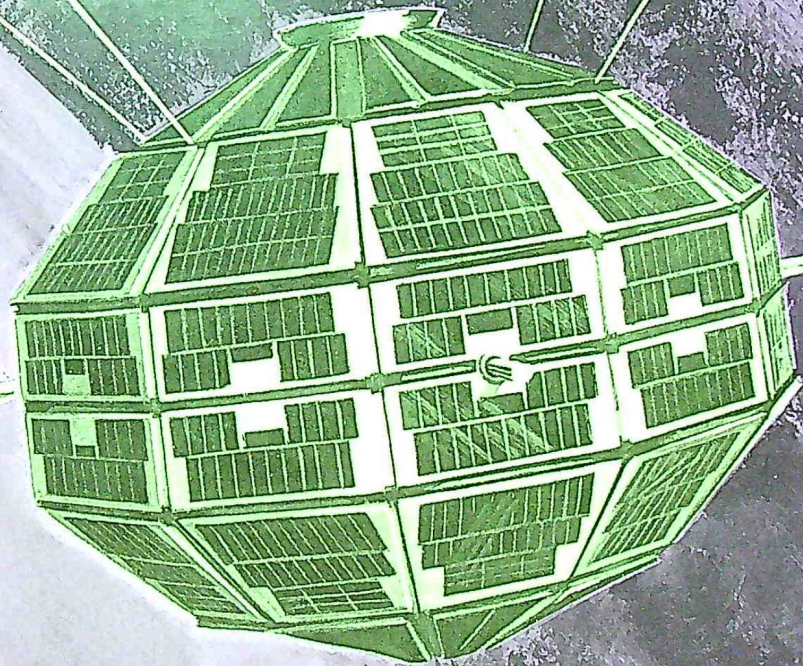


ROUNDEL

MARCH 1965 VOL. 17, No. 2



ROUSSEAU

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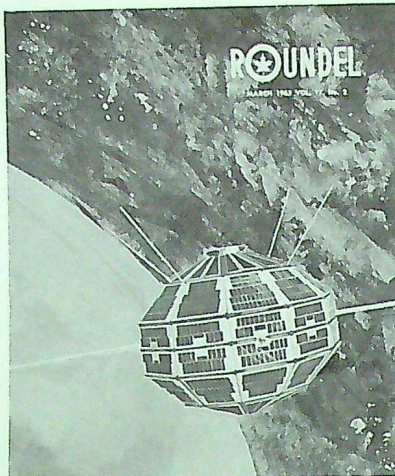
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Ottawa 4, Ont.



COVER CAPTION

This month our cover is out of this world, about 600 miles out to be exact. That is the altitude at which Alouette II will orbit the earth and telemeter back information concerning the ionosphere. For more information on this and other Canadian space achievements see page 2.

ARTICLES

	page
Canada's Space Program	2
War on the Front Doorstep – Part One	9
Milestone at Lincoln Park	18
Do-It-Yourself Aircraft	22
Judo in the RCAF	26

PHOTO STORIES

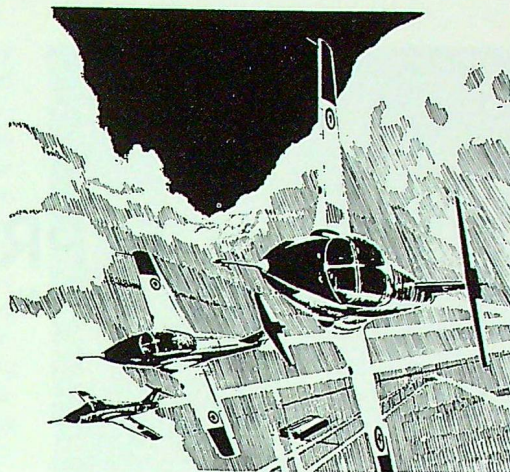
The New Flag Flies	15
We Will Remember Him	16
Three Years of Yukon Operations	24

FEATURETTES

Father and Son on Parade	21
Bertrand Steward Essay Winner	21
New Ice Arena at Comox	28
Canadian Forces Biathlon Team	28
Subterranean Fish Story	29
RCAF Officer in Hall of Fame	29

DEPARTMENTS

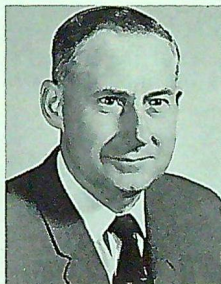
On the Break	1
RCAF Association	30
Letters to the Editor	32
Aircraft Album	inside back cover



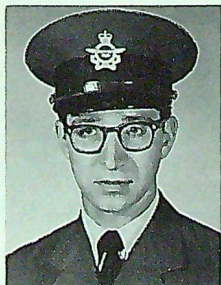
ON THE BREAK



F/L H. A. Halliday



Mr. A. M. Pennie



Cpl. C. Rousseau

ACCORDING to Robert Service, in introducing that rollicking tale of Sam McGee's cremation in the Yukon 60-odd years ago, "the northern lights have seen queer sights. . ." Queer sights, indeed, are still being found in Canada's northern latitudes where, for more than a decade, scientists have been probing the ionosphere with balloons, rockets and satellites.

This month's lead article (page 2) describes Canada's contribution to space-age technology and provides a glimpse into some of the programs for the future. The story was researched and written by *ROUNDEL* assistant editor F/L Tom Coughlin.

PRESENT-DAY anti-submarine patrols off Canada's east coast were featured in last month's *ROUNDEL* picture-story entitled "Argus Ops". This month the first of a three-part article, "War on the Front Doorstep" (page 9), tells the colourful story of the men who preceded *Argus* aircrews on similar duty during World War II.

Author F/L Hugh Halliday, of the directorate of historical services, as well as many of those who today fly in Maritime Air Command, was but a babe in arms when Eastern Air Command crews operated over the North Atlantic a quarter of a century ago.

A PERSONALLY nostalgic incident from the war years is related in "Milestone at Lincoln Park" (page 18). It features an embryo pilot making his first runway-landing at Calgary in a *Stearman* trainer.

Mr. Archie Pennie, whose milestone this was, is now deputy chairman of the Defence Research Board in Ottawa. A few months ago *ROUNDEL* published his operational memoirs under the title "Blenheim Occasions."

THROUGH the medium of his art work on the cover and on the inside pages of *ROUNDEL*, Cpl. Claude Rousseau has ably demonstrated his artistic abilities. But what most readers don't know is that Cpl. Rousseau is also a flier, who has been piloting light aircraft around the Ottawa area for the past two years and is the proud possessor of a private pilot license.

Now he is branching out. In addition to flying aeroplanes, he is helping to build one - as he outlines in interesting fashion in the article, "Do-It-Yourself Aircraft" (see page 22).

A. M. Pennie 5/1
Editor

CANADA'S SPACE PROGRAM

By FLIGHT LIEUTENANT T. G. COUGHLIN
Assistant Editor, ROUNDEL

SOME time this summer an American Thor-Agena rocket will blast off from Vandenberg Air Force Base in California putting Alouette II, Canada's second satellite into orbit. If Alouette II performs as efficiently as its predecessor, and there is every reason to believe that it will, then Canada's space program will be well established.

It was on 29 Sep. '62 that Alouette I soared into the sky as Canada's entry into the space age.* This Defence Research Board-produced "top-side sounder", now nearing its third birthday in space, has been described by an American scientist, Mr. J. E. Jackson of NASA, as "outstanding proof of the proficiency of Canadian scientists and engineers in this aspect of space technology." Several vital components of Alouette I had backup equipment which could be activated when the original instruments failed. But so far these spare parts are still just going along for the ride because none of the original parts have failed.

The first spacecraft to be designed and constructed by a nation other than the U.S. or the U.S.S.R.,

*Italy has become the fifth nation to have a satellite in orbit. This satellite, named the San Marco, was launched in December '64 from Wallops Island, Virginia by an American booster vehicle. There are now 126 payloads in space. Of these, 108 belong to the US, the USSR has 14, Great Britain has two and one belongs to Canada.

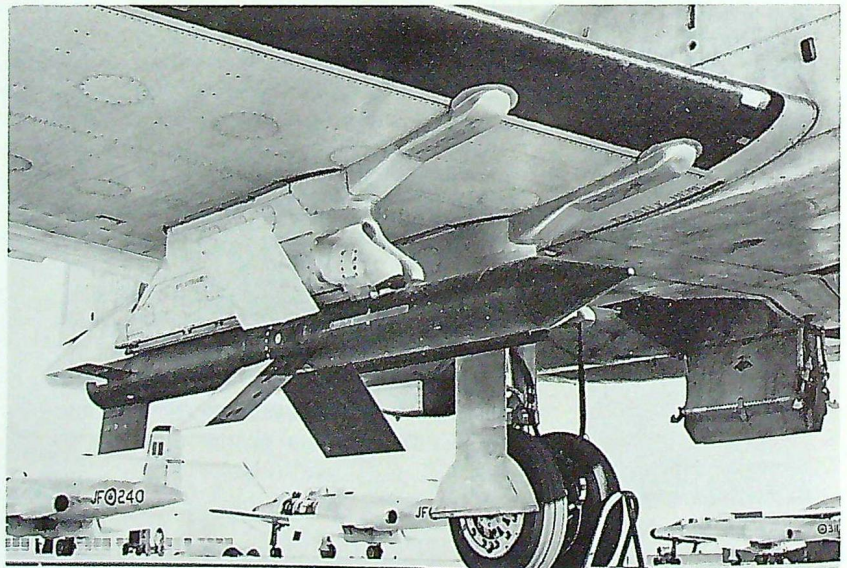
Alouette I is still faithfully sending back a steady stream of scientific information. At time of writing, it has provided scientists with approximately 6,500 miles of magnetic tape recordings and it has been estimated that this satellite will continue to orbit the earth for approximately 2,000 years. An illustration of the international interest in the Alouette project can be seen by the fact that 13 telemetry stations in various locations around the world collect data from the spacecraft. They include three built in Canada by the DRB: located at Resolute Bay, NWT; Shir-

ley's Bay, near Ottawa and Prince Albert, Sask. The station at Prince Albert, however, is now primarily concerned with carrying out fundamental research employing its 80-foot diameter radar antenna. Another location in Canada where satellites are tracked is the Primrose Lake Evaluation Range at RCAF Station Cold Lake. At this site RCAF personnel use a Baker-Nunn camera for tracking.*

Alouette II is part of a \$25 million space program extending from 1964

*ROUNDEL Oct. '62.

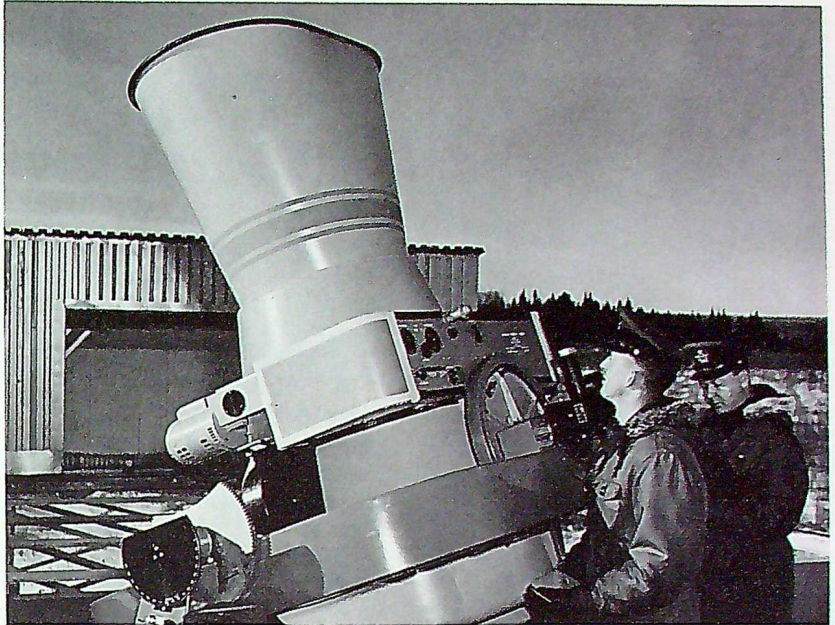
A Canadian-designed air-to-air guided missile, the Velvet Glove, is slung under the starboard wing of a CF-100 for test firing.



until 1968. It will be followed by three additional satellites designated ISIS (International Satellites for Ionospheric Studies) A, B and C. This space program has as its main objective a comprehensive study of the ionosphere from the approaching solar cycle minimum to the next maximum. Alouette II will carry out five experiments: sounding or charting the ionosphere from above; measuring cosmic noise; investigating "whistlers" (upper atmosphere radio signals initiated by lightning strokes); detecting energetic particles; and determining the temperature of electrons in the vicinity of the orbiting satellite.

The scientific information obtained from Alouettes I and II, which resemble each other in size, shape and weight (320 lbs), will eventually benefit radio communications in all parts of the world. The ISIS satellites will be completely different and even more experimental. The Defence Research Board's Telecommunication Establishment (DRTE) will direct the design, construction and testing of the three ISIS spacecraft, as well as operate at least one ground station capable of supplying data on the satellites' operation.

Canadian industry is playing a major role in the project, with the RCA Victor Co. acting as prime contractor and de Havilland of Canada Ltd., associate contractor. De Havilland has already entered the export business with a space-age hardware item - antenna. The two 75- and 150-foot antennae carried by Alouette I were the longest used by any satellite anywhere up to that time. The antennae were stored in the satellite wrapped around spools like a carpenter's tape. They were made of spring steel tempered so that they would assume cylindrical shape as soon as they came off the spool. This unique design feature was invented by a National Research Council scientist. The antennae were then built by de Havilland



LACs A. Dow and K. Dodd prepare the RCAF's tracking camera for night operations. This three ton camera is located at Primrose Lake Evaluation Range which is near RCAF Station Cold Lake.

and performed in such an impressive way that they were purchased by the Americans for several of their own satellites. For Alouette II the length of one antenna has been increased to 240 feet.

It is expected that Canadian companies, under DRTE's direction, will assume the bulk of the design and construction effort for spacecraft after ISIS A. Associated with DRTE throughout the program will be research laboratories in the U.S.A., Britain and in other countries. The National Aeronautics and Space Administration's office of space science and applications will control U.S. participation in the program while the Goddard Space Centre, also in the U.S., will participate in data analysis.

This country's first venture into space exploration began in 1951 when a small group of scientists at the Canadian Armament Research and Development Establishment (CARDE) located at Valcartier,

Que., began preliminary investigations into the field of guided missilery. This group had a program with two main objectives; first, to build up guided missile research and development potential in Canada, and second, to provide an air-to-air guided missile for RCAF aircraft. The program lasted four years and produced the missile known as the Velvet Glove. More than 300 test missiles were manufactured and fired during those four years. RCAF participation in the program consisted of air launching Velvet Glove missiles from Sabre and CF-100 aircraft. However, the second objective of the program, to provide a missile for RCAF aircraft, could not be realized because rapidly developing technology rendered the Velvet Glove obsolescent.

However, the program was not all wasted. A considerable amount of knowledge and experience was acquired by Canadian scientists in the field of rocketry. Furthermore, fa-

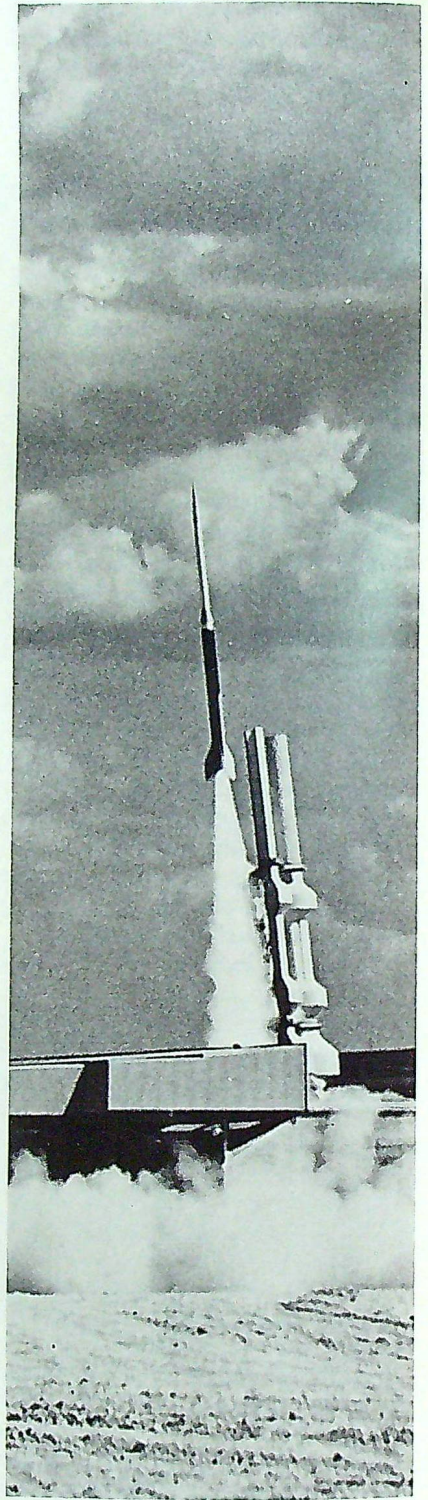


A Black Brant II, developed at CARDE, blasts off on a test flight.

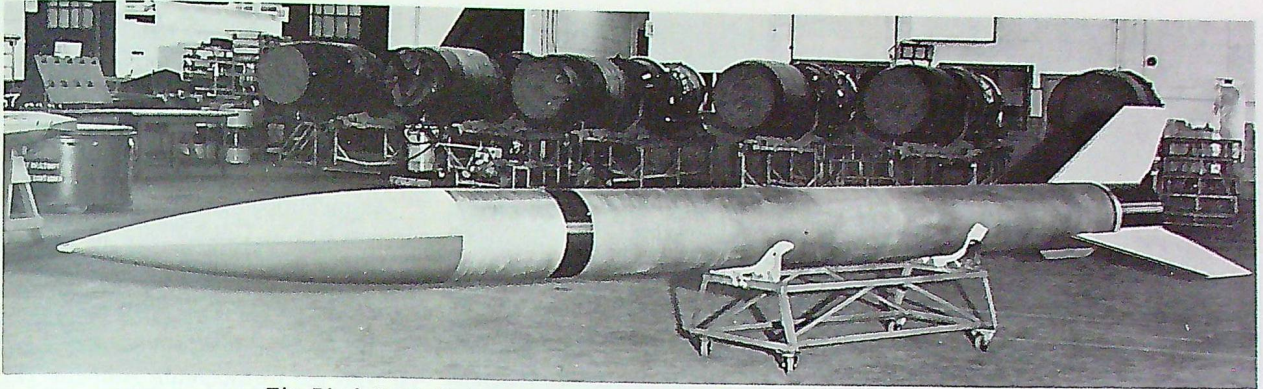
cilities built for the Velvet Glove were suitable for later experiments. The next step into the space age for Canadian scientists also took place at CARDE where work was done on the development of solid rocket propellant and a rocket to test the propellant. This rocket, the Black Brant I, proved so successful during its launching in 1959 that a number of nose cones were instrumented for ionospheric investigations. It was an auspicious beginning.

In 1960 a later development, the Black Brant II, was fired from the government's test centre at Fort Churchill, Manitoba. This rocket, 28 feet in length and 17 inches in diameter, was also successful. The DRB scientists realized at once that they had a useful tool for their upper atmosphere program. After changes were made in the propellant design, a Black Brant II soared even higher carrying a 150-pound instrument payload to an altitude of about 140 miles. Since the first of this series rocketed into space, more than 30 Black Brant IIs have blasted off, telemetering back scientific information and adding to man's knowledge of the upper atmosphere. The Black Brant II made a particularly impressive showing during the total eclipse of the sun on 20 July '63, carrying instruments to measure that phenomenon's effect on the upper atmosphere. The Black Brant II was also used by the DRB, NRC, USAF and the Universities of Toronto, Western Ontario, Saskatchewan and Alberta to carry scientific instruments far out into space.

Following in the footsteps of its illustrious predecessors, Black Brant III was developed in 1961. This time, the project was a co-operative venture between CARDE, the Department of Defence Production and Canadian Bristol Aerojet Ltd. The Black Brant III underwent a period of testing and acceptance at Wallops Island, Virginia and Churchill Rocket Range in 1962 and, since



A later development, Black Brant IV, leaves the launcher at Fort Churchill Rocket Range.



The Black Brant V-A was built as a single-stage high altitude research rocket.

that time, it has been evaluated for possible use in the International Quiet Sun Year (IQSY) program, which extends from 1 Jan. '64 until 31 Dec. '65.

Another limb was added to the family tree in 1964 when the Black Brant IV saw the light of day. The Mark IV version of the space vehicle is a more sophisticated research tool in that it is a two-stage rocket consisting of a Black Brant II as the first stage and the smaller Black Brant III as the second stage. The Black Brant IV is capable of carrying a 150-pound payloads to altitudes in excess of 500 miles. The final model in the Black Brant series will likely be Black Brant V. This rocket is likely to be used either as a single-stage vehicle to gather upper atmosphere measurements or as the first stage of the Black Brant IV.

Having decided to enter the field of space research by building rockets, the Canadian government naturally required a rocket range. Fort Churchill, in northern Manitoba, was almost an ideal site. This location was chosen because it lies directly under the region in which the aurora borealis reaches a maximum. In 1956 a combined Canada-USA project built rocket-firing facilities near the Canadian Army-operated base in preparation for the International Geophysical Year (1 July '57 to 31 Dec. '58). Although no Canadian-

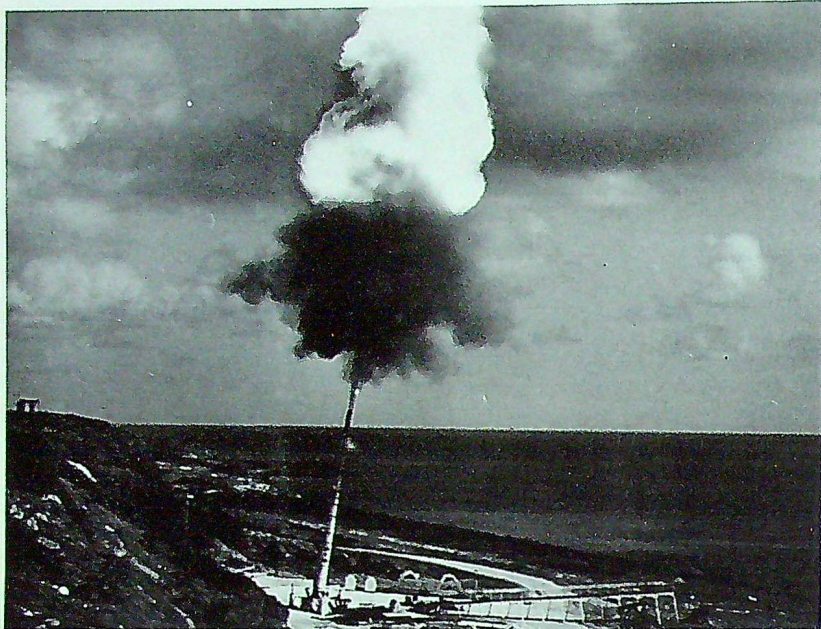
built rockets participated in the IGY experiments, DRB provided two instrumented nose cones for American rockets that were fired in 1958. Since that time a number of American rockets fired from both Fort Churchill and Wallops Island, Virginia, have carried Canadian-built nose cones. Following the IGY operations, the rocket-firing facilities were closed down until September 1959 when additional upper atmosphere rocket research operations

were commenced with DRB, NASA, NRC and the USAF as participating agencies.

The research range at Fort Churchill has facilities for firing both solid and liquid-fuel rockets. An additional type of upper atmosphere research operation at this location is the high altitude balloon work. During 1962 alone approximately 50 balloons were launched with various scientific payloads. The Fort Churchill area is an example of extreme

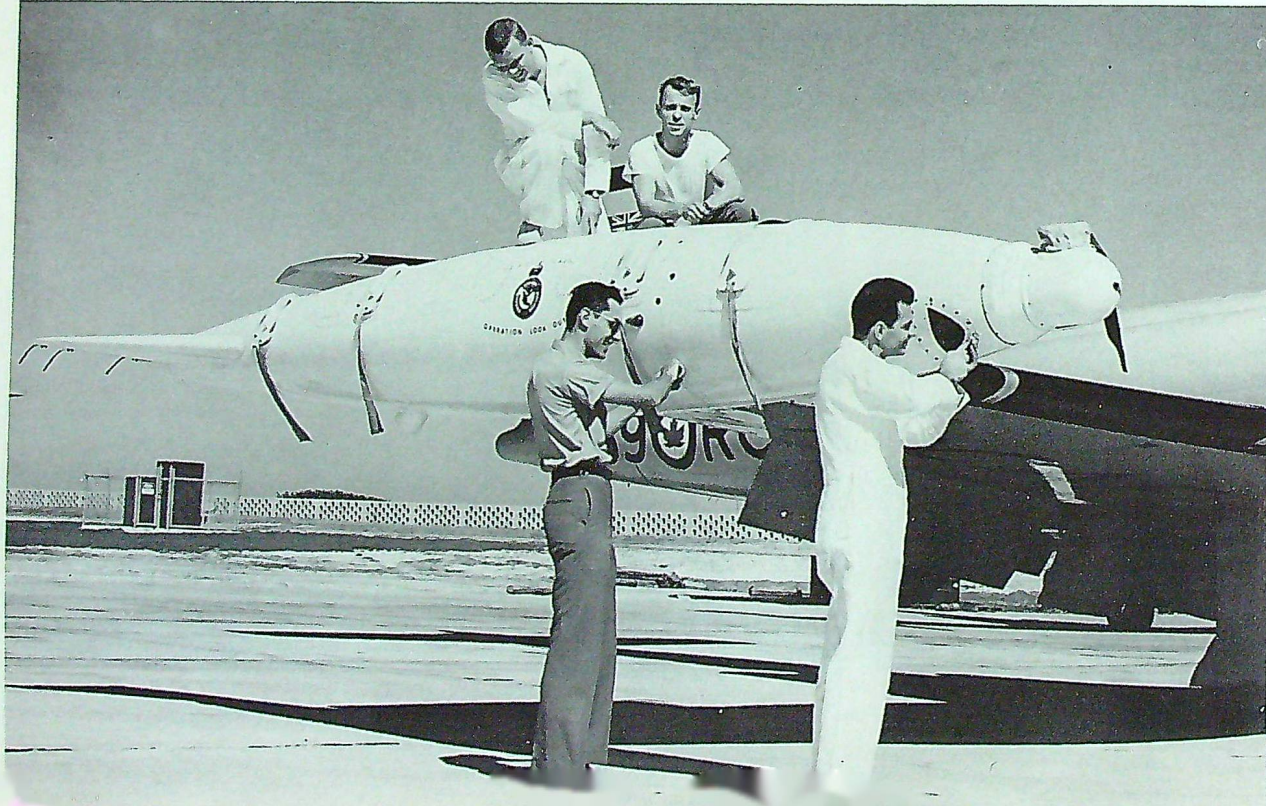
Mr. L. Maynard, officer in charge of DRB's scientific and technical staff, discusses some of the finer points of the antenna at PARL with F/L E. J. Gaines, RCAF support officer at Prince Albert Research Laboratory.





A World War I cannon belches flame as a Martlet missile, designed at McGill University, heads for the ionosphere from a launching site in the Barbados.

RCAF airmen work on a CF-100 wing pod containing instruments which detect incoming missiles through the use of infra-red radiation (l. to r. on wing) LAC B. Robinson and Cpl. H. Johnston (l. to r. on ground) LAC J. Horwat and Cpl. L. D'Amour.



contrasts. On the one hand Eskimos and Indians eke out a precarious living under primitive conditions while close by scientists and technicians are occupied with the highly-sophisticated task of exploring space.

As mentioned previously, various universities in Canada are involved in upper atmosphere research and are having their experiments aided by DRB rockets. This DRB and university co-operation will be continued with the forthcoming Alouette II and ISIS satellites. But the university project which has become the best known for its contribution to Canada's space effort is McGill's HARP (High Altitude Research Program).

Project HARP ran into a lot of opposition at its inception because the idea of using a gun to launch scientific payloads into the ionosphere called for such an improvement in the design of payloads and their electronic instrumentation to withstand the high "G" loading inherent in gun launching versus rock-

et launching. However, with support from Canadian and American industry, universities and the US military, McGill's experiment has proven successful. From a launching site in the Barbados, a borrowed US Navy artillery piece of World War I vintage weighing almost 250 tons and more than 70 feet in length, was used in 1963 to fire an instrument-packed Martlet missile. It soared to a height of nearly 65 miles, a world's record for a cannon shot. The gun has now fired dozens of Martlet vehicles, demonstrating that for some research jobs, the gun-launched upper atmosphere probe provides a good answer.

Computing Devices of Canada Ltd. provides the telemetry system for the firings and manages the launching facility. W/C H. B. Hallett, recently retired from the RCAF, is CDC's HARP project manager in Barbados.

An RCAF consultant discusses a model of ISIS "A" with a DRB scientist (l. to r.): S/L G. Tahiral and Mr. G. Booth.

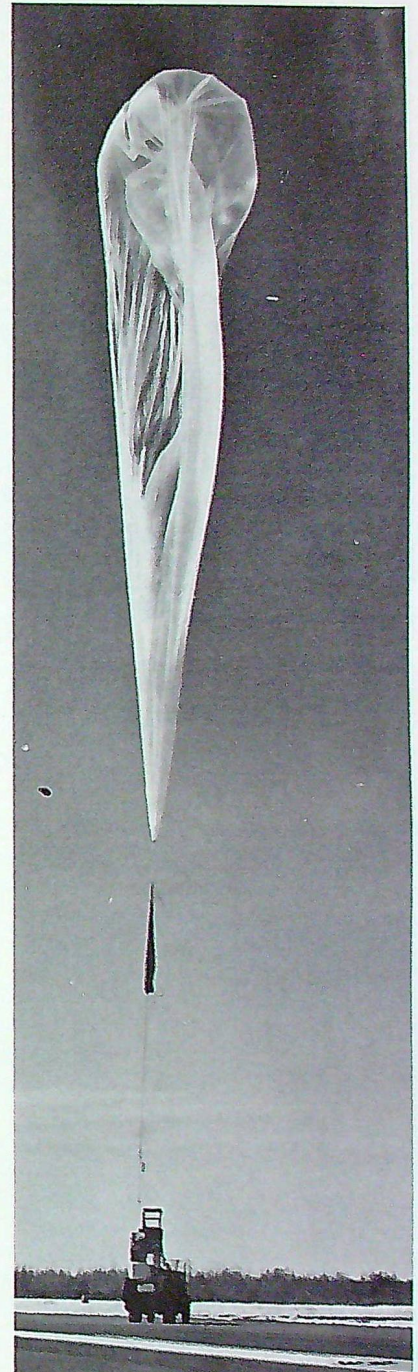


Collectively, Canadian scientists have placed themselves in the forefront of international research into all levels of the atmosphere up to 600 miles. Balloons and aircraft carrying spectrometers to probe the lower regions, the HARP project which researches the lower ionosphere combined with Alouette's findings in the upper layers of the ionosphere have given Canada a pre-eminent position in this sphere of aerospace knowledge.

Another university research project, although not as dramatic as McGill's HARP program but nevertheless equally important, is the University of Toronto's study concerning drag effect on spacecraft. These studies, undertaken on behalf of NASA, are to determine if the lifespan of a low-level satellite can be extended by delaying their decaying orbits. The university's approach to the problem is to analyse how gas particles bounce off satellites, thus dragging them down to lower altitudes where they burn up on re-entering the earth's atmosphere.

The two main government agencies involved in space research are the DRB, which conducts scientific investigations on behalf of the armed forces, and the NRC which is primarily concerned with research for industrial purposes. Although both DRB and NRC have their headquarters in Ottawa, their personnel are engaged in space science in widely-separated points on the globe as well as in Canada. For example, at both Thule, Greenland, and on Ascension Island, in the south Atlantic, government scientists have been studying the possibility of detecting incoming ballistic missiles through the use of infra-red radiation.*

This country is also involved with communications by satellite. When the Americans built Relay 1, one of their first communication satellites,



A balloon, carrying scientific measuring and recording instruments, is inflated before release by DRB personnel.

*ROUNDEL Apr. '60 and Mar. '61.



DOT Photo

A communications satellite ground station nears completion at Mill Village, N.S.

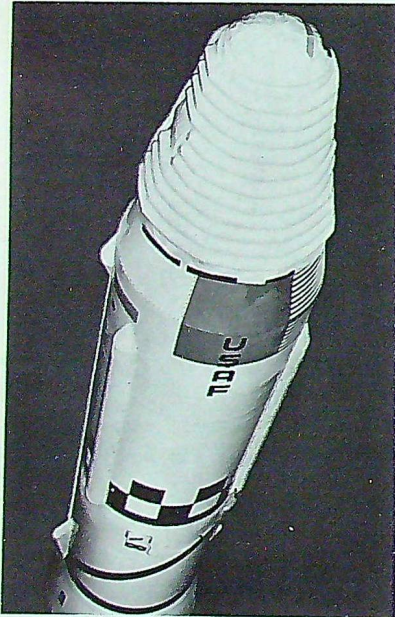
a vital part of the satellite's electronic system was constructed by RCA Victor in Montreal. This highly-sophisticated system worked so well that the Canadian factory was awarded another contract, this time for ground station receivers for NASA's syncom program. Then, in 1963, the Department of Transport announced that a Canadian ground station would be built. This station which, according to RCA Victor will be "the most advanced installation of its kind in the world", will be able to relay television, telephone, telegraph and data transmissions. Construction of the station, at Mill Village, N.S., is nearing completion and if no serious setbacks develop, it will be "on the air" sometime this year. When it becomes operational, the station will transmit messages via satellite from Canada to other countries on behalf of the Canadian Overseas Telecommunication Corporation.

The branch of science which first pondered the mystery of space was

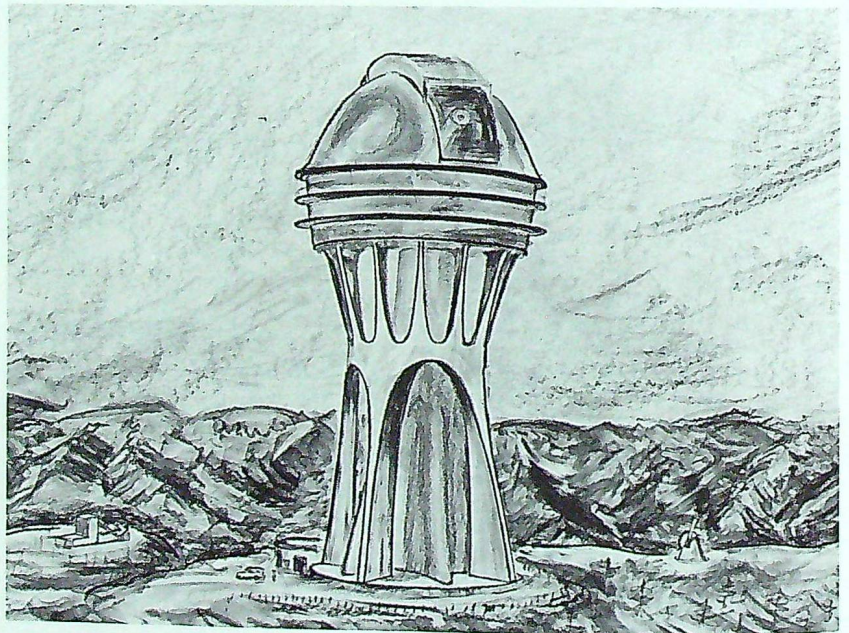
astronomy. With optical or photoelectric telescopes, astronomers all over the world have searched the heavens for answers to an unending series of questions. In Canada, however, the two large telescopes belonging to the University of Toronto and the Federal Dominion Observatory Branch respectively, were rendered obsolescent by newer developments over the years. Fortunately, this trend is being reversed.

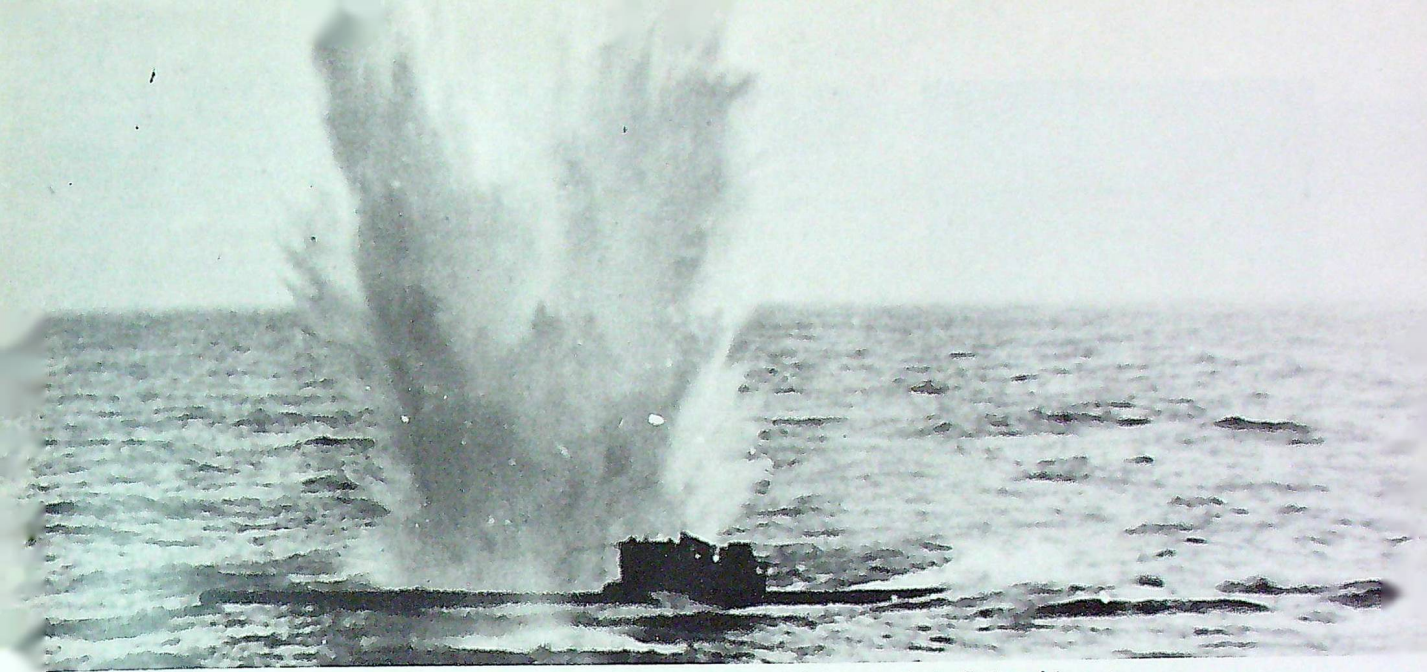
Recently the government announced that an observatory, to be named the Queen Elizabeth II Observatory, would be built on Mount Kobau in southern B.C. This \$10 million project will include a 150-inch telescope which will bring Canadian astronomers back to the forefront of astronomical research. With this advanced research tool astronomers will investigate planets of our solar system and distant stars in our galaxy. By so doing they will probe for and – hopefully – find some answers to the many mysteries of outer space. ☉

Canada's second satellite, the Alouette II, will be boosted into orbit this summer by an American Thor-Agena similar to the one pictured below.



An artist's conception of how the Queen Elizabeth II Observatory will look when it is completed on Mount Kobau, B.C.





A depth charge explodes by a German submarine being attacked off Canada's east coast during World War II.

WAR ON THE FRONT DOORSTEP

By FLIGHT LIEUTENANT H. A. HALLIDAY
Directorate of Historical Services

First of Three Parts

DURING the two World Wars the attention of the Canadian public was generally focussed on the major battles that raged far from home. However, it should not be forgotten that during World War II a serious enemy threat developed on Canada's doorstep in the form of German U-boats. The Canadian Home War Establishment was deeply involved in the Battle of the Atlantic, with the brunt of the fighting in Canadian waters being borne by the Royal Canadian Navy and the RCAF's Eastern Air Command.

Canada had had previous experience with anti-submarine warfare. During World War I Canadian fliers

had taken part in such operations as members of the Royal Naval Air Service and the Royal Air Force. In August 1918 a German U-boat had actually operated off the coast of Nova Scotia. With enemy submarines probing the western Atlantic, the U.S. Navy established flying units at Dartmouth and Sydney, N.S., while Canada undertook to establish the Royal Canadian Naval Air Service. The war ended before the submarine menace could become more acute. In 1919 the Americans returned home and the RCNAS was disbanded.

For several years thereafter military flying in the Maritimes was re-

stricted to aerial photography, transportation, and general reconnaissance, particularly in the suppression of rum runners. In 1936 the Fairchild seaplanes of No. 5 Sqn. took part in a number of exercises with the RCN. Thereafter the emphasis on military flying increased. In 1938 Eastern Air Command was created with G/C N. R. Anderson (A/V/M ret.) as its first AOC. The command was intended to administer a variety of units in the Maritimes, and when the war broke out it became responsible for training as well as operational establishments in the region.

On the eve of war EAC's Order



A/V/M N. R. Anderson
first AOC, Eastern Air Command

of Battle reflected the general state of unpreparedness that marked the Allied forces at that time. No. 2 (Army Co-operation) Sqn. at Saint John, N.B. was flying *Wapitis*. No. 3 (Bomber) Sqn., enroute to Halifax, was equipped with *Atlas* aircraft, while No. 8 Sqn. at Sydney, N.S. had Northrop *Deltas*. The only aircraft available which were not obsolete were the *Stranraers* of No. 5 Sqn. at Dartmouth. The first patrols were flown by No. 5 Sqn. on 2 Sep. '39, one day before Britain declared war, and eight days before Canada followed suit. On 14-15 Sep. aircraft shadowed the German steamer "Franz Klazen" until ships of the RCN could intercept her.

The pattern of flying escort patrols for convoys and single ships was established quickly, but there was no sign of German U-boats. In fact the German Navy had entered the war in a very disorganized state, with few U-boats, half a surface fleet, and no naval aviation. It was only in the latter half of 1940, with more submarines at their disposal and with bases in Norway and

France, that the U-boat threat became serious. Even then the enemy concentrated on the areas closest to their bases – the Bay of Biscay and around the British Isles. As British defences stiffened the U-boats moved westward, to the south of Iceland and then Greenland. Hitler, however, had no wish to antagonize America, and the U-boats were kept out of the western Atlantic on his orders lest an incident should arouse the ire of the United States.

During this period EAC disposed of most of its obsolete aircraft. No. 3 Sqn. was redesignated No. 10 (bomber-reconnaissance), and in March 1940 it began to receive Douglas *Digbys*. A *Hudson* squadron, No. 11 (BR), was formed in November 1939. To enable aircraft to reach further into the Atlantic a detachment of five *Digbys* was established at St. John's, Nfld. under the command of S/L H. M. Carscallen (A/V/M ret.). This move, carried out on 17 Jun. '40, was the first step towards the setting up of a major anti-submarine establishment on the island.

Although U-boats were not in evidence, EAC was haunted by German surface raiders which operated in several instances just beyond the range of the *Hudsons* and *Digbys*.

In February and March 1941 the battleships "Scharnhorst" and "Gneisenau" sank 21 merchant ships some 350-500 miles from Newfoundland. Unfavourable weather, insufficient range, and not enough *Digbys* prevented EAC from locating the raiders. This led the AOC, A/C A. E. Godfrey (A/V/M ret.) to move the remainder of No. 10 Sqn. to St. John's while requesting AFHQ to obtain *Catalinas* for his command. Canadian production of these aircraft was only then beginning, while American production was being absorbed by RAF and USN contracts. In May 1941 the British consented to diverting nine *Catalinas* to EAC. These were not available in time to take part in the hunt for the German battleship "Bismarck", but they did constitute the first truly long-range aircraft to serve in EAC.

The *Catalinas* were initially sent to No. 5 Sqn. but, on 28 June, No. 116 Sqn. was formed at Dartmouth, and the new unit took possession of all nine "Cats". It was several weeks before No. 5 was able to re-equip with *Cansos* (*Catalinas* built to RCAF specifications) and to send its reliable old *Stranraers* to Western Air Command. The procurement of long range aircraft did not solve all the problems facing EAC. On 22

Delta aircraft were used by No. 8 Sqn. in the anti-submarine role in 1939.

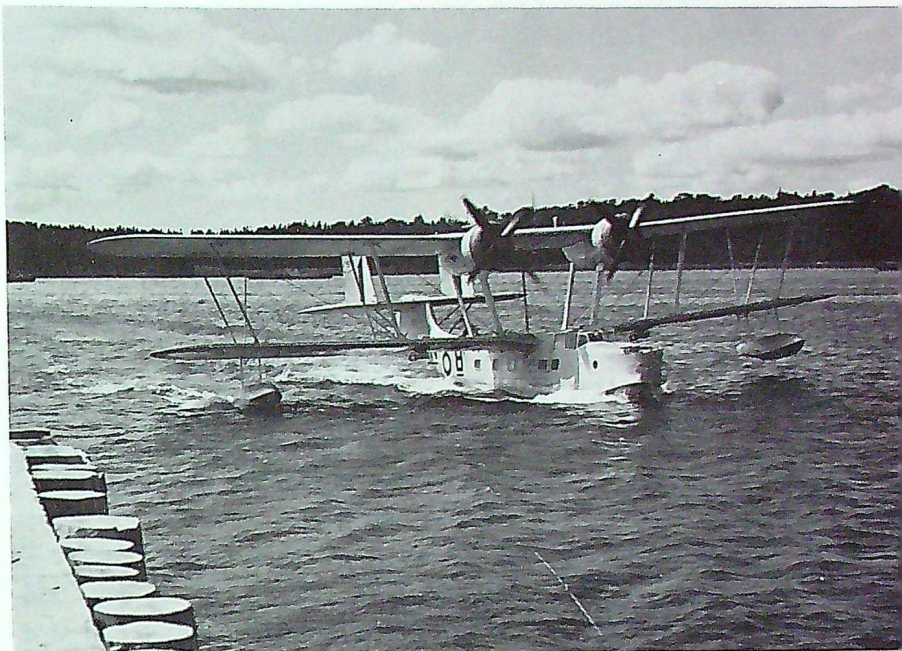


Jul. 1941 F/L N. E. Small (S/L dec.) of No. 116 Sqn. attacked what was believed at the time to be a U-boat near Halifax. His two 250-lb general purpose bombs failed to explode. There was, in fact, no U-boat in the vicinity, and Small's intended victim was probably a whale or a porpoise. The incident, however, dramatically illustrated the armament shortages in the command.

The 250 and 600-lb general purpose bombs then in use were fused to explode on impact, rather than for hydrostatic detonation (i.e. to explode when water pressure triggered the fuse). Dropped at low altitude, they skipped along the water. Attempts were subsequently made to drop 250 and 450-lb navy depth charges. These were fused for hydrostatic detonation, but frequently broke up on hitting the water. The answer finally evolved was a depth charge similar to the RCN's 250-lb model, stressed for an air drop, with its ends rounded to improve its ballistics.

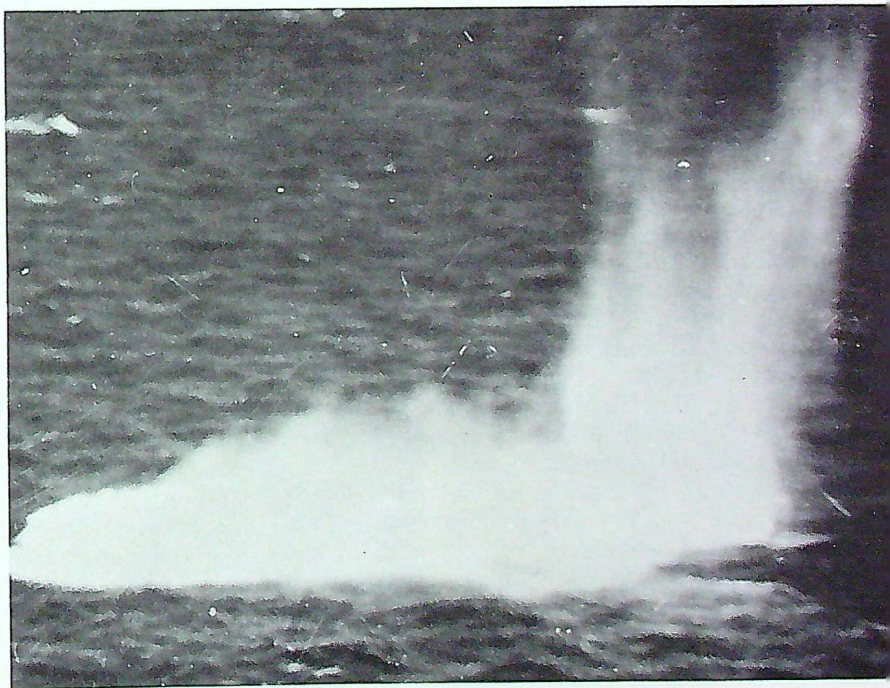
As these events were occurring, the Germans shifted their U-boats. In mid-October 1941 four U-boats moved into the Cape Race area, near Newfoundland. Weather was unsatisfactory, but three *Catalinas* were held in readiness at Botwood. No. 10 Sqn. got in the first blow, however. On 25 Oct. a *Digby* piloted by S/L C. L. Annis (now A/M) attacked U-573 100 miles east of Hare Bay. Unfortunately the bombs had been put on "safe" by a crewman who had not informed Annis, and they splashed harmlessly into the sea.

The U-boats remained long enough to sink five ships before pulling back to the North Atlantic. They were still under orders not to become involved with American ships. In spite of these instructions, several incidents occurred involving German submarines and American destroyers escorting convoys to Iceland, where an American garrison



The Stranraers were considered modern aircraft at the beginning of World War II.

Water erupts like a volcano when a depth charge, dropped from an RCAF aircraft, explodes near a submerged submarine.



was stationed. Gradually the American navy was becoming more and more involved in an undeclared war on the U-boats. However, it was not until Japan attacked Pearl Harbour that the Germans, coming to the support of their ally, were able to unleash the full fury of their submarine fleet in the western Atlantic.

EAC entered 1942 with a mixed bag of aircraft – one squadron of *Digbys* (No. 10), two of *Cansos* (Nos. 5 and 116), one of *Hudsons* (No. 11), and one of *Bolingbroke*s (No. 119). In addition there was one fighter squadron, No. 118, at Dartmouth flying *Kittyhawks* and *Goblins*. These forces were increased during the first three months of the year by the formation of No. 113 Sqn., flying *Hudsons*. Several *Ansons* of the maritime reconnaissance schools were also fitted with bomb-racks, though they could serve as little more than scarecrows. The Germans began their campaign in the western Atlantic by sending six picked U-boats to North American waters, followed by others in the first half of 1942. A few raided shipping around the Maritimes and New England, but the bulk of the enemy subs operated south of New York. There, thanks to American unpreparedness, they took a huge toll of Allied shipping.

The battle moved into the Canadian zone on 12 Jan. when a U-boat torpedoed the SS “Cyclops” 180 miles south of Halifax and another sank the SS “Frisco” 100 miles east of Dartmouth. In the first month of the year 22 ships were sunk in the area north of 40° N and west of 40° W, including eight ships sunk within 150 miles of St. John’s. The tempo slackened as the enemy shifted southwards, but losses in the Canadian zone from February through May totalled 33 ships sunk.

EAC reacted with vigour. In January it flew 1400 hours, and made five attacks on U-boats. Flying times increased to 1883 hours in Febru-



Hudsons allowed No. 11 Sqn. to reach further into the Atlantic.

ary, 2898 hours in March, and 3752 hours in April. The first attack was on 12 Jan. when Sgt. R. L. Parker (FS dec.), in a *Bolingbroke* of No. 119 Sqn., caught U-130 on the surface. His bombs fell close but did no damage. On 16 Jan. two *Kittyhawks* attacked what may or may not have been a U-boat. Next came an attack by F/L J. M. Young (W/C dec.), flying a *Digby* of No. 10 Sqn. on 19 Jan. On the 21st F/L N. E. Small of No. 116 Sqn. jumped a U-boat. Oil and bubbles came up for 45 minutes following his attack, but the U-boat was able to continue its patrol. Finally, on 22 Jan., F/L E. M. Williams (W/C dec.), of No. 10 Sqn., bombed a U-boat. One depth charge exploded alongside the conning tower, and a second attack was inconclusive. The assessment was “must have shaken up the crew”.

Another job, equally important but more grim, was that of searching for survivors from torpedoed ships. On 24 Jan. F/L Small and F/L J. E. Martin (F/L rel.) of No. 116 Sqn. flew patrols lasting more than 11 hours, searching for the survivors of the SS “Wildbeast” which

had been sunk 600 miles southeast of Halifax. Two lifeboats were spotted and the aircraft dropped messages, food, cigarettes, and a rubber dinghy. Next day the seamen were picked up by two freighters. Another notable sortie was flown by F/L J. E. Martin (F/L rel.) of No. 5 Sqn., who located survivors from the SS “Empire Seal” off Liverpool, N.S. More frustrating were those searches which turned up only wreckage and empty lifeboats – mute testimony to the struggle at sea.

Such was the pattern for the next few months, as EAC aircraft carried out their duties of attack and rescue. In March USN *Hudsons* flying from Argentia sank two U-boats, but such successes were denied EAC. The *Bolingbroke*s, indeed, proved to be of limited value. Though capable of carrying four 250-lb depth charges, their range was small, and a meaningful range could be obtained only by cutting the load in half. This undoubtedly robbed Sgt. C. S. Buchanan (F/L rel.) of No. 119 Sqn. of success. On 23 Mar. he attacked a diving U-boat 150 miles south of Cape Race.

His two depth charges were enough to blow it to the surface but not to damage it. The submarine submerged again and escaped.

The lack of visible success did not rob the aircrews of their sense of humour. On 28 Apr. F/L Small dropped two depth charges 15 seconds after a U-boat had submerged. Oil and bits of wood, probably from a catwalk on the deck of the submarine, swirled to the surface. The report of the attack noted the following:

"The captain of the aircraft feels that though the possibility of a clean kill is not very strong, he is certain that he definitely made their back teeth rattle."

May was a slack month, with only two or three sightings of U-boats and no attacks. A U-boat slipped into the Gulf of St. Lawrence and sank two ships off Fame Point on 11 May, but the enemy eluded all

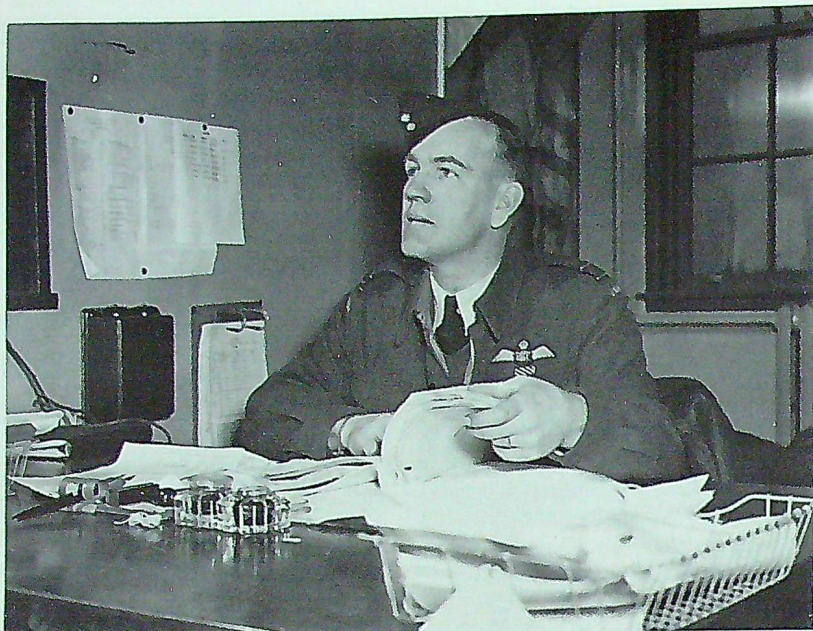
aircraft despite many sweeps by *Cansos*, *Ansons*, and *Hudsons*. Meanwhile the strength of EAC continued to grow. No. 118 Sqn. with its *Kittyhawks* was sent to Western Air Command, but four *Hurricane* squadrons were formed to guard against possible enemy air attack. This was deemed necessary as the Germans' HE-177 was potentially capable of carrying out reconnaissance flights as far as North America, while the aircraft carrier "Graf Zeppelin" represented another threat. (In fact, construction of the carrier was never finished). In addition, another *Canso* squadron, No. 117, was formed at North Sydney on 27 Apr. and No. 145 Sqn., flying *Hudsons*, was formed on 18 May. Next day No. 162 Sqn. was formed at Yarmouth, but until late in 1943 it was so short of equipment that it was little more than a squadron on paper.

A few U-boats operated between Nova Scotia and Bermuda during the summer of 1942. In June EAC carried out four attacks on enemy subs. The only one which enjoyed any success was on 23 Jun. when P/O W. Graham (F/L rel.) in a *Hudson* of No. 11 Sqn. caught U-87 on the surface. The conning tower was still out of the water when Graham's depth charges straddled the sub and blew it to the surface. U-87 submerged again amid a hail of bullets from the *Hudson*. She had been so badly damaged that she was forced to return to port. Early in July U-132 broke into the Gulf of St. Lawrence and sank three ships. Subsequently she escaped from attacks by HMCS "Drummondville" and a *Hudson* of No. 113 Sqn. Six other attacks were carried out by EAC aircraft in July, the last one paying off in spectacular success.

On 30 Jul. P/O Graham of No. 11 Sqn. attacked a U-boat 120 miles south of Halifax. Next day S/L N. E. Small AFC, who now commanded No. 113 Sqn., was sweeping the area where Graham had carried out his attack. At a range of three miles he spotted a U-boat on the surface with crewmen running for the hatches. The sub was still on the surface when four 250-lb depth charges exploded around the hull, just forward of the conning tower. The U-boat submerged, resurfaced, then submerged again. Oil and debris swirled up. Fifty-five minutes later a heavy underwater explosion occurred. It marked the end of U-754, a 740 ton U-boat commanded by Kapitaneutnant Volmar Schwartzkopf. On 2 and 5 Aug. the redoubtable "Molly" Small attacked U-89. Neither attack damaged the sub sufficiently to force her to abandon her cruise, but Small's record was remarkable. Before the year was out he would make six attacks on U-boats, and in January 1943 he would be awarded the DFC, only to die in an air crash six days later.

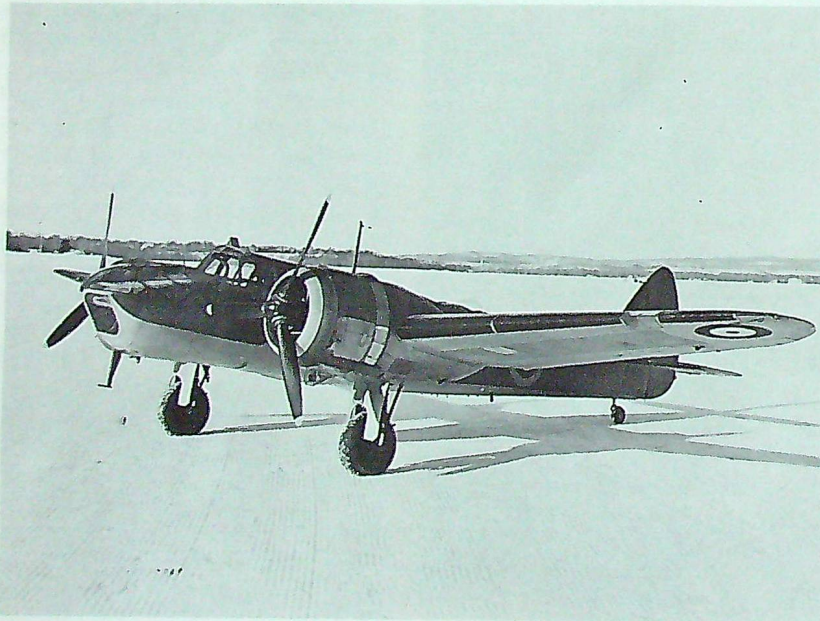
Groundcrew haul depth charges out to a waiting aircraft.





S/L N. E. Small, DFC, AFC, made six attacks against German submarines in 1942 including a successful battle on 31 July '42.

Bolingbrokes were pressed into anti-submarine service to help protect Canada's east coast.



The fighting went on around Newfoundland and further eastward, while EAC continued its grim work. In September and October 1942 U-boats made several attacks in Conception Bay, the Strait of Belle Isle, and the Gulf of St. Lawrence. U-517, which penetrated the Gulf in company with U-165, sank 12 ships totalling more than 33,000 tons. During September, aircraft of EAC had numerous sightings of U-165 and U-517, and carried out seven attacks against them. At least four of these attacks appeared damaging at the time, but U-517 at least escaped unharmed, although on one occasion a depth charge landed on her deck without exploding. It was thrown overboard by her captain and some crewmen. U-165 was mined off Lorient while returning home, and reports of any damage she may have suffered in Canadian waters were lost with her.

The first attack on these submarines was carried out by F/O J. H. Sanderson (S/L rel.) in a *Digby* of No. 10 Sqn. on 3 Sep. The remaining six attacks were the work of a *Hudson* detachment of No. 113 Sqn. based at Chatham, N.B. Three of these attacks were carried out by F/O M. J. Belanger (F/L rel.), two of them on the same day. P/O R. S. Kettley (F/L rel.) made two attacks and Sgt. A. S. White (F/L dec.) made one. Belanger was awarded the DFC in January 1943. He subsequently served overseas in No. 425 Sqn. and was awarded a Bar to the DFC.

(to be continued)

A space-agency psychologist asked one of the astronauts what he was thinking about as he strapped himself into his craft atop the rocket which was to hurl him into space.

"All I keep thinking," he grumbled, "is that everything that makes this thing go was supplied by the lowest bidder."

THE NEW FLAG FLIES

SIMULTANEOUSLY with the historic "Proclamation Day" ceremony on Ottawa's Parliament Hill 15 Feb. '65, Canada's new national flag was raised for the first time at RCAF establishments and flew on the tail-planes of RCAF aircraft around the world. On that day the red-and-white, single-maple-leaf Canadian Flag replaced the Union Jack, Red and Blue Ensigns and the Service Ensigns wherever these flags were formerly flown or displayed by the navy, army and air force.

Many Canadians wept nostalgic tears as Red Ensigns were finally lowered from flagstaffs across the nation. Such emotion was especially felt by former and serving members of the RCAF as they witnessed their own Service Ensign solemnly furled and cased for the last time.

Until 1940 the RCAF flew the

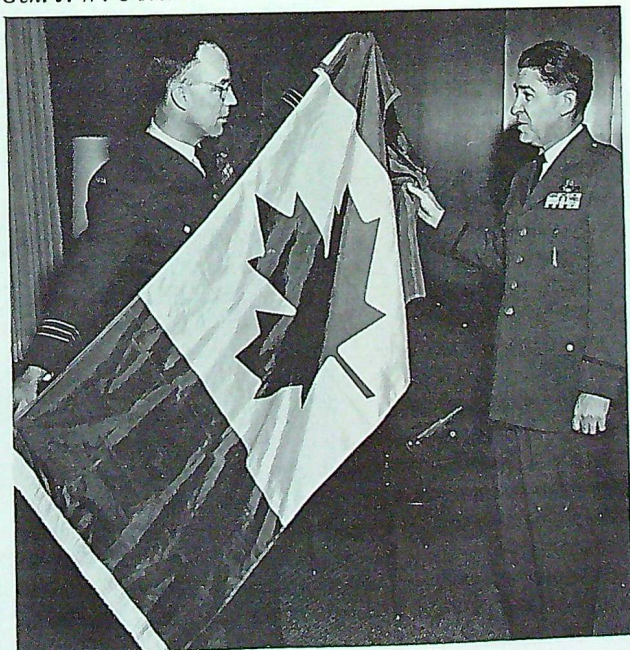
RAF Ensign: red, white and blue roundel on a light blue field, with the Jack in the upper left-hand corner. A despatch dated 22 Oct. '21 addressed to the Governor General, and signed by Mr. Winston Churchill, then Secretary of State for the Colonies, stated in part: "The Air Council was most happy to consent to the request that the Canadian Air Force be granted permission to use 'without difference' the ensign of the Royal Air Force."

Early in World War II it was considered desirable to substitute a red maple leaf for the red ball, to distinguish RCAF units and aircraft. King George VI approved this proposal on 5 Jul. '40. The document sent from Canada House advising Ottawa of this decision was signed by Mr. L. B. Pearson, for the Canadian High Commissioner.



The Canadian flag flies proudly on top of Canadian Forces Headquarters, in Ottawa.

W/C C. E. Holdway, liaison officer at the USAF Systems Command, HQ Bedford, Mass., displays Canada's new flag to Maj. Gen. J. W. O'Neill.



LAC L. P. Turcotte paints the new Canadian flag on a CF-104 at the RCAF's No. 3 Wing Zweibrücken, Germany.



WE WILL RE



"In war - resolution."

In Aug. '43 Prime Minister Churchill, Prime Minister Mackenzie King and President Roosevelt met at Quebec City. Here, arriving for the conference, are Churchill, his daughter Mary and Mackenzie King.

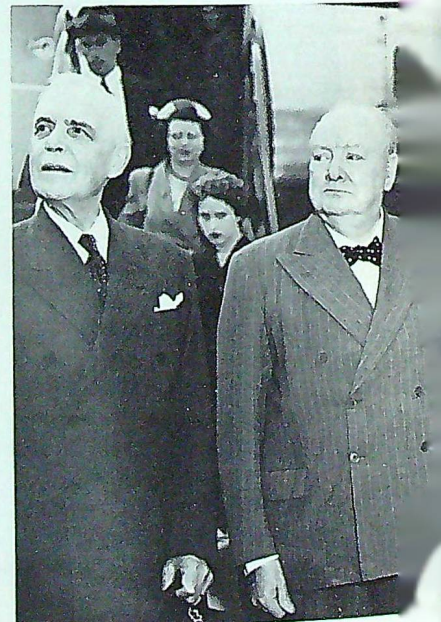


ALL CANADA and indeed all the world mourns the death of a great statesman, a great writer, a man of many talents: Sir Winston Churchill.

His active life in the service of his country and of the free world spanned more than half a century. He was the British leader of what became the greatest and most powerful alliance in history but when he assumed the leadership it was weak and the outlook was uncertain, yet his faith in the final outcome inspired not only his nation but free men everywhere toward the ultimate victory.

He was a man honoured by many nations. He was a Privy Councillor of Canada. He was given an honorary citizenship of the United States. These and many other tributes to him recognized that he was not a

Churchill arrives at RCAF Stn. Uplands Canada. L. to r.: Prime Minister Louis St. Laurent's Minister of Foreign Affairs, Anthony D. Ivinson, Lester B. Pearson.



EMBER HIM

man of only one country but of the world. He embodied the dynamic qualities and quest for progress of this century and through his long life he never lost the ability to question and look ahead. We feel his loss but we know that his works will remain as a lasting monument to his services to all mankind.

At the outset of the massive work in which he recorded World War II he inscribed these words which are indeed fitting for his epitaph:

In war: resolution;

In defeat: defiance;

In victory: magnanimity;

In peace: good will.

This eulogy was given by the Hon. Paul Hellyer, minister of national defence, on the occasion of Sir Winston's death.



Prime Minister Churchill inspects the guard-of-honour on his arrival at RCAF Stn. Uplands, 15 Jan. '52. Mr. Brooke Claxton, then Canada's Minister of National Defence, walks behind Mr. Churchill.

*30 June '54 to begin an official visit to
parent, Prime Minister Churchill, Bri-
'en and Canada's Minister of External*



Making his well-known "V for Victory" sign, Prime Minister Churchill boards the RCAF's C-5 aircraft on his departure from Stn. Rockcliffe on 30 June '54.





MILESTONE at LINCOLN PARK

By MR. A. M. PENNIE
Deputy Chairman DRB

THE announcement of the closing of RCAF Station Lincoln Park caused a certain degree of political excitement at the Alberta provincial level. It also produced, in local newspapers, vehement statements of protest from those who regarded the station only as a healthy part of the city of Calgary's economy.

There must be hundreds of people who view its demise in an entirely different light and who have never associated it with the economic structure of that burgeoning oil city of the West. These people constitute that band of brothers, now in their middle forties and graying at the temples, who trained there as fledgling pilots during the years of World War II.

Many of the airfields that constituted that busy and productive life-line of the Allied Air Forces quick-

ly fell into disuse and were disposed of at the conclusion of hostilities. Today the majority of these airfields have been swallowed up by the cultivated land they, themselves, pre-empted at the birth of the Commonwealth Air Training Plan, and only a few were retained and preserved. Lincoln Park* was one which escaped the disposal axe and, since it retained its flying facilities, hangars, control tower, and most of its buildings, it made it much easier for the nostalgic mind to recall scenes and incidents which happened there, even after a lapse of nearly a quarter of a century.

Currie was never "home" for this author, but it was the scene of a highlight or milestone in his flying career.

Some sixty-five miles north of Calgary lies the little town, or ham-

*Lincoln Park was known previously as Currie, No. 10 Repair Depot and No. 25 Air Materiel Base until it acquired the name Lincoln Park on 16 June '51.

let, of Bowden. In the early 1940's it was a convenient stopping place during the dusty drive over the gravel highway to Edmonton. To a colony of transplanted RAF boys it was a stopping place in another sense. For them it was their first flying school for ab initio training and it was there that I, and many others, experienced that wonderful and never to be forgotten feeling of the first solo flight.

Immediately after this historic marker, extension of flying skills and training followed fast and in no time at all the embryonic pilot with twenty hours of solo time to his credit was ready for another supreme test — the first solo cross-country flight.

At Bowden we felt a trifle superior to other Elementary Flying Training Schools. We trained on *Stearmans* and tended to look down our nose at the other schools who flew the reliable but humble *Tiger Moth*. The *Stearman* was, by elementary training standards, a tricky aircraft to handle but it had lots of power from

its Continental engine and steel propeller. Someone once said in a crew room that the *Stearman* was used as a fighter aircraft during the Spanish Civil War. This was all that we needed at that stage in our flying training to boost our morale and ego by another five notches!

Like all things good and beautiful, the *Stearman* had its vices, particularly dangerous for the tyro. One of these was its great tendency to ground loop if badly handled on landing, and particularly on landing slightly out of wind direction. Ground looping could be expensive to the aircraft and, perhaps fatal to the pupil who lived in mortal fear and terror of being "washed out" for the least flying error or misdemeanour. As a concession to the precious and overworked aircraft, and also to the pupils, all landings at Bowden were performed on the grass centre field, and of course always into wind. In other words, we never used the runways.

Having satisfied my instructor that I could navigate with a reasonable degree of accuracy (and this included an ability to read the place names on the grain elevators) he announced to me one afternoon that I was to prepare myself for my first solo cross-country flight. I jumped to my feet smartly and accepted the news just as if he had asked me to embark on a fighter sweep across the English Channel. Where was I to go? "Calgary, No. 3, S.F.T.S., Currie", he replied. No flight plan I ever prepared in after years received so much attention, and my Dalton computer fairly sizzled as I computed courses, true air speeds, and all the other calculations necessary prior to a navigational trip.

I checked the aircraft, inspected the fuel tanks, and had them all topped up to the brim. Just as I was about to fasten on my parachute and climb into the front cockpit my instructor came running out and informed me in the most casual and

off-hand manner that I would have to land on the runways only at Currie. I think if he had told me that the approach to the airfield at Currie was bristling with 20mm cannons which fired indiscriminately at every single-engined aircraft, my heart could not have sunk lower and I could not help but think that my instructor had quietly bestowed the kiss of death on me. As I carried out my vital checks, my mind buzzed with the tales I had heard and the mental pictures I had conjured up of the vicious and wicked ground loops which were the custom of *Stearmans* landing on runways. However, for the keen and fledgling pilot there is no withdrawing; one must press on even when the odds are heavily against, so, like the Hussars at Balaclava, it was do or die, and without further delay I was airborne and set course for Calgary.

It was a cold, crisp afternoon with the ground below white with snow. Aloft, with the reliable Continental engine rasping in the cold frosty air, the *Stearman* and its anxious pilot winged its way southward. Surely and accurately the intervening towns appeared beneath the wing tip right on track and dead on E.T.A. Olds, Didsbury, Carstairs, Crossfield, all looked so clean and tidy with their winter coat of white, and the south-bound CPR freight, belching black smoke, stood out against the background like a sore thumb. What with making navigational calculations and observations and checking and rechecking the engine performance and fuel supply, there was little time left to worry and fret over the problem of landing on the runway at my destination. Once Airdrie slid under the engine cowl it was no time at all before I was crossing the city of Calgary and experiencing a momentary feeling of surprise and panic as the aircraft was violently rocked and buffeted by the warm turbulent air rising from the city.

Calgary in those days covered

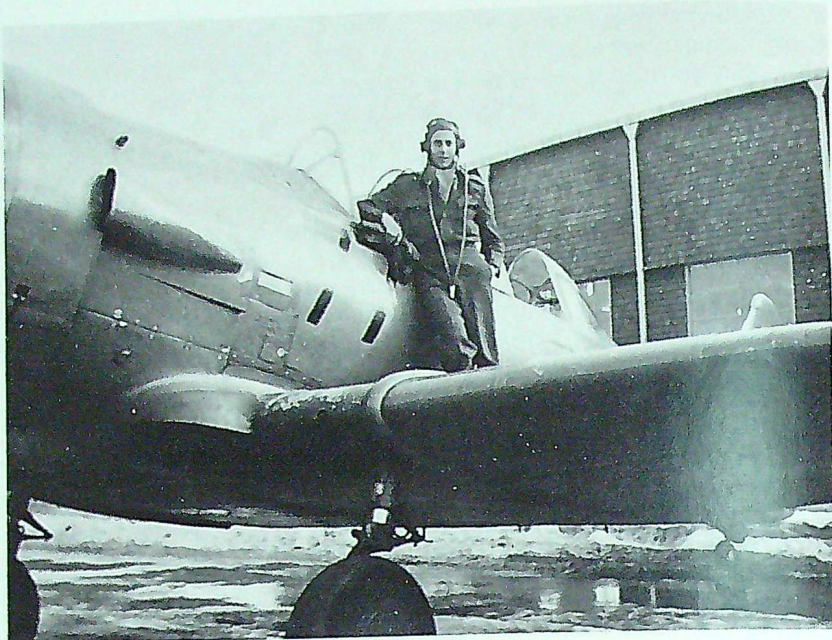
about one-quarter of the area it does today. Currie airfield lay well beyond the southwest boundary of the city. In fact, as I altered course over the centre of the city I had to scan the middle distance several times before I picked up the airfield, so well was it camouflaged with its white buildings and snow covered surface.

In the good old training days we had no luxury aids such as radio, and communications air to ground and vice versa were non-existent. Attempting to land at any airfield was generally an exercise in personal survival and only the bravest and most steadfast could keep his place in the landing queue. Timid or courteous pilots who gave way to others on the circuit, ended up by circling the airfield for hours on end and eventually running out of fuel. In textbook fashion I lost height and prepared to join the circuit which was alive with home-based Cessna *Cranes*. On that particular day, and at that instant, I had two major problems. The *Stearman* was slower than the *Crane* by quite a margin and the faster aircraft tended to displace me from my landing position. Added to this, the awful spectre of my first uninstructed runway landing now presented itself, so between these two problems I accumulated more than an average stock of butterflies in the middle regions.

All appeared well and I had positioned myself in a good spot on the cross-wind leg. I turned into wind and in typical E.F.T.S. style commenced a glide approach dropping in steeply from about five hundred feet. I had by now more or less triumphed in my internal struggle with mind over matter and had practically conquered the runway complex. My airspeed was spot on – no drift, height about right, and I appeared all set for a good approach onto what appeared to be a very narrow landing ribbon so different to the many acres which we had to play with at Bowden. At the last

moment the controller at the end of the runway turned his Aldis lamp on me and frantically flashed a series of red dashes. Why was he doing this? There was no one above me, and no sign of a hostile *Crane* on either side. At such a stage in a landing run one is always very loath to break off and overshoot, however, in this instance discretion and wisdom prevailed and I opened up the Continental to its maximum revs and prepared to go round again. As I did I noticed a *Crane* sneaking in at ground level. I cursed him and the controller roundly, from the open cockpit, and started round again into the battle for position with twenty other aircraft on the circuit.

Ahead things looked clear, there was a vacant slot for me and I latched into it and made my way round the busy circuit clear of pursuing *Cranes*, and once more lined myself up with the narrow ribbon of runway. Rate of descent fine, airspeed correct, and nothing underneath (I hoped), all clear ahead – ah, the green light from my erstwhile enemy in the control wagon. From now on, like the young boy entering the dentist's office, there was no drawing back. The runway was the next hazard. The *Stearman* glided down with the slipstream singing on the struts and the faithful Continental plopping regularly as it idled on low revs. Over the boundary fence, across the rough grass, past the controller's caravan and now below me lay nothing but the strange, inhospitable and unconquered runway. My anxiety was heightened when my eyes caught sight of the deep ridges of snow along the edges of the runway, like the *Charybdis*, a hazard and a trap ready for the negligent and unwary. Rounded out, throttle right off and the aircraft settled evenly and gently onto the runway. The faithful *Stearman* ran straight ahead under full control with no tendency to swing or yaw. The butterflies vanished



The author stands on a Harvard at No. 37 SFTS, Calgary.

from my innards, the perspiration evaporated from the palms of my hands, and I relaxed.

With a feeling of great relief, pride, and personal achievement I taxied like a veteran to the visiting area, swung the aircraft around, and parked it with a flourish and a burst of engine. A visiting aircraft, no matter what its make or vintage, always attracts attention. As I jumped down from the cockpit an interested crowd of trainees and ground crew were moving towards the *Stearman*. With my helmet on the back of my head, maps and flight plan sticking out of my flying boots, I sauntered casually and nonchalantly past them to the control tower, leaving with them I hoped, the impression that I generally flew *Spitfires* but occasionally condescended to juggle with a *Stearman*!

This incident and others like it were some of the great milestones in a pilot's life – milestones or outstanding incidents that are often recalled by places, situations or names. Each time I visit Lincoln Park I think of that occasion twenty-two years ago and my recollections of that first runway landing and all its implications are still as clear now as they were on that crisp and exciting winter afternoon.

When Lincoln Park closed, the hangars began to disappear, and the sprawling city of Calgary moved in. From a selfish point of view this author regrets the change for it is obliterating physically, but fortunately not mentally, that runway which was a turning point in his brief but unforgettable flying career. ©

FATHER AND SON ON PARADE

RCAF Station Clinton holds a number of parades each year as graduates of various schools on that unit finish their respective courses. Parades are also held when personnel are awarded a CD (Canadian Forces' Decoration). But a parade, held recently at Clinton, had an interesting twist as both a father and son were honoured at the same ceremony.

The father, Sgt. L. Ludlow was presented a CD by his son AC1 D. Ludlow after which Sgt. Ludlow presented his son with a graduation diploma from Clinton's radar and communication school. On the sidelines, watching the ceremony with pride, were the rest of the Ludlow family, Mrs. Ludlow and her other son Paul, age seven.



AC1 D. Ludlow pins the Canadian Forces Decoration on his father, Sgt. L. Ludlow.



AC1 D. Ludlow receives his graduating diploma from his father, Sgt. L. Ludlow.

BERTRAND STEWARD ESSAY WINNER

Captain F. J. Norman, of the Directorate of Land Operational Requirements, has been declared the winner of the Bertrand Steward essay competition for 1964. Captain Norman is only the second Canadian to win this annual competition since it was started in 1923. The other Canadian winner was Lt.-Gen. E. L. M. Burns, who won the award in 1932 and again in 1936.

The Bertrand Steward Essay Award, named after Captain B. Steward who was killed in action in

World War I, is given for the "best article, paper or lecture on some military subject, the study or discussion of which will tend to increase the efficiency of the British Army as a fighting force". The subject which Captain Norman wrote on was the effect of the improvement of night vision devices on battlefield operation.

The right to compete in this competition is limited to British subjects who have served or who are serving as officers or in other ranks or rat-

ings of Her Majesty's Forces. The closing date for the 1965 competition will be 22 June '65. For further information contact:

The Editor,
The Army Quarterly and
Defence Journal,
43 Cardington St.,
London, N.W. 1,
England

DO-IT-YOURSELF AIRCRAFT

By CORPORAL C. ROUSSEAU

A PRIVATELY-OWNED aircraft is generally thought of as being a luxury item well out of reach of the average individual. An increasing number of air force personnel are overcoming this financial obstacle by their own efforts: "do-it-yourself" aircraft.

At various RCAF units across Canada station hobby shops or PMQ basements have taken on the appearance of miniature aircraft factories as enthusiasts bend to the task of making their own aeroplanes. In Ottawa, for instance, G/C W. N. Hoye, of the Directorate of Materiel Maintenance, has almost completed the task of building a two-seater amphibian. Sergeant G. Hein and I, both of the Graphic Arts Section, are in the preliminary stages of constructing a single-seat open cockpit aircraft.

In addition to the tangible reward of saving money, home builders also receive the intangible, but incomparable, bonus of flying an aircraft they produced by their own hands. Building a homemade aircraft is a long and, by necessity, an exacting process. The first step is to decide on the type of aircraft you wish to build and for most enthusiasts, the simplest possible aircraft is the best one to start with.

Working drawings or blueprints range from \$10 to well over \$100 varying with the complexity of the aircraft. Many different types of plans are available to the home builders: single-seaters, two-place, open cockpit, closed cabins, low-wing with either conventional or delta wings, mid-wing or high-wing monoplanes, landplanes, floatplanes

or flying boats. The airframe itself can cost from \$400 to approximately \$2,000 while a new engine for a homebuilt runs as high as \$2,000.

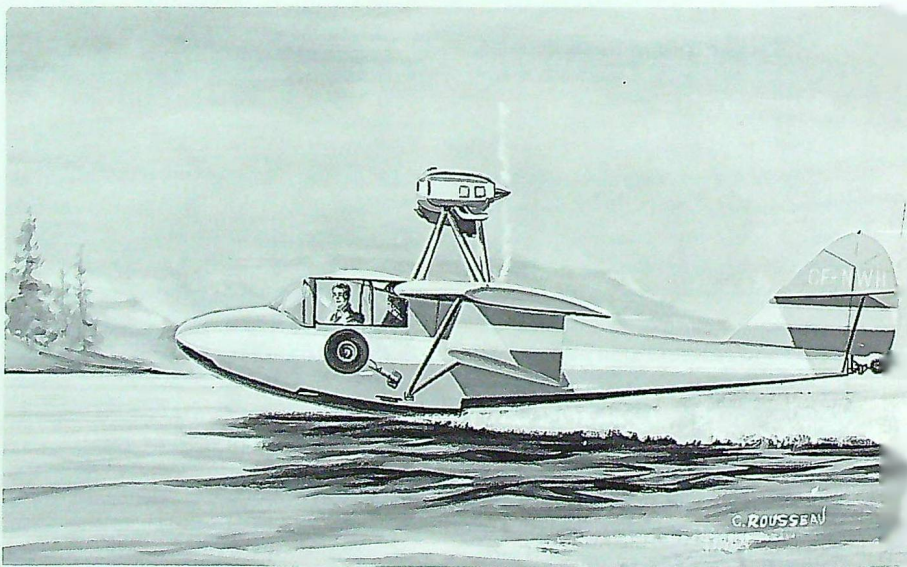
The price can vary, however, since some homebuilders incorporate standard parts into their custom-made aircraft or else construct a relatively simple aircraft, then equip it with a wealth of flight instruments, navigation gear and radio equipment. But, in spite of these extras, the final price is still less than it would be for an off-the-shelf aeroplane with a similar amount of additional equipment.

Having decided on the type of aircraft he wants to build and purchasing the plans for it, the enthusiast then is faced with the problem of gathering material. Material procurement is a real problem, since

building full-size aircraft hardly ranks with model building or stamp collecting as a hobby. But, with perseverance, sources of supply can be found either locally or in some of the larger Canadian cities.

Homemade aircraft are generally framed with all-welded tubular steel, then covered with fabric or else constructed with wood throughout. Those wishing to build with wood use either sitka spruce or special plywood because of the favourable strength-to-weight ratio. However, it is not always possible to obtain certified sitka spruce from lumber companies because they have so little demand for it they seldom keep it in stock. A satisfactory substitute can sometimes be found in marine-grade spruce, providing the grain is exceptionally straight thus assuring that

This illustration, by ROUNDEL artist Cpl. C. Rousseau, depicts the amphibian aircraft built by G/C W. N. Hoye.



the wood will not break under strain. But, in certain critical parts of the fuselage and wing only aircraft-certified wood should be used.

The wood which bears these rubber-stamped words are but one of the many ways in which the Department of Transport ensures that the homebuilt aircraft will be as safe as a normal factory product. The DOT also carries out various inspections as the homemade aircraft progresses. When major components (such as the fuselage, wings and empennage) are finished, they must be inspected and approved by a DOT inspector before they can be covered with fabric or plywood. When the construction phase is completed the finished aircraft is given its first flight. This provides the homebuilder an unparalleled thrill as he takes his aircraft aloft for the first time.

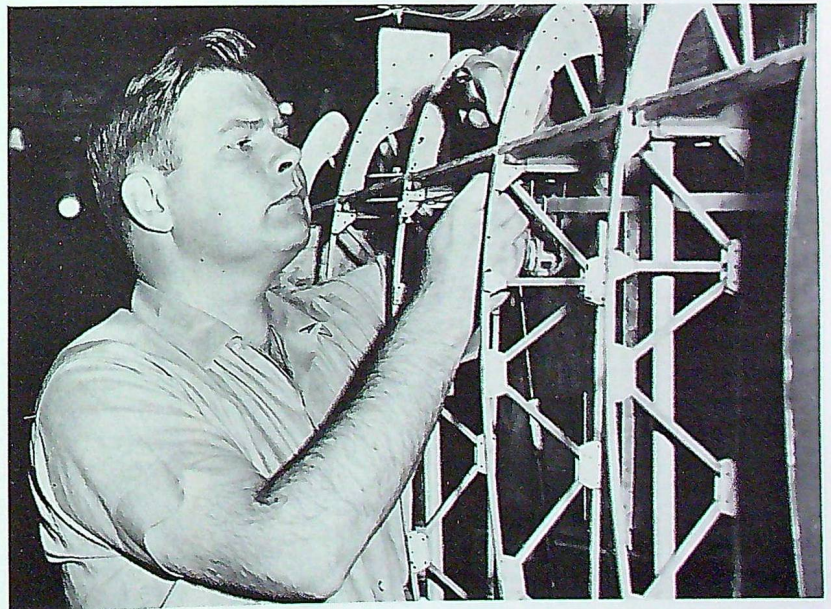
Generally, there are no major problems encountered on this maiden flight, particularly if the aircraft was built to a proven set of plans. But, if the homebuilder has created an aircraft of his own design, there may be stability problems which will have to be corrected during the test phase. When the test flights are completed the homebuilt aircraft is certified by the DOT. Unlike factory-produced aircraft, which are given certificates of airworthiness, homemade aircraft are issued flight permits which must be renewed each year. This piece of paper means that the homebuilt aircraft has been found satisfactory and the proud owner can look forward to years of inexpensive flying in his own machine.

After spending hundreds of dollars and working thousands of man-hours on his project over a period of two or three years, his dreams have been realized. The do-it-yourself aircraft builder has learned what those who have gone before him already know – you can run out of money, you can run out of material, you can run out of patience, but you can't run out of enthusiasm. ©

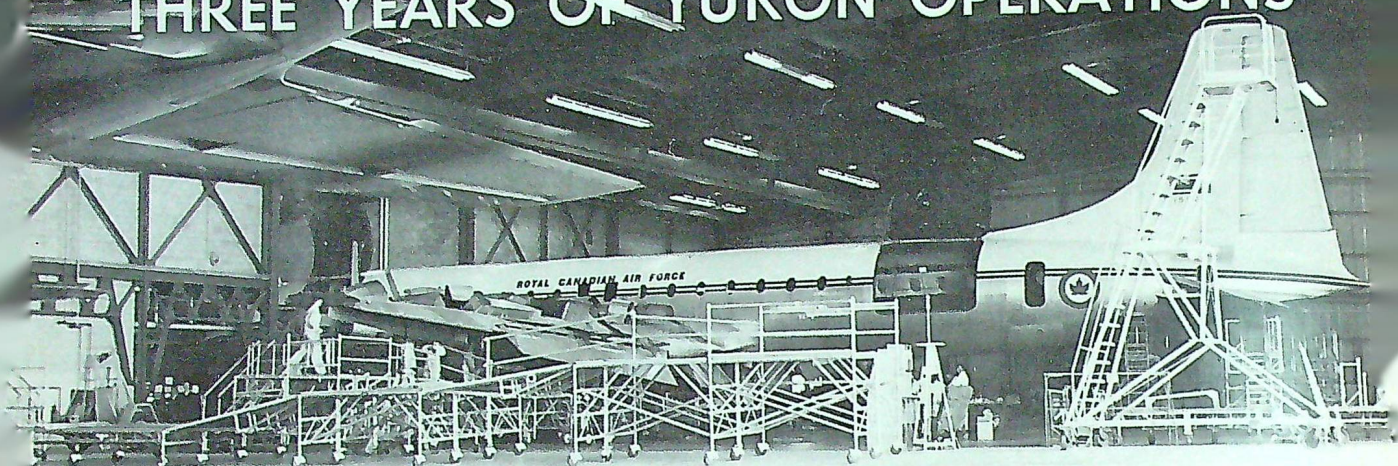


Cpl. Rousseau and Sgt. G. Hein study the blueprints of the open cockpit aircraft which they plan to build.

F/L R. P. Larnon puts the finishing touches on the wing assembly of his homebuilt aircraft.



THREE YEARS OF YUKON OPERATIONS



Under the glare of fluorescent lights a "snag crew" works on a Yukon.

THE *Yukon*, largest aircraft ever built in Canada and the flagship of Air Transport Command, has now entered its fourth year of operations with the RCAF. During their three years of service, *Yukons* have established an impressive record for hours flown, passengers carried and cargo-miles recorded. Much of the credit for this success goes to the groundcrew personnel whose task it is to keep the *Yukons* flying.

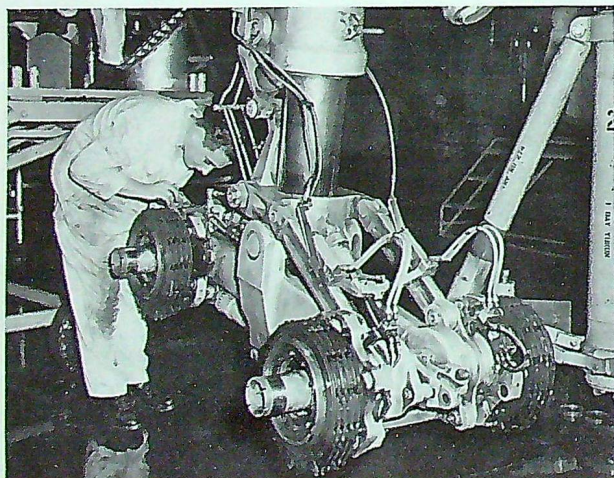
At RCAF Stn. Trenton, where

the *Yukons* are based, there are 1200 maintenance personnel working on shifts around-the-clock to keep ATC's different types of aircraft serviceable. In addition, there is a detachment at Marville, France, which handles minor maintenance on *Yukons* and prepares them for their long overwater flights back to Canada or onward to other foreign destinations.

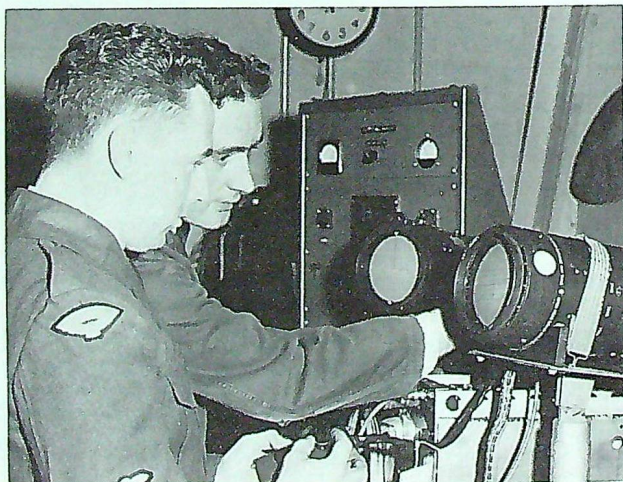
Servicing personnel work a seven-day week and most of their work is

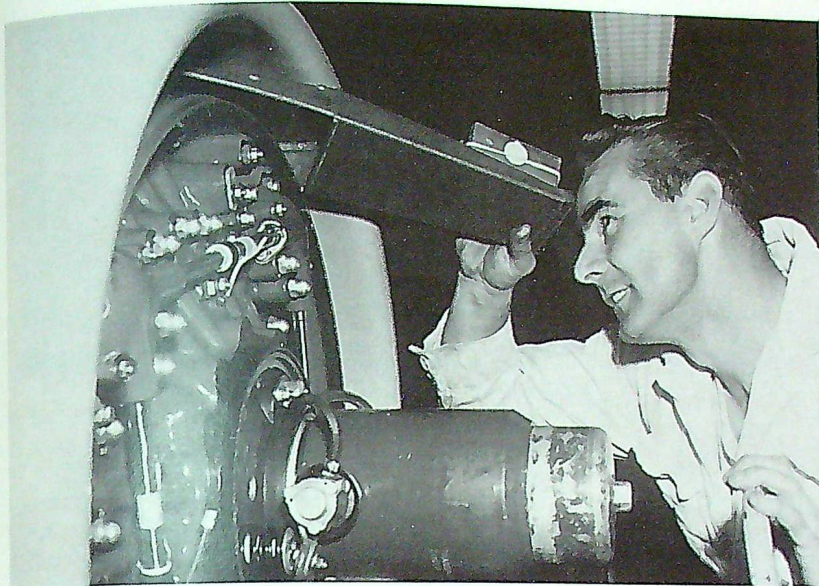
done after midnight, because of the flying schedules of the *Yukon*. The flights usually depart in the morning and return about midnight. The servicing crews work a split shift and recognized holidays are nothing but dates on the calendar to them. Aircraft repair "snag crews" are available 16 hours a day, seven days a week. If an aircraft must be test-flown after midnight, snag crews work until the aircraft is ready. ☉

Brake hydraulic lines and brake discs on the main wheel bogies are carefully checked.

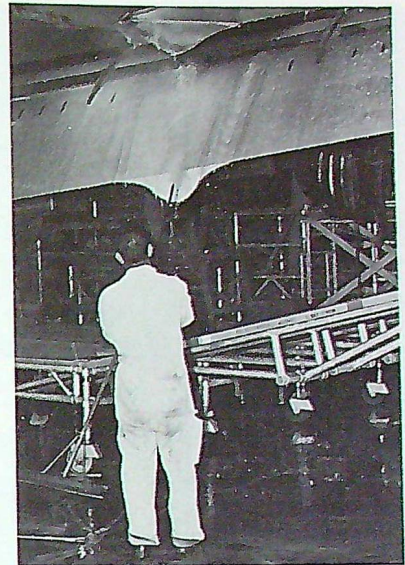


The many electronic devices, ranging from navigation equipment to the cabin PA system, receive close attention.





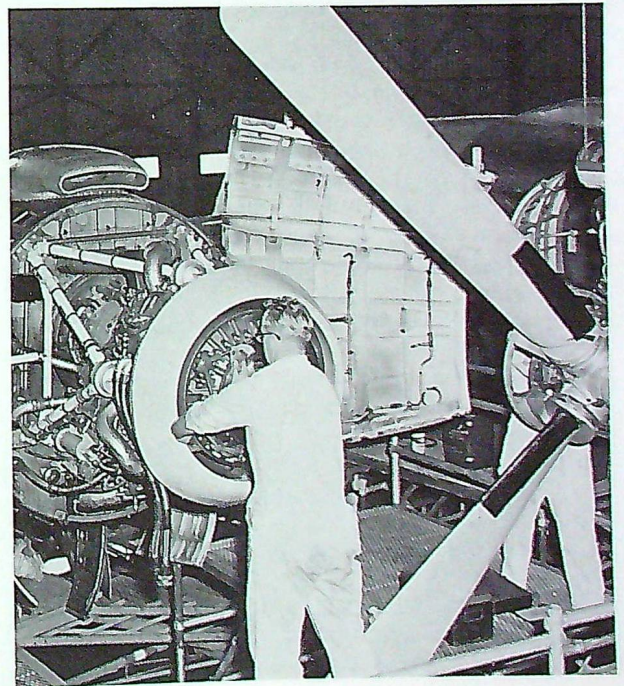
An intrascope is used to determine the condition of stator blades on the Tyne turbo-prop engine.

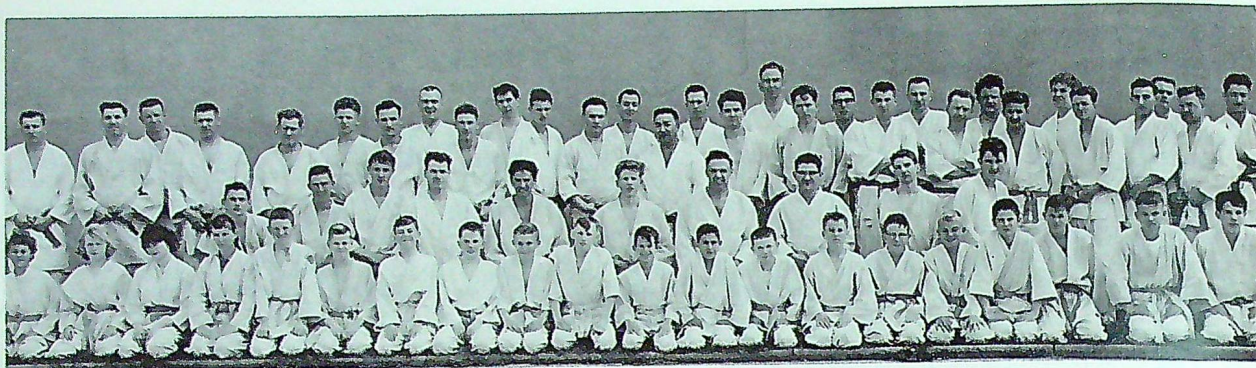


Washing a Yukon, with a solution of Varsol and aircraft liquid soap, takes four men six hours. The Yukons are washed at least once every two weeks.

F/O S. Saunders and FS J. W. Bryson check parts requested by the aircraft maintenance section at RCAF Stn. Trenton.

The propellers are carefully removed and the propeller shafts closely examined.





Cpl. M. Takahashi with some members of No. 1 Air Division Judo clubs.

JUDO IN THE RCAF

By FLYING OFFICER R. B. de LOTBINIERE-HARWOOD

“**A**MAZE your friends, clobber your enemies. Learn the art of judo in three easy lessons for only \$3.95.” This is the type of advertising that meets the eyes of readers of cheap periodicals. What is this so-called secret that enables 98-pound girls to defeat 200-pound men?

The technical theory of judo is based on the laws of nature — gravitation and leverage. It is only logical that when force is matched with force the stronger of the two will win. Let us assume then that strength is measured in units and two adversaries, one of 10 units of strength and the other of seven units, oppose one another. The stronger of the two can be defeated, however. As the stronger pushes the lesser retreats at the same rate, maintaining his balance. Now the larger man, through his own efforts has destroyed his balance and is momentarily weaker, therefore, easily defeated.

Judo, which is one of the fastest growing sports in the RCAF, was derived from the ancient and legendary science of jujitsu in 1882 by Dr. Kano, president of the Tokyo Uni-

versity of Education. Dr. Kano, who as a young man was of slight build, wished to find a way to defend himself against stronger men. He began to study jujitsu under several masters and through diligent practice became very proficient. Dr. Kano realized that jujitsu was a most effective way for training the body and the mind, therefore, by eliminating the dangerous techniques and stressing the mental and moral aspects of the sport, he formed Kodokan Judo — the gentle art.

Judo becomes a way of life in itself, to its devotees. The majority of people who study this sport do not wish to become champions; instead they stress perfection of character with the development of serenity and peace of mind. The character of a true judo man includes self-respect, self-control, patience, humility and reliability. No judo player will claim to have achieved the above results, however, although others can see the individual improve as training continues.

Judo, like most of our off-duty recreation programs, is approved by

CFHQ and paid for through non-public funds. The basic ingredients for a club consist of an instructor, a playing area free of obstacles, about 30 feet by 30 feet, a two inch covering of mat on a springy floor and, of course, interested players.

The usual training program begins with learning how to break one's fall correctly. This is one of the most important phases of learning as the proper method of hitting the mat will absorb over 90 per cent of the fall. Basic throws and groundwork are then taught, the latter consisting of immobilization, armlocks, and strangulations. Strict rules govern the effectiveness of the last two methods and children, for instance, are forbidden to employ them.

The ability of an individual is denoted by the colour of the belt that he wears. The beginner commences with the white belt and progresses to yellow, orange, green, blue, and brown. After three to five years of steady practise one is usually ready to receive the coveted black belt. Learning, however, does not stop here as there are ten degrees of

black belt. The first six degrees are normally awarded for competitive ability and the rest are presented for work done to further the art of judo. Honorary coloured and black belt degrees are also presented to deserving people who have put a lot of time and effort into judo, although they do not play the sport.

Judo for children is becoming more popular as it gives them the opportunity to prove their skills in competition without the danger of permanent injury inherent in other contact sports such as boxing and football. This is very evident when one goes to Japan and sees hundreds of older men in their fifties, who have been playing judo since their childhood, working out regularly with young men and frequently winning.

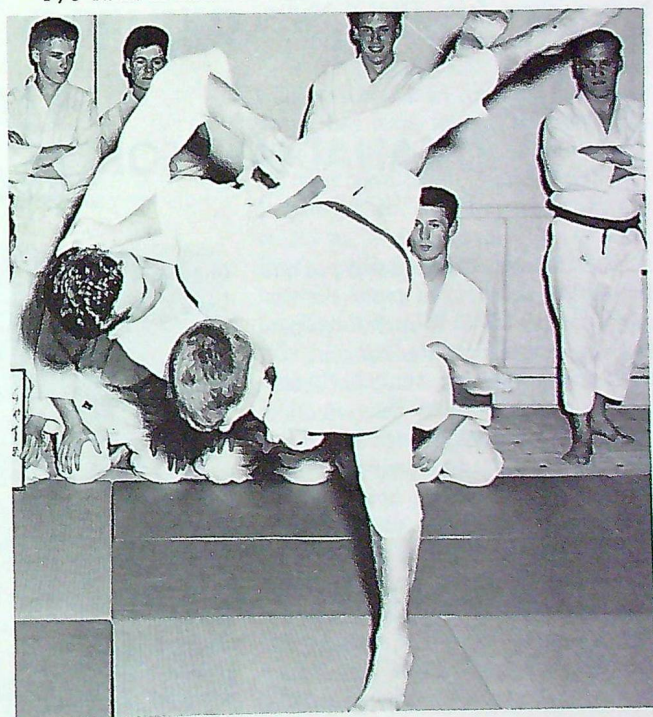
Judo clubs are very active at most of our major air stations from Comox to Greenwood. The area of best RCAF judo is concentrated at No. 1 Air Division where Cpl. Masso Takahashi, 4th degree black belt, the highest ranking belt in the armed services, has been instrumental in forming a strong association. Cpl. Takahashi recently took leave and studied for six weeks at the mecca of judo, in Tokyo. Upon his return he conducted several judo instructor's clinics in Canada at Stns. Trenton and Winnipeg to help improve and standardize RCAF judo.

Judo provides an easy opportunity for an airman to exercise with friends, working off tension and anxiety to find relaxation physically and mentally. And the ancient sport of judo was suddenly brought into prominence, across this country last year, when a Canadian by the name of Doug Rogers won a silver medal for Canada at the Olympics by placing second in the judo heavyweight class. It is no wonder then why this sport is gaining so much in popularity amongst people of all ages. ©



Cpl. R. Jones, from No. 4 Wing, "upsets" Cpl. R. Metz to win the AOC's trophy.

F/O R. B. de Lotbiniere-Harwood throws Cpl. C. Johnson.



NEW ICE ARENA AT COMOX

At RCAF Stn. Comox on 30 Jan. the station's commanding officer, G/C E. G. Ireland, DFC, opened Glacier Gardens. The new ice arena was financed entirely by non-public funds, with the exception of some machinery for the ice plant from RCAF surplus stocks.

The arena is a boon to local civilians as well as to servicemen and their families, since the 100 x 84 ft. ice surface has been made available to all citizens of Comox valley. After the opening ceremonies, the RCAF Comox Totems won a 4-3 hockey game from HMCS Naden, last year's tri-service champions.



Family fun in Comox's new Glacier Gardens.

CANADIAN FORCES BIATHLON TEAM

The Canadian Forces will provide a biathlon ski team to represent Canada in the 1968 Winter Olympics to be held at Grenoble, France.

The Canadian Amateur Ski Association recommended the selection of armed forces skiers for this team because training programs in winter warfare, rifle shooting and physical fitness activities of the military provide a ready-made base for the development of biathlon competitors. Considered one of the most difficult of all winter Olympic events, the biathlon had its origin in cross-country ski races of European ar-

mies and consists of 20 kilometers (12½ miles) of skiing over difficult terrain during which the competitors must shoot at small targets flanking the course at varying distances up to 250 meters.

Because the biathlon demands great physical strength, high altitude endurance, and above-average skiing and marksmanship ability all potential candidates undergo physiological, psychological and advanced medical tests before the final selection of members for the six-man team is made. A preliminary screening has already been carried out and

18 prospective team members gathered at Camp Valcartier in January for further training and selection.

The team, which will be coached by Niilo Itkonen of Vancouver, former coach of the Finnish team, will participate in gruelling training programs to prepare them for the 1968 Winter Olympics while also performing their regular military duties. The training and experience they receive will be valuable to the Armed Forces in setting up future winter warfare training programs.

SUBTERRANEAN FISH STORY

RCAF messes are almost as well known for their decor as they are for their culinary arts. Case in point: the North Bay SAGE mess, which is located hundreds of feet underground, now features a tropical fish tank in the dining room.

Two NCOs at the SAGE site, Sgt. J. E. Price and Cpl. K. P. St. George, felt that life underground, particularly at meal times, would be enhanced by a display of something typical of life close to the surface of the earth. In searching for a solution they spoke with Mr. Moe Meir, the ration truck driver, who owns a small tropical fish store in North Bay. He suggested the fish and provided the airmen with invaluable advice on the selection, care and feeding of their charges.

Some of the fish in the tank include Anostomous, Platys, Etrance, Mollies, Swordtails, Zebras, Catfish, Geramis and, of course, the ever popular Guppies. The tank is equipped with an air intake to keep a sufficient amount of oxygen in the water, a heater and marine growth to provide a stable habitat for the fish. It also requires a vacuum cleaner, filters, chlorine neutralizer and bacterial compounds to ensure that the fish remain healthy and contented. The care and feeding of these fish has become quite a hobby and after all, fish are food so in an emergency — well, who knows? ©



Sgt. J. E. Price feeds the fishes at Northern NORAD Region while the mess hall staff looks on (l. to r.): LAC P. Hortley, Cpl. K. St. George, and LACs J. Taylor, H. Berthelette and T. Morrison.

RCAF OFFICER IN HALL OF FAME



Wing Commander A. C. Golab, who was active in football for many years, has been named to the Canadian Football Hall of Fame. Only 27 men have been so honoured.

Known to the Canadian sports world as Tony Golab, "the Golden Boy", he has been associated with football since 1935 when he played for Kennedy Collegiate in Windsor. Wing Commander Golab played with the Ottawa Rough Riders from 1939 to 1941 and again from 1945 to 1950 following World War II.

He later had coaching jobs with the Hamilton Panthers and the Royal Military College. During his football career, W/C Golab was named to several All-Star teams; in 1941 he was selected as Canada's outstanding athlete. W/C Golab is now stationed at 25th NORAD Region McChord, Washington.



RCAF ASSOCIATION

This section of ROUNDEL is prepared by Association Headquarters, 424 Metcalfe St., Ottawa, Ontario.

National Executive Council and Advisory Committee Meeting

On January 22nd and 23rd the members of the National Executive Council and the Advisory Committee gathered in Ottawa for their annual meeting. Members, some of whom had travelled from as far west as Vancouver and as far east as Halifax, were welcomed by the National President, Mr. George Penfold upon arrival at the Chateau Laurier. He had a special word of welcome for Advisory Committee members who were attending for the first time.

As only a day and a half had been set aside for the occasion the delegates got down to work early on Friday morning in an effort to cover the full agenda. The National President started the proceedings by reporting on events that had occurred since the Charlottetown Convention. Some of the many subjects he cov-

ered were the membership campaign, the formation of two new Wings, the acquisition of new Wing Quarters and the continuing use of the Administrative Sub-committee as a Defence Committee. While speaking of National Defence he pointed out that the Association's policy was explicitly stated in a recent bulletin sent out from Ottawa.

Here are the highlights from among the matters discussed and decided upon:

FINANCE: Wings are to be urged to send the special assessment decided upon in Charlottetown to National as soon as possible.

MEMBERSHIP: In an attempt to encourage the formation on new Wings it was decided to allow new members of new Wings formed from February 1st to April 30th each year to pay half the annual National dues.

RCAF ENSIGN: In view of the fact that an order has been issued to the Armed Forces to discontinue the use of their individual ensigns when the new Canadian flag is officially flown, the National Executive sent a telegram to the Minister of National Defence suggesting that the RCAF Ensign be retained, but that the Union Jack in it be replaced by the new Canadian flag.

CONVENTIONS: Edmonton was chosen as the site of the 1966 Convention.

PROGRAM COMMITTEE: A new committee, within the National Council, was set up to devise and promulgate specimen Wing Programs as an aid to new Wings and as a guide to all Wings. The committee will be headed by Miss Beth Rowand of Edmonton.

The National President, on behalf of all members of the Association, sent the following cable to Lady Churchill upon learning of Sir Winston's death.

January 25, 1965

THE MEMBERS OF THE ROYAL CANADIAN AIR FORCE ASSOCIATION JOIN WITH ME IN OFFERING TO YOU AND YOUR FAMILY OUR HEARTFELT SYMPATHY AND UNDERSTANDING. THE STRENGTH OF CHARACTER AND THE UNDAUNTED DEVOTION WHICH GUIDED SIR WINSTON WILL BE REMEMBERED WITH GRATITUDE AND HONOUR AS LONG AS HUMANITY VALUES ALL THAT IS GOOD AND FINE AND TRUE.

GEORGE E. PENFOLD, PRESIDENT
ROYAL CANADIAN AIR FORCE ASSOCIATION

The National President officially welcomed Advisory Committee delegates to the meeting and briefed them on the Association. A joint discussion followed, during which members of the Advisory Committee made a number of interesting suggestions. (The Advisory Committee was formed last year as part of the National Executive Council to act as independent advisers to the President and the Council members.

Delegates enjoyed a most interesting talk from Air Marshal Annis, Chief of Logistics and Engineering Development at CFHQ, on "Integration and its Effect on the RCAF."

On the Friday night delegates attended a mess dinner at RCAF Stn. Uplands at which the Honourable Paul Hellyer, Minister of National Defence, was guest speaker.



At January's RCAF "summit meeting" in Ottawa: Front row (l. to r.): Mr. Roy Begg, A/M Hugh Campbell, Mr. George Penfold, A/M W. A. Curtis, Mr. Gordon McGregor. 2nd row: George Sellers, Mr. P. F. Connell, G/C L. N. Baldock, Mr. R. W. Ganong. 3rd row: Mr. Jack Dinan, Miss Elizabeth Rowand, Miss Catherine Fortune, Mr. George E. Ault. 4th row: Mr. Stanley Wooten, Mr. Allan Craig, Mr. Herbert Flook, Mr. Jack McDonald. Back row: Mr. A. T. Goodwin, F/L M. V. Robey, Mr. Leon Schedlin, Mr. Frank Connolly, Mr. Thomas Farmer. Not present: Mr. V. P. Cronyn, Mr. H. E. Langford, Mr. Arthur Smith, Mr. H. M. Bell, Mr. D. C. Gillies.

NEW RCAF ASSOCIATION WINGS IN ONTARIO

SARNIA: After a lapse of some years a determined effort to reactivate No. 403 (Sarnia) Wing has met with considerable success. Under the energetic leadership of Mr. John Miles, the Wing now has more than fifty members.

No. 403 (Sarnia) Wing will accept its new charter from the National President on January 30th.

ST. THOMAS: Another Wing that has started again under new auspices is No. 429 (St. Thomas). Mr. Phillips is the recently elected President.

RCAF REUNION ST. THOMAS, ONT. JULY 1 - 4, 1965

No. 429 St. Thomas Wing of the Association is planning a reunion of all Air Force personnel who served at No. 1 Technical Training School, No. 4 Bombing Gunnery School Fingal and No. 14 Service Flying Training School Aylmer, on July 1st - 4th, 1965.

A very warm invitation is extended those 75,000 airmen who were stationed at these units during 1940-1945.

A complete program is being planned.

For further information write: Mr. Rees Edwards, c/o 429 Wing RCAF Association, 24-26 John St., St. Thomas, Ont.

ANNUAL GROUP MEETINGS

It has been decided that the Annual Meetings of Groups will be held in the following cities on the dates indicated:

Atlantic	Saint John, N.B.	May 21-22
Quebec	Sherbrooke, P.Q.	May 8
Ontario	Kingston, Ont.	May 21-22
Manitoba	Winnipeg, Man.	May 21-22
Saskatchewan	Moose Jaw	May 1
Alberta	Edmonton, Alta	May 15

Letters to the Editor

AIRCRAFT ALBUM REQUEST

Dear Sir:

I have lived away from Canada for the past 12 years in South America and U.S.A. and I appreciate your magazine very much as it keeps me in contact with the RCAF.

During the war I was a pilot in a Bristol Beaufort Sqn., attached to the RAF, with a number of other Canadians. This was in 1941 and 1942. I would appreciate your including a picture and write up of a Beaufort, long obsolete, in the Aircraft Album section of your magazine. I do not think there were any Canadian Beaufort squadrons, but many Canadians flew them during their day.

Thank you very much.

J. B. D. Wilson,
13765 S.W. 80 Ave.,
Miami, Florida, U.S.A. 33158.

(The Beaufort is this month's Aircraft Album subject — Editor.)

QUEBEC SLIGHTED

Dear Sir:

With reference to "The Gift of Life" (Oct. '64) which read in part, "The service became nationwide in 1961 when the 10th province, Quebec, entered the scheme".

In the fall of 1954, all the personnel of RCAF Stn. St Jean, Province of Quebec, were called to donate blood through the Red Cross. Well, if that was not free blood donation service, what was that service?

Cpl. G. R. Ouellet,
RCAF Stn. Namao,
Lancaster Park, Alta.

(Cpl. Ouellet is quite correct, it was the city of Quebec not the province of Quebec that came into the scheme in 1961. Quebec province has been doing its best for the Red Cross for many years.—Editor.)

CAPTION ERROR

Dear Sir:

I would like to point out that the flight steward shaking hands with Her Majesty the Queen in the picture in the November '64 ROUNDEL is not Cpl. L. H. Gilks, but the undersigned.

I might add that it was the fourth time for me to have the privilege and honour to be a crew member on a flight with Her Majesty since 1951.

FS J. O. G. Mignault,
NCO i/c Flight Stewards,
No. 412 (T) Sqn.,
RCAF Station, Uplands.

BIRDS BEATEN

Dear Sir:

Having read the item "We, Too, Have Bird Troubles" (Dec. '64) I would like to tell you about my experience with birds.

At a power transformer station, over which I have operation and maintenance jurisdiction, we have had considerable concern caused by nesting starlings and robins. For some reason, known only unto themselves, they prefer to build nests in areas which are most vulnerable to destruction by short circuit. Upon examination of nests removed from these areas I found pieces of small gauge copper wire sufficiently long to create a short circuit either from phase to phase bus bars or from phase bus bar to the grounded steel structure; this could cause costly and embarrassing power failures.

The entire operating staff was aware of this possibility but at a loss to suggest a means to prevent homebuilding in this dangerous area. One day during nesting period I had a maintenance crew working on the location, it became necessary for me to make vocal contact with my crew foreman. I decided to use the transistorized megaphone but I accidentally turned the volume too high. This produced a very high pitched squeal so I turned the volume down to the proper level and made contact with my foreman. The shift operator remarked "you sure scared the birds". Upon viewing the area I found this to be true. Believing the loud noise had frightened the birds away, I left instructions to be passed on to the operators coming on shift to repeat the performance when the birds returned. The next operator raised the volume and produced a very loud squeal which is in the area of a musical note "HighC" above the staff of the treble clef. To his and my delight the birds left for a period of approximately 24 hours. We have continued this practice for the past two years and found it to be effective; and are continuing the practice.

I respectfully submit the foregoing for your information and possible interest.

Stanley B. McKnight,
Stations Superintendent,
Kitchener Public Utilities Co.,
Kitchener, Ont.

GENESIS GUIDEPOSTS

Dear Sir:

Three cheers and a hearty "Amen" to retired A/V/M who ever he may be. ("Genesis Guideposts," Nov. '64.)

"Carpe diem".

Harry B.
Comox, B.C.

"One of Mawdesley's Boys."

NO. 436 WAS THERE TOO

Dear Sir:

F/L Coughlin has written an interesting article on the RCAF participation in the UN "Peace-Keeping" role (ROUNDEL Dec. '64), and I appreciate that space limitations preclude making specific mention of people and places. However, reference is made to the air transport support given to the UNEF in 1956 and specifically to No. 435 Sqn. I must take exception to the lack of credit given to other units directly involved.

In the article, it states that No. 435 Sqn. departed Namao, flew to Toronto eastbound for Naples, Italy. In actual fact, No. 436 Sqn. supplied half the aircraft and crews that comprised the 12 C-119s that departed Downsview, and in fact the first aircraft to depart eastbound was from 436 Sqn. In addition, while the operation was being mounted in Canada, a 436 Sqn. crew, on operations in the UK, was diverted to Naples; consequently the first C-119 to arrive at Capodichino airport was from No. 436 Sqn.

In closing I might make a correction to a statement concerning No. 115 Air Transport Unit replacing No. 114 Air Transport Unit. This is incorrect, for No. 114 ATU based at Capodichino remained in being and continued to support No. 115 ATU based at Abu Sueir. Further, it was the C-119s of 114 ATU that moved 115 ATU from Abu Sueir to El Arish.

F/L D. A. Hache,
Officer Selection Unit,
RCAF Stn. Centralia, Ont.

(Space limitations indeed restricted naming all of the units which contributed to the success of the UNEF. However, it is quite true that No. 436 Sqn. shared the work done by No. 435 Sqn. Also, No. 114 ATU did remain in business until 31 Jan. '58 — Editor.)

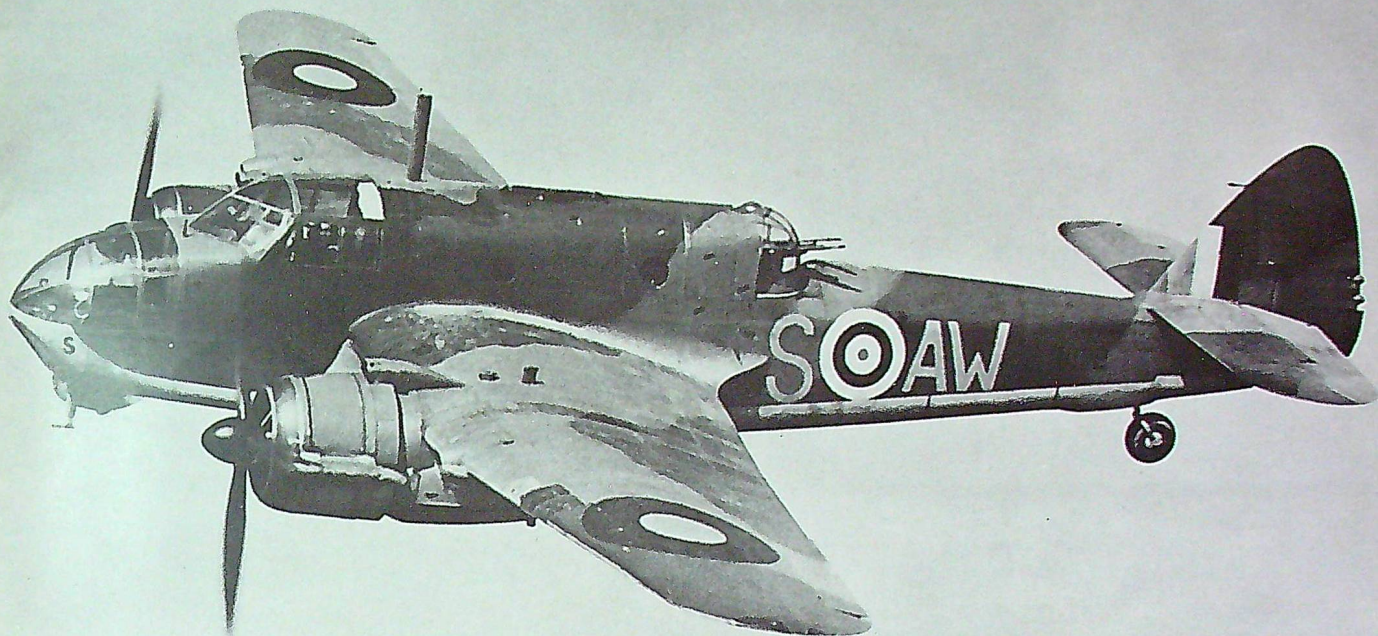
IDENTIFICATION NOT INTERROGATION

Dear Sir:

I read with great interest in the Dec. '64 ROUNDEL the article, "Evolution of RCAF Telecommunications". However, in the paragraphs on airborne equipment the meaning of a particular piece of equipment seems to be in error. I always thought that IFF stood for Identification, Friend or Foe. Am I not correct?

Cpl. J. A. Riley,
RCAF Station,
Summerside.

(Cpl. Riley is correct. The I stands for identification, not interrogation—Editor.)



AIRCRAFT ALBUM:

Bristol Beaufort

The *Beaufort* was first flown in October 1938 and was in action by December 1939 with RAF Coastal Command. Its main function was torpedo bombing, but it was also used in reconnaissance and mine-laying. *Beauforts* did good work attacking enemy shipping in the North Sea, the English Channel, and the Mediterranean, and took part in several strikes on major German warships. The first Coastal Command VC was awarded to F/O K. Campbell (RAF), who was the pilot of a *Beaufort* which attacked the battle cruiser *Gneisenau* in April 1941. Operating from Malta, Gibraltar, and North African bases, *Beauforts* did much to deprive the enemy forces in Africa of valuable supplies, notably gasoline.

No. 415 Squadron (RCAF) flew *Beauforts* for a brief period, and in Canada No. 149 Squadron flew them from Patricia Bay. Many more were flown by Canadians in the RAF.

Powered by two Bristol Taurus radials of 1,130 h.p., the *Beaufort* had a top speed of 265 m.p.h. at 6,000 feet. It was armed with four .303 cal. machine guns and carried either 1,500 pounds of bombs or one 18 inch torpedo of 1,605 pounds. Wing span was 57 feet 2 inches, length 41 feet 8 inches, and loaded weight was 17,000 lbs.

Roger Duhamel

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