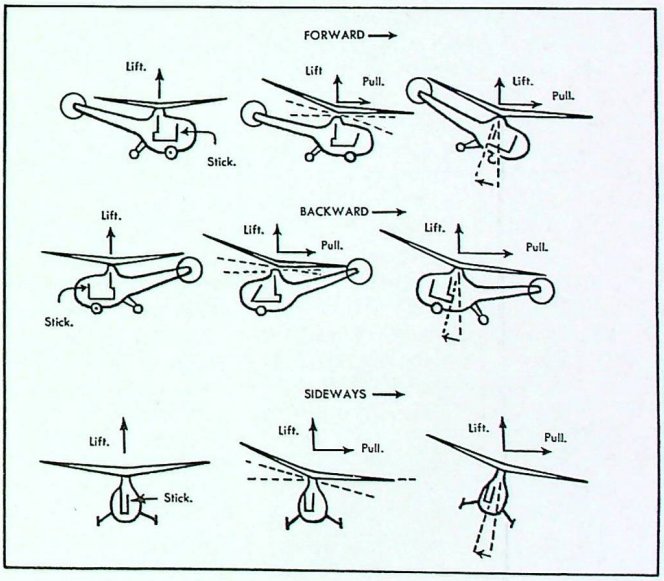


Fig. 28.



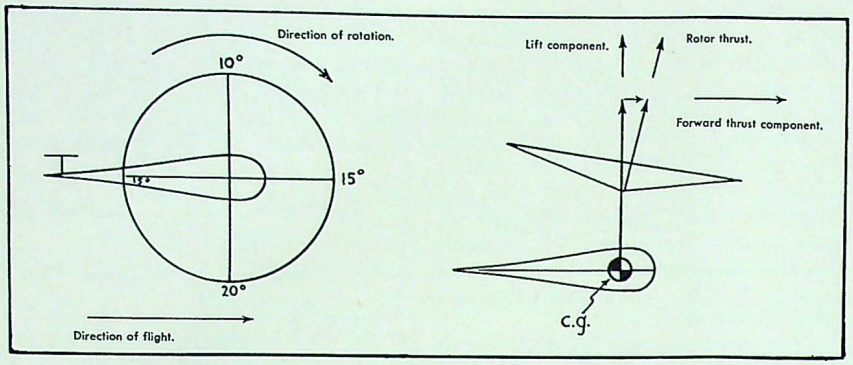


Fig. 29.

acting on the blades. Fig. 31, which illustrates the approximate ratio of lift to centrifugal force, shows how the resultant force dictates the average coning angle or vertical movement of the blade about its horizontal flapping hinge.

For emergency landing, in case of engine or other failure which leaves the rotor system free to rotate, an autorotational descent can be made. Autorotation is a method of producing lift without power but with the rotors free to rotate as a result of aerodynamic forces acting on the blades. The upward movement of air through the blades has two effects. First, it assists in keeping the blades in rotation; and secondly, it provides lift. In the single main rotor system there is no torque effect, since the engine is not running and the rotor is not powered. Immediately engine failure occurs, it is essential to put the blades into fine pitch in order to take advantage of the stored inertia in the blades and build up high r.p.m. This technique will, if carried out properly, produce sufficient lift to permit a safe and gentle landing. Autorotation has been executed safely from above 12,000 feet on tandem rotor helicopters. Experience has shown that one type of rotor system is not safer than another in case of rotor system failure, and a failure of this nature precludes a safe landing.

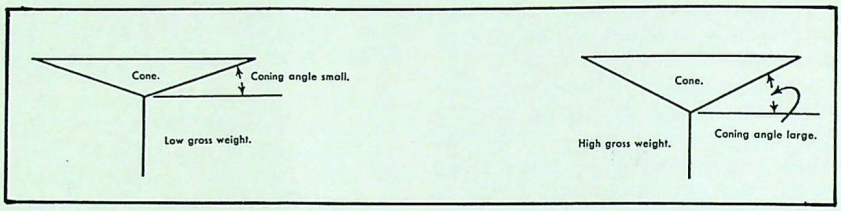


Fig. 30.

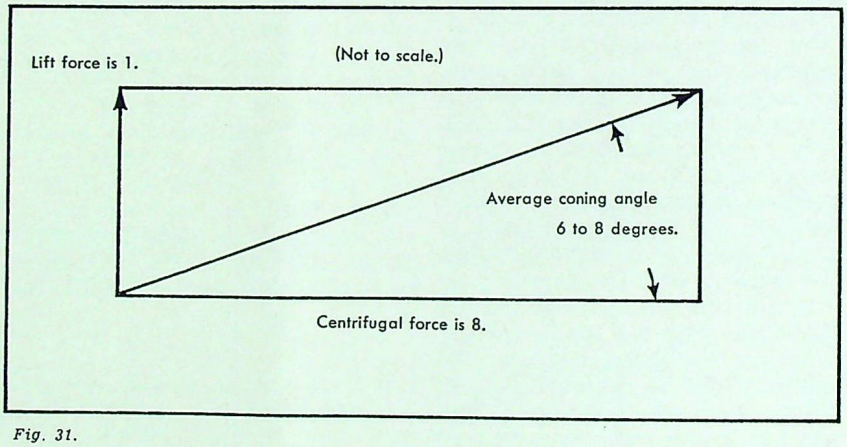


Fig. 31.

THE FUTURE

Prophecy is always a dangerous business. It should be recognized, however, that the helicopter is no longer a novelty. It is an absolute necessity as an integral part of military operations, and it is fast becoming equally important in commercial aviation. There are now, in Canada, two major overhaul and repair centres for helicopters, and it is expected that facilities will expand and that others will become established in the near future.

The most pressing problem with existing models of helicopters is that of reducing the operating costs to bring them more in line with fixed-wing aircraft. To date, all helicopter manufacturers have been obliged to convert and use reciprocating engines designed for fixed-wing aircraft. It is considered that turbine engines will be almost exclusively used in future helicopters of more than 7000 lbs. gross weight, with a preference for the free turbine engine. Turbine engines will decrease vibration problems and increase the payload capabilities by obtaining a much more favourable

gross-weight/payload ratio. For helicopters using more than two engines, there will probably be little difference between the free and fixed turbine. It is interesting to note that the Bristol 193 (Fig. 32), with a gross weight of 17,000 lbs., will use the Napier free turbine, while the 40-passenger Piasecki H-16 (Fig. 33), with a gross weight of about 35,000 lbs., is using the T-58 turbine. These two aircraft are scheduled to go into production shortly.

Ultimately, the pure helicopter (i.e. an aircraft whose lift and thrust is developed only by the main rotor) will probably reach maximum forward speeds approaching 200 m.p.h. This will be possible with the use of various aerodynamic devices such as boundary-layer control on rotor blades, and aerodynamic cleanliness of blades, rotors, and fuselage. Aircraft of this type will no doubt fill the requirement for a utility type of machine with a relatively short range.

The next step towards increasing the range and speed of the true helicopter will probably be further development of the compound type such as the Bristol 190 series (Fig. 34). Here the stub wings (shown attached to the fuselage and carrying the fore-and-aft undercarriages) unload the main rotors during forward flight. In the future, with the rotors unloaded by these stub wings, speeds up to 250-275 m.h.p. and ranges up to 1000-2000 miles may be attained by aircraft of this type. They will fill the need for a medium-sized passenger/freight machine in both military and commercial aviation for the interim period during which the convertiplane is being extensively tested and proven.

Further development of the compound helicopter will lead to the convertiplane. Here the vertical lifting rotors, mounted on wings, will be rotated in flight to operate as conventional aircraft propellers. The Bell XV-3 convertiplane (Fig. 35) and the Transcontinental 1-G convertiplane are examples of this type. It is likely that this type of high-speed, high-performance machine, capable of both fixed-wing and rotary-wing good all-round performance, will become the commercial and military machine of the future. Britain's 44-passenger Fairey Rotodyne (Fig. 36), with tip-powered rotor for take-off and conventional wings and propellers for horizontal flight, is another type of convertiplane.

The true helicopter will be developed to meet special requirements. Training-helicopters, of conventional design and with reciprocating engines, will be required as helicopter operations increase. There will also be a heavy cargo or crane type of short-range transport. This flying crane may well be used — as part of a transport team — for picking up pre-loaded packages at factories or other bases and transporting them to large fixed-wing aircraft for long-distance travel.

The crane type of helicopter will probably have a jet-driven rotor. While the fuel consumption for a jet-driven rotor will be high, this can be accepted over a short range because of the great advantage in

Fig. 32. Bristol 193.

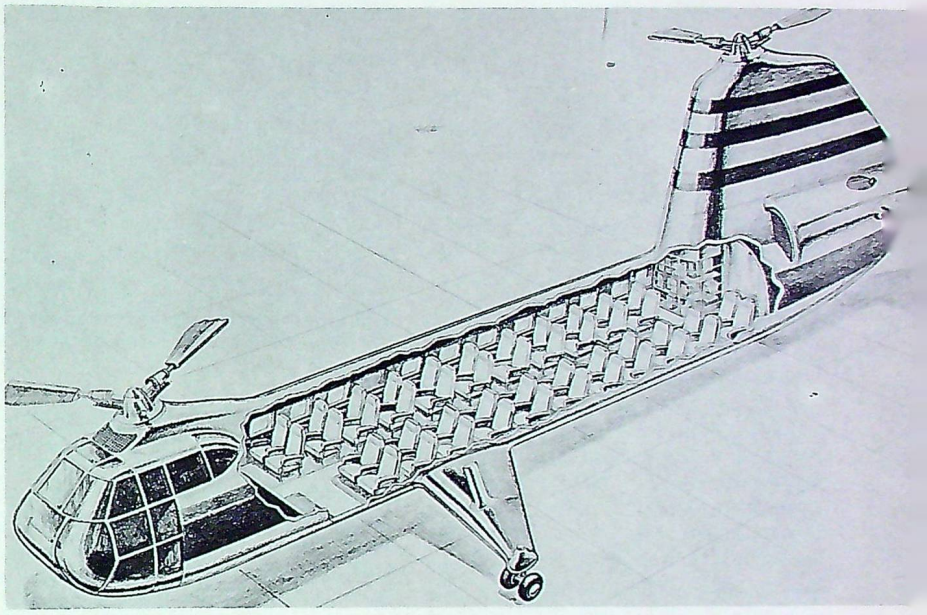


Fig. 33. H-16.

Fig. 34. Bristol 190.

the amount of power available and the resultant lifting capability.

There are five general types of rotor-tip jet-power systems used to drive helicopter rotors. They are:

1. Turbo-jet.
2. Pulse-jet.
3. Ram-jet.
4. Pressure-jet.
5. Rocket.

The rocket system is ideally suited for emergency power or as an auxiliary power boost system for take-off.

The rocket-on-rotor (R.O.R.) system has small rocket engines in the tip of each rotor blade, powered by a mono-propellant fuel. Once the fuel is used, it must be replenished on the ground. A schematic diagram of a typical R.O.R. system is shown in Fig. 37. This system has a weight penalty. When weight/power ratios are more favourable on both R.O.R. and helicopters, the R.O.R. will probably be used for special overload lift requirements and emergencies.

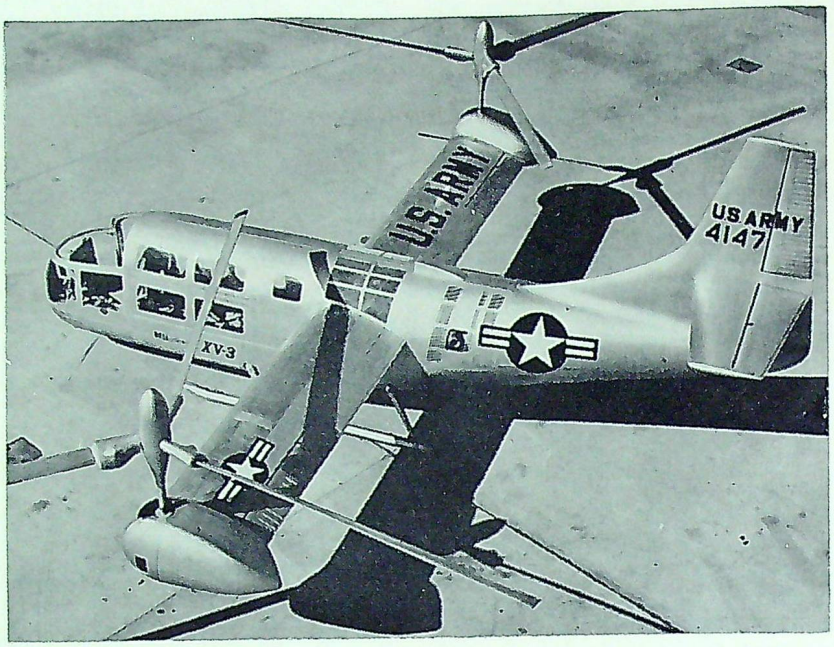
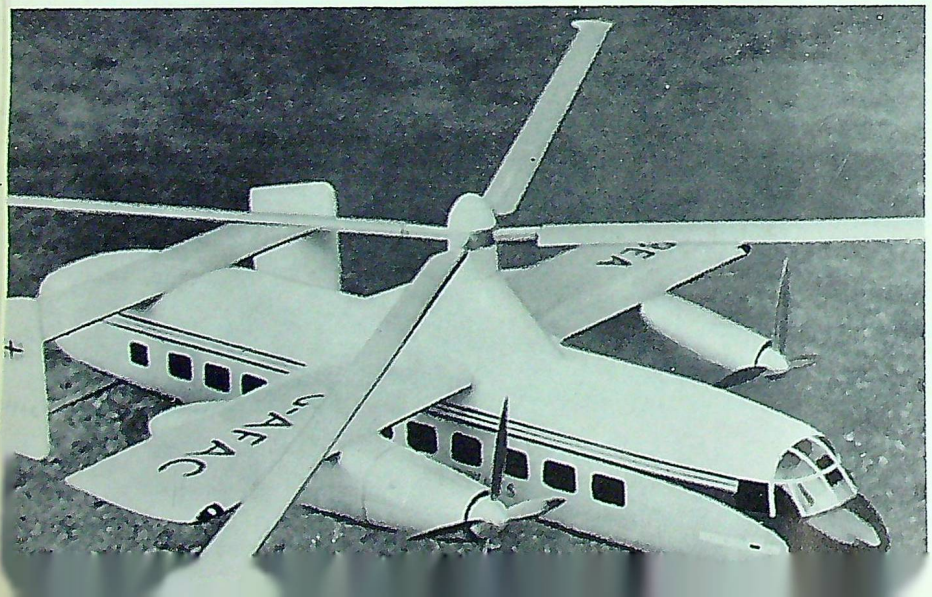


Fig. 35. Bell XV-3 convertiplane.

Mention might also be made here of "tail-sitters", or direct-thrust vertical risers, such as the Lockheed and Convair, which have flown recently. This type of aircraft has been mentioned as a possible competitor to helicopters. While the prototypes have demonstrated the practicability of both vertical rising and descent, and of conversion from vertical to horizontal flight and back again, such evolutions entail complete dependence on the turbo-prop power-plant. Obviously one-hundred-per-cent reliability of the power-plant and propeller system is mandatory for safe operation, because neither conventional landing nor autorotation can be carried out. For this reason, and because the pilot is in a semi-reclined position for landing and take-off, it is unlikely that this type of machine will have any practical application in the field of helicopter operations.

In the near future we can look forward to the acceptance of the helicopter, by the military and the general public alike, for both large-scale operations and scheduled flights calculated from city centre to city centre. It will be necessary first, however, to improve the helicopter's ability to operate under any weather-conditions on an equal basis with fixed-wing aircraft.

Fig. 36. Fairey Rotodyne.



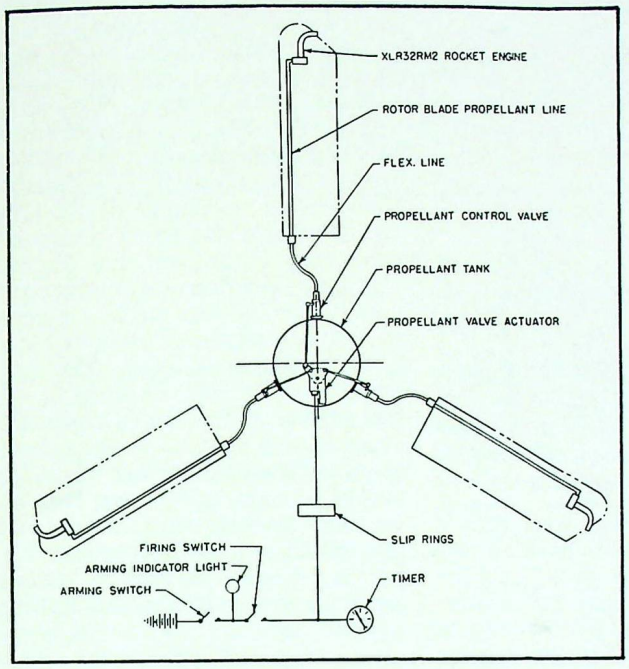


Fig. 37. Typical R.O.R. system.

Externally there are no great problems to de-icing the 'copter.

The electro-thermal method of de-icing can be applied very readily, when necessary, to the fuselage and the rotor blades. It is understood that the Piasecki Corporation has already prototyped and whirl-tested some electro-thermally de-iced blades. Considering the peculiar requirements of helicopters to operate in icing conditions for extended periods of time, the electro-thermal method will probably prevail over the hot-air method which has received some consideration for blade anti-icing. Rotor heads can be shielded from ice build-up, and windshield anti-icing will not need any new developments.

The I.F.R. machine of the future will, of course, be multi-engined, but capable of making emergency landings on one engine. Such a capability, if required in helicopters of high gross weight, will of course adversely affect the weight/payload ratio. On the other hand, it is not anticipated that, in passenger-transport operations, aircraft of high gross weight will be required.

The helicopter is inherently a dynamically unstable machine. Therefore it will be essential to have autopilots that will automatically stabilize the 'copter before reliable instrument-flying can be accomplished. While some aspects of the development of helicopter auto-pilots present problems fundamentally different from those connected with fixed-wing aircraft, progress has been steady. Auto-stabilization can be expected when the development of the necessary flight instruments has been effected.

Since the helicopter can perform flying tasks in very low speed-ranges and close to the ground, it needs instruments better suited to this type of flying. Airspeed and altitude instruments will have to be much more reliable and accurate in the lower ranges than they now are. Then, too, a method must be developed to give warning of buildings or uneven ground. With reliable flight instruments in hand, it will be possible to develop an effective instrument let-down system and accurate navigational aids.

Other factors affecting the future operations of 'copters will include air traffic control procedures, helicopter identification, and navigation lighting.

CONCLUSION

One may well ask when all the above improvements will come to pass. The answer is that they will come when the requirement is urgent enough for some large agency or agencies to spend the necessary money on developments. Britain and the U.S., as well as Canada, are fast becoming aware of the potentialities of helicopters, but, at the last air show in Moscow, it became evident that the Russians can at least equal, and perhaps even surpass, our latest prototype achievements. Perhaps that fact may help to accelerate our efforts.

As has already been pointed out, helicopters are most efficient when used on short hauls to carry heavy loads. It takes little imagination to see how helicopters could be used as flying cranes to transport large and awkward pieces of equipment either for commercial or for military purposes. Consider, for example, how much easier it would be, during the construction of large buildings, for a 'copter to lift complete units — and to put them into place, almost ready for use — than to transport them one by one on trailers through crowded city streets. Civil Defence, too, must certainly have a requirement for helicopters.

The potentialities for salvage operations, both commercial and military, have yet to be explored. It is true that aircraft have been salvaged by helicopters, but this has only happened when other methods

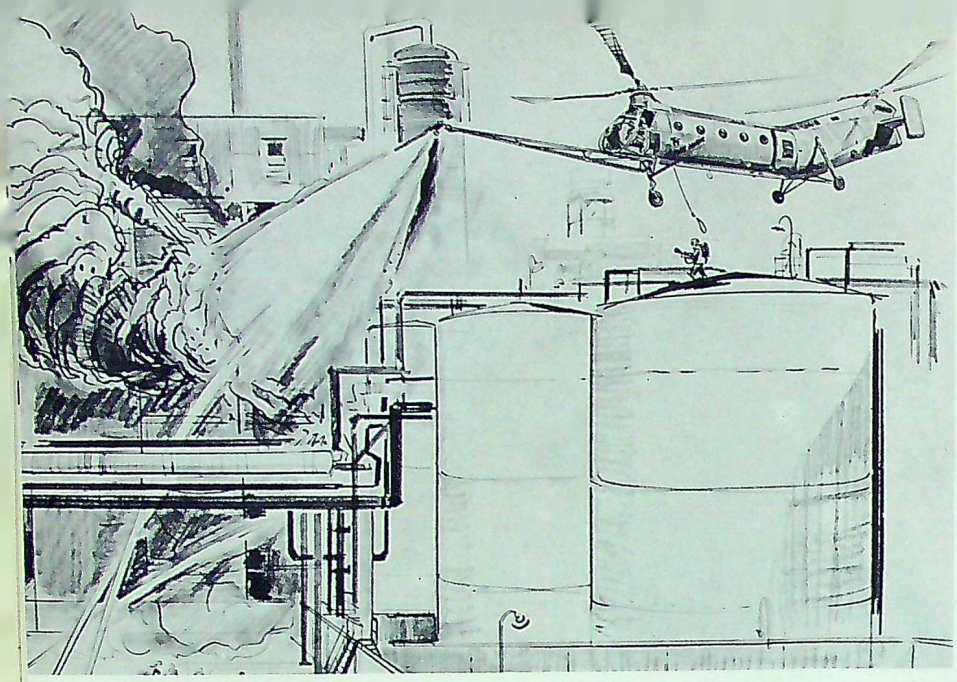


Fig. 38. Piasecki "Fire-horse".

have proved impossible. In actual fact, though, heavy salvage operations can almost *always* be effected both more easily and efficiently by helicopter than by any alternative means.

Another interesting possibility is a helicopter fire-truck such as proposed by Piasecki (Fig. 38). By use of such equipment, it would be possible to bring fires under control in places inaccessible to the present type of fire-fighting trucks. Rescue or lowering of personnel by the rescue hoist could be readily effected because of the helicopter's mobility and of its ability to blow the fire in any desired direction. Unhampered by confusion on the ground, this type of helicopter would also be invaluable in many kinds of emergency other than that of fire.

All the foregoing possibilities, and many more, remain to be explored if we are to maintain what we hope is our lead in technology. There is, admittedly, no single answer to all our problems; but, since the helicopter has yet to be really extensively employed in either commercial or military operations, how do we know that its optimum utilization might not well mean the difference between victory or defeat either in war or in the competitive world of peace?

End

The Suggestion Box * * *

Flt. Lt. E. A. DeLong.

The Chief of the Air Staff has written a letter of thanks to the undermentioned officer for an original suggestion which has been officially adopted by the R.C.A.F.

Flt. Lt. E. A. DeLong, of Maritime Air Command H.Q., designed a combination protractor and sonobuoy plotter which is of considerable value to the navigators of maritime aircraft both in ensuring the accuracy of sonobuoy plots and in increasing the speed of laying sonobuoy patterns.

NOTICE TO CONTRIBUTORS

Beginning with Vol. 8, No 1, "The Roundel" has contained 32 instead of 48 pages. Contributors are therefore asked to bear with us when we hold accepted manuscripts for severals months before publishing them. The reduction of available space compels us in some cases to delay the publication of material whose interest is not appreciably lessened by a short lapse of time — e.g. articles of a historical or reflective nature, book reviews, etc.

The Party Line

THE R.C.A.F.'s POLICE FORCE

Prepared by the Air Force Police Branch, Directorate of Air Force Security.

INTRODUCTION

ALTHOUGH our Air Force Police is one of the youngest military police forces in the world, with a history of only sixteen years, it is nevertheless rich in experience gathered during the Second World War and during the uneasy peace that has followed. Furthermore, its roots are grounded in 300 years of military police tradition.

It was in 1643 that King Charles the First of England issued the following instruction:

"The Provost must have a horse allowed him and some soldiers to attend him, and all the rest commanded to obey and assist, or else the service will suffer, for he is but one man and must correct many, and therefore he cannot be beloved. And he must be riding from one garrison to another, to see the soldiers do no outrage nor scathe the country."

In point of fact, the Provost Marshal's organization, although not as the strictly military body we know today, goes back 900 years to the Norman Conquest, when the first Provost Marshal accompanied William the Conqueror to England. From that time until the 17th century, the Provost held powers of life and death over soldiers and civilians alike. According to a 15th century historian, it was not lawful for the men of the Provost Marshal to go about at any time without their halters, withes, and strangling-cords.

Since the 17th century, when the Provost Marshal's organization became a military body, its rôle has changed to the protection of the Serviceman and his equipment in order to preserve his efficiency as a fighting man.

HISTORY OF THE AIR FORCE POLICE

Before the outbreak of war in 1939, the R.C.A.F. had no police organization, and such police duties as were necessary were carried out by General Duties airmen without special training. The number of personnel employed in this capacity was small, and in June 1939 the total establishment for R.C.A.F. Station Trenton was one corporal and three aircraftmen.

In July 1939, thought was given to the creation of a trade of Service Police. After successful completion of a suitable course, personnel were to qualify for the trade of Service Police with a "C" grouping. Nothing was done, however, until October of that year, when the first provost officer was appointed. The first police course began at Toronto on the 2 December 1939, and classes were held in the "Bull Ring" of the Canadian National Exhibition — which doubtless seemed an appropriate place in which to conduct a police course!

The first Provost Marshal was appointed in March 1940. Authorized to form, within the Directorate of Personnel, a Guards and Discipline Branch, he selected seven assistants who, with commissioned ranks, would represent him in the Commands. Of these seven, six came directly into the Service from civil police agencies.

In late 1941, the Guards and Discipline Branch reached sufficient size to warrant the formation of a separate directorate; and the Directorate of Provost and Security Services, embracing the Service Police and Security Guard Branches, was formed. A Special Investigation Section was created within the Directorate, with the responsibility of conducting all criminal investigations in the R.C.A.F. It is interesting to note that many of the personnel of this Special Investigation Section went on after the war to distinguish themselves in senior police positions in towns and cities across Canada.

After the war the Service Police dwindled from a peak of nearly 5000 officers and men to some 5 officers and 60 airmen. The outbreak of the Korean War, however, together with Canada's responsibilities under N.A.T.O., brought about a general expansion in the R.C.A.F. and a consequent increase in the Police Branch. In November 1950 the Directorate of Air Force Security was formed and made responsible for the prevention of espionage, sabotage, and subversion, for the maintenance of law and order, and for ground defense training of all personnel in the Air

Force. Ground Defense became a separate directorate in 1953.

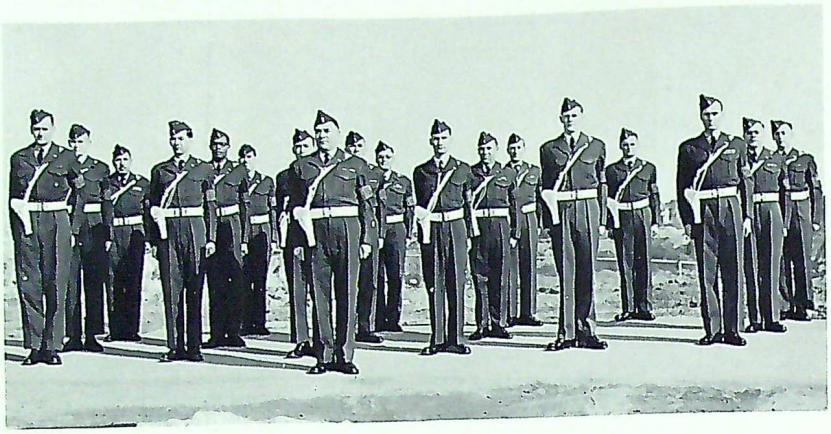
FUNCTIONS

Today the mission of the Air Force Police is:

- the protection of classified information,
- the protection of R.C.A.F. material against sabotage,
- the protection of R.C.A.F. civilian and Service personnel against subversion, and
- the prevention, detection, and investigation of crime.

The primary purpose of the Air Force is, of course, to carry out air operations. When, therefore, we consider the disastrous effects that espionage, sabotage, and subversion can have on air operations, the importance of protection from these forms of covert attack can be readily understood. Espionage can rob us of our advances in military science, disclose our weaknesses and strengths, and give away our methods of defence to a potential enemy. Sabotage can destroy our aircraft and installations for defence before they can be used. Subversion can undermine confidence and morale, and reduce efficiency and the will to resist. Thus, the Air Force Police must necessarily give first priority to that part of its mission which aims at countering these threats.

(Let us remind the reader here that no security measures and no efforts of the Air Force Police will provide effective security unless they receive the complete support and co-operation of everyone concerned with their success. Security against covert attack is not just the responsibility of commanders and police personnel; it is the individual responsibility of all Air Force personnel, both Service and civilian. Intelligent co-operation with the Air Force Police — a co-operation which stems from an awareness of the danger to be combatted — is essential in ensuring that the air operations of the R.C.A.F. are not hampered or their effectiveness nullified at a critical time.)



A flight of Air Force policemen on parade in Ottawa.

Although priority must be given to the prevention of espionage, sabotage, and subversion, the importance of the prevention of crime in the Service must not be forgotten. Crime, too, can impair the efficiency of the force. The loss to the Air Force, resulting from crime, can be serious far beyond the gravity of the individual offences. A carelessly dropped cigarette can cause the destruction of a costly and important installation, the theft of equipment can hinder an air operation or endanger life. Crime is contagious; it grows if not suppressed in time. It is the duty of the Air Force Police to see that it is stamped out wherever it appears.

ORGANIZATION

To accomplish the vital security mission assigned to it, the Air Force Police is organized as follows:

A.F.H.Q.

Responsible to the Director of Air Force Security are the Security Branch (for security of information, personnel, and materiel) and the Police Branch (for prevention, investigation, and detection of crime).

Commands, Groups, and Divisions.

The Staff Officer Security is responsible to the A.O.C. for security and police functions within the Command.

Units.

The unit Air Force Police are responsible to the C.O. for the security and policing of the unit.

Special Investigation Bureau.

Responsible to A.F.H.Q., the Special Investigation Bureau is established on a regional basis in Europe and in all provinces of Canada except Newfoundland.

RECRUITING

Men and women apply to join the Air Force Police for many different reasons; but, whatever their reasons, Air Force policemen and policewomen need intelligence, patience, strength of character, and sometimes bravery. They must also have a calm and judicious approach to their calling.

The Air Force Police contains in its ranks men and women drawn from many sources. Its personnel include ex-members of the R.C.M.P. and of the provincial, municipal and railway police forces of Canada. There are members of the London Metropolitan Poice, and many British city and county police forces are represented. A number have served with the British military police and intelligence organizations, and the British colonial police forces have contributed ex-members from Palestine, Malaya, Hong Kong, Singapore, Shanghai, and Rhodesia. The largest number, however, have come into the force as inexperienced personnel and have been trained by the R.C.A.F.

In late 1951, women were reintroduced into the trade of Air Force Police. Policewomen are established on all units having a complement of more than 25 airwomen and at each Special Investigation Unit. They are to be found at radar stations in Canada and at R.C.A.F. Wings overseas. They receive the same training as men, even to the manly (or womanly) art of self-defence. Although they fulfill a normal police function, they are primarily concerned with airwomen.

TRAINING

All members of the Air Force Police are required to attend the Air Force Police training course at R.C.A.F. Station Aylmer, Ontario, regardless of previous experience. In addition to this basic course, Air Force Police are accepted for training by various police schools in Canada, the United States, and Great Britain. Training is also provided in special fields, such as identification and interrogation, and selected personnel are given training in arson investigation within the R.C.A.F. and at Purdue University in the United States.

Air Force police have attended courses at the Canadian School of Military Intelligence, Camp Borden, and the Canadian Provost Corps School, Camp Shilo. Air Force Police officers and N.C.O.s are regularly included in the R.C.M.P. College courses at Regina and Rockcliffe, and in the Maritime Police School at Halifax.

DUTIES AT UNITS

The primary function of the Air Force police on units is the protection of life and property, and to this end all efforts are bent. Whether conducting security checks to ensure that all classified matter is adequately protected, or quelling a disturbance or directing traffic, the purpose of their duties is the same: the protection of serving personnel and public property. Air Force police maintain a 24-hour watch on the station, and many of their duties are performed when the rest of the personnel of the unit are enjoying themselves in recreation or are asleep in bed. During week-ends or holidays you will always find an Air Force policeman on duty. They maintain patrols in all weather, by day and by night; for there is no real substitute for the man on patrol, who, as he goes quietly on his rounds, is quick to notice any unusual circumstance.

Air Force police handle the finger-printing and photographing of personnel for identification purposes, they take care of the custody and escort of Service prisoners, they supervise the control of entry to the unit, and they investigate Service and criminal offences. They must often spend long hours in the investigation of crime, frequently working overtime. They are called upon to handle all disturbances on the unit — and sometimes off the unit in adjacent towns, when R.C.A.F. personnel are involved. Although these tasks are usually performed quietly and without difficulty, there have been occasions when Air Force policemen have been confronted with great personal danger, and they must always be alert to protect themselves and others in the vicinity.

The Air Force police are ready at all times to assist the airmen of the unit. To this end the guardhouse is a general information centre for all newcomers. The police run a lost-and-found bureau on each unit, and recover articles lost on trains and other forms of public transport. It is a rare day indeed when the unit police are not called upon to help someone who needs the benefit of their knowledge and contacts. Not long ago an airman was beaten and robbed in a city near his unit. His appeal for help to his unit brought prompt action. The Air Force police, with the assistance of the civil police, were able to bring about the arrest of the assailant and recover a portion of the stolen money for the airman.

No policeman, no matter how minor his task, can carry out his duties efficiently without giving his whole-hearted support to the policies he must execute. But his efficiency is also predicated to a large extent upon the support he receives from the rank and file of airmen,

Cpl. Patricia McGrath finger-printing an airman at R.C.A.F. Station St. Hubert.

among whom he must move and work. The police owe a duty to the airmen, but, conversely, the airmen owe a great deal of responsibility to the police. Law observance is far better than law enforcement. Law observance is the exercice of a desire and willingness from within to comply with established rules; law enforcement is the exercise of a power from without — and generally against the will of the individual.

SPECIAL INVESTIGATION BUREAU

The Special Investigation Bureau is established on a regional basis with units in Edmonton, Toronto, Montreal, and Metz (France), and with detachments of these units in Vancouver, Whitehorse, Calgary, Saskatoon, Winnipeg, London, Trenton, North Bay, Ottawa, and Halifax. Each unit is commanded by an Air Force Police officer; each detachment is in charge of a senior N.C.O. Their duties consists of the background enquiries necessary for security clearances and the investigation of crime. Some of their work takes them far off the beaten track into northern Manitoba and Saskatchewan and the interior of British Columbia, where overnight accommodation is a sleeping-bag thrown on the ground beside the car and breakfast is served to the aroma of wood-smoke.

The Special Investigation Bureau is manned in such a way that well trained men are available for every phase of investigative work. They are always at the call of any commanding officer to conduct or assist in investigations which he considers beyond the capabilities of his own police resources. Since this organization is established on a regional basis in Canada and Europe, its men are quickly available to most units, and can, in most instances, be on hand to take over an investigation in a few hours from the time they are called.

RELATIONS WITH OTHER POLICE FORCES

Air Force police deal constantly with the public, and the rest of the Air Force is often judged by the appearance and bearing that these men present. They are in constant touch with other military and civil police agencies. In Europe excellent relations exist between the Air Force Police and the French *gendarmerie*, the German security police, and the British county police. Patrols in Metz are conducted by the Air Force Police and the U.S.A.F. Police jointly; in Rabat, by the Air Force Police and the Moroccan Police.

The civil police, by making their facilities available, greatly assist the Air Force police in the performance of their duties. The work of the latter would be difficult indeed without the constant co-operation and assistance afforded by the civil police and by other military police agencies. The training given by these agencies, the assistance of their experts, together with the assistance provided by the facilities of their laboratories, are a constant support. On the other hand, the Air Force police stand ready at all times to assist these agencies by passing on information, gathered in the course of their duties, respecting personnel who are, or may be, involved in criminal activities; and, when requested, they will assist in locating potential witnesses or suspects from among Service personnel.

CONCLUSION

The maintenance of law and order, the prevention of crime, and the apprehension of criminals are the functions of civil police forces. To carry out this task they have special powers given to them by law. Like their civil police counterparts, the Air Force police represent, within the Air Force, all the majesty of the law, and are vested by law with special powers to carry out their duty of the maintenance of law and order. Yet, unlike the majority of civil police, they have, in addition to and transcending this duty, the duty of protecting the Air Force from espionage, sabotage, and subversion.

That they are capable of adequately fulfilling all their functions, there is no doubt. But, as has already been said and cannot be too often repeated, they cannot do it alone. They are merely a part of the great team which works to keep the R.C.A.F.'s aircraft effectively in the air, and the essence of all teamwork is co-operation between all the components engaged in it.

CIVVY STREET OR SERVICE LIFE?

BY FLYING OFFICER R. I. SCHOLES

(This year is a year of decision for many airmen in the R.C.A.F. whose period of engagement is about to expire. The following article, which originally appeared in R.C.A.F. Station Moose Jaw's "Planesman", seems to us well worthy of publication throughout the Service. It was written in order to explain, in down-to-earth terms, just what factors should be taken into consideration by Servicemen who find themselves faced with the necessity of deciding whether or not they should re-engage themselves with the Air Force.—Editor.)

REALISM IN RECRUITING

THE problem of enlisting men for military service is, of course, not a new one, but the approach to its solution has varied considerably over the years. In bygone days a military band, parading down the main street to the accompaniment of rousing martial tunes, would always ensure that a few volunteers reached the recruiting-office. Earlier still, the old Press Gang was an even more effective, if less democratic, method. Neither of these solutions, however, can provide the complete answer to the R.C.A.F.'s recruiting problem today. Nor do flag-waving campaigns, appeals to patriotic emotions, or similar exhortations, have the same response in peace-time as in times of national emergency.

The R.C.A.F.'s approach to the question is, therefore, a realistic one. It appreciates the need to provide career opportunities equal to, or even better than, those offered in civilian life. The financial security and retirement benefits necessary to attract a family man; facilities, privileges and amenities not always available to the civilian employee; and lastly, good on-the-job pay (which, after all, is the common denominator in comparing any occupation or profession) — these are the factors that affect men's and women's decisions concerning the careers they should follow.

RELEASE v. RE-ENGAGEMENT

Continually many of our airmen are reaching the period in their Service life when their original enlistment is about to expire. It is up to them then to choose between release or re-engagement, between returning to civilian life or continuing to serve in the R.C.A.F.

The purpose of this article is to draw comparisons between Service and civilian occupations, with emphasis on the financial returns offered by each. There is often a tendency to estimate our personal value to the Air Force rather generously, but let us not allow this self-assurance to develop into over- confidence, nor let us permit ourselves to labour under the delusion that three or five years in the R.C.A.F. automatically qualifies us for key positions in industry when we leave the Service. The final choice is one that every individual must make for himself, but, before deciding, he should examine both sides of the picture thoroughly and with honesty.

Separate the civvy street of your *imagination* from the civvy street of *reality*, and compare its rewards with those of a well-paying Service career. During the time you have been in the R.C.A.F., you have become a skilled tradesman, and the purpose to which you put your skill, and the benefits you obtain from it, depend on you and your immediate decision. Should you return to civilian life, you will be faced with the problem of finding suitable employment. Many lay-offs in industries have made it increasingly difficult to obtain good jobs, and you will have to find a very good job indeed in order to live on the scale to which you have been accustomed in the R.C.A.F.

* * *

In order to discover just how generous your new employer would have to be to give you the equivalent of what you now receive in the R.C.A.F., we will take the hypothetical case of L.A.C. Joe Smith, with three years' seniority as a Group 3 tradesman. Study the figures carefully.

L.A.C. Smith's employer would have to:

- Pay him a basic salary of $184 per month. If Joe marries, the employer would have to fork over an additional $30 per month.
- Give him free board and lodging — and, if Joe chooses to live off the plant with his wife, he would expect a further bonus of $91 to take care of food and housing. If, on the other hand, Joe had lived in married quarters, he would expect his new employer to

supply him a modern home (with heat, electricity, and water supplied) for a total monthly rental of $71.

- Guarantee him free hospitalization. On civvy street, hospital fees are approximately $10 a day and doctors' fees about $3 a visit. An appendix operation costs in the neighborhood of $300. Even more important is the fact that an injury or operation invariably necessitates a lengthy lay-off. In civvy street, compensation may possibly be paid, but it is only a fraction of the employee's regular wage. In the R.C.A.F. no wages are lost through time off, and, in most cases, sick-leave with full pay and allowances is granted in order that the patient may fully recover before returning to work.

- Provide him with free dental treatment. Teeth extractions and fillings cost from $3 to $5 each, dentures about $75.

- Allow him thirty days' leave on full pay — as opposed to the average of two weeks' holiday on civvy street — as well as ten statutory holidays per year, plus time off at Christmas and the New Year.

- Guarantee him progressive pay. (And let us remember, too, that there have been four increases of Service pay since 1946.)

- Offer him the opportunity of travel both in Canada and overseas (plus travelling-allowances).

- Provide him with the best of recreational facilities.

- Pay him a substantial clothing allowance.

- Present him with an excellent pension plan. There is no doubt that the R.C.A.F. has one of the best pension plans in existence. Take the case of the man who joins the Service at the age of 20 and is retired at 50 as a W.O.1, having served 6 years in that rank. At current rates of pay (1 April 1956), he would receive a pension of $272.10 a month if he were married, and $248.10 if he were single. A well-known insurance firm was asked to quote the cost of a policy which would yield an income of $272.00 a month for life, starting at age 50. In the event of death before the age of 50, the policy would provide only a return of premiums. Such a policy would cost $114.23 a month, starting at the age of 20 and continuing for 30 years — i.e. a total of $41,122.80. The Defense Services Pension Act scheme costs about $6,600. Can you think of a better way of saving $35,000 over a 30-year period? Furthermore, remember that life expectancy at the age of 50 is another 25 years, during which time Joe would receive 25 x 12 x $272.10, or $81,630.

* * *

If you are a single man or woman contemplating re-engagement, the foregoing facts and figures will be of vital interest to you. If you are a married man, they become even more important. Good housing and an education for his children are the responsibilities of every married man. Will the job you are contemplating provide you with good married quarters and free schooling? Furthermore, will it offer marriage and subsistence allowances, as well as separated family allowances? We would suggest that the answer is NO.

Personal financial security plays such an important rôle in our society today that the money coming into your pocket at the end of each month will perhaps be the greatest factor affecting your decision to return to civilian life or stay with the R.C.A.F. Note well what you are now earning and what you may expect to earn in the years to come, and remember — a very conservative estimate shows that, to parallel in civvy street the life you are now leading as an airman, you would have to earn at least $350.00 per month, or $4,200 a year. That is, you would have to make more than young graduate engineers, doctors, lawyers, and school teachers, whose starting salaries are rarely over $3,600 a year.

The above facts and figures, though they cannot be disproved, are admittedy still facts and figures — and, as such, may seem cold and impersonal. Accordingly, in order to "personalize" this article, "The Planesman" interviewed four airmen who had accepted release and, after periods of from six to eight months, re-enlisted.

FOUR ACTUAL CASES

L. A. C. Brian Bellingham

L.A.C. Bellingham served as an A.E. Tech. overseas on a jet squadron, and, on his return to Canada and with his completion of three years' service in January 1955, decided to try "something different".

He received his release and took his jet experience to the doors of Canadair, Avro, and Rolls-Royce. He was told that, on account of previous lay-offs, union members would have to be re-hired before consideration could be given to his employment.

He then decided to try the U.S.A. After receiving his visa, he travelled south to apply to Pratt & Whitney and other aircraft firms. There he was told that firms engaged on government contracts could only hire American citizens, and that it would take him five years to obtain his citizenship.

Bellingham then decided to return to his pre-Service textile trade. It was in this field that he found that, although jobs were available, the pay was not comparable to the pay and allowances offered by the R.C.A.F. By the time his room and board were paid, he had little left for himself. The result: L.A.C. Bellingham is now back in the Service, far happier and wiser.

L.A.C. Gerald McNutt

An S.E.Tech., L.A.C. McNutt was

serving at C.J.A.T.C., Rivers, Man., when his three-year term was completed. On his release in January 1955, feeling that it was time for a change, he sought employment with the Canadian Pacific Railway. He was taken on as a trainman, at what seemed a substantial rate of pay. But he soon found that, as a trainman, his time was never his own; he was called out on the job at all times of the day and night. He discovered, too, that his pay was soon eaten up by union dues, clothing expenses, room and board, etc., and before very long he realized that even railway pay could not compare with his former pay and allowances, and that the regular routine of the R.C.A.F. was far better than the on-again-off-again life of a railwayman. He also missed the facilities, such as canteens, hobby shops, etc., of Service life. Accordingly, in October 1955, he returned to the R.C.A.F.

Cpl. Stanely Morris

Cpl. Stanley Morris, a Com.Tech., is married and has one three-year-old daughter. He had been stationed at Bagotville, Quebec, for two years when his time for re-engagement came up. He was competent in his trade and proud of it. (In fact, he had been recommended for promotion, and, but for his release, could possibly be a member of the Sergeants' mess at the present time.) He therefore decided to try the radio and TV field in civvy street. Upon release, he and his family moved to Deslisle, where he opened his own radio and TV shop. Finding that business unsuccessful, he applied for positions with different radio and electrical firms. He discovered, however, that the only decent jobs paying enough wages to keep himself and family were jobs that meant a great deal of travel. Such a life being unsuitable for a family man, he and his wife made the decision to return to the R.C.A.F., where he was re-engaged as an L.A.C. with pay and allowances totalling to $273 per month. He says: "My family and I are happy to be back in the Air Force and we hope to make it a career."

L.A.C. W. Harazany

An A.E.Tech., L.A.C. Harazany was stationed at Comox, B.C., for more than two years, and in May 1955 received his release because he wished to get back to his father's farm on the prairies. His plans going astray, he looked for work in Regina and obtained a job with the Provincial Government at a little over $200.00 per month. After paying for the bare necessities of life, he found himself left with about $40 a month to spend in cash. He compared his present position with his former life in the Service, and decided he was approximately $80 a month better off in the R.C.A.F. Making his decision primarily on the basis of dollars and cents, Harazany re-enlisted on 21 November in the R.C.A.F. He states: "I am more satisfied now after having seen how the other side lives, and I intend to stay in the Air Force until they ask me to leave".

THE MORAL

Consider carefully what the R.C.A.F. has done for you and what it still can do. And remember that your decision affects not only yourself but also the defense of your country.

ROOF-TOP RITES

L.A.W. O. Bruce and Cpl. J. King ensure themselves good luck by touching the buttons of a *Schornsteinfeger* (chimney-sweep) as he is about to descend a chimney at Baden-Soellingen, where No. 4 (Fighter) Wing is based. The origin of the old tradition is lost, but it probably has something to do with the propitiation of the Black Man (*der Schwarze*), or the Devil!

What's the score?

("This month," writes Sgt. Shatterproof, "I am bringing to a close my questionnaires on the Commonwealth of Nations. The status of its various components seems to be changing so rapidly in this tempestuous era that I am disturbed lest the first of the series cease to be accurate by the time the final one is printed. Furthermore, who knows but that even now, after reading the last five issues of 'The Roundel', the leaders of the great powers may not be preparing to apply for membership in our far-scattered family? With such a possibility in mind, I have already drafted letters to Sir Anthony Eden, Mr. Eisenhower, and Mr. Krushchev, suggesting a plan for converting the U.N. building in New York into low-rental housing for unemployed diplomats." — The correct answers appear, as usual, on page 32.—Editor.)

1. The name of Nigeria, a British colony and protectorate on the west coast of Africa, was suggested in 1900 by Lady Lugard, wife of the territory's governor. Its area is almost 3¼ times that of the U.K.; its population exceeds 30,000,000; and its leading tribes, Mohammedan in faith, have a highly developed culture of their own. The Cameroons (pop. 1½ million), which adjoin it, are administered in trust for the United Nations. The first white man to explore the upper reaches of the Niger River was:

   (a) Erik the Red (951).
   (b) Vasco da Gama (1497).
   (c) Mungo Park (1796).
   (d) Mango Chutney (1810).

2. The colony and protectorate of the Gold Coast (about ¾ the size of New Zealand and with more than twice its population) also administers the adjacent territory of Togoland. The first white settlers were Portuguese, in 1432. Gold is found there in large quantities; and named after the gulf in which the Gold Coast is situated was the coin known as the:

   (a) Guinea.
   (b) Doubloon.
   (c) Moidore.
   (d) Pistole.

3. Another colony and protectorate in W. Africa is Sierra Leone, with a population of 2,000,000. Discovered by the Portuguese twenty years before their settlement of the Gold Coast, the colony originated in the sale of a piece of land by the native ruler to Capt. John Taylor, R.N., in 1788. It was first used as a home for Africans who, for various reasons, were destitute in and about London. The year 1898 is memorable in the annals of Sierra Leone as marking:

   (a) The abolition of polygamy.
   (b) A massacre of missionaries.
   (c) An oubreak of paganism among the white traders.
   (d) An outbreak of Christianity among the natives.

4. The smallest British colony and protectorate in W. Africa is:

   (a) Liberia (43,000 sq. miles).
   (b) Senegal (77,730 sq. miles).
   (c) Dahomey (43,232 sq. miles).
   (d) Gambia (4,003 sq. miles).

5. Off the southern tip of S. America, in the Atlantic Ocean, lie the Falkland Islands, with several small island dependencies bordering the Antarctic Continent (South Georgia, the South Sandwich Islands, the South Shetlands, the South Orkneys, and Graham Land). South Georgia is:

   (a) The centre of a thriving guano industry.
   (b) Now being developed as an early-warning station in the Penguin Line.
   (c) The burial-place of Sir Ernest Shackleton.
   (d) The only trading-post of the Hudson Bay Co. south of the equator.

6. The little island of St. Helena, a colony some 1,200 miles off the southern west coast of Africa, was discovered by the Portuguese in 1502, annexed by the Dutch in 1633 and by the British East India Co. in 1659. The residents of St. Helena have *never* included:

   (a) Napoleon.
   (b) Africans liberated from slave-ships by the British navy.
   (c) The famous Boer general, Piet Cronje.
   (d) The exiled Ashanti king, Prempeh.

7. St. Helena has two dependencies: the island of Ascension (about 800 miles to the north-west) and another island (some 1800 miles to the south). The latter, uninhabited at the time, was taken over by the British during Napoleon's exile on St. Helena, and, when the garrison was withdrawn in 1817, an artillery corporal and his wife elected to remain there. Together with two ex-naval men and a few shipwrecked sailors who later procured wives from St. Helena, they were the founders of the present settlement of 230 or so people. The name of the island is:

   (a) Tenerife.
   (b) Tristan da Cunha.
   (c) Martinique.
   (d) Fayal.

8. Named by the Moors Gebel-al-Tarik, the colony of Gibraltar has a population of 24,000 in its

2¼ sq. miles. A promontory on the extreme south of Spain, it was taken from the Spanish by the Dutch and British in 1704 and ceded to Britain in 1713. Among its fauna are Europe's only native:

(a) Parrots.
(b) Monkeys.
(c) Lemurs.
(d) Porcupines.

9. The island of Malta, a self-governing colony, has an average population of 2,580 for each of its 122 sq. miles. Probably colonized by the Phoenicians in the 16th century B.C., it was held subsequently by the Greeks, Romans, Goths, Byzantines, Arabs, and Spanish. In 1530 the Spanish king gave it to the Knights of the Order of St. John of Jerusalem, who defended it from Moslem attack until, in 1798, they surrendered it to the French. It passed into British hands sixteen years later. The Knights of St. John, who originated in the 11th century as a brotherhood of warrior-monks, were also known as:

(a) Knights Hospitallers.
(b) Knights of the Round Table.
(c) Knights of Pythias.
(d) Knights of Columbus.

10. The government of the island of Cyprus, colonized by the Phoenicians about 2000 years before Christ, has since been administered by the Egyptians, Persians, Macedonians, Romans, Byzantines, Arabs, French, Venetians, and (since 1878) British. One of its most distinguished visitors in ancient times was:

(a) Julius Caesar.
(b) St. Luke.
(c) St. Mark.
(d) Marco Polo.

11. The group of islands known as the Bermudas (pop. about 38,500) was uninhabited when Sir George Somers' ship was wrecked on one of its reefs in 1609. Its House of Assembly:

(a) Was reputedly built from the proceeds of buccaneering.
(b) Was originally a residence of Sir Henry Morgan.
(c) Is the oldest legislative body (after the British House of Commons) in the Commonwealth.
(d) Cannot include women among its 36 members.

12. The colony of the Bahamas (formerly known as the Lucayos) comprise about 3,000 islands of which only 20 are inhabited. The total population is 83,000. They flourished exceedingly during the American Civil War (by blockade-running) and also during the years of prohibition in the United States. Their first white visitor was, almost certainly:

(a) Columbus (1492).
(b) Leif Erikssen (1000).
(c) Magellan (1520).
(d) Henry Shatterproof the Navigator (1418).

13. Off Venezuela lies a group of islands called the Leeward Island, a colony with a total population of about 120,000. The Virgin Islands, some of which belong to the U.S.A. and some to the U.K., form part of the group. They were named after:

(a) Queen Elizabeth the First.
(b) Nell Gwyn.
(c) St. Ursula.
(d) Queen Isabella.

14. The colony of Jamaica has as dependencies the Cayman Islands and the Turks and Caicos Islands. The total population is about 1½ million. Jamaica's original Indian name was Xaymaxa, or "Land of Water". Attacked by the British as early as 1596, it remained in Spanish hands until 1655. The Caymans were formerly known (in reference to the turtles which abound on them) as the:

(a) Testudos.
(b) Tortolas.
(c) Terrapins.
(d) Tortugas.

15. British Honduras (or Belize), a colony in Central America, first became known to Englishmen in about 1638. They were in constant conflict with the Spanish for 160 years, and it was not until 1853 that a legislative assembly was formally constituted. The population is 73,000. The country is of great archaeological interest, being rich in remains of the:

(a) Aztecs.
(b) Lemurians.
(c) Incas.
(d) Mayas.

16. The colony of the Windward Islands, all of which owe their discovery to Columbus, has a total population of nearly 300,000. The largest of the islands is:

(a) St. Vincent's — discovered on St. Vincent's Day, 1498.
(b) St. Lucia—discovered on St. Lucy's Day, 1502.
(c) Dominica — discovered on a Sunday (Domingo), 1493.
(d) Grenada—the seat of government.

17. The colony of Barbados, the most easterly of the W. Indian islands, is a little larger than the Isle of Wight and has a population about 16,000 greater than that of Ottawa. Probably discovered in 1536 by the Portuguese, it served as a refuge for many royalist families during the Cromwellian régime. It was named "Los Barbados" in reference to its:

(a) Prickly pears.
(b) Bearded fig-trees.
(c) Beardless natives.
(d) Sharp coral reefs.

18. The islands of Trinidad and Tobago together form a colony with 664,000 inhabitants. Trinidad, named by Columbus for the Trinity, is the present source of Angostura bitters and also possesses the world's best-known deposit of asphalt — the "pitch lake" at La Brea. The island:

(a) Was the reputed home of Calypso, daughter of Quetzalcoatlas.

(b) Is the largest producer of rum in the world.
(c) Was the birthplace of Henry Christophe, king of Haiti.
(d) Is the second largest producer of petroleum in the Commonwealth.

19. The colony of British Guiana, with a population of nearly half a million, adjoins Venezuela. It was first settled by the Dutch in 1616, who put up a fort at Kyk-over-al. Found only in British Guiana is the Bibiru —

(a) A tree affording excellent timber for ships.
(b) A man-eating giant sloth.
(c) An evil-smelling wingless vulture.
(d) A species of lily from which arrow-poison is made.

20. "If we all go forward together with an unwavering faith, a high courage and a quiet heart, we shall be able to make of this ancient commonwealth which we all love so dearly an even grander thing—more free, more prosperous, more happy, and a more powerful influence for good in the world — than it has been in the greatest days of our forefathers. To accomplish that we must give nothing less than the whole of ourselves." — The foregoing words were spoken by:

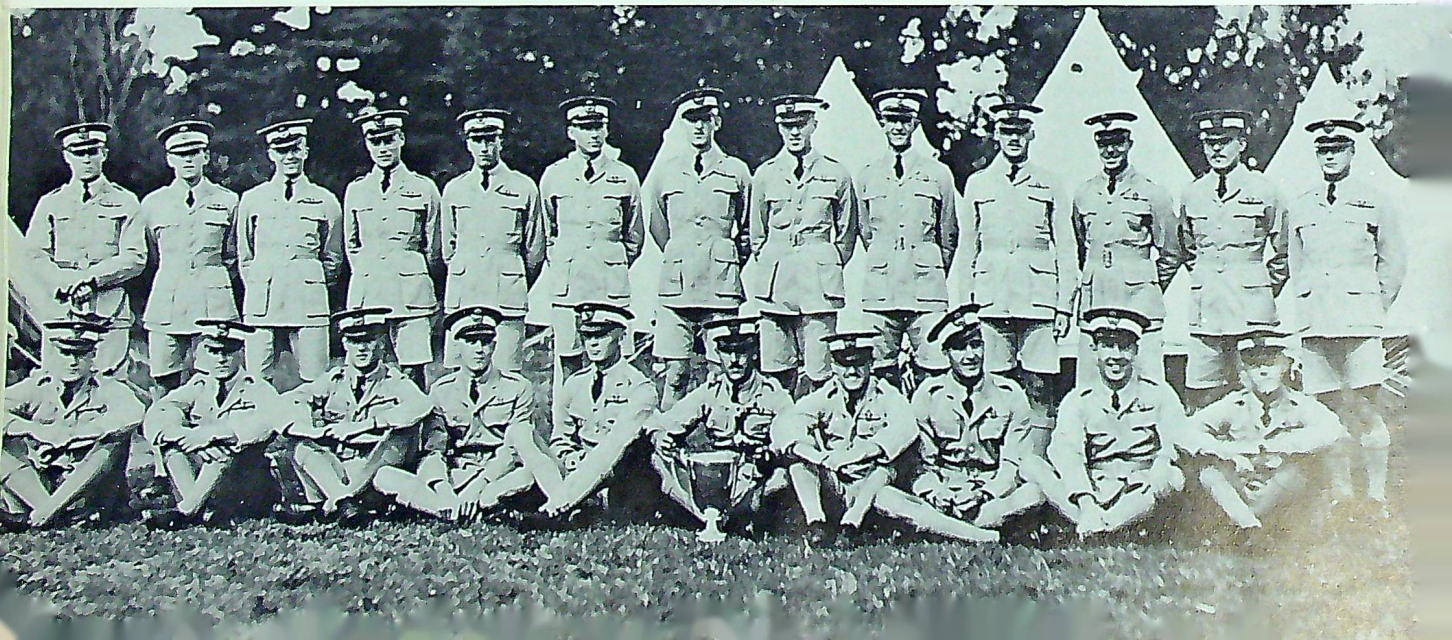
(a) Her Royal Highness Princess Elizabeth, in 1947.
(b) Sir Winston Churchill, in 1953.
(c) Sir Anthony Eden, in 1955.
(d) Her Majesty Queen Elizabeth the Second, in 1954.

* * *

PIN-POINTS IN THE PAST

From Sqn.Ldr. P.S. Shepard, of Training Command H.Q., we have received the accompanying photograph of the last of the P.P.O. (Provisional Pilot Officer) courses at Camp Borden, in 1931. The photograph of the first and second courses, taken in 1924, appeared in our issue for June 1954. P.P.O.s were students from R.M.C. and various universities who took training with the R.C.A.F. during the summer months over a period of three years. Of the group shown here only two members are now in the R.C.A.F. — P.P.O.s J.L. Plant (Air Vice-Marshal, C.B.E., A.F.C.) and Sqn. Ldr. P.S. Shepard. Others served — some with great distinction — during the Second World War.

Standing (left to right): P.Y. Davoud (with Sword of Honour), T.C. Holland, N. Johnstone, C.H. Brereton, R.E. Thomas, M.P. Boyle, J.N. Lane, R.L. Lee, E.R. Sykes, J.L. Plant, P.S. Shepard, G. Werle, R.O. Hewat. Seated (l. to r.): A.J. Kennedy, V.B. Corbett, G.L. Best, J.L. Rood, W. Thornber, W.A. Murray, M.C. Nesbitt, L.E. Marion, M. McKillop, E.L. Bowerman.



VAPOUR TRIALS: 3

BY FLYING OFFICER D. G. TURNER

(Last month the writer told us how, having successfully navigated the shoals of the Personnel Selection Unit, he was staggered to find himself posted to Centralia for training as a pilot.—Editor.)

FLIGHT Cadets were taken into No. 1 Flying Training School, Centralia, every six weeks, their arrival coinciding with the graduation and wings parade of the Senior Course. I must remark here that the system of Junior, Intermediate, and Senior Courses, introduced into Canada many of the traditions and customs of Chinese tong warfare, each new senior course bringing with it its own distinctive brand of atrocities.

At F.T.S., the first two weeks were spent in a concentrated introduction to flying by means of ground-school lectures and the drawing of flying-equipment from the stores.

"What size flying-boots?" enquired the haughty maiden who issued them. Since she might as well have asked what size I took in iron lungs, I said I didn't know. I tried a few pairs, however, and eventually found an approximate fit. "But they aren't very comfortable for walking", I ventured. Eyeing me coldly: "They're for flying", she retorted, " — not hiking!"

The flying-suit consisted of a pair of fur-lined pants cut along the lines of old-fashioned bloomers, the seat hanging dejectedly somewhere at the back of my knees. The waist was enormous, and it was fitted with a sturdy pair of suspenders stamped with the word "POLICE". Even police support, though, was not sufficient to carry the tremendous weight of the garment, and I had to resort to string to keep them on. To the jacket (which endowed me with the wistful air of approaching motherhood) I added another piece of string to keep the draft out, and over all this finery went the parachute. When being fitted with the 'chute harness, I offered a fervent prayer that I would never have to bail out, for so encompassed was I with belts, braces, and lengths of string, that I ran the risk of pulling the wrong cord and letting down my fur bloomers instead of opening the parachute. Later, examining my reflection in a mirror, I sadly abandoned my plans of posing for a photograph in my flying-clothes. They were not, somehow, quite compatible with the eagle book.

At ground-school we were issued with a copy of Kermode (the official Flight Cadet Bible, showing a variety of aircraft in precarious and unlikely positions), and given a short examination to demonstrate how much we knew about navigation. Having reviewed my paper, the instructor expressed the opinion that my only real hope of survival lay in the goodness of God. He then issued me with a map of Vancouver Island, three different kinds of rulers, a curious instrument called a computor, and a good sharp pencil.

The use of the computor, the instructor explained, was incredibly simple and would enable even a child to navigate the most difficult course. If there is a child in existence who can use the computor accurately for all its mysterious functions, I don't want to meet him. For me, the computor had all the uncertainties of a ouija board.

Thanks to my ignorance of navigation's basic principles, the first lesson developed into a fiasco, even though the instructor tried to help me with a few minutes' personal tuition.

"How much do you know about navigation?" he enquired.

I told him I could use a road map.

"Good," he went on. "Now, have you got North?"

I answered truthfully that I hadn't, nor had I seen anyone take it.

"Well, here it is on your computor," he said, a little testily.

I pretended to be impressed. "Well, well," I said, "so *that's* North!"

"Didn't you ever take geometry as a boy?" he enquired, even more testily. I replied emphatically that I had. (If he thought I had taken it as a girl, he was mistaken.)

"Now, then! Have you got the wind?" he asked.

"Certainly not!" I snapped.

"Oh well, you'll get it in time," he said. "All you have to do . . ."

At different periods of my life I have given way to uncontrollable impulses to improve myself by learning something new. At times I have enrolled myself in some rather fanciful courses, but none of them seemed to do me much good. At ground-school, however, I was

overjoyed to find that an earlier two-week course in the Morse code suddenly bore fruit, and, while my companions struggled along learning the alphabet, I covered myself with glory by passing the Morse exam. on the occasion of the first practice session.

It fascinated me to witness the devotion of the Flight Cadet for his flying instructor. Although the utterances of the ground-school lecturers were received in the light of divine revelations, all else paled before the glamour of the actual flying-instructor. A lad who was otherwise quite normal would develop a fierce pride in his flying-teacher and speak of his doings in a voice choked with emotion. The rest of the world might see the same instructor as fortyish, narrow-minded and pot-bellied, but to his student he was an Adonis with the wisdom of Solomon.

Nor was I any exception. I too gazed at my instructor with awe. When I first met him he was puffing on a pipe and making a noise like bath-water running away. He looked up from his paper, inspected me carefully, and said "Oh!" Gushing out my self-introduction, I waited breathless for his first words.

"Okay," he said, "let's look at an aeroplane."

I followed him around a *Harvard* as he pointed out its salient features. When he paused, I stood back respectfully, stowing away the pearls he cast my way. When we had completely circled the machine, he turned to me and remarked: "Ugly little cow, isn't it?" I was shattered. To me, it was like going to church and hearing the minister tell the story of the travelling salesman.

Perhaps I am a heretic, but I do not recall my *Harvard* training-days with nostalgia. From our first introduction to the *Harvard* to the last time I landed it (I use the term "land" in its broadest sense, since my arrivals at the airport were more frequently in the nature of controlled crashes), ours was less a love-match than a marriage of convenience whose child was a certificate from the Air Force permitting me to call myself a pilot. Unlike my comrades, who grow starry-eyed when they refer to the *Harvard* as a "grand old chap" (the fakers!), I am inclined to regard it rather as a dirty old man.

The first time I took to the air in a *Harvard*, I climbed on the wing and posed for a moment staring into the sky. I wasn't looking for anything in particular, but it seemed to be a pilot-like thing to do. Then, prompted by my instructor's "Aren't you going to get in?", I wedged myself and my bloomers into the front seat.

Before me rose the control column. Around the walls, hidden beneath the window-sill and behind the seat, was a confusing array of switches, buttons, nipples, stop-cocks, gococks, weathercocks, thermometers, barometers, and dials.

A series of quacks sounded in my earphones.

"I'm going to start up and you can follow me through on the controls."

"Roger — over", I acknowledged.

With a tremendous explosion and a belch of smoke from the flues, the engine tried to shake itself free of the aircraft. A few moments later, like a bumble-bee on a glorious drunk, we were steering a zig-zag course to the end of the runway.

Here, contrary to my expectations, we did not take off. The instructor began a detailed examination of the machine. He flapped the flaps, wagged the tail, blew its nose, burped it, and opened the engine up to its full power to confirm that it was going to work. Then he took its temperature and started all over again. I felt that he exhibited very little faith in the airworthiness of our machine. Finally, however, he opened up the engine and we were bumping along the runway at a furious pace. . .

We practised a little straight and level flying, during which I drew hearty congratulations from the back seat for performing a perfect loop.

"I have control", said my teacher, with the air of taking an open razor from a baby. "If you really want to do acrobatics, though, I'll show you how."

Hating the very idea of them, I beseeched him to demonstrate a few.

In less than a minute of aerobatics, and I began to find the *Harvard* a bit too much of a good thing so soon after lunch. My stomach crawled upwards and lay purring in my throat. My eyes bulged, and I knew that my complexion had taken on the lurid yellow colour of the aircraft itself. Presently, I regret to say, I accepted a decision which was forced on me . . .

As we walked back to the hangar:

"You'll enjoy lesson two", said my instructor.

(To be continued)

THE ESSENTIAL OIL

Millions of people never achieve success because they lack the ability to get along successfully with others.*(No. 1 S.S.T.S. précis.)*

R.C.A.F. Association

GROUP CONVENTIONS

Groups of the Association held their annual meetings during February, and a consolidated report of all the meetings was published in the April issue of "Wings at Home".

The Group Executives for 1956-57 are::

Maritime Group

President: T. H. Frazer, Stellarton.
Vice-pres. (N.B.): Dr. C. H. Jarvis, Chatham.
Vice-pres. (N.S.): J. L. MacDougall, Sydney.
Vice-pres. (P.E.I.): G. R. Howard, Charlottetown.
Vice-pres. (Nfld.): P. T. Neary, St. John's.
Past-President: S. M. McInnis, Charlottetown.
Secretary: C. R. Glendinning, New Glasgow.
Treasurer: J. Paul Magee, Moncton.
Addit'l rep., Nat. Exec. Counc.: Norman Jackson, Saint John.

Quebec Group

President: L. E. Fulton, Ville St. Laurent.
Vice-presidents: R. G. McLarnon, Montreal.
G. A. Power, Quebec.
A. L. Schaefer, Drummondville.
Secretary: Miss M. L. Pineo, Pointe-Claire.
Treasurer: M. J. Simon, Montreal.

Ontario Group

President: D. W. Cain, Kingston.
Vice-president, G. E. Penfold, Toronto.
Regional Vice-presidents:
A. Wicks, St. Thomas.
A. J. Kernot, Kingston.
P. Bedard, North Bay.
S. Wooten. Toronto.
R. Swartz, Kitchener.
Past-President. L. N. Baldock, Windsor.
Secretary: W. Cherry, Kington.
Treasurer: D. Budd, Waterloo.

Manitoba - Northwestern Ontario Group

President, H. Ogden, Lakehead.
1st Vice-pres., E. Carlyle, Winnipg.
2nd Vice-pres.: R. E. Rosenberg, Brandon.
Sec'y-Treas.: R. W. Close, Lakehead.
W. D. Rep.: Miss E. Halliday, Lakehead.
Regional Vice-presidents:
R. E. Johnson, Winnipeg.
W. Lehto, Lakehead.
J. Moore, Brandon.
Past-President: G. Phillips, Brandon.

Saskatchewan Group

President: E. W. Campbell, Regina.
1st Vice-president.: W. Laing, Saskatoon.
2nd Vice-pres.: A. K. Dennis, Moose Jaw.
3rd Vice-pres.: R. Harris, Lloydminster.
Sec'y-Treas.: Miss M. K. Smith, Moose Jaw.
W. D. Rep.: Miss L. Andahl, Saskatoon.

Alberta Group

President: R. A. Wright, Edmonton.
Vice-president: S. C. Campbell, Edmonton.
Secretary: Miss Beth Rowand, Edmonton.
Treasurer: G. Forbes, Edmonton.
Legal Adviser: R. D. White, Edmonton.

MEMBERS-AT-LARGE

Early in the New Year a letter was sent to all members-at-large inviting them to participate in the campaign for new members, which was being sponsored by the Wings of the Association.

The campaign slogan ("Member, Get A Member") seemed to be appropriate in the case of our members-at-large. Approximately 200 new members were obtained through their efforts. L. R. Tofrel, of Walkerton, Ontario, and H. A. Carmichael, of Portage la Prairie, Man., each brought in seven new members, while F. Scholfield, of Dunnville, Ont., brought in six.

THIRD INTERNATIONAL AIR FORCE BONSPIEL

The largest bonspiel of its kind in the World was held late in March at Lethbridge, Alberta, under the sponsorship of No. 702 Wing.

From Goose Bay to Whitehorse, eighty rinks, representing every province in Canada, and also two rinks from the United States, participated in this third annual curling event which has grown in three years from a mere venture to a full-grown International Air Force Bonspiel.

Manitoba-Northwestern Group Executive. Seated (l. to r.): E. A. Carlyle, H. Ogden, R. E. Rosenburg. Standing (l. to r.); R. E. Johnson, W. Lehto, R. W. Close. Missing from photograph: Miss E. Halliday, J. Moore.

The members of the bonspiel committee, under the chairmanship of T. Martin, and ably assisted by M. Moffatt, C. Linn, T. Segsworth, and others, are to be congratulated on a job extremely well done.

The feature event — the Flying Officer Del Martin Trophy — was won this year by the Ray Mueller rink of No. 702 Wing, skipped by G. Rutten. The runner-up was the Campbell rink from Rockcliffe. The second event — the Tip-Top Tailors Trophy — was won by the Ray Proctor rink from Edmonton. The banquet and the presentation of prizes and trophies at the Lethbridge Curling Club brought to a close a most successful and happy occasion.

Members of the Lethbridge Wing are sincerely appreciative of the assistance they received from the City Council, service organizations, firms, and merchants.

WING NEWS

No. 306 (Maple Leaf) Wing

Two hundred members of the

Ontario Group Executive. Seated (l. to r.). L. N. Baldock, D. Cain, G. E. Penfold. Standing (l. to r.): A. Wicks, A. Kernot, W. Cherry, P. Bedard, J. Newell, D. Budd. (Charles photo.)

No. 400 (Guelph) Wing

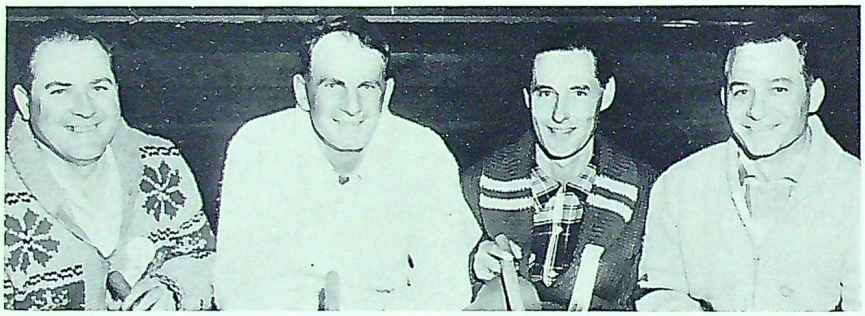
W. Slatter, president of No. 400 Wing, recently presented flags to No. 121 Air Cadet Squadron. The band of No. 80 Air Cadet Squadron, Kitchener-Waterloo, was in attendance.

The Kitchener-Waterloo Squadron is fully sponsored by No. 404 Wing of the Association.

No. 410 (Ottawa) Wing

The annual membership stag-night held not long ago was the best yet. Tickets were sold to Air Force veterans only, and approximately 100 attended. Mr. T. D. Anderson, General Secretary of the Canadian Legion was a guest speaker, and he expressed the hope that No. 410 Wing would be successful in its drive for new members.

Mr. R. F. Hanna, M.P. for Edmonton, addressed the group and stressed the importance of the R.C.A.F. Association's work.



Winners of the Del Martin Trophy. Left to right: Don Gordon, Ted Petrunia, Ray Mueller, and Gordon Tutten, all of No. 702 Wing.

No. 306 Wing. Left to right: A. R. Clibbon, W. Nobes, Mr. and Mrs. R. J. Dormer ($5000-winners in the Wing's fund-raising campaign), Mrs. Janssen, Air Vice-Marshal A. L. James, C.B.E., A. Cooper, G. Harrison. (Kalb photo.)

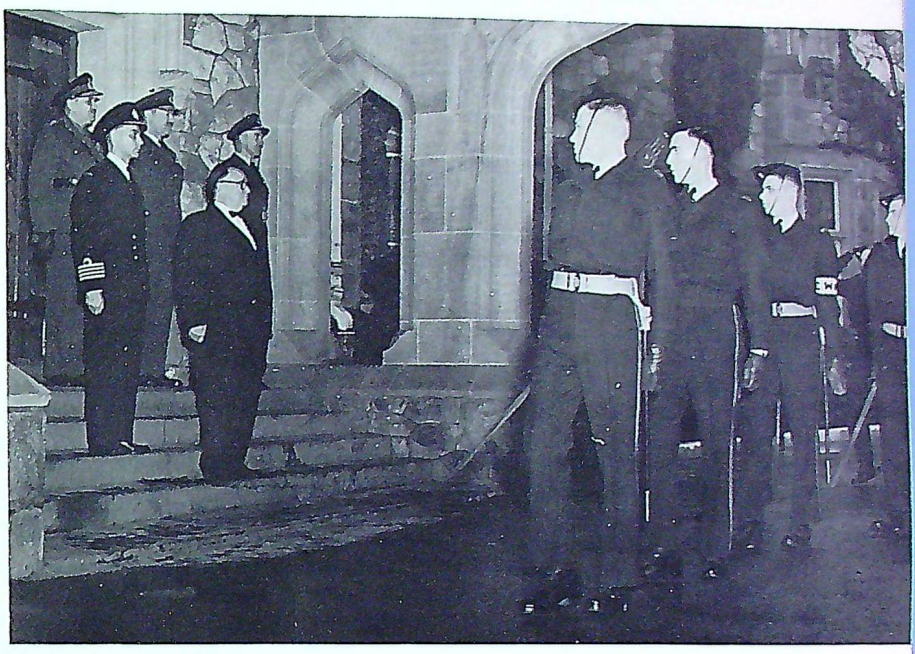
R.C.A.F. Association and other veteran airmen attended the annual meeting of No. 306 Wing, Montreal, the chief feature of which was the Honorary Life Membership bestowed on Mrs. Geertruida Janssen, of Holland, who saved the lives of scores of Canadian flyers during the last war when she was a member of the Dutch underground. The presentation was made by Air Vice-Marshal A. L. James, C.B.E.

CANADIAN SERVICES COLLEGES' TOURNAMENT

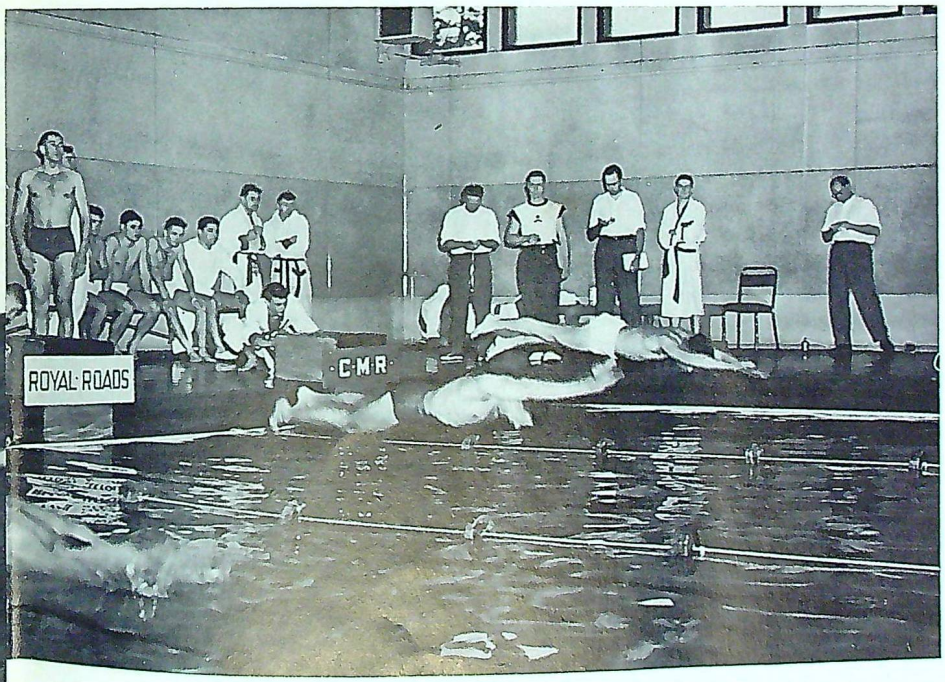
Each year the cadets of the three Canadian Services Colleges (Royal Military College, Royal Roads, and le Collège Militaire Royal de Saint-Jean) meet at one of the colleges to hold an athletic tournament for the Claxton Cup, which was donated for annual competition in 1949 by the Honourable Brooke Claxton, when he was Minister of National Defence.

This year the five-event tournament was held at Royal Roads on the 24th and 25th of February. The R.M.C. and C.M.R. teams, with accompanying coaches and staff, were flown to Victoria in an R.C.A.F. *North Star*.

The winner of the Claxton Cup (for the second time) was Royal Roads, which won the tournament by taking first place in the basketball, volleyball, and swimming events, and tying for first place with C.M.R. in the boxing. The rifle-shooting was won by R.M.C. The Cup was presented by the Hon. Ralph O. Campney, Minister of National Defence.



The Minister takes the salute.



The start of the 50-yard free-style relay race.

A new trophy, the Marshall Memorial Award, was presented for the first time at this year's tournament. This trophy, awarded for sportsmanship, was presented by the R.M.C. class of '54 in memory of Flying Officer James Alick Marshall, an outstanding former cadet who was killed in training six weeks after graduation from R.M.C. It was presented to the winner, Cadet R.M. Burleigh (R.M.C.), by Mrs. K. Marshall, mother of the deceased cadet.

"AGAINST THE SUN"

A Review-article

BY SQUADRON LEADER N. W. EMMOTT, D.F.C.

It seems to be a characteristic of men who distinguish themselves in battle that they too often descend into obscurity or compromise their fame after the guns fall silent. On thousands of occasions, for instance, it has been said that Wellington would have done better to have died at Waterloo. This, however, is emphatically not true about one of Britain's top test pilots, Wing Commander Roland Prosper Beamont, D.S.O. and Bar, O.B.E., D.F.C. and Bar.

His story has been most capably and thrillingly told in "Against the Sun", by Edward Lanchberry.* The book traces his career from his first flight, made at the age of six in a rickety old Avro 504, to his initial test flight of the English Electric Company's P.-1, the first British jet aircraft to exceed the speed of sound in level flight. Beamont's dogged fight to enter the R.A.F., despite his borderline academic qualifications, reveals his determination. The fifteen hours' dual instruction he needed before he was sent solo, and his two tries at his wings examination, prove that a "history of second attempts" may well lay the background for a brilliant career.

Beamont began his career slowly (if anything during those hectic days could be called slow) as a *Hurricane* pilot in the battle of France. His first victory, against a Dornier 17, was scored on 8 May 1940, but he did not chalk up another kill until the Battle of Britain was well begun, on 24 July. During these days he kept up a diary in which he described his experiences in remarkably eloquent language. Several excerpts are reprinted in the book.

As the winter of 1940-41 wore on, Beamont's squadron was used as a single-engined night-fighter unit, which, because of its lack of radar, was ineffective. To keep himself employed, Beamont joined a three-man aerobatic team which put on shows spectacular enough to bring out the whole station to watch them. It was as a result of Beamont's boredom, however, that he made the suggestion that opened up his career of distinction — namely, to make night-intruder raids on French airfields. The squadron was so effective in this rôle that it soon gained a reputation as a night-fighter unit. To get back into the battle, it staked out a claim on the Scilly Islands, from which it shot down a couple of Dornier 18 flying boats.

Beamont was then posted to a new squadron, where he promptly managed to get himself court-martialled for flying a *Hurricane* while sitting in a woman officer's lap. (She wanted to get to a nearby station to go to a dance.) One aftermath was his posting to Hawker's as a test pilot.

His job at Hawker's was to test *Hurricanes* and *Typhoons*, the latter type being then under forced-draft development in order to meet the threat of the Focke-Wulfe 190. The aircraft suffered from recurring engine trouble, and the tails had a distressing tendency to break off, while the big air-scoop made ditching almost invariably fatal.

Despite his full knowledge of the *Typhoon's* defects, Beamont chose to join a *Typhoon* squadron, of which he soon became the squadron commander. Through the dark days when engine or structural failures were costing the R.A.F. one *Typhoon* per sortie, Beamont fought to help rectify the faults and to prove the aircraft in combat. He soon succeeded in showing that it was a match for the F.W.190 and also a splendid aircraft for ground-attack, and before long his squadron was widely known for its "train-busting" activities. Engine trouble led to a crash-landing that very nearly killed him, but a few weeks later he was back in time to make a determined and successful attack on a flotilla of German minesweepers. As a reward for his efforts, after his second tour of operations was over, he was sent back to Hawker's — to see if he could break the tail off a *Typhoon* by diving it. He couldn't.

After this "rest" he went back on operations, to repeat the *Typhoon* story with the *Typhoon's* younger brother, the *Tempest*. The *Tempest* also was plagued with engine-trouble, and, like the *Typhoon*, was distrusted until, largely because of Beamont's efforts, it proved itself in combat. The forte of the new aircraft was, however, the battle against the flying bombs.

As 1944 neared its end, Beamont was sent back to France. He was offered the job of experimental test pilot, as a civilian, at Hawker's; but by now he had 491 operational sorties to his credit of which 94 had been over enemy territory, and he wanted to make it an even hun-

* "Against the Sun", by Edward Lanchberry. Published by Cassll & Co., distributed in Canada by British Book Service (Canada) Ltd., 1068 Broadview Ave., Toronto 6, Ont. Price: $3.50.

dred. During an attack on a troop-train he disobeyed his own orders and was shot down, thus affording solid proof of his instructions' soundness.

After a stay of six months in a number of German prison camps, where he found himself threatened first by German guards and then by Russian liberators, he was returned to England, where he found that his test-pilot job had been given to somebody else.

He tried a piloting job at Gloster's, but soon left it for English Electric, where he was set to work as chief test pilot of the new *Canberra* jet bomber. His work here gave him a solid reputation as an experimental test pilot, but what really caught the public eye was his crossing of the Atlantic both ways in one day in 1952. From that triumph he went on to become the first man to break the sound-barrier over Britain in level flight. He is still with the English Electric Company.

* * *

"Against the Sun" is an absorbingly interesting book, written in vivid and polished English. Once the reader has begun it, he finds it almost impossible to lay the book down, so crammed is it with incident. The conversation, which presumably must have been invented, nevertheless always rings true.

Although the book is laudatory enough, it is far from being a "puff" document. The only one of Beamont's five decorations mentioned is his first D.F.C.; the other four are never referred to. At the same time, Beamont's purely personal affairs are allowed a decent obscurity rare in books of this kind.

"Against the Sun" contains a number of excellent illustrations. The only possible objection to them is the fact that, by their placing, they rather tend to give the show away and destroy the suspense which often builds up to quite a high pitch. Edward Lanchberry has proved himseif second to none in his ability to recreate the atmosphere of the war years, and to write a masterful and technically accurate book on flying. To all those who are interested in aircraft and in the men who fly them, and to those who simply want to read an interesting story about a great aviator, this book is highly recommended.

The Queen's Commendation * * *

Three R.C.A.F: airmen were recently awarded the Queen's Commendation for Brave Conduct: Cpl. K.B. Hyatt, L.A.C. C.R. Heffern, and L.A.C. J.R.A. Ste. Marie.

On February 21st, last year, the three men were on duty at Keflavik, Iceland, with No.1 Overseas Ferry Unit, when a *Sabre* ran out of control and crashed into two other *Sabres* parked on the tarmac. Fire immediately broke out, and an airman was trapped in one of the burning aircraft. Cpl. Hyatt rushed to the scene with a fire-extinguisher, followed by L.A.C.s Heffern and Ste. Marie. When all efforts to open the canopy had failed, they smashed it with the extinguishers and pulled out the trapped man, who was by then overcome by smoke and fumes.

Cpl. K. B. Hyatt.

Cpl. C. R. Heffern.

The citations read, in part: "... without regard for personal safety (they) displayed courage and presence of mind in the rescue of an airman trapped inside a burning aircraft when danger of explosion was imminent."

Letters to the Editor

R.C.A.F. FAMILIES

Dear Sir:

In the January-February issue of "The Roundel", Flying Officer J.L.E.B. Jacques invited a challenge for the largest Air Force family. Perhaps my family can enter the competition.

Four of us are at present serving in the Regular Force: Maurice (Flying Officer), G.Ob.C., St. Jerome; Fernand (Cpl.), Para-Rescue, Whitehorse; Gisele (L.A.W.), Met.Obs., St. Hubert; and Gilles (L.A.C.), A.E.Tech., Rockcliffe.

Two other brothers were navigators in the Second World War and are now serving with 5000 Int.Unit (Aux.), Montreal. They are: Marcel (Flying Officer) and Jean Guy (Flt.Sgt.).

I also have another sister who, although not herself a member of the R.C.A.F., married an R.C.A.F. Flying Officer who served as navigator in India and is now with an Air Cadet squadron in Montreal.

Flying Officer J.S.R.M. Bourdon,
60 G.ObC. Detachment,
St. Jerome, P.Q.

LOST PAINTING: NO. 419 (A.W.) SQN.

Dear Sir:

Following the reformation of No.419 Squadron in 1954, application was made for the return of the original painting of the official squadron badge. After many efforts we were informed that the original squadron badge had disappeared from the R.C.A.F. Staff College, Toronto, where it had been hung for safe keeping.

As you are aware, the original painting bears the signature of the reigning Monarch at the time of the badge's approval, and it cannot be replaced except by a replica — without the Royal Signature. The members of No. 419 Squadron would appreciate it if you would publish their plea for the return of the painting.

Wing Cdr. E. G. Ireland, D.F.C.,
O.C. No. 419 (A.W.) Sqn.,
R.C.A.F Station North Bay, Ont.

* * *

LAST DANISH SPITFIRE

The Royal Danish Air Force, which is shortly to put into commission the first of a batch of Hawker *Hunters*, is to present its last *Spitfire* to the town council of Vaerloese for use in a children's playground. All other *Spitfires* on charge are to be broken up.
(*"Flight": U.K.*)

THE RIGHT TO CRITICIZE

"He has the right to criticize who has the heart to help!" (*Abraham Lincoln*)

THE OBVIOUS

The obvious is better than obvious avoidance of it. (*Fowler's "Modern English usage".*)

Answers to "What's the Score?"

1: (c)	2: (a)	3: (b)	4: (d)
5: (c)	6: (d)	7: (b)	8: (b)
9: (a)	10: (c)	11: (c)	12: (a)
13: (c)	14: (d)	15: (d)	16: (b)
17: (b)	18: (d)	19: (a)	20: (a)

Night Take-Off

The great tin bird,
Her four mighty motors
Coughing cantakerously,
Forces the chocks
That check her flight.
Into her hulk
(The size of a house),
Into her belly
(The shape of a whale),
The weight of a cargo
Enormously large
Is skidded and groaned into place.

A magical motor
Fired by flames
From dissolving stars,
Fuelled from fountains
God only knows where,
Sits waiting . . .
Its thoughts crashing
On the roof of the sky.

Up front
The mysterious lingo
Litters the air
With electric sounds.
Outside my port window
An exhaust is bombarding my stare.
I suddenly sense the permission
Sidling back through the pallid air.

Gassed and greased and logged out,
We lumber down the runway
And labour into the wind.
The motors rear up
As we ready ourselves.
Power blazes through manifold pipes
As propellers respond
To thumbs on the throttle.
The great bird staggers . . .
Spread-eagled on turbid air,
Madly cleaving a flight-path
By the eerie tremble of flares.

Our mammoth machine,
Her four heads on fire,
Manoeuvres into the mist.
With our piston choir
Puncturing the fuming height,
We clamour and climb
And, angling,
Flame furiously into the night.

Flying Officer R. Faibish.

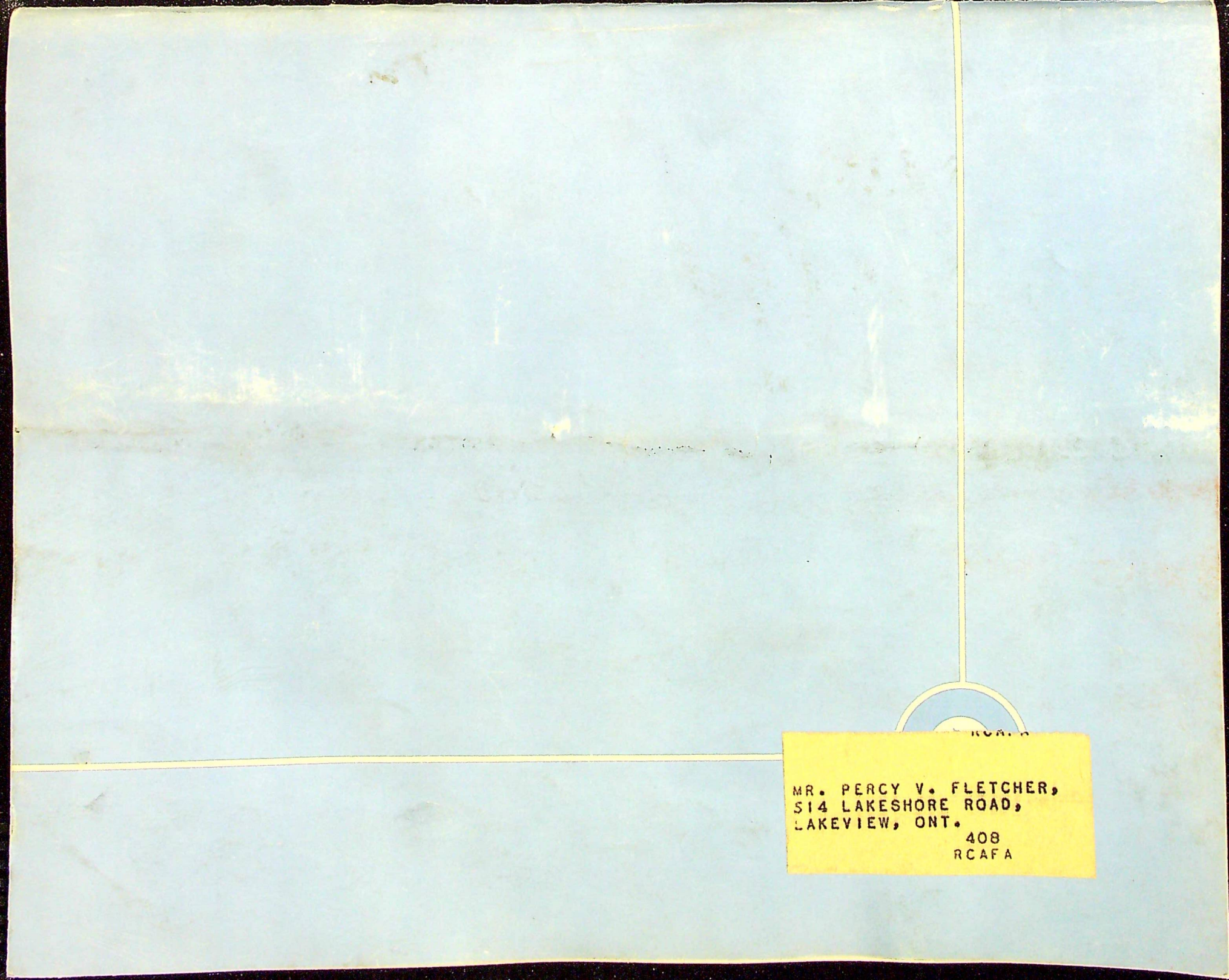
THE R.C.A.F. BENEVOLENT FUND

The Royal Canadian Air Force Benevolent Fund was established in order to assist serving and former members of the R.C.A.F. and their dependents in time of financial distress.

SERVING PERSONNEL can obtain full information from their units' Orderly Rooms.
FORMER MEMBERS can obtain it from:

- The local Benevolent Fund Committee.*
- Any Wing of the R.C.A.F. Association.
- Any District Office of D.V.A.
- Royal Canadian Air Force Benevolent Fund (Inc.), 424 Metcalfe St., Ottawa, Ont.

*This address is obtainable from any of the other three sources.


MR. PERCY V. FLETCHER,
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LAKEVIEW, ONT.
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