

# ROUNDDEL

APRIL 1963  
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# ROUNDEL

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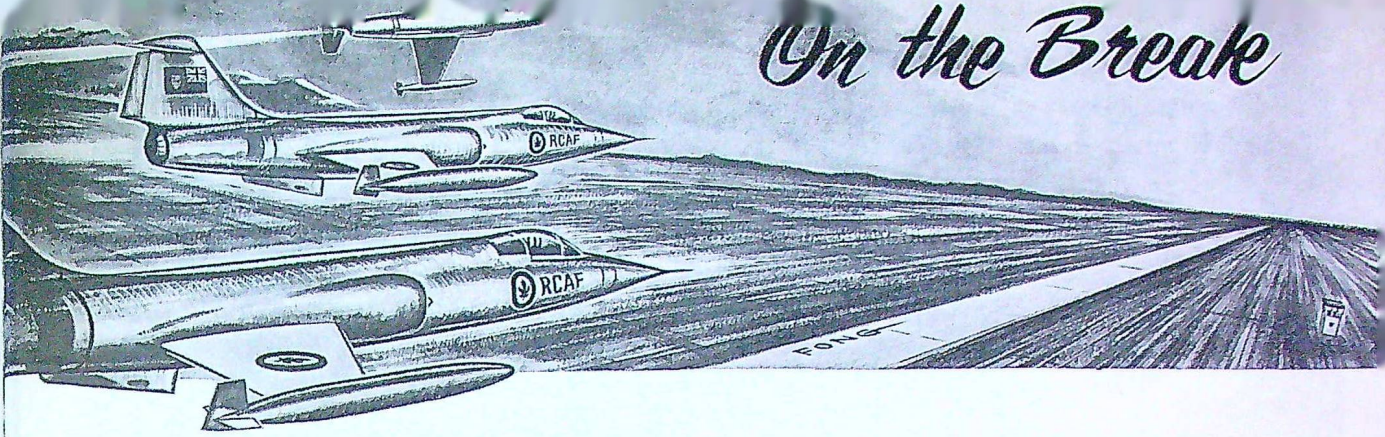
#### COVER CAPTION

A world record was established by the RCAF when CEPE accomplished the first successful zero-zero (zero altitude, zero speed) firing of the C-2 rocket sled. See page 2.

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# On the Break



S/L D. West



W/C G. Murray



F/O H. Halliday

**S**QUADRON Leader Don West, author of this month's cover story (page 2), in a sense is an air force pioneer. When the RCAF decided that all aircrew survival equipment must be tested by CEPE, a separate section was formed in that organization in 1961 and S/L West was selected as its commander. Since then his work has taken him from Cold Lake in the north to Los Angeles in the South. Next year S/L West and his crew of specialists will travel to Hollman AFB, New Mexico, to complete tests on the escape system of the RCAF's ab initio jet trainer, the *Tutor*.

**A**S of deadline time, only one post-war flight cadet has attained the rank of wing commander in the RCAF. He is W/C Gordon Murray, author of "Professional Education in the RCAF" (page 8). After graduating from the University of Saskatchewan in 1947, this rapidly-rising officer joined the air force and trained as a radio/navigator. On completion of two flying tours, he served on the staff of Royal Military College before proceeding to Air Force College. W/C Murray is now commanding officer of RCAF Stn. Gypsumville, one of the newest units on the Pinetree Line.

**D**URING World War II many RCAF formations overseas did their bit towards final victory. Of these components No. 6 Bomber Group was the largest and by far the best known. Now, some 20 years later, the memory of its deeds and the

record of its achievements have dimmed with passing time — perhaps even in the minds of those who were members of its squadrons.

The author of the nostalgic article beginning on page 16 was only three years old when the story he relates began. Flying Officer Hugh Halliday, now a member of the air historical section, joined the RCAF in July 1961 upon graduation from the University of Manitoba. Since then he has devoted himself to researching and writing about past RCAF accomplishments. Our popular monthly Aircraft Album (inside back cover) is one of his regular contributions.

**A** FEW weeks ago we were privileged to attend the annual banquet of the Air Cadet League of Canada and to learn something of its accomplishments during the past year. At that meeting Mr. Ivan Quinn of Vancouver took over the League presidency from Mr. Arthur Smith of Calgary.

This month 27,000 air cadets in 345 squadrons across Canada will participate in Air Cadet Week, to help publicize the activities of this RCAF-supported youth movement. *ROUNDEL'S* contribution to its information program begins on page 26.

*Art Paterson* S/L  
Editor

# TESTING THE STARFIGHTER ESCAPE SYSTEM

By SQUADRON LEADER D. R. WEST  
Central Experimental and Proving Establishment

LONG gone are the days when a pilot, making an emergency exit from a fighter aircraft, stepped out of his cockpit onto the wing, jumped into space clutching his parachute "D" ring, and counted off the required number of seconds before pulling the ripcord. Today sophisticated escape systems are incorporated in all military jets, but only after they have been thoroughly tested under the most realistic simulated conditions.

Postwar investigation confirmed the suspicion that the Germans had anticipated the problems of aircraft escape and had developed workable ejection seats during World War II. In fact, by the end of the war, the Germans had used ejection seats 60 times in emergencies; their scientists had a sound understanding of human tolerances and limits which varies but little from that conventionally accepted today. The first work of note to follow the German effort was done by the Martin-Baker Co. of England, supported by the Royal Aircraft Establishment, with test programs and analyses to produce design criteria. The result was the development and proving in 1945 (with a live subject) of a ballistic, telescoping catapult-powered ejection seat.

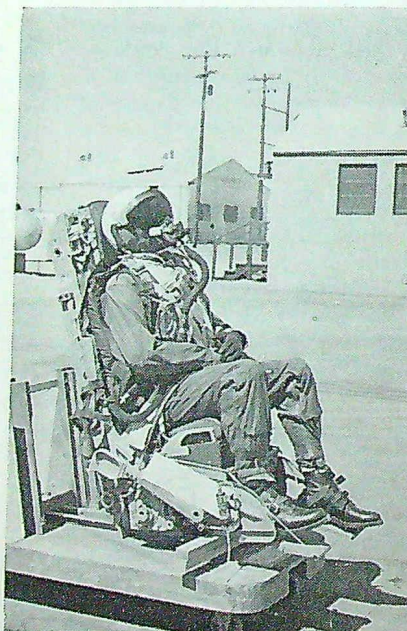
In 1955 the RCAF Central Experimental and Proving Establishment (CEPE) received a project to evaluate automatic devices for use in the T-33 escape system. Additional projects to test new escape

equipment led eventually to the establishment of a specialized section to deal with all aspects of escape and survival equipment. Experimental and developmental trials have been done by CEPE for the T-33, F-86 and CF-100 escape systems. Parachutes and ancillary equipment have been tested as well. The vital importance of aircrew survival in aircraft emergencies has caused great stress to be placed on policies concerning the introduction of new escape equipment to the

RCAF and it is now a requirement for all new systems to be tested under realistic environmental conditions.

With the advent of the *Super Starfighter* (CF-104), CEPE was instructed to study, evaluate and test the aircraft's escape system. Although the USAF has been flying the F-104 for several years, the data which they obtained and the experience which they acquired were not completely applicable to the Canadian version of this aircraft. There were two reasons for this: first, items of personal flying equipment in the RCAF such as helmets, parachutes and flying suits plus the connections for oxygen, anti-G suit and telecommunications differ from those used by the USAF. Secondly, the USAF escape system trials on the F-104 were not fully successful above 400 knots. The RCAF was interested in obtaining reliability in a higher speed range.

The dummy and seat wait for installation into the rocket sled.



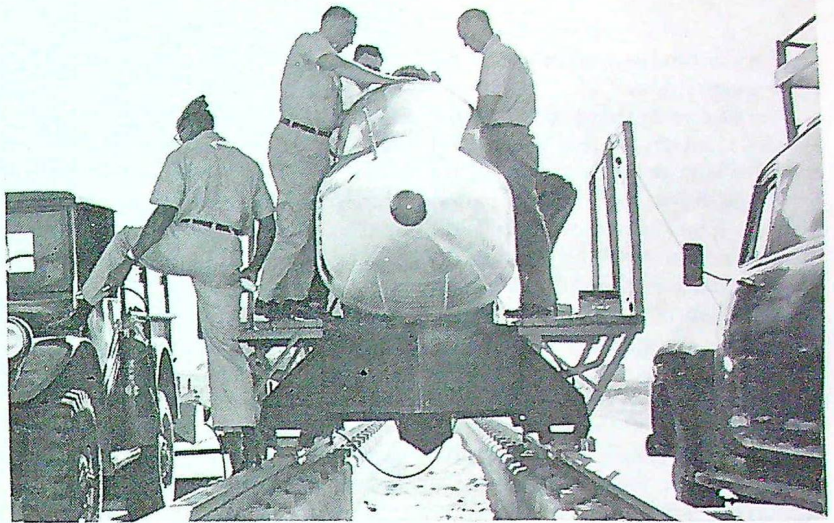
## TEST PROGRAM

The test program written to cover the trials on the escape system was developed in three phases. Phase One consisted of a study of previous work, logistics build-up and the development of a satisfactory ejection system for the seat. Phase Two was planned as a series of airborne ejections to be done at the Air Armament Evaluation Detachment's instrumented range at RCAF Station Cold Lake, using a T-33 aircraft as the ejection vehicle. Phase

One was done at RCAF Station Uplands and was completed in January 1962. Phase Two was completed that March. The ejection trials done in Phase Two pointed up several faults in the system and these had to be corrected before proceeding to Phase Three. Several modifications were developed, particularly to re-arrange the crewman's personal equipment connections and the system was then declared ready for high speed testing. As the T-33 vehicle was limited to a safe ejection speed of 400 knots indicated air speed (IAS), it was necessary to detach the operation to the USAF's Edwards Air Force Base in California where the existence of a high speed experimental track could provide the capability needed for near-supersonic ejections.

Edwards AFB lies 70 miles from Los Angeles, on the edge of the Mojave Desert. The excellent year-round flying weather and the existence of several dry lakes suitable for aircraft landings were probably the main reasons for the choice of this area for the USAF Flight Test Centre. It is, among other things, the home of the famous X-15 rocket plane. Located about 10 miles from the main base is the high speed experimental track.

This track is 20,000 feet long and consists of dual rolled crane rails set at a standard railroad gauge. The continuously-welded rails are positioned and supported on sleepers located at intervals of three feet and are restrained at each end by anchor blocks. Test vehicles are recovered on the track by a combination of inherent air drag and water braking. A unique water brake trough, incorporated in the last 6000 feet of the track, allows the use of vertical and horizontal momentum exchange and probe water brakes. The water trough, set between the rails, has the capability to control water level very precisely.



Two members of CEPE check the dummy's hook-up. (L. to r. on platform) S/L D. West and FS L. Steeves.

ly. The recovery of a sled travelling at high speeds is effected by a scoop under the vehicle which enters the water, gradually at first, and then with increasing projection and lifts the water discharging it forward or to the sides. It is this momentum exchange which can bring a heavy vehicle, travelling at very high speeds, to an amazingly quick stop. The water brake is also used to provide controlled deceleration forces at various 'g' levels for crash simulation.

The instrumentation system, whereby the data and event information are obtained, is the heart of any experimental project. The data are acquired by two major methods: telemetry and photography. Sled-borne radio frequency telemetering systems transmit signals from the vehicle to a receiving station where the message is displayed in the form of an oscillograph trace. This trace is then used to interpret the information gathered by the telemetering system. Telemetering is also the best means of obtaining data when the test item has separated from the sled and is travelling through the air. A continuous signal

is transmitted, for example, from a dummy crewman from the time it leaves the sled in an ejection seat until the time it contacts the ground via parachute. All of the accelerations and events which transpire during this free-flight stage are thus recorded immediately they occur and are preserved regardless of the outcome of the test.

The photographic engineering capability of the track is most impressive. Accurately positioned metric cameras alongside the track measure position, velocity, acceleration and attitude, wherever predictable trajectories allow the use of fixed cameras. Additionally, very high speed cameras are available to cover events on board the sled and along the track. As many as eight high speed cameras may be used as an integrated system on board a sled. One ejection run will have possibly 20 metric cameras and three trackside event cameras covering the operation.

All of the instrumentation, photographic and telemetric performs as an integrated system. All track operations are centrally controlled from a block house and a binary

type code timing system correlates all acquired data.

For escape systems testing, the vehicle used on the track is called a sled which actually glides along the track on a set of pads called slippers. The slippers serve to hold the sled on the track by bearing on the underside of the rail head. The rail itself acts as a continuous grinding surface, abrading the alloy steel slipped pads as the sled travels down the track. The sled usually takes the form of the nose section and forward fuselage of the aircraft to which the test applies. A supporting structure is designed to transmit the loads from the sled to the track. There are also many other configurations of vehicles which are used for track work, the designs of which are dictated by the type of testing required.

The sleds are propelled by rocket power, either by rockets carried on the vehicle itself or by a separate pusher sled. Solid propellant and liquid fuel type rockets are both employed but the solid type is used more because of technological reasons. Rocket sleds have been propelled successfully on the track at equivalent speeds of Mach 3 at sea level.

As mentioned earlier, the purpose of the RCAF trials was to prove the integrity of all aspects of the escape system at high ejection speeds. The test program called for a correlation run at 400 knots to tie in with the Phase Two work at Cold Lake. Runs were planned for 500 and 600 knots, subject to limitations imposed by the success met on each ejection. The information desired fell into two broad categories: physiological factors affecting a crewman, and physical limitations and functioning of equipment.

For a crewman, concern is expressed over the accelerations imposed on the body in terms of total or peak 'g', sustained 'g' and rate of onset of 'g'. The term 'g' refers to

acceleration. Briefly, it is understood that when a force is applied to a body, causing a change in velocity, the body experiences an acceleration which is proportional to the applied force (Newton's Second Law of Motion). When we say a pilot "pulled 10 'g's" we mean he suffered a force on his body equal to 10 times the force of gravity. Earth's gravity provides at sea level an acceleration of one 'g', which is numerically equal to an acceleration of 32.2 feet per second per second.

The study of biodynamics has provided criteria on accelerations which can be withstood safely by the human body. For escape systems design accelerations of 20 'g' spinally, for very short time durations, with a rate of onset of 'g' not greater than 250 'g'/secs appears generally accepted.

For the equipment the major concern was the ability to withstand high air blast effects, especially for the helmet, oxygen mask and flying clothing. The structural integrity of the ejection seat and its components was also important. The ability of the parachute to deploy safely at high speeds, without damage to itself and without applying excessive deceleration to the crewman was questionable.

The CF-104 rocket-powered C2 ejection seat was the main test item. This seat was the culmination of much thought and work by the Lockheed Aircraft Corp. and was designed to provide structural integrity at supersonic speeds. The seat has a leg and arm restraint mechanism, a ballistically operated lap belt release and a positive man/seat separating device. In lieu of a live subject (volunteers being scarce for this sort of work), anthropomorphic test dummies are used. The dummies are quite human in appearance and their physical makeup are based on extensive anthropometrical studies done on USAF flying

personnel. The weight, centre of gravity, mass distribution and articulation are closely representative of a human being. The dummies are made in three sizes, large, medium and small, representing the human average crewman.

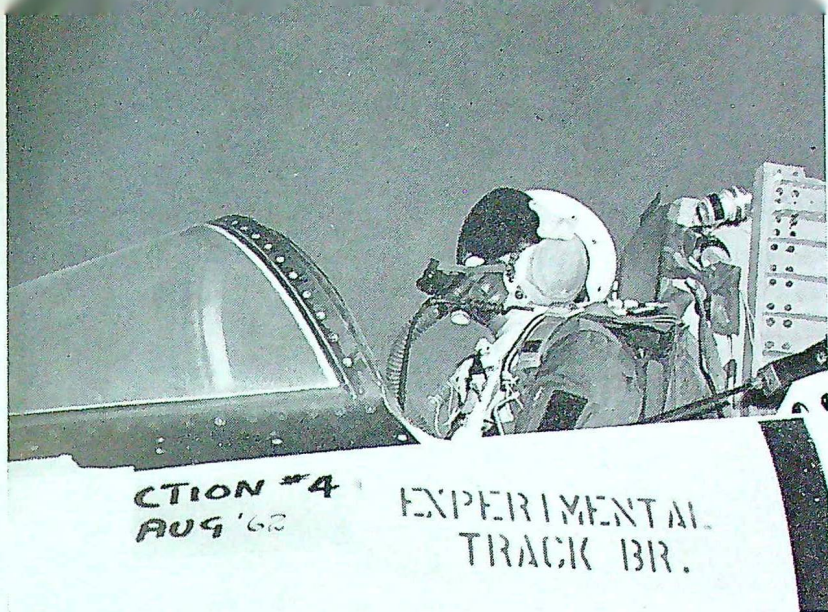
A note of humour was provided during the trials at Station Cold Lake when a hangar guard discovered what he thought to be a suicide and called the police. What he had seen, through the window of the safety equipment shop, was a dummy, fully operational, hanging from a rack. For ease of handling, the dummy is suspended by a large eye hook screwed into its head. From a distance this sight could be very disturbing to the uninitiated.

To ascertain the nature of the forces to which the dummy is exposed during a high speed ejection, instrumentation is essential. Mounted in the dummy's chest, in a special container is a telemetry package. The various signals relayed by the test instruments contained in the dummy are fed to the telemetry transmitter which in turn passes the signal by radio frequencies to the track receiving station. Strain gauges and accelerometers are the instruments installed on the dummy to determine the forces being applied by the ejection. Clothing and survival gear are carefully fitted and adjusted as required by current engineering orders.

Probably the best way to gain an understanding of how an operation is carried out on the experimental track is to follow through one of the actual trials from start to finish.

#### THE TEST RUN

The day is Tuesday, 22 August. The RCAF is scheduled on the track for the following day. The sled is to be fired at 0930 hrs at a speed of 600 knots. Tension runs high for this will be the greatest speed yet attempted during the trials and if successful will conclude



The dummy is in place and the test is about to start.

the work at Edwards AFB. Work starts early on the track. It is 0700 hrs and the thermometer already is rising through 80°F. The dummy has been brought to the working area from the instrumentation shop where Cpl. G. Foster of CEPE Detachment Cold Lake has installed the telemetry and instrumentation. FS L. Steeves and Cpl. A. Winchester of CEPE Uplands now dress the dummy, fitting his helmet and personal gear carefully. This completed, the dummy is placed in the ejection seat and the parachute and survival kit securely attached. The leg restrainer cables are attached to the boot spurs, shoulder harness and lap belt adjusted and secured, personal leads for oxygen, anti 'g' suit and telecommunications are connected. Finally, all instrumentation leads are connected and properly secured.

One very important operation remains to be done before the seat and dummy can be loaded into the sled, and that is to determine the location of the centre of gravity of the mass. This is essential to ensure that the seat will remain stable and not tumble as it travels away from the sled. Stability in a rocket-pow-

ered ejection seat is obtained by having the thrust line of the rocket nozzle pass through, or very close to, the centre of gravity of the seat/man package. In this way no rotating force couple results and the seat climbs stably under rocket power. F/O J. Greenslade, the project engineer, now does a weight and balance check whereby the c of g of the package is accurately determined. The operation completed the package is ready for installation in the sled. With the hoist the package is raised to a position above the sled cockpit and then carefully guided down the seat rails to the correct location. Cpl. Winchester, the munitions and weapons technician, secures the rocket catapult and connects the ballistic gas hoses. He then safeties all critical items and the seat is ready to be ejected.

*Wednesday, 23 August, 0700 hrs:* The track is active with technicians going efficiently about their tasks. A side loader has picked up the sled and transported it to the breach of the track. The track crew attaches the sled slippers to the rails and moves the vehicle to the designated firing point 3700 feet down the track. The countdown has started.

Firing time is 0930 hrs and it is now X minus 2½ hrs. The track safety measures are now in effect. The control of the operation and audible countdown emanate from the block house at the breach of the track.

*X minus 2 hrs:* the propulsion rockets are being installed by specialized crews.

*X minus 1½ hrs:* telemetry check-out has started.

*X minus 45 minutes:* guards have been posted at the entrance gates to the track. Normal traffic has ceased and operational crews only are in the area. Trackside cameras are ready. The RCAF crew commences its final equipment checks, following detailed check lists.

*X minus 25 minutes:* RCAF checks are complete. All switches on the sled are now shorted out as a precautionary measure against stray currents. The sled area is now cleared for installation of the rocket ignitors. This is a hazardous task for should a rocket fire prematurely, fatal or serious injuries could be sustained by the rocket crew. The block house control has called for radio silence in the area during ignitor installation since the ignitors



The rockets light up and the sled is on its way down the 20,000 foot track at Edwards USAF base.

are sensitive to small currents.

*X minus 11 minutes:* ignitors are installed. Cpl. Winchester connects the ballistic gas firing hose to the catapult and removes the safety pins from the seat.

*X minus 10 minutes:* Cpl. Foster now does the final instrumentation calibration check. This is the last physical check done on the equipment before the sled is fired. He ascertains that all channels are reading at the receiving station and makes the final instrumentation connection to internal power for the dummy's telemetry package.

*X minus 8 minutes:* the shorting wires are removed from the sled knife switches and the vehicle is now "hot".

*X minus 5 minutes:* the sled area is cleared. Project personnel proceed to the barricade at the 5800-ft. station of the track. Here, behind a protecting wall of earth and wood, all observing personnel from the

track area are required to remain during the firing.

The track is strangely silent. In the distance the rocket sled sits alone – the tremendous power locked in its rockets awaiting the signal which will erupt it into action. The mechanical voice of the controller drones out "One minute – counting!" Every eye is fixed on the rocket sled during the final count. "15 - 14 - 13 - 12 - 11 - 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - FIRE!"

*0930 hrs:* a cloud of smoke erupts from the sled, followed by the thunderclap of rocket ignition. The sled accelerates with frightening speed as successive banks of rockets are cut in automatically. The sled shudders on the verge of supersonic speed as it breasts the barricade and shrieks its protest.

Suddenly, almost faster than the eye can follow, a burst of flame flashes from the sled cockpit followed by a rocket's roar, and the

seat is on its way. Rocket blazing, it climbs away from the sled, striving for height against the tremendous air loads to which it is exposed. Then the dummy is clear of its seat – a simulated human being with a mechanical brain, hurtling through the air on its own trajectory. Survival now depends on the parachute. Will it disintegrate from the opening forces or will it open at all?

The project personnel stopped breathing the moment the sled started. Eyes glued to the scene, with mixed fascination and trepidation showing on their faces, they know they are attempting a feat fraught with disastrous possibilities. Although only seconds are involved, the panorama appears to take a lifetime.

Suddenly, a streak of white appears. The chute is out and streaming, the fabric straining to stop the dummy in its chaotic flight. Can it hold? The ground appears close, the

tension unbearable. Then, in almost instant transition, the chute is fully open — dilated fantastically by the air drag. The dummy appears to stop in mid-air, extended horizontally feet first, then swings gracefully below the billowing canopy and touches the ground seemingly like a feather.

A moment of stunned silence is broken only by the distant howl of the sled, long since out of sight but still coasting down the track and into the water brake. The project crew vents its pent-up emotion in jubilant shouts and jigs. Congratulations are expected, and received, from the track personnel all of whom have contributed to the success. Pride of workmanship is inherent in this type of occupation.


To the layman observer who is not quite certain what he has seen, the operation was impressive as a light-sound spectacle but little else. To the RCAF crew, however, things are different. This ejection, at a speed just under Mach 1, marks the culmination of a year's work on the escape system and has demonstrated the capability of the RCAF equipment to perform successfully over the critical range of human tolerances. To add to the satisfaction, this ejection marks the highest speed successful recovery ever accomplished by any agency using the F-104 aircraft.

Following the ejection the crew proceeds to the recovery area to carry out detailed examination of all the test equipment before transporting it to the laboratory for further inspection. Photos are taken of every item before it is touched and meticulous care is exercised in evaluating the condition of the test equipment.

Experimental track testing is unique and extremely interesting work. Much of the knowledge required is specialized and many of the techniques are produced by trial and error. The work is pains-

taking in its attention to detail. It is also hazardous. Mistakes cannot be tolerated and if made, the incumbent likely will not be allowed a second try. For the RCAF crew, the track operation was stimulating and of great value for the CF-104 program and in related areas. Other projects were witnessed and the knowledge gained will contribute to future RCAF operations. Relationships with the USAF and civilian track personnel were excellent and the admiration of the RCAF group for the diligence and efficiency of the support personnel was manifest at all times.

In summation and so that the reader is not misled into thinking that high speed ejections are easily accomplished, it is correct to say that ejection equipment today is capable of withstanding much greater forces than is a man himself.

For the CF-104 system, with its present equipment, completely safe recovery is predicted for ejections at 500 knots I.A.S. at near sea-level altitudes. Beyond this speed the high dynamic air effects can cause serious damage to unprotected bodies. With improved equipment the range of survival can be extended. However, it is now considered necessary to protect a man completely in some form of capsule for aircraft operating in the supersonic area. The CF-104 escape system tests have provided much valuable information and allowed the RCAF crewman's equipment to be improved in many ways. One can never prove after an ejection what the precise effects of the changes may have been, but can only say that if the man is down safe and sound, the effort has been amply repaid. 

## RCAF RINK WINS NORDIC BONSPIEL

CURLING has undoubtedly become Canada's No. 1 participation winter sport. The Richardson brothers of Regina (four-time winners of the world championship) are not the only Canadians to win honours in international roaring game competition.

For instance, an RCAF rink from No. 3 Wing in Germany recently

walked off with the silverware in the Nordic Bonspiel held in Oslo, Norway. The Zweibrucken-based airmen, who emerged victorious over rinks from Norway, Sweden and Denmark, proudly displaying their trophies, are (l. to r.) LAC G. T. Hegge, LAC A. M. Greter, LAC S. V. Bielka and Sgt. O. M. Venance.





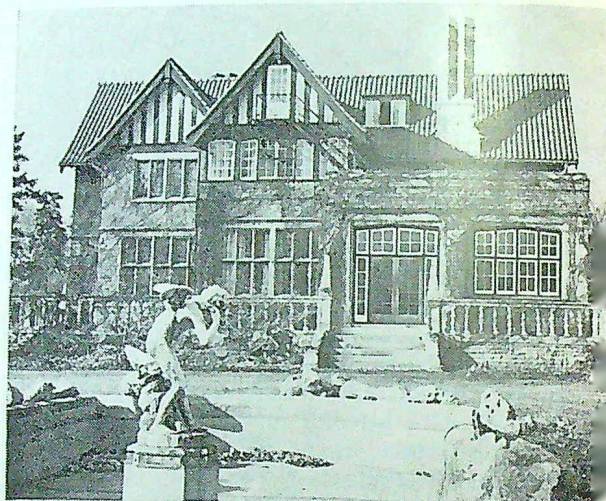
# PROFESSIONAL EDUCATION IN THE RCAF

By WING COMMANDER G. K. MURRAY

SITUATED in a residential district in north Toronto, only 20 minutes from City Hall, is an RCAF unit comparatively unknown even to the inhabitants of the surrounding area. But few units have a more far-reaching effect on the Service in general, and on its educational system in particular, than does the Air Force College.

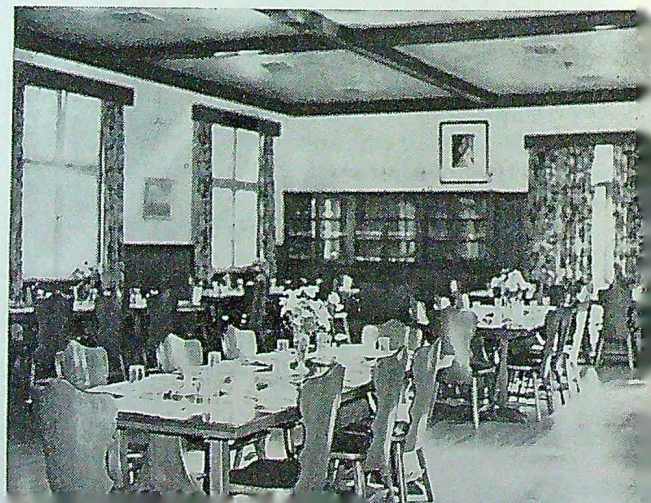
The site of the College has figured largely in the history of the area and of Canadian aviation. Older Torontonians can still recall Strathrobyn, the country estate built in 1914 by Col. F. B. Robins. During World War I activity centred around nearby Armour Heights airfield, where the Royal Flying Corps had established one of their stations of an early version of the Commonwealth air training scheme.\* Strathrobyn became almost a second home to many of the pilots under-

\* ROUNDEL, Vol. 14, No. 10, Dec. '62.



The charm of the Old World in the centre of a busy city is illustrated by the Officers' Mess.

The Staff College dining hall blends efficiency with tradition.





A/C W. F. M. Newson, DSO, DFC,  
Commandant, Air Force College.

going training. In 1926 the estate was sold to Mr. A. L. Ellsworth, president of British American Oil, who renamed it Glenalton. The RCAF's interest in the property began in 1943 when it was rented from Mr. Ellsworth as the site for a War Staff College.

In 1945 the government bought Glenalton as the permanent home of the RCAF Staff College. The original buildings proved adequate until about 1950 when the increased size of the courses began to strain facilities to the limit. In 1951 a new academic and administrative building was erected and named Curtis Hall. A few years later a new kitchen and dining room were added to the manor house, which now served as the officers' mess. Finally, in 1961 a new wing was added to Curtis Hall to house the library which had outgrown its original location in the mess. The growth of the College has thus reflected the increasing emphasis on professional education in the RCAF.

## DEFINITION OF PROFESSIONAL EDUCATION

Professional education as it applies to the RCAF may be broadly defined as the instruction commencing after an officer has had some experience in his trade specialty. This does not imply that the technical speciality or the tactical skills first learned by the junior officer are not important to him. Indeed, with the increasing complexity of military equipment, this initial training has become more important than ever. However, many officers (regardless of their trades) will eventually be in command positions with staff responsibilities. Then, as in any large civilian organization, their abilities as managers or supervisors become as important as their technical or tactical skills. Officers must therefore learn to achieve their goals, not by direct personal effort, but through the efforts of subordinates.

At this point the staff officer will need new skills and knowledge—those that will help him organize and direct the activities of others. In these tasks enthusiasm and specialist knowledge are not in themselves enough. To make sound decisions in his own military field, clarity of thought and the ability to communicate it are primary requirements. He must be prepared to work with senior civil servants, industrial managers, scientists and educators. He will also require an extensive knowledge of military, national and international affairs; of technical and scientific theory; the principles of military strategy; and, most important, the organization and administrative processes of a large and complex organization. The development of these new skills and knowledge is the aim of the professional education system.

## HISTORY OF PROFESSIONAL EDUCATION

In 1765 Frederick the Great

wrote:

"With the object of making officers attentive to their duties, and giving them the power of reasoning for themselves, I have them now instructed in the Art of War, and they are taught to form their own judgement on everything they do."

When Frederick founded his "Académie des Nobles" he was building the intellectual foundation for his officer corps. Since that time every major fighting service has developed a system of professional education.

From its beginning the RCAF has recognized the need for this advanced staff education for its officers. Before 1939 we depended upon the RAF for such education. Soon after the outbreak of World War II it was realized, however, that the RCAF needed its own staff training facility. This led to the formation of the Staff College at Armour Heights in 1943.

At the end of the war the Staff College was operating a four-month course for senior officers; late in 1945 a composite training school (KTS) was introduced to provide administrative training for junior officers. During the next decade more emphasis was given to education and a number of different agencies became involved. Because these agencies developed more or less independently there was a danger that such education was being carried out in a piecemeal fashion. By 1958 it became clear that to ensure proper span of control and effective policy direction, one single agency was required to provide unified control in the field of professional education.

The recognition of this situation led to the creation of the Air Force College in 1959. A three stage system was devised, made up of two resident schools and an extension school. Through these schools are offered a sequence of courses designed to help RCAF officers acquire the professional skills needed

at progressively higher levels of rank and responsibility.

To operate this three stage system the Air Force College is organized into four components:

- Staff School
- Extension School
- Staff College
- Air Force College Headquarters

#### COLLEGE HEADQUARTERS

The headquarters staff is charged with setting the objectives of the educational system as a whole, including the aims and objectives of each of the component schools. They have the difficult task of determining what degree of executive proficiency is required at each level of responsibility.

Having defined these objectives, they must then be translated into a basic syllabus of study that will apply to all three schools. A long and rather imposing list of subjects can readily be drawn up, for the scope of military responsibility has expanded so greatly that there is no limit to the skills and knowledge that might at some time be required. There is, therefore, a need for careful planning to ensure that the system equips its graduates with the required skills at the appropriate time.

As if these functions were not enough, one final and important task remains. The headquarters staff must also research and prepare the instructional material to form the exercises and doctrinal papers that are called for in the curricula of the schools. This distribution of duties allows the schools to devote themselves exclusively to instructional tasks.

#### THE STAFF SCHOOL

An officer receives his introduction to professional education on the 14-week course at Staff School. During the first few days he experiences a complete re-orientation, for this course is much different



Knowledge is acquired through the syndicate system . . .

from any that he has taken thus far. From the Commandant's opening remarks he is exposed to a broad view of his Service and profession, which, after seven or eight years of specialized training and experience, sometimes comes as a distinct shock.

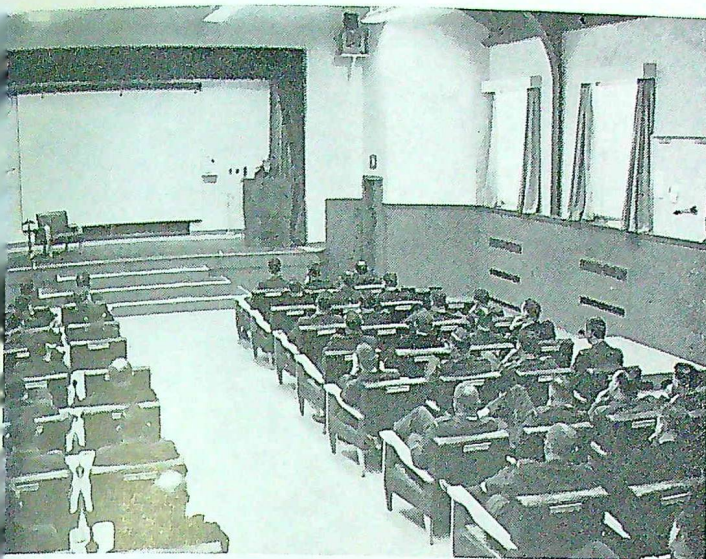
Throughout the lecture program the student is constantly reminded that his responsibilities as a professional officer extend much further than the cockpit or the supply section. In rapid succession he is exposed to such diverse fields as the problems of high speed low altitude flight, current international developments, the elements of command, and the historical development of air power doctrine. The student's initial re-action is usually a spate of hastily written lecture notes or a frantic plea for supporting precis. There is, however, no requirement for notes.

There are no examinations during the course, but the student soon realizes that the course itself is one long examination, with a compre-

hensive end-of-course report that will reflect the general attitude and ability he displays in every aspect of the work. The lectures, however, are designed not to provide detailed information, but to broaden his outlook and to stimulate his interest. He is encouraged to listen with a critical ear, to question, and to express his own opinions during the discussions that follow each lecture.

Another technique that students find new is the syndicate system of tutorial instruction. The syndicate group is the basic working unit at both Staff School and Staff College. It is made up of a small number of students, carefully selected to provide a wide variety in individual background and experience. This variety ensures a healthy exchange of opinions during the many discussions and joint exercises during the course. In this syndicate work, too, the student's viewpoint is constantly being broadened by the influence of the other specialists that make up the group.

Lest the discussions become too



... and the medium of lectures.

vigorous, a staff member is assigned to work closely with each group. The syndicate director is not a teacher in the sense that he conveys subject matter directly to his students. He is more the tutor who leads the group to discover for themselves the instruction being offered. In discussions he is a moderator and supervisor; the main contributions must come from the students themselves.

An important function for the syndicate director is the critical analysis of all individual exercises submitted by his students. Because the skills of logical thinking and clear expression are personal in nature, each student is on his own in this aspect of the work. He has ample opportunity to practise these skills and at the same time increase his knowledge of the various forms of service writing. Each exercise is carefully assessed by the syndicate director and his suggestions for improvement are recorded. These in turn are reviewed with each student individually and the suggestions are

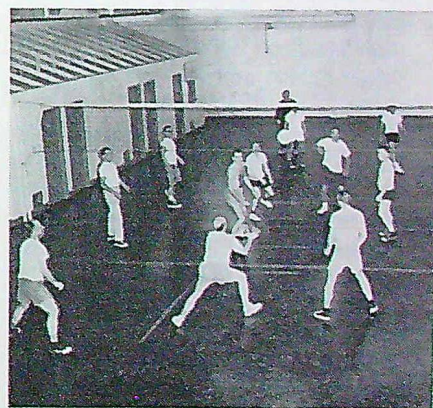
further amplified and explained.

Although the individuals concerned would vehemently deny the charge, in these endeavours the syndicate director must display many of the attributes of a dedicated man. Certainly the qualities of patience, thoroughness, tact and openness of mind must be clearly evident. He must be able to assess the basic ability of each student and quickly identify his problems. He must know when to encourage and when to find fault and how best to phrase his advice. He must, above all, take the time to know his students individually and with this knowledge carefully select the best approach to this difficult task of criticism. An attitude of constructive, co-operative endeavour must be fostered so that the student looks upon his syndicate director less as a critic and judge and more as a conscientious helper in the task of improving his ability. This personal relationship, with its emphasis on development and improvement, is the key link in the tutorial system

of instruction.

If any differences of opinion still exist at the end of the working day, the students have opportunity to express themselves in a more physical manner on the sports floor. Staff members are always ready to defend themselves on the volleyball or badminton courts. A few of the more hardy have been known to carry this competitive spirit to the swimming pool before continuing a discussion on a more relaxed note over dinner.

The nature of the course is such that the student seldom realizes its full scope until after his return to the unit. The coverage of every subject has been necessarily broad. He has worked hard on the course and his interest has been stimulated in a number of different fields. He has, for perhaps the first time in his career, a clear picture of the full scope of his responsibilities as a professional officer. For those who wish to continue their professional development, the Graduate Assistance Program (GAP) is available to aid in the task.



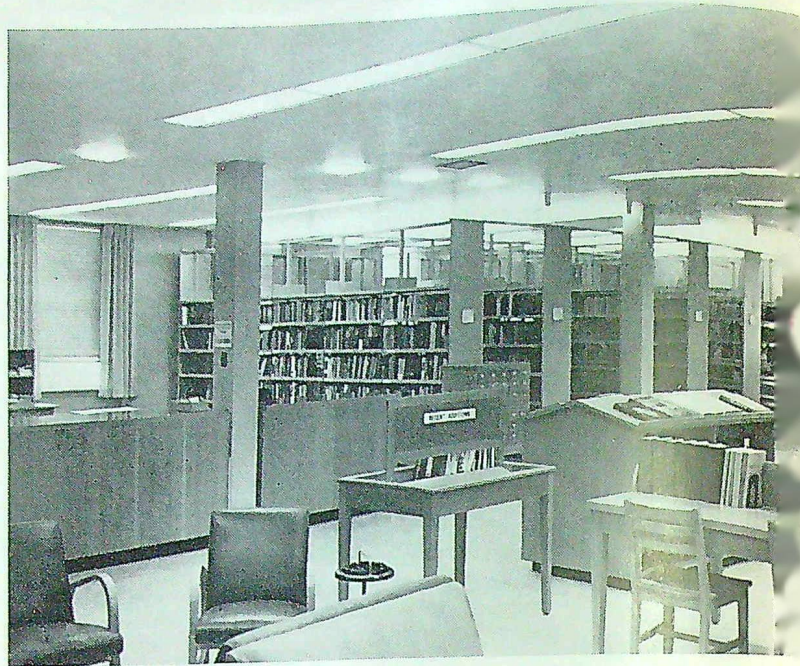
Course members are also required to maintain their physical fitness.

## THE EXTENSION SCHOOL

The Extension School came into operation in September 1962 as the newest branch of the Air Force College. The school is responsible for the GAP, a correspondence course of study specially designed to further the professional education of Staff School graduates. It was developed to enable these graduates to consolidate and to expand upon the knowledge gained at the Staff School. The student also has opportunity to gain further practice in the skills of logical thought and the accurate communication of ideas.

The GAP curriculum is designed to provide background knowledge in subjects relevant to professional development that are particularly suitable to home study. The subjects are expected to further broaden an officer's understanding of his career responsibilities and to prepare him for subsequent levels of the education system. The curriculum consists of six subjects, two of which are compulsory and four optional. To attain full credit for GAP an officer must complete the two compulsory subjects and two of the optional subjects within six years of his registration. Normally the course will be completed in four years. Studies in each subject begin in September and continue until the following June. Only one subject may be taken at a time.

The compulsory subjects are Military Studies 1 and 2. The former is a survey course covering the development of land, sea and air components of military power, and includes a consideration of present capabilities. Military Studies 2 is a survey of contemporary strategic thinking and includes a consideration of the strategy designed to meet current and future threats. The optional subjects available to the students are The Individual in Society, Modern Political Systems, Canada, and Management. All military stud-



The Staff College Library contains over 10,000 books.

ies material is prepared by the Air Force College; optional subjects are prepared by the University of Toronto with the assistance of the College.

## THE STAFF COLLEGE

The last step in the educational system is the ten-month course at the Staff College. By this point in his career an officer has had extensive experience in both command and staff positions. The composition of the staff and student body at Staff College reflects the efforts to draw from a wide cross-section of this military experience. The staff includes a member from each of the other two Canadian Services and one from the RAF. The student body at the present time totals 60 students, including two from the RAF, two USAF, two Canadian Army and 10 from the RCN. This mixture of services and nationalities ensures a useful exchange of opinions and ideas.

The instructional techniques are essentially the same as those used at the Staff School. The level of student experience is higher and hence the broad view of the military profession that is presented is much wider in its scope. The personal skills of logical thought and clear expression are further exercised within the setting of more complex assignments. The lecture program expands upon the basis laid at the other two schools. The roles and responsibilities of the military in modern government are examined. The elements of world conflict and the employment of air forces are studied, including a critical study of military doctrine and present strategic thinking. To provide the greater depth and expertise required in the program, lecturers are invited from government, university, and the business community.

This program is supplemented by a number of field trips scheduled

throughout the course. Beginning with local industrial plants, the tours also include visits to RCAF Commands, to military establishments of the other two Canadian Services, and to military and space installations in the United States.

Although the students might not agree that the pace of the course is exactly leisurely, there is time for research and reading and calm deliberation. For the former the students may use the Keith Hodson Memorial Library, containing over 10,000 volumes and increasing at the rate of about 1,000 volumes per year. Copies of over 100 periodicals of interest to the military officer are also available. In addition to this specialized source of military information, the students have available the resources of the University of Toronto, the Royal Canadian Military Institute, and the public libraries of Metropolitan Toronto.

As a setting for deliberation and discussion, the physical characteristics of the College leave little to

be desired. The campus represents a unique combination of modern, efficient academic facilities set within the spacious environment of another age. The original manor house has been skillfully modified to accommodate more people, yet its atmosphere of gracious tradition has been carefully preserved. Outdoors, this atmosphere of tradition and detachment is further emphasized. The grounds are heavily treed and carefully maintained, providing the setting which permits the aesthetic combination of buildings that are a generation apart in age and worlds apart in original purpose. The effect is all the more startling when one realizes that the College is located close to the geographic centre of the metropolitan area.

Within this setting the student has the opportunity to pause and re-assess himself, physically removed from the day-to-day pressure of service matters. He has the time to read, to exchange ideas, and

simply expressed — to think. On completion of the course he returns to his Service mentally refreshed, with a broad, up-to-date view of his profession and with new executive capacity to apply to his future tasks.

Professional education, then, is designed to equip the specialist with the executive skills required to organize and direct the complex and expensive resources that make up a modern military force. The system makes no attempt to graduate experts in a particular field. Rather, by providing its graduates with an education of the broadest scope, it attempts to instill a breadth of interest, openness of mind, reasoning ability and a broad view of the Service that will enable them to master the specific tasks of any appointment and to make sound decisions in any situation. The efficiency of the Service as a whole depends to a large extent upon the success with which these aims are accomplished. ☉

## HIGH CLIMBERS



At RCAF Station Rockcliffe a group of airmen believe in getting up in the world. These men are members of a course in high climbing conducted by Communications Command Headquarters (CCHQ). The two-week courses are held on an "as-required" basis to teach communications technicians (ground) and radar technicians (ground) the art of scaling telephone poles, towers and antenna masts.

In addition to climbing techniques, the course teaches students the use of blueprints and specifications, knots and splices, fabrication and installation of antenna support guys, rescue techniques from high structures, use of block and tackle and other affiliated subjects.

# THE MILITARY CREDIT UNION AND YOU

By WING COMMANDER V. C. STEVENS

CREDIT unions were introduced into the RCAF over ten years ago and appear to be here to stay. These co-operative savings and loan associations, which had their beginnings in Germany in the middle of the 19th century, began in Canada more than 60 years ago when Alphonse Desjardins organized the first "Caisse Populaire" in Levis, Quebec. Since then they have flourished and now there are more than 4000 credit unions in this country.

It appears that the Canadian, as an individual, is particularly susceptible to the philosophy of co-operative enterprise. On a pro rata basis this country's participation in credit unions is the world's highest, with one person in every eight a member of a credit union and with 13 percent of the savings of Canadians invested in these organizations.

To people in military service, credit unions offer several attractions for saving and borrowing money. The needs of the borrowers are met with funds accumulated by the savers, thereby providing a sound investment and a good rate of return for those who are able to save and a source of funds at reasonable rates for those who require to borrow — the whole within a legal framework provided by the Credit Union Acts of the various provinces of Canada. Add to this the convenience and economy pro-

vided by the pay assignment method of collection, backed by the wealth of administrative and accounting talent available at most military bases.

Administratively, the operation of a credit union is fairly simple. Policy is laid down by a board of directors elected from the general membership. An elected credit committee is responsible for all decisions concerning the granting of loans, and an elected audit group performs a continuous inspection of the books. There are no paid positions other than that of the treasurer-manager of the organization and such staff as he may require. General meetings are held annually to receive the reports of the committees mentioned above, to declare the annual dividend, and to elect such new officers as may be necessary. At such meetings each member has one vote, regardless of his total investment in the organization.

Most credit unions provide life savings and loan insurance as a service to their members, with the cost of premiums being absorbed as an operating expense. This means that for every dollar a member has invested in his credit union (up to a maximum of \$2,000 for this purpose), he has an additional dollar of life insurance which, should he die, is payable to a duly designated beneficiary or to his estate. Loans, too, are normally insured in their full

value up to a maximum of \$10,000 per individual.

For the peace of mind of the investor there are additional safeguards. Yearly independent audits of credit unions are performed either by members of the supervisory staff of the provincial governments, by members of the various provincial credit union leagues, or by recognized firms of chartered accountants. In addition, most provinces have now made provision for a credit union stabilization fund, financed by the credit unions themselves, to ensure that in the event of a failure of a member organization no credit unionist need ever be required to accept less than 100 cents back on his investment dollar.

Although until recently the RCAF did not enter into the organization or administration of such co-operative enterprises, it permitted their creation on a strictly private basis under the applicable provincial legislation. This spring the RCAF officially accepted the principles of the credit union as worthwhile and is now encouraging their formation.\*

However, even within the framework of the earlier policy of aloofness, the growth of RCAF credit unions has been rapid. An examination of the following statistics will

\* AFAO 99.00/09, promulgated 1 Feb. 1963.

indicate that, as recently as five years ago, the total known assets of service-operated credit unions did not amount to \$100,000, whereas today 20 of these organizations now hold assets approaching the six million mark. In addition, one of them (the Cold Lake organization) has established world records for credit union growth in two successive years, and is believed to be the first credit union in the history of the movement to have achieved a million dollars in assets with less

than two years of organization.

As a general rule, it may be stated that the rate of interest charged on loans is one percent per month of the unpaid balance (this is the maximum allowable under the law in each province), and the dividends paid on investments average between five and six percent. RCAF credit unions have shown that an aggressive well-run military credit union, charging the interest rate shown above, should have no difficulty in paying a yearly divi-

dend of six percent plus a rebate of at least ten percent of loan interest to the borrowers.

It is expected that the next few years will show a continuing increase in the formation of military credit unions in Canada. Although no applicable legislation has yet been proposed, supporters of the credit union movement are hopeful that some means will be found to enable the eventual formation of similar institutions at military bases overseas. \*

#### RECORD OF GROWTH — RCAF-OPERATED CREDIT UNIONS

Stn. or Unit	Inception	Total Assets as at Dates Indicated					Remarks
		31 Dec. '57	31 Aug. '60	31 Aug. '61	28 Feb. '62	30 Nov. '62	
Trenton	Jul. 1952	50,000	135,000	280,000	350,000	490,000	
Aylmer	May 1955	15,000	45,000	40,000	—	—	Disbanded 61
711 SD Calgary	1955	notknown	notknown	notknown	25,000	25,000	
Lincoln Park	Mar. 1958	—	110,000	120,000	125,000	145,000	
St. Jean	1958	—	150,000	250,000	325,000	387,000	
Winnipeg	Nov. 1958	—	240,000	300,000	390,000	535,000	
Saskatoon	Feb. 1959	—	20,000	80,000	100,000	104,000	
Portage	May 1959	—	30,000	70,000	95,000	126,000	
Gimli	Aug. 1959	—	35,000	90,000	115,000	160,000	
Moose Jaw	Sep. 1959	—	13,000	40,000	80,000	165,000	
Cold Lake	Sep. 1959	—	555,000	1,025,000	1,200,000	1,530,000	
St. Hubert	May 1960	—	15,000	80,000	120,000	217,000	
Uplands	Sep. 1960	—	—	200,000	360,000	583,000	
Bagotville	Jan. 1961	—	—	130,000	180,000	246,000	
Greenwood	Apr. 1961	—	—	notknown	175,000	437,000	
Moisie	Oct. 1961	—	—	—	65,000	102,000	
Penhold	Dec. 1961	—	—	—	notknown	19,000	
Rockcliffe	Apr. 1962	—	—	—	—	125,000	
NDHQ	May 1962	—	—	—	—	100,000	
Summerside	1962	—	—	—	—	40,000	
<b>TOTALS</b>		<b>65,000</b>	<b>1,348,000</b>	<b>2,705,000</b>	<b>3,705,000</b>	<b>5,536,000</b>	

Latest Charter reported: Stn. North Bay — Jan. '63.

NOTE: Growth rate in 1962 has exceeded two hundred thousand dollars per month.



THOUSANDS of Canadians who served in the RCAF during World War II remember with nostalgic pride No. 6 Bomber Group, the largest RCAF formation overseas. Hundreds of currently-serving officers and men fought with the group, and many of them later rose to very senior positions. Among these are Air Chief Marshal F. R. Miller and Air Marshals C. R. Slemmon and C. R. Dunlap, now

located in Yorkshire, the northern area of No. 4 Group, RAF. Allerton Hall was selected as a headquarters and the rambling old mansion became known to Canadians as "Castle Dismal".

The group headquarters was formed on 25 October 1942. For a time it was a head without a body, while communications systems were established and administrative arrangements made. The formation

ton St. George, Croft, Topcliffe, Dishforth, Dalton. Every station had its peculiar features, and certainly its share of mascots. They ranged from stuffed rabbits and moose heads to live nanny goats. No. 427 Sqn. had a lion cub, which was in keeping with the squadron's "adoption" by Metro-Goldwyn-Mayer.

Then, too, there was Mrs. Mudd, the self-appointed "fairy godmoth-

By FLYING OFFICER H. A. HALLIDAY  
Air Historical Section

*"We in Bomber Command have always regarded our Canadian Group and Canadian crews outside the Group as among the very best."*

*Air Chief Marshal Sir Arthur Harris, KCB, OBE, AFC.*

chairman of the chiefs of staff, NORAD deputy commander, and chief of the air staff, respectively. So highly regarded did the group become that the Royal Air Force reserved the designation "No. 6 Group" for Canada, should another, similar organization ever be established.

The British Commonwealth Air Training Plan Agreement, signed in December 1939, provided for the establishment of Canadian units to be formed overseas under RAF operational control, and a number of bomber, fighter and coastal patrol squadrons were so formed. By 1942 there were enough RCAF bomber squadrons to warrant the establishment of a separate Canadian group. During the summer and autumn of that year these squadrons were re-

became operational on New Year's Day 1943, when the Canadian squadrons ceased to take orders from No. 4 Group HQ, and were placed under No. 6 Group HQ, which reported directly to RAF Bomber Command HQ.

Originally, No. 6 Group consisted of eight squadrons (Nos. 408, 419, 420, 424, 425, 426, 427 and 428) equipped with *Wellingtons* and *Halifaxes*. By the end of the war, six more squadrons had been added and the force, flying improved *Halifaxes* and Canadian-built *Lancasters*, was capable of lifting a formidable tonnage of high explosives.

The names of the bases evoke memories for many — East Moor, Leeming, Linton-on-Ouse, Tholthorpe, Skipton-on-Swale, Middle-

er" of the Canadians at Tholthorpe. Every station had her counterpart — a gentle, elderly English lady who went to great pains to lavish hospitality on the young men from far-off Canada. Mrs. Mudd even indulged in poaching to obtain fresh meat for "her boys". When the law finally frowned, the Canadians took up a collection to pay her fines.

New crews quickly determined which bases in northern England served the best food, and stations were ranked as "one egg" and "two egg" bases. It was not uncommon for the bomber crews, returning from a raid and with fuel running low, to put down at the nearest field. Some veterans claim that "two egg" bases received more aircraft on such occasions than their "one egg" counterparts; and that the

USAAF fields, where delicacies such as ice cream and canned peaches abounded, were the most favoured of all.

Life on the RCAF stations was sometimes as eventful as the actual raids over Germany. One day at Tholthorpe a 1000-pound bomb fell off a trolley. It was assumed to be fused and cautiously taken to a near-by sand pit. The following afternoon the camp was shaken as the bomb voluntarily exploded, but apart from some smashed crockery, no damage was done.

Periods of leave broke the operational routine when the boys headed for London, Edinburgh and other favoured relaxing points. A good deal of excellent staff work was often done as crews worked out complicated schedules involving buses, trains, and any other available means of transport. Nevertheless, it was commonly said that no matter where you headed for, the trip always took eight hours.

The men of No. 6 Group were a select crowd, liberally sprinkled with personalities. There was F/L Joseph "Chazz" Chasenoff, No. 427 Sqn.'s adjutant, who once got a room in a crowded London hotel by claiming to be a Russian flyer, newly landed in England. There was R. S. Turnbull (now G/C), who rose from sergeant to wing commander in 11 months, and Lionel Dupuis, who went from sergeant to squadron leader in 13 months. And there was F/L Vaughn Ganderton, who bailed out of his crippled *Halifax* over England and made a perfect parachute descent — landing safely astride a startled cow.

To gain admittance to this world, one had to go through a form of initiation. It differed from station to station, sometimes one merely being spun around, and sometimes being ordered to down a specified number of drinks. It was made tougher for Westerners, who were

recognized as especially hardy men.

Pubs were a source of continuing interest. To Canadians the English names seemed descriptive and pleasant — such as the "Punch Bowl", "Black Bull", "Shoulder of Mutton" and the "White Swan", irreverently called the "Mucky Duck".

The pubs weren't the only things with peculiar names. Crews often racked their brains for hours, thinking of appropriate titles for their aircraft. The range of names was impressive — "X-Terminator", "Block Buzzer", "The Champ", and "P-Poison" with its four engines christened "Cyanide", "Arsenic", "Iodine", and "NAAFI Tea" (see also title illustration). Crews often argued about the relative merits of *Lancasters* and *Halifaxes*. Various planes would be cited in defence of its type, like the unnamed *Halifax* that completed two tours and 65 missions, or "Cowan's Cowards" which flew 60 missions.

The first Air Officer Commanding No. 6 Group was A/V/M G. E. Brookes, CB, OBE, a veteran of the Royal Flying Corps and a member of the RCAF since its formation. Away from Allerton Hall, he lived in rooms over a public house and once remarked that he had been living in pubs for over a year. He was succeeded by A/V/M C. M. McEwen, CB, OBE, MC, DFC, on 29 Feb. '44. "Black Mike" McEwen occasionally flew on operations over Europe, despite superstitions about "brass" on aircraft and instructions from superior officers. With his row of ribbons and impressive moustache, he was one of the more colourful of the RCAF's senior officers.

At the outset, No. 6 Group drew a large proportion of its men from the RAF, as Canadian flight engineers and ground crew were then comparatively scarce. Nevertheless, it was about 60 per cent Canadian in January 1943, and this increased



Nocturnal Rendezvous

as time went on. By April 1945 the group comprised 95 per cent Canadian personnel.

#### OPERATIONS BEGIN

Group operations opened on the night of 3/4 Jan. '43, when No. 427 Sqn. despatched six *Wellingtons* to lay mines off the Frisian Islands. In another mining operation on the night of 9/10 Jan. a *Wellington* of No. 419 Sqn., piloted by Sgt. F. H.

Barker, failed to return—the group's first loss. The first bombing sorties were on the night of 13/14 Jan., when 14 aircraft took off to attack Lorient. Eleven bombed the primary target, two returned early and one was missing. No. 6 Group had been given its baptism of fire.

The group was in a state of flux during 1943. In March it added No. 405 Sqn. to its strength, only to lose that unit to No. 8 (Pathfinder) Group in April. In mid-May Nos. 420, 424, and 425 Sqns. moved to North Africa, where they constituted No. 331 Wing commanded by G/C (now A/M) C. R. Dunlap. From Tunisia they assisted in the bombing of Sicily and Italy, before returning to No. 6 Group in November.

On the night of 26/27 March the group despatched 116 bombers. Of these, 101 attacked the primary target, Duisberg—the first time that more than 100 aircraft had been sent out. The century mark was passed again on 4/5 April in a raid on Kiel, when 108 aircraft attacked the primary target. Subsequent squadron moves made this the record for several months.

In the meantime, the UK-based squadrons continued to hammer away at Germany. Following a series of raids known as the Battle of the Ruhr, the Allied air forces turned on Hamburg, principal hatching ground for Nazi U-boats, and the city was blasted by four attacks which were milestones in the history of Bomber Command.

The Peenemunde raid on 17/18 August was a particularly hard-fought battle. The target—German V-1 laboratories and V-weapon technicians—was so secret that not even the aircrews attacking were told the truth about what they were to bomb. At the time, they were told that Peenemunde was manufacturing improved radar for enemy night fighters, and that the target would be visited for as many nights

as it took to destroy it, regardless of casualties. The raid marked the operational debut of the *Lancaster* in No. 6 Group. Twelve of the group's 63 bombers despatched failed to return.

In November a famous airplane made its appearance—"Ruhr Express"—first of the Canadian-built *Lancasters*. It was probably the most-photographed craft ever flown by the RCAF, but made few operational sorties, being used mainly for familiarization purposes.

As the old year went out, the headquarters checked the figures for the previous 12 months. Over 6,200 successful sorties had been flown, and more than 13,600 tons of bombs and mines dropped. Aircraft in the group had destroyed 19 enemy fighters. The price that had been paid was 340 bombers with their crews. It was a fine record, but few persons on operations took note of it. They were too busy. The Battle of Berlin was then raging.

Statistics fail to give an idea of the fury of that battle. It was waged with every weapon available to each side, and assumed epic proportions. As the capital of the Reich and a vital manufacturing centre, it was of great importance to both the attackers and the defenders. Between 18/19 Nov. '43 and 15/16 Feb. '44, No. 6 Group alone visited the city 14 times. More than 8,300 aircraft were sent to bomb Berlin; of these, 974 came from the Canadian group, 52 of which did not return.

As the invasion of Europe approached, the group began attacking the railway network in western Europe. The list of targets reads like a gazetteer of the continent. Success, however, was not always to be gained. Many veterans will remember the tragic night of 30/31 Mar. '44, when Nuremberg was the target. In that raid, Bomber Command lost 94 bombers—13 from No. 6 Group.

Bombing was not the only task carried out. The group had begun operations by laying mines, and this job was continued. While some of the hazards of bombing were diminished, such as heavy flak, there were other problems. Until the beginning of 1944, mining had to be done at 6,000 feet or less, which complicated navigation and dimmed prospects of getting home if a night fighter or light flak put an engine out of order. The development of new mines finally made it feasible to carry out these missions from 15,000 feet. The use of these mines was pioneered by the Middleton-based squadrons, Nos. 419 and 428. The introduction of H2S radar simplified navigation and aiming. In these operations, the *Halifaxes* were used, as it was RAF policy to use only the *Lancasters* of Nos. 1 and 5 Groups when *Lancs* were required for mining.

#### PATHFINDER OPERATIONS

On 24 Feb. '44, as No. 8 Pathfinder Group was unable to spare any marking aircraft, the Canadian group was detailed to supply markers for an experimental mining operation in Kiel Bay by Nos. 3, 4, and 6 Groups. Numbers 419 and 428 Sqns. dropped these markers and the mission was so successfully carried out that for the next three months these two squadrons supplied markers for nearly all the large-scale operations carried out by the non-H2S equipped aircraft of these groups. The largest "gardening" effort by No. 6 Group was made on 22/23 Mar. '44, when 74 aircraft took off for minelaying in Kiel Bay. The average total size of the large minelaying forces was between 150 and 200 aircraft.

The year 1944 was indeed an outstanding one. "Crossbow" (attacking flying bomb sites), "Overlord" (the invasion of Europe) and other operations went on, and the results became apparent as the German



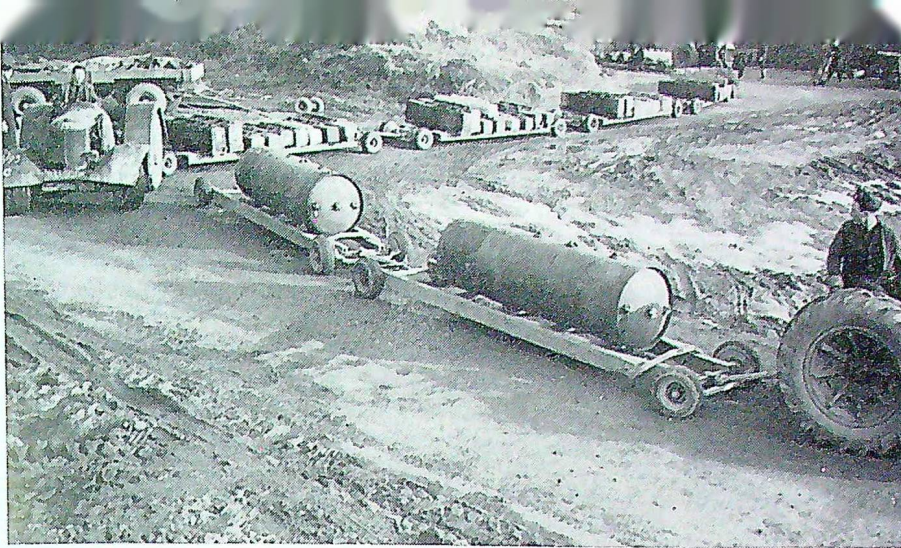
1 Briefing on tactics is given by  
A/V/M G. E. Brookes and  
G/C C. R. Slemon.



2 Sgt. air gunner H. Venn cleans his  
machine guns.

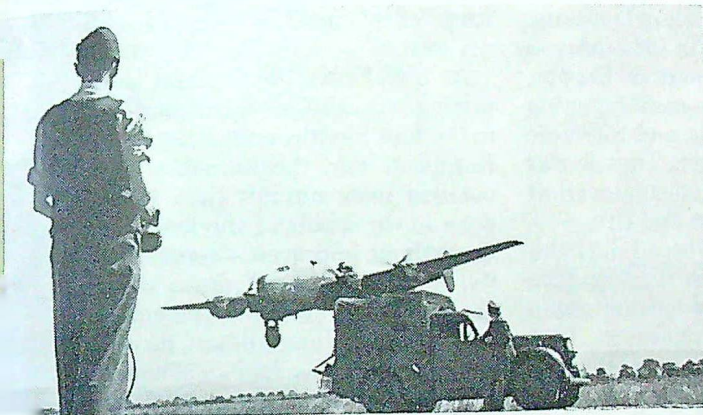
4 Over the target





3 Next step is "bombing-up".

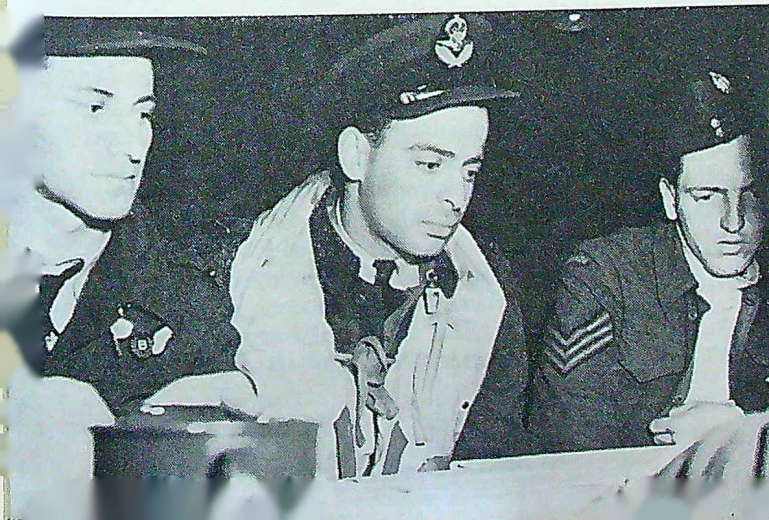
5 The bombers return.



7 Two members of the ground crew (l. to r.): LACs H. P. Ramsay and W. G. Inch examine battle damage to a squadron *Halifax*.



6 Three tired crew members attend de-briefing (l. to r.): F/Os H. H. Zellen and L. Peters and Sgt. D. H. Ayres.



armies reeled back. Bomb loads were increasing and so were the actual bombs themselves. The development of explosives made the weapons even more deadly, while the proportion of explosives to bomb casing increased. Moreover, there were fewer "dud" bombs. Thus, while a *Halifax* or a *Lancaster* carried about three times the weight of bombs that a *Wellington* did, in destructive power the newer aircraft packed much more than three times the wallop of their predecessors.

The most striking thing of all, though, was courage. Some of it was recognized by decorations. Mostly, however, it was the steady, unspectacular bravery of going out, night after night, to face the flak and the fighters, and sometimes the sea itself. Arrival back at base gave no security, for even there the enemy might have an intruder lurking in the approach paths. By 8 May '45 members of the group had received 2,230 awards for gallantry, and many more were honoured in the following months, including the late P/O Andrew Mynarski, VC.

All the courage wasn't exhibited over Europe. Early in the morning of 28 Jun. '44, a bomber of No. 425 Sqn., returning on three engines from a raid, crashed into a parked aircraft at Tholthorpe. Air Commodore A. D. Ross, the base commander, risked death by fire and exploding bombs to rescue the pilot and the rear gunner. A blast threw him to the ground and so injured him that his right arm had to be amputated below the elbow. For his heroism, A/C Ross received the George Cross.

As time went on the size of the forces despatched increased. On 28/29 July '44, 209 aircraft poured 903 tons of high explosives into Hamburg, the largest raid by the group to that date. It was also the most costly — 22 bombers did not return, many of them flown by

veteran crews on their second tours.

Even this was topped. On the night of 6/7 Oct. '44 No. 6 Group despatched 293 aircraft. Of these, 276 bombed the primary target, Dortmund, and three bombed secondary targets. It was a milestone for the group, being the biggest single raid ever mounted on one target. The losses were two bombers. Remarkable as was this achievement, the group's largest effort was still to come.

Inland water transportation plays a major part in the industry of Europe. An elaborate system of canals links rivers and cities, and barges ply this network loaded with coal and ore, gas and finished products. The development of this system has given rise to several cities, the most important being Duisburg, on the Rhine River. In 1944 this was the largest inland port in Europe, a key unit in the manufacturing complex of the Ruhr, and therefore a high priority target. Thus it was that No. 6 Group's maximum effort was directed against this city.

On 14 Oct. '44, in broad daylight, a heavy attack was launched in which 239 aircraft from the group bombed the primary target. That night the bombers returned to stoke the fires. In the second attack, 225 bombers from the Canadian group blasted the main target. In 16 hours the group poured 2,125 tons of high explosives and incendiaries into the port, and returning crews reported the glow of fires being visible from the Dutch coast. In 36 hours the allied air forces dropped more than 10,000 tons on Duisburg. Total RCAF losses were four bombers.

None of this could have been possible without the whole-hearted support of the ground-crews. The group, being located in northern England, was farther away than other groups from all targets except those in Norway. The aircraft had to take off sooner and land later than their brethren farther south.

That meant less time for servicing, fueling and bombing up.

To meet these conditions No. 6 Group turned cooks into mechanics and clerks into armourers. They worked in the shadows, doing a job that was unglamorous but vital. By day and by night, in sweltering heat and pouring rain, often only with a wrench and a flashlight, they kept the bombers going. It wasn't easy and the bane of the armourers was the anonymous someone who kept changing the load.

During 1944 No. 6 Group flew more than three times as many sorties as in 1943, and increased the tonnage of bombs and mines by more than 630 per cent. Yet losses were only 377 aircraft. The loss ratio, in other words, had fallen from 4.6 per cent to less than 1.5 per cent.

As 1945 began the constant hammering was almost at an end. Yet in the four months remaining in the European war, the formation despatched more aircraft than it had done in the whole of the first year. Everything improved — serviceability, results, loss ratio (down to 1.2 per cent), and even the percentage of aircraft reaching primary targets.

Some problems had declined in importance. The advance of the allied armies enabled a similar extension of navigational aids into the continent. German flak and fighters still fought back, however, and on several occasions the bombers of the group had brushes with ME-262 jets.

The most dramatic of these encounters came on the afternoon of 31 Mar. '45 during a raid on Hamburg. A gaggle of about 30 German jet fighters intercepted the bomber stream, shooting down several aircraft. The Canadian gunners hit back and destroyed four of the enemy, probably destroyed three and damaged three.

The last raid was on 25 April, when 184 bombers from No. 6

Group, with more than 160 from No. 4 Group, blasted the German coastal batteries of Wangerooge Island in the Frisian chain, not far from where the *Wellingtons* of No. 427 Sqn. had laid their mines in January 1943.

The Canadian group remained in readiness and was several times alerted for operations, but the rapid collapse of the enemy made this unnecessary. The 8th of May brought victory in Europe and celebrations throughout the group.

On the following day the diarist for RCAF Station Linton noted, with a great deal of understanding:

"A survey of the station revealed that the only damage sustained from the exuberant celebrations of the evening were two broken windows in Bening-

brough Hall. These were on the ground floor and it is presumed that the incident was purely accidental — someone no doubt mistook the windows for doors."

Though the men of No. 6 Group did not know it, for them the war was over. Eight squadrons, equipped with *Lancasters*, flew home in May and June to prepare for service in the Pacific with the "Tiger Force", but Japan collapsed before the tiger was ready to spring and the squadrons disbanded.

No. 6 Group continued to function, but now it was moving repatriated prisoners of war to England. Gradually the stations were transferred to other commands, and on 1 Nov. '45, the group headquarters disbanded. The

RCAF evacuated "Castle Dismal" for the last time.

The record of the group had been outstanding. Until 8 May '45 it had dropped 126,122 tons of bombs and destroyed 116 enemy aircraft. It had also lost 814 aircraft and more than 3,500 men had paid the supreme sacrifice.

In October 1946 His Majesty King George VI approved the badge of No. 6 Group. It depicted a maple leaf superimposed on a York rose, emblematic of the land where the group had been. The proud motto was "Sollertia et Ingenium" — Initiative and Skill. These qualities the group had certainly shown. By valour, work and self-sacrifice the goal had been attained — victory over the Third Reich. ☉

## SYSTEM 37

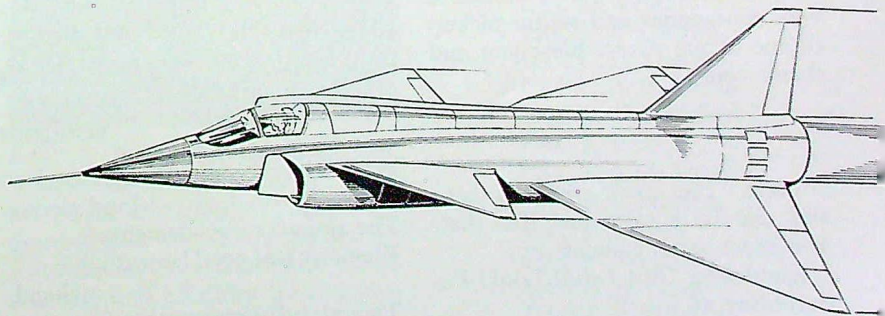
IN this age of advanced technology even a high performance aircraft may only be a component of an overall integrated weapon system. Case in point: Sweden's System 37.

System 37 consists of a Saab 37 aircraft with armament and photographic equipment, special ground service equipment including test gear and special training equipment including simulators. The Saab 37, which will be an all-purpose aircraft, is designed to operate in strike, reconnaissance, fighter or training roles.

The Saab 37 is of unconventional design, having a nose-plane (canard) and a delta wing. This configuration was chosen in order to achieve low

landing speed while still maintaining good high-speed performance. The aircraft is to be fitted with thrust reversers to reduce the landing run still further especially under winter conditions. In order to increase its effectiveness at low

speeds, the canard surface is provided with blown flaps. The aircraft is also equipped with a miniaturized digital computer to handle the multitude of computations needed for navigation, target approach and fire control.



## EVERYBODY GOT INTO THE ACT

Adapted from the RNZAF NEWS

When F/O G. G. Millward of the Royal New Zealand Air Force was forced to abandon his *Harvard* and parachute into the Tasman Sea, his distress call produced a quick and unique response. The rescue of F/O Millward involved, among other people, a civilian pilot and the RNZAF's chief of the air staff.

While his aircraft filled with dense smoke, F/O Millward radioed MAYDAY and bailed-out. A *Dakota* carrying A/V/M I. G. Morrison, chief of the air staff, and several other RNZAF senior officers was flying in the area and intercepted the distress call. The *Dakota* immediately diverted; thus the CAS was in on the search. Soon one of the passengers sighted the downed pilot bobbing along in his orange-coloured dinghy.

The New Zealand search and rescue organization, which was keeping abreast of developments, contacted a civilian pilot who was flying an amphibious aircraft. When the civilian pilot arrived at the scene, daylight was failing and a considerable swell was running, nevertheless the pickup of F/O Millward was accomplished. When the amphibian landed, its pilot received a message from A/V/M Morrison: "I have just watched a very courageous and skilful pickup of one of my pilots. Bless you and thank you".

Boss: "You can't come in here and ask for a raise just like that! You must work yourself up!"

Employee: "But I did! Look! I'm trembling all over!"

# GEORGE MEDAL WINNERS

S/L F. E. McLaren, DFC.



F/L I. K. McKenzie.



Two RCAF pilots will receive the George Medal, one of the Commonwealth's highest awards for bravery in peacetime, for their part in extricating the occupants of a burning aircraft at Station Centralia, last April.

Squadron Leader F. E. McLaren, who already holds a DFC for wartime operations, and F/L I. K. McKenzie have become only the seventh and eighth persons to win this award since World War II. The investiture will take place shortly.

Squadron Leader McLaren and F/L McKenzie were both instructors at the RCAF's Primary Flying

School at Centralia on 6 April 1962 when a *Chipmunk* crashed and burned on the tarmac. Its occupants, F/Os P. B. Gillette and A. W. Thomson, were trapped in their cockpits. Despite the flames and the constant danger of explosion both S/L McLaren and F/L McKenzie managed to extricate F/O Gillette and directed the rescue of F/O Thomson even though they were severely burned in the rescue operation.

In the words of the citation, "the two officers displayed leadership and courage of a very high order at grave risk to themselves."

### BOUQUET FOR GCA

We lurch and zoom through murk  
[and gloom,  
The aircraft seems demented.  
We don't feel good beneath this  
[hood,  
Though fully instrumented.

So on such days we offer praise  
For GCA's ability  
To guide our flight till we alight  
In zero visibility.

A. Klinge

ROUNDEL

# Air Force College Journal Essay Contest for 1963

## The Suggestion Box

The 1963 Air Force College JOURNAL Essay Contest will be open to members of the Canadian armed forces or any Canadian citizen. The prize of \$250.00 will be awarded for an unsolicited essay not longer than 5,000 words on a topic likely to stimulate thought on military matters, particularly those of interest to the RCAF. The field thus includes strategy, operations, training, logistics, personnel administration, technical services, research and production, social sciences, and any other related field. In addition to the prize-winning essay, the judges may select a maximum of two other essays worthy of honourable mention. Writers of these essays will be awarded a secondary prize of \$100.00 each.

The authors of the winning and honourable mention essays shall also be paid a professional fee if the essays are published in the JOURNAL.

The essays should be analytical or interpretative and not merely expositions or personal narratives. They shall not contain classified information. Each essay shall be submitted in two copies, typed, and double spaced. Manuscripts must reach the Editor, Air Force College JOURNAL, Armour Heights, Toronto 12, Ontario, by 3 May 63. All essays shall become the property of the Air Force College JOURNAL.

Service personnel are particularly invited to enter the essay contest. The Board of Directors of the JOURNAL shall appoint the judges whose decision shall be final. If no essay meets the standard set by the judges, they have the right to make no award of any kind.



Cpl. R. J. Theriault of 6 R. D. Trenton suggested a method for timing the automatic parachute release mechanism used in jet aircraft.

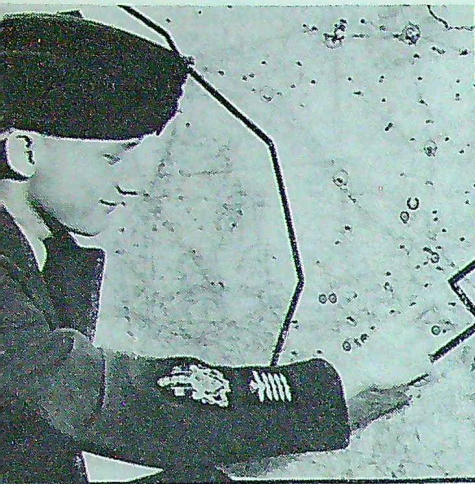


LAC J. R. McNaughton of Stn. Summerside suggested a device to ensure the safe storage of armament ground pins which are carried in *Neptune* and *Argus* aircraft which was adopted officially by the promulgation of EO 05-110A-6A/232.

The following individuals have received awards from the Suggestion Award Committee, Department of National Defence, for suggestions which have been officially adopted by the RCAF. Photographs of winners of \$100 or over appear at left. Proper procedure for submitting suggestions is detailed in AFAO 99.00/01.

### Other award winners:

WO1 W. F. Bevan  
WO1 N. J. Matthews  
WO2 D. Haugh  
WO2 R. K. Ellery  
FS A. A. Burge  
FS A. A. Binnie  
FS O. W. MacKenzie  
FS G. E. Davies  
FS S. N. Grove  
Sgt. C. H. Stokes  
Sgt. G. V. Palmer  
Sgt. R. S. Smith  
Sgt. R. A. Thomson  
Cpl. R. D. Hedges  
Cpl. E. W. Vincent  
Cpl. J. R. Helpard  
Cpl. J. L. Arsenault  
Cpl. W. C. Elder  
Cpl. D. Walsh  
Cpl. D. E. Anderson  
Cpl. W. J. Gehrke  
Cpl. A. E. Luker (2 awards)  
LAC K. Wright  
LAC N. B. Curran  
LAC G. D. Dixon  
LAC G. A. E. Karila  
LAC H. C. Goddard  
LAC R. Jodoin  
LAC T. J. M. Town  
LAC A. J. Warren  
LAC J. J. Barry  
LAC F. Saindon  
LAC G. B. Love  
LAC R. A. Swayze



## TWENTY-TWO YEARS OF AIR CADETS

**D**URING National Air Cadet Week, 21-27 April this year, the Air Cadet League of Canada will observe the 22nd anniversary of its founding. Air Cadet Week is held annually to familiarize the public with the accomplishments of this teen-age youth program.

While military cadet organizations exist in many lands, the air cadet movement in Canada is perhaps unique in that it is sponsored by a civilian organization, the Air Cadet League of Canada, which works in close partnership with the Royal Canadian Air Force. The following paragraphs have been prepared with the thought that ROUNDEL readers would be interested in how the Air Cadet League of Canada came into being in 1941.

### THE EARLY DAYS

During the dark days early in World War II, when France had fallen, the Low Countries had been invaded and Britain was under heavy attack from the air, the critical need was for planes and more planes — and for trained young men to fly them in defence of freedom.

Against this background there grew in Canada the idea of a select corps of teen-aged youths who would devote some of their spare time preparing for the day when they would take their places as air-crew in the ranks of the RCAF. Even before the Air Cadet League started there was a flourishing air cadet unit in Vancouver, and other groups had sprung up in Montreal,

Windsor, Penhold and elsewhere.

In 1940 Air Minister C. G. Power, who was very much aware of the need for air cadet training, called in a group of influential civilians and asked them to set up a country-wide voluntary organization to sponsor and develop this growing movement. The response was immediate, and a civilian organization was soon created to work on a partnership basis with the RCAF. As it later developed, this partnership was to be the main reason for the striking success of the air cadet movement in Canada.

On 11 November 1940, Order-in-Council P.C. 6647 was passed. This order authorized the formation of the Air Cadet League of Canada and set forth the responsibilities of the civilian body and the RCAF. On 9 April 1941 the Air Cadet League of Canada was granted a Dominion charter, authorizing it to operate as a non-profit corporation. An administrative headquarters was established in Ottawa and the stage was set for a concentrated appeal throughout the provinces.

In the spring of 1941 a national board of key men was chosen and it met for the first time in Ottawa on 2 June of that year. One of the first acts of the national directors was to appoint a chairman in each of the nine provinces. The provincial chairmen, in turn, set up their own committees and these gentlemen travelled widely, talking to public-minded citizens and recruiting local sponsorship for the squadrons.

The organization of squadrons proceeded through the fall months of 1941 and by the end of the year there were 79 squadrons affiliated across the country. By May 1942 there were 135 squadrons and 10,000 cadets; and a year later 315 squadrons with 23,000 cadets.

The primary purpose of the League during its formative years was a military one, but its founders were also thinking in terms of the long-range benefits of air cadet training. They realized that, through voluntary study, the cadets would improve their knowledge and increase their usefulness to the community. And in supervised squadron activities they would find opportunities to develop those qualities usually associated with good citizenship.

It was the character-building aspect of air cadet training which appealed most strongly to the youth leaders of the country. Service clubs, educators, boards of trade and other groups offered their services to the League, not only as a contribution to the war effort but also as a means of assisting the youth of the country along the road to good citizenship. In September 1944 the movement reached the peak strength of 374 squadrons, over 29,000 cadets, 2000 officers, 650 civilian instructors and another 2000 civilians who supplied financial and other support.

It is unfortunate that during the early years accurate records were not kept of the number of cadets

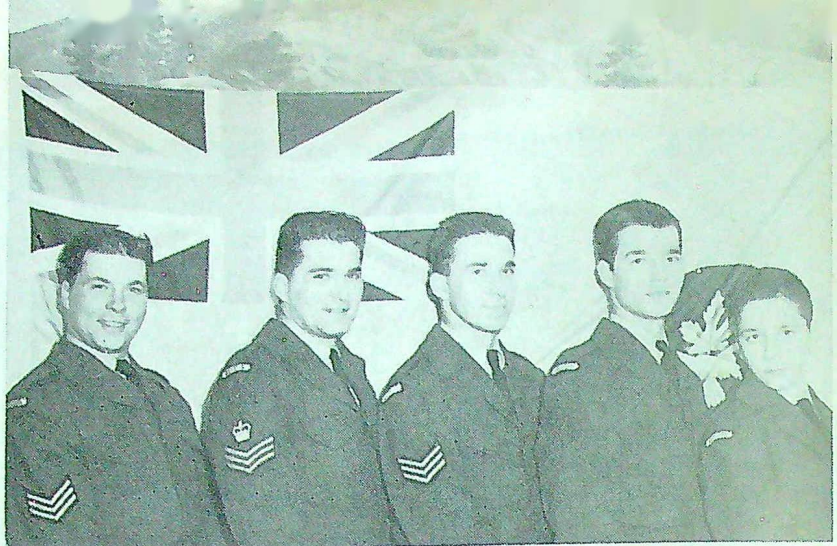
who joined the fighting forces. It has been established, however, that during one brief period over 3000 air cadets graduated into the wartime RCAF and more than a score of them were subsequently decorated for gallantry. This was a proud record and one which provided tangible proof of the value of air cadet training.

### THE POST-WAR PERIOD

The peacetime story of the Air Cadet League is perhaps even more impressive than its wartime history. Commencing in late 1944, the League planned and carried out its peacetime conversion with the same vigour that it had tackled its wartime responsibilities. Probably the most important job facing the League in 1945 was to provide an incentive which would rival in its appeal the wartime goal of graduation into the RCAF. The answer was found in a variety of awards for outstanding proficiency and loyalty to the squadrons.

One of the top awards from the standpoint of popularity: summer camps of two-weeks duration at RCAF stations spaced across Canada. In 1946 the RCAF introduced flying scholarship courses for senior cadets, a development which gave added impetus to the movement. A year later the first of an annual series of goodwill exchange visits between cadets of Canada and the United Kingdom was carried out. In the summer of 1952 the first seven-week leadership training course was held, and three years later was supplemented by another summer course for drill instructors. The League has also been active in the field of academic scholarships, and large numbers of cadets have received generous financial assistance enabling them to obtain higher education.

Immediately following the end of the war, there was a natural lessening of interest in all cadet



Five brothers of the Bozzer family of Kimberley, B.C. have served in No. 266 Squadron. (L. to r.): Victor, Dino, Raymond, Ronald and Leo.

activities throughout Canada. Many squadrons that had been set up "for the duration" were disbanded and the movement settled down to a low point of approximately 11,000 cadets in 155 squadrons.

In 1946 the government approved a maximum establishment for the post-war period of 15,000 cadets across Canada. Simultaneously, a new peacetime program for air cadets, based on a combination of aviation and citizenship training, was put into effect by the League and the RCAF.

Early in 1949 the movement spread to the new province of Newfoundland where six active squadrons, all supported by strong civilian committees, were in operation only a few weeks after confederation. A year later the need for an increase in the maximum establishment was recognized by the government and the ceiling was raised to 22,500 cadets.

In 1958, at the League's request and in order to meet the growing need for new squadrons in all parts of Canada, the establishment was raised to 25,500. In order for the movement to operate within this

quota, it was necessary to establish air cadet strength quotas at provincial and local levels. The result was that waiting lists were created not only for boys wishing to join but for new units as well. In view of the growing demand for new units and to provide for gradual expansion, authority was granted in 1962 for an increase by stages in the air cadet establishment to 30,000 by 1965.

The table below shows cadet and squadrons strength figures, at various stages since inception of the air cadet movement in 1941:

YEAR	CADETS	SQUADRONS
1941	8,000	79
1943	28,119	350
1944	29,037	374
1946	11,000	155
1950	16,746	198
1955	21,099	277
1960	25,500	332
1962	27,000	345
1963	28,000	—
1964	29,000	—
1965	30,000	—

### LEAGUE ORGANIZATION

The Air Cadet League of Canada has been incorporated to co-operate

with the RCAF in the formation and administration of air cadet units. Responsibilities are divided as follows: the RCAF is responsible for training and supply; the League is responsible for public relations and administration. In actual practice, however, there is considerable overlapping of these responsibilities.

To carry out the duties assigned to it, the League organization is divided into three levels: national, provincial and local.

### NATIONAL LEVEL

The League is governed by a national board of directors comprised of 55 Canadian citizens, representing all ten provinces. The board meets annually, chooses a president, vice-presidents and a 12-member national executive committee. There is also an advisory board made up of the past presidents of the League and a number of honorary members. These two committees assist the president with policy direction of the League throughout the year. The national board maintains a full time administrative headquarters in Ottawa under the direction of a general manager. This office works closely with AFHQ, and provides year-round planning and supervision of the Air Cadet League and its numerous activities.

### PROVINCIAL LEVEL

There are 11 provincial committees, one for each province and one for the Northwestern Ontario zone. The membership comprises all local sponsoring committee chairmen, plus such other persons as may be selected. Provision is made for prominent and influential citizens to associate themselves with the provincial committees as members of advisory councils. Provincial committees meet annually, elect a chairman, vice-chairman and other officers and, in some cases, employ fulltime secretaries or managers. In

densely populated areas there may also be a regional committee which comes under the jurisdiction of the provincial committee. Provincial committees supervise the activities of all air cadet units in their respective areas and are required to raise their own finances by means of public subscription.

### LOCAL LEVEL

Standing behind each squadron is a local sponsoring committee, usually affiliated with a service club, RCAF Association wing, Canadian Legion branch, school board or other community group. Local committees, often referred to as "the backbone of the League", are expected to finance the squadrons, see that they are properly managed, adequately housed and efficiently operated.

Local sponsoring committees have a very broad field of respon-

An external check is just as important on a little aircraft as it is on a big one so WO J. G. Filmore, an air cadet flying scholarship winner, does a methodical pre-flight inspection. Like many thousands of air cadets before him, Filmore is now a member of the RCAF.



sibilities in relation to the week-by-week training of the cadets. It is the function of the local sponsoring committee to recommend appointment and retirement of squadron officers; to provide where needed, accommodation, transportation and amenities for the cadets; to look after the public relations aspect of squadron operations; and to provide whatever funds may be needed to ensure the successful operation of the squadron. Local committees usually consist of a chairman, an honorary secretary-treasurer, and not less than three other members.

### LIAISON

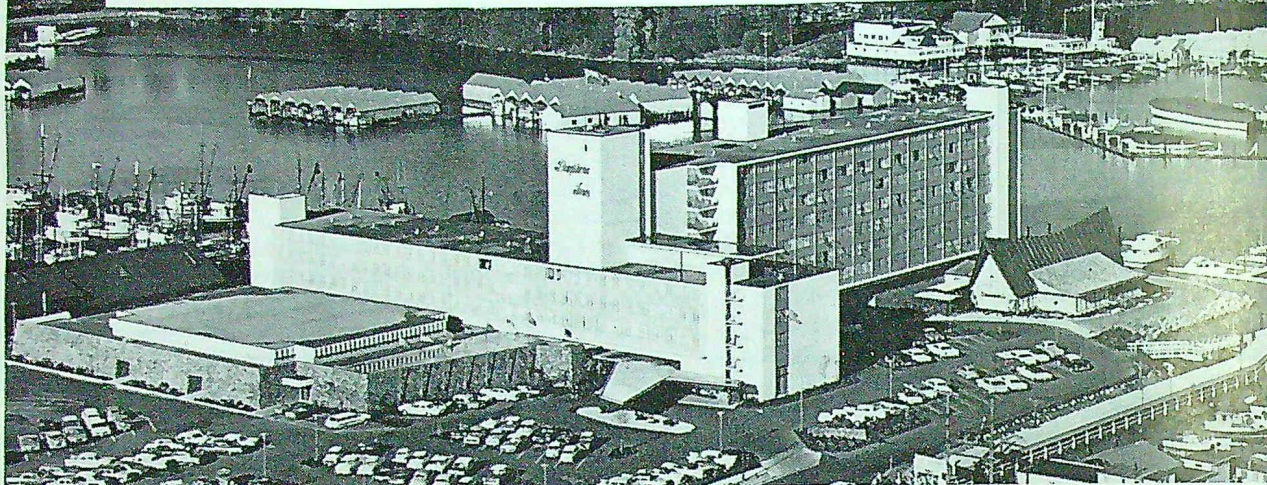
At each level of League authority, liaison is maintained with the corresponding level in the RCAF. At the national level there is a direct line of communication between the president of the League and the chief of the air staff, and contact is maintained regularly between the League's general manager and a full-time air cadet liaison officer at Air Force Headquarters. Liaison with provincial committees of the League is the responsibility of the appropriate RCAF commands and air divisions, which also supervise RCAF training policy in respect to the air cadet squadrons allocated to them. At the local level each air cadet squadron is attached to an RCAF "parent unit" for liaison, material, supply and accounting purposes.

From a national viewpoint, the success of the air cadet movement is nicely summed up in a statement made by His Excellency Major General Georges P. Vanier, Governor-General of Canada: "By means of disciplined effort over the years the Air Cadet League has emphasized character building and leadership training for its members. In so doing it has fostered national maturity at home and understanding between this country and its allies abroad."



RCAF ASSOCIATION

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



The Bayshore Inn, Vancouver.

## VANCOUVER — SITE OF THE 13th ANNUAL CONVENTION, 26-27-28 SEPTEMBER 1963

THE city of Vancouver, the largest and most important Canadian seaport on the Pacific coast, was named after Captain George Vancouver, Royal Navy, who led an expedition to explore the North Pacific coastline in 1790. Captain Vancouver, who had previously served under James Cook in the explorations of the southern Pacific, completed what was termed "a most remark-

able and meticulous survey". In addition to the city, Vancouver Island and many other geographical features in Canada, Australia and elsewhere have been named in his honour.

In 1827 the Hudson's Bay Company established Fort Langley, a trading post, and in 1858 a short-lived gold rush was made to the Fraser River and Burrard Inlet, but

it was not until 1862 that the first white settlers arrived.

The city's growth in the intervening years has been phenomenal. In the latest census Vancouver had a metropolitan population of 777,197.

This, then, is the site of the RCAFA National Convention for 1963. What a wonderful time and opportunity to "go west young man"!

## A SPECIAL VOTE OF THANKS

Jane Dolan was the pretty little daughter of Matt Dolan, a member of No. 437 (York) Wing and chief instructor of No. 172 (York) Squadron air cadets. She was born with a congenital heart disease which, despite the efforts of the best surgical teams in the country, caused her death in September 1960.

This tragic loss brought the subject of heart disabilities directly to the attention of the executive of No. 437 Wing. A canvass for a heart fund was commenced in February 1961. The combined efforts of No. 437 Wing and No. 172 Squadron raised \$5,600. Other air cadet squadrons in Toronto became interested and this year a total of \$13,600 has been collected. It is reassuring to us all that the memory of a little girl set this movement going so that some day another little girl may be restored to a normal and healthy life.

## RCAF ASSOCIATION AWARD

The highest air cadet award in Canada has been won this year by No. 155 (Sault Ste. Marie) Squadron. In winning this award the Sault Ste. Marie Squadron has earned the distinction of being the most proficient air cadet squadron in Canada.

The RCAF Association award was first presented in 1951 and remains in the possession of the winning squadron for one year. A parchment scroll accompanies the trophy and is retained permanently by the winning squadron. In addition to being victors this year, No. 155 Squadron has added the honour of winning the award twice, having won the trophy previously in 1956. The RCAF Association sponsors 56 air cadet squadrons across Canada. It is the unanimous opinion of all the wings concerned that this endeavour is one of their most rewarding projects.

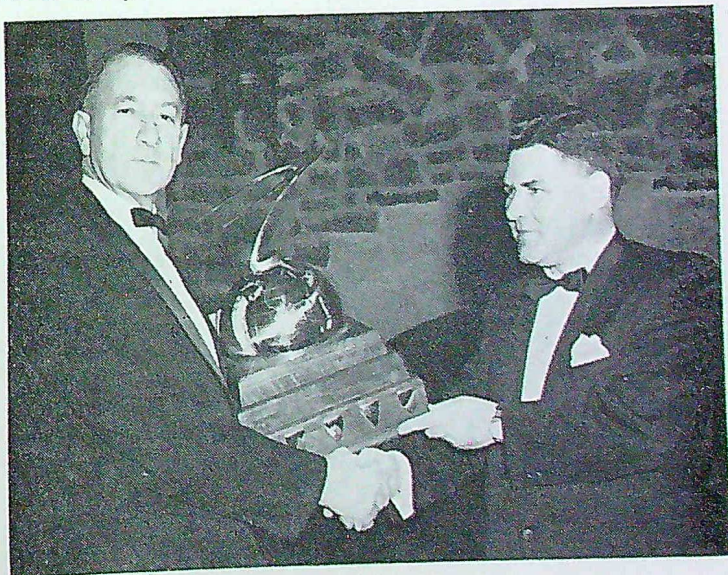


In appreciation of his assistance to Polish-Canadians G/C S. M. Sznuk was presented with a silver smokers' box at the Annual Blue Ball. The presentation was made by Mr. M. A. Taras, president No. 310 Wilno Wing. A/V/M W. W. Bean, O.B.E., AFHQ, looks on.

## QUEBEC GROUP FORMS NEW WING

An application for charter has just been received for the formation of a new wing in the west-end of Montreal. The wing will be known as No. 317 (Lac St. Louis) Wing, Pointe Claire. Major credit for formation of this wing is due Miss Madeline Pineo. We extend congratulations to the newest wing in the Association.

Mr. P. F. Connell, D.F.M., presents RCAF Association trophy to Mr. Victor Simpson, Ontario Chairman Air Cadet League, who accepted the award on behalf of this year's winner No. 155 (Sault Ste Marie) Squadron.



## Members-at-Large

As a result of a request sent out in January to all members-at-large for names and addresses of friends who served in the RCAF, we wish to thank all who responded so promptly. To date over 1500 names have been received and more are expected. To all members-at-large the national office would like to say "thank you" for their continued interest and co-operation.

## NOTICE TO ALL MEMBERS INCREASE IN MEMBERSHIP DUES

The Twelfth Annual Convention authorized an increase in the dues from three to four dollars commencing Aug. 1st, 1963. The increase in revenue will be used to cover Association operating expenditures and the procurement of "Wings In Space". (The required amendment to the Association By-Laws has been approved by the Secretary of State.)

# Letters to the Editor

## SOME LIKE COVER

Dear Sir:

I would like to compliment you on your Jan.-Feb. issue of *ROUNDEL*. The new cover is very artistic and provides a very pleasant "new-look" to the magazine.

F/L K. M. Morgan,  
Records Office, AFHQ.

## SOME DON'T

Dear Sir:

Let's keep *OUR* magazine looking like it belongs to *OUR* Air Force. Let's go back to the red-white-blue cover. One issue of sickly green is enough.

J. A. Hill,  
116 Price Ave.,  
Welland, Ont.

## BET WON

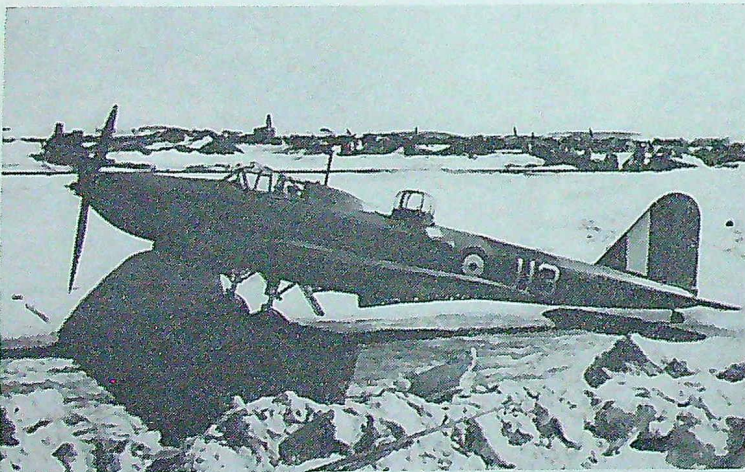
Dear Sir:

I have been having an argument with another member of the RCAF concerning whether or not the Fairey Battle was equipped with a gun-turret.

In 1944 I attended No. 9 Bombing and Gunnery School at Mont Joli and graduated as a sergeant air-gunner. I am sure our Fairey Battles were equipped with mid-upper turrets (Bristol type). My friend says that the Battle was not capable of carrying a turret as the turret was too heavy for the aircraft. Would you please settle this argument? If I am right I win a small bet of \$1.00.

J. R. Cumming,  
Debert, N.S.

*(You have just won \$1.00. The original Fairey Battles had a gun position in the rear not a gun turret. (See this month's back cover.) The later models did have a turret as shown in the accompanying photograph . . . Editor.)*



## EXERCISE IN SEMANTICS

Dear Sir:

For some time students of military locution have felt a growing concern as they observe the use of picturesque language by NCOs and airmen fall into desuetude. The ungrammatical but colorful speech, liberally sprinkled with the four letter words dear to soldiers since Hannibal crossed the Alps, is heard only on the lips of the few remaining "old sweats". The new breed communicates in a jargon that has one law — never use a single syllable word if you know a bigger one that sounds more official. So they never go anywhere — they 'proceed'; nothing is used — it is 'utilized'; nothing is done — it is 'accomplished'. — S/L Bowdery's article in the Jan-Feb issue has shored up our trembling faith. His verbatim (it was in double quotes) report to Sgt. Lovejoy's reply to a question shows that our NCO's are lighting the way by progressing from the bureaucratic to the poetic. "Tall green trees pushing their lush growth towards the lowering rain-laden clouds". Beautiful, — it generates hope and sets an example. I am sure the next time I ask a sergeant what he thought of a tour on the DEW Line he won't say, "Nothing but — snow everywhere and cold enough to alter a brass monkey". Indeed not, he will tell me, "Winter brings a pristine blanket, softening the harsh realities of rock and tundra, and the crisp cold of an Arctic morning gives a glow to the cheeks and a lift to the spirits". Or will he?

Perhaps the poesy lies in the poetic licence S/L Bowdery took in reporting Sgt. Lovejoy's answer.

S/L D. A. Reid,  
RCAF Station Edgar, Ont.

## SOMEBODY GOOFED

Dear Sir:

In your issue for Jan.-Feb. 63, under

the heading The Suggestion Box, the captions written under WO2 M. Shopka and Sgt. T. L. Williams should be reversed.

Cpl. J. N. Mowatt,  
RCAF Stn. Winnipeg.

*(Our apologies to the two NCOs concerned . . . Editor.)*

## VTOL STARFIGHTER?

Dear Sir:

I enjoyed the article "Hot Aircraft at Cold Lake" in the December issue of *ROUNDEL*. I would like, however, to take issue with two of the statements in this article.

The first refers to the CF-104; it is the only aircraft in the RCAF which does not require lift to fly. The CF-104 takes off and flies with "brute force". Is F/L Coughlin saying that the CF-104 has VTOL characteristics, and that it is something like a rocket while in flight? If it requires no lift to fly its static thrust must be greater than its weight.

I quote the following from *The Observer Book of Aircraft* (1962 edition). "F-104, Power Plant 10,350 lbs. S.T. (dry) and 16,150 lbs. S.T. (after burning). Weights, normal loaded 20,900 lbs., maximum 27,000 lbs." It is apparent that the minimum weight is greater than the maximum thrust. It is, of course, well known that the CF-104 is not a VTOL aeroplane but that, in fact, it has wings to produce lift, and that the lift produced must be in the order of 25,000 lbs. in level flight. The thrust and weight figures were quoted only to show the confusion which could result from taking this statement at face value.

The second statement is in the same paragraph: "Sabre pilots wanting to go through the sound barrier point the nose of their aircraft straight down and open the throttle wide". Is it true that the Sabre is dived "straight down" to exceed Mach One?

F/L R. C. Chambers, RAF,  
Syerston, Newark,  
Nottinghamshire, England.

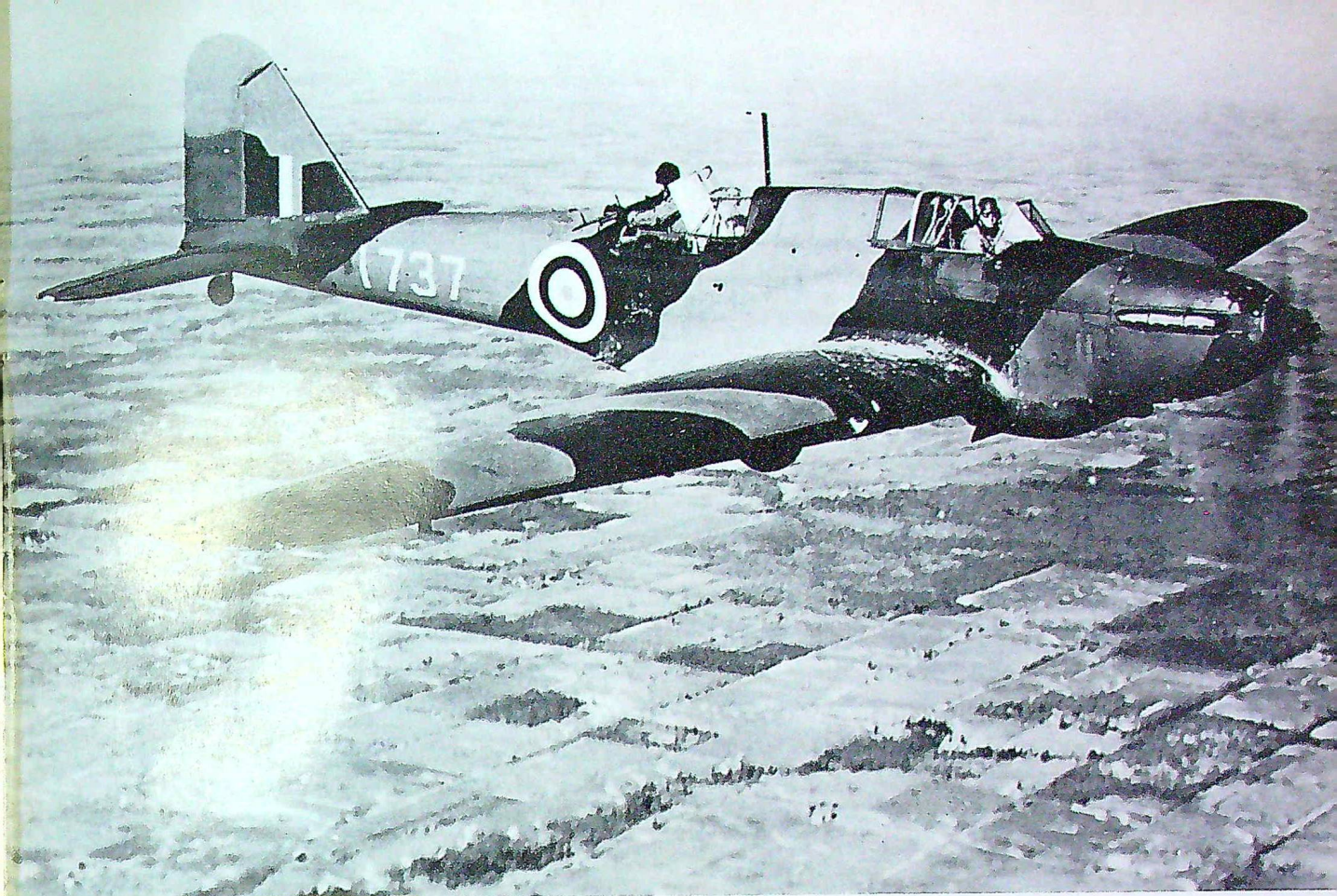
*(F/L Chambers is, of course, correct. Even the superb Super Starfighter requires lift to fly. However, the implication that the CF-104 is something like a rocket, has some merit if you are willing to accept Lockheed's statement that the Starfighter is "a missile with a man in it". As for the statement that the Sabre is dived "straight down" to exceed Mach 1 — diving as close to the vertical as possible is standard practice with our pilots . . . Editor.)*

## PEN PALS WANTED

Dear Sir:

I would be most grateful if you would print my appeal for pen pals in your magazine. I am in my 20s and my hobbies are stamp collecting, music both modern and jazz, and all sports.

Mr. Ralph Gunner,  
9 Dunmore St.,  
Glasgow C5, Scotland.



# Aircraft ALBUM:

## *Fairey Battle*

First flown in March 1936, the *Battle* was operationally obsolete by 1939 when it was in service as a front-line bomber. Following a gallant and hopeless career in France, it was relegated to training duties, in which it contributed more to the war effort than it had as an operational machine.

The RCAF received its first *Battles* in August 1939, when eight were sent by rail to Camp Borden. More followed from England and a total of 802 eventually served with the RCAF. They were used as dual control trainers, target tugs, and gunnery trainers in the Bombing and Gunnery Schools of the British Commonwealth Air Training Plan. With the introduction of *Bolingbrokes* and *Harvards*, the number of *Battles* in service declined, but they continued in service until the end of hostilities. *Battles* were also flown by Nos. 111 and 122 Squadrons of the RCAF.

Powered by a Rolls-Royce Merlin, the *Battle* had a top speed of 241 m.p.h. and cruised at 210 m.p.h. Span was 54 feet, length 52 feet 2 inches, and the armament was one machine gun in one wing, another in the rear cockpit, plus half a ton of bombs.

*Roger Duhamel*

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