

TO TRAINS

# ROUNDDEL

Come to  
QUEBEC

TICKETS

TICKET

NEWFOUN  
SKI

CANADIA  
ROCKIES

ALASKA

LAND

Vacation

ONTARIO

WEEK END  
Excursion  
LOW FARE

VISIT

NOVA SCOT

VOL. I, No. 8  
JUNE 1949

ROYAL CANADIAN AIR FORCE



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

VOL. I, No. 8

JUNE 1949

## CONTENTS

### EDITORIAL

	<i>page</i>
Shatterproof in Spring .....	1

### ARTICLES

St. Hubert Revamped .....	2
The South African Air Force: Part I. ....	10
Northern Skytrails: Part VIII. ....	18
Air Power .....	28
Men, Birds and Planets: Part II. ....	40
How the Air Force Spends its Money. ....	43

### REGULAR FEATURES

Royal Canadian Air Cadets .....	8
Accident Prevention: Weather Hazards in Summer Flying .....	15
What's the Score? .....	26
RCAF Association .....	37
Letters to the Editor .....	48

### MISCELLANY

Honour .....	14
Sky Map .....	17
Have You Seen These Posters? .....	25
Gadzooks! .....	36
An Old Master .....	39
Glimpses at 426(T) Squadron Dorval. ....	47
"We Keep Watch Over the Waters" .....	48



# SHATTERPROOF in SPRING

Sir:

Summer is once more approaching on the double, and even the stern spirit of Shatterproof feels itself slightly seduced. As I write, I am reclining in the long grass where the aerodrome borders on one end of the golf course. In the words of some civilian poet, "I loaf and invite my soul"—though what he was inviting his soul to, I have never quite figured out. Since he was a poet, it was probably something best not mentioned. I have known several poets in the Service, and their work is never sung outside the Mess.

For the past hour I have been relaxing in the peace and quiet of this Sunday afternoon in May . . . the innocent laughter of children shooting with their slingshots at the lambs in Farmer Fetlock's nearby meadow . . . the musical bellowing of his prize bull, "Jack the Ripper" . . . the squealing of a pig, muted by distance, as the hired man slits its throat . . . the graceful hovering of a hawk before it swoops to bury its talons in a rabbit . . . and in the rough, not far away, the voice of Squadron Leader Bostitch addressing his ball. In brief, I am a boy in the field, communing with Nature.

It is possible that the picture I paint may alarm you. You may say to yourself: "This is dangerous. Shatterproof is getting soft." But you need have no fears, sir. Responsive though I may be to the lightest touch of beauty, my devotion to duty still transcends all other emotions. It was from this very spot yesterday evening that I witnessed WO1 Gallstone make one of his customary bad drives. The ball rolled to within two feet of where I lay. With characteristic presence of mind, I reached out for it and unobtrusively threw it into a deep irrigation ditch some ten yards away. I consider that WO1 Gallstone derived considerable benefit, both physical and spiritual, from the lesson in patience to which he was presently compelled to submit himself.

Whether or not I have been influenced by the season, I don't know. The fact remains, however, that my thoughts have lately been turning towards the tender subject of marriage. Not long ago I received a letter from the girls of NWAC Headquarters, imploring me to visit them. I was



unable, of course, to comply with their request; but the episode indicates to me that I have perhaps been somewhat selfish. After all, I am a man of commanding presence, in the prime of life, and can offer a home (run on efficient military lines) to any worthy applicant. My wife would never be bored: I am used to allocating work. And should our union be blessed with issue—but enough! I dream too much.

A figure is hurrying towards me from the direction of the farm. I think—yes, it is Miss Clasper, Farmer Fetlock's sister-in-law. I do not need to see what she is carrying. It is a large and leathery piece of pie. She has been watching for me through her field-glasses again.

There are times to play the man, sir—but this is not one of them.

Yours in haste,

*Shatterproof*

# St. Hubert

# REVAMPED

by F/O W. M. LEE and F/O M. A. EAST

## Introduction

THE RAPID GROWTH of Canada's fighter defence programme at RCAF Station, St. Hubert, P.Q., may be aptly described by the phrase recently coined for the RCAF's Silver Jubilee: "SO MUCH IN SO SHORT A TIME." In less than three years, St. Hubert has risen from a retired wartime flying station to an organization embracing Canada's first post-war regular fighter squadron, an operational training unit, two auxiliary fighter squadrons, and a radar and communications unit. In addition, members of the RCAF's second fighter squadron are presently receiving operational training at the O.T.U.—although the squadron itself has not yet been formed.

Designed originally as a mooring-base for trans-Atlantic dirigible service, St. Hubert was quickly converted into a Service Flying Training School early in the last war. The station contributed over 1,000 pilots to the stream of air-crew trained by the B.C.A.T.P. Towards the close of the war, the S.F.T.S. was transferred to the west, and St. Hubert temporarily passed out of the spotlight.

During October, 1946, two Montreal auxiliary fighter squadrons were formed, and week-ends at St. Hubert began to echo again with the bustle of earlier days. Since then, with the addition of new units, the Station's stature in Canada's air defence has increased immeasurably.

## The O.T.U.

The Operational Training Unit, where wartime pilots and former Flight Cadets are converted to Vampires, occupies a prominent position in the RCAF's peacetime flying programme. Commanded by Wing Cdr. "Bud" Malloy, D.F.C.,

well-known fighter pilot and flying instructor in the last war, the O.T.U. is looking forward to turning out its first batch of fully qualified jet fighter pilots in the very near future. The 12-week course, the first seven weeks of which are occupied half with ground and half with air training, includes instruction in low and high altitude flying, navigation, aerial interception, formation flying, and armament practice.



Wing Cdr. J. A. D. Richer, D.F.C.

With dual instruction an impossibility in the single-seat Vampire, students receive thorough ground training before they ever step into a cockpit. A stiff ground examination, requiring 85% for a pass (average mark for the first course was over 96%), and close to 30 hours in Harvards, prepare the pilots for the experience of flying the 500-mile-per-hour Vamps.

Wing Cdr. Mahoy has a top-notch trio of experienced jet pilots in Flt. Lt. "Joe" Edwards, Flt. Lt. "Irish" Ireland, D.F.C., and F/O Freddie Evans, D.F.C., to instruct the former Flight Cadets, whose average age is 20. Although susceptibility to blackout is to a large degree dependent upon physical condition, the student pilots are not restricted in any way after working hours. Says Freddie Evans: "They are conscious of the fact that they are flying high-speed aircraft, and they govern themselves accordingly."

The O.T.U. teaches a brand of formation flying that leaves the ground-watcher breathless. The main formation, called the "Fluid Six," consists of two staggered lead fighters trailed in a "V" by two more pairs of staggered aircraft. Although the formation is basically simple, it can carry out numerous intricate manoeuvres. Jet-propelled aircraft are tricky to handle in formation work at first, because of the tendency to lag. With a conventional fighter, a touch of the throttle is almost immediately followed by acceleration of the aircraft. The jet engine, however, does not react so swiftly. The pilot must learn to take this fact into consideration when manoeuvring his plane at close quarters with other aircraft. Flt. Lt. Edwards makes veiled reference to another formation the school intends to try out. It is picturesquely titled "The Finger Four." But that is for the future. . .

The school is trying to develop a Canadian brand of fighter tactics—based, naturally enough, on the wider experience of the RAF, the USAF, and the USN.

The pilots themselves are fond of the Vampire. They have found it to be a reliable aircraft that demands only common-sense handling. As one of them puts it: "One of the big dangers in flying jets is the possibility of being injured in an



(Left) LAC Ken Leeming, ex-RAF airman who recently joined the RCAF in London, Eng., with LAC "Chuck" Empey.

automobile crash on the long drive out to the flying field."

The young students get ample opportunity for practice. Interceptor runs against Lancasters are an important phase of the course. Using Battle-of-Britain technique, the flyers are alerted to their machines, and controlled in their attack by ground radar systems. The Lanc. crews try every type of manoeuvre to get in a simulated bombing run over the station, while the radar controllers peer at their screens for an indication that an attack is on. When word is flashed to the ready-room, the pilots rush to their aircraft, take off in formations, and climb to height, all the time following the instructions of the ground controller. Substantially, this is exactly what would happen in reality.

Typical of the young men receiving this training is F/O Claude LaFrance, 19, of Quebec City, who entered the Air Force in September, 1947. Trained as a pilot at Centralia, he finds that flying a Vampire is an experience that makes life worth living.

It takes a highly trained corps of mechanics (aero-engine, airframe, and instrument), electricians, armourers, and others, to keep the aircraft in the air. St. Hubert has them all. F/Sgt. J. S.

Brock, a former RAF pilot who served on operations overseas as a Flight Lieutenant, has nothing but praise for the veteran and not-so-veteran tradesmen under his command.

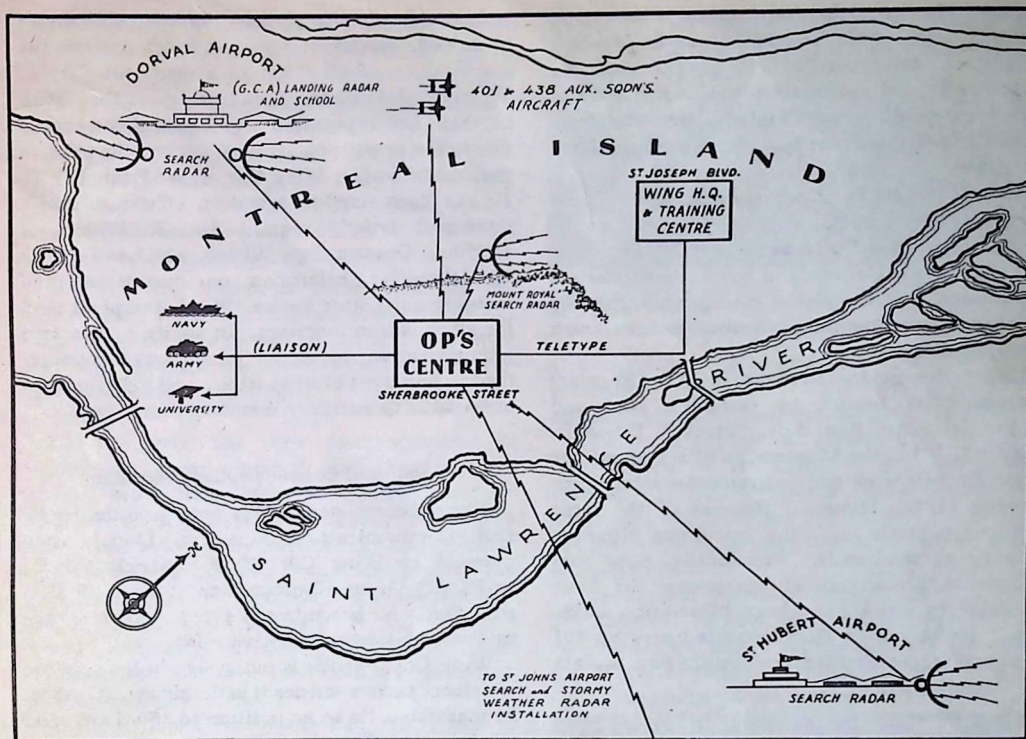
Predominantly high in trade grouping (average minimum: Group 3 outright), his men have a mature idea of their position in the overall defence scheme of the Air Force. What F/Sgt. Brock likes about the new ones among them is the enthusiasm with which they tackle their jobs. He says: "Most of them would never admit it, but they actually get a big kick out of seeing the results of their work flying about the Montreal skies." Although the armourers grumble a bit at having to lie down in order to reload the four 20-millimeter canons in the nose, tradesmen generally have a sincere affection for the slick little Vampire, which they call the "Screaming Minny"—because, as LAC "Chuck" Empty puts it, "it sounds like a thousand blow-

torches all going at once." The nickname "Minny," incidentally, stems from the "Minenwerfers"—the German mortars of World War I. Some of the more experienced mechanics say they can judge the condition of a jet-engine by its scream.

Probably the person on the station who believes he knows the jet-plane best is a big good-natured fellow named "Sub," a black-coated Labrador retriever belonging to one of the pilots. He used to romp about the hangars and tarmac on a daily inspection tour. One day he spotted his master climbing into a Vamp for a take-off and decided to gallop out for a "hello" bark. By the time he got there, however, the plane was under way. "Sub" ran smack into the business end of the jet and got himself a scorched crew-cut before he could get out so much as a single astonished yip. He is no longer air-minded.



*Officers and men of 438 Sqdn. restore their tissues after donating blood to Red Cross.*



Radar and Comm. hook-up in Montreal area.

## 410 Squadron

Graduates of the O.T.U. do not have far to go to find an operational fighter squadron. Canada's first Regular Air Force interceptor squadron, No. 410, is being quartered at St. Hubert until its permanent base is ready. Another squadron, No. 421 is soon to be formed, and its ex-fighter pilot members are now being converted to Vampires at the O.T.U.

Commander of 410 Squadron is Sqn. Ldr. "Bob" Kipp, D.S.O., D.F.C., who was the first RCAF fighter pilot to destroy four enemy aircraft in one night. Sqn. Ldr. Kipp's squadron, although manned by experienced pilots, is engaged in a never-ending programme of improvement and perfection. Under the functional control of Air Defence

Group at Ottawa, the fighter squadrons are being pumped full of every scrap of information obtainable regarding interceptor operations. Working in conjunction with ground radar nets, they are designed to give the Air Force the nucleus of a permanent interceptor force.

As St. Hubert operates under a central maintenance system, the fighter squadrons receive the same servicing and repair work as does the O.T.U. Sqn. Ldr. Kipp heartily endorses Wing Cdr. Malloy's praise of the ground crew and is planning to abduct a few of them when his squadron moves to its permanent home.

## Auxiliary Squadrons

In order to provide a first-line supplement to the RCAF (Regular), 401 and 438 Auxiliary

Fighter Squadrons, in conjunction with others across Canada, were reactivated at St. Hubert during the latter part of 1946. The auxiliary members were recruited from the vast reserve of RCAF veterans in the Montreal area and from civilians interested in non-permanent military activities.

The progress of these two squadrons since their reorganization is no less amazing than that of the permanent units at St. Hubert. Starting with little else than a few Harvards, a barren headquarters in Montreal and a skeleton membership, the two squadrons have moulded themselves into crack operational units.

Under the guidance of an RCAF (Regular) support party headed by ex-fighter pilot and leading jet pilot, Sqn. Ldr. "Stocky" Edwards, D.F.C., D.F.M., the Montreal auxiliary squadrons carry out their week-end programme of interceptor training at St. Hubert. Because of the large strength of each unit, the squadrons alternate their flying week-ends. Periodically, they participate in mock combat operations, the most elaborate of which have been "Operation Lakehead," an attack on Hamilton's industry by 401 Sqn., and "Operation Quebec" by 438 Sqn. against the Canadian army.



Flt. Lt. "Joe" Edwards (left) and F/O Claude La France.

It is difficult and perhaps unfair to give credit to any one person for a success which requires the contribution of all. Yet to a man, 401 City of Westmount Auxiliary Squadron agrees that much of their fine reputation and accomplishments is due to the energy, encouragement and devotion of their commander, Wing Cdr. J. W. Reid, D.F.C. He, in turn, credits squadron efficiency to his "one-man orderly room," Sgt. R. Wilson, of Durham, Ontario. Sgt. Wilson, who has been an administrative helmsman on operational and training units since before 1942, is the pivot man for all squadron functions. In addition to routine administrative duties, he is circulation manager for the hundreds of news letters and bulletins that are mailed to auxiliary members every week.

## Radar and Communications Squadron

Newest component of the station is the Radar and Communications Squadron (Aux.), commanded by Wing Cdr. K. R. Patrick, O.B.E., ex-RCAF Group Captain and now an R.C.A. engineer, who has infected every member of the unit with his own aggressive spirit.

Wing Cdr. Patrick is outspoken in his opinions of defence tactics and needs in the air age. "Canada, he maintains, "is in no position to afford any kind of defence other than the most effective and efficient in the world . . . Our defence dollar must buy a dollar's worth of defence, not ninety cents' worth of tradition." He believes that the basis of our defence programme must be a radar defence screen around our key cities. The Air Force agrees with him. The R&C Squadron is the result.

The squadron trains auxiliary personnel as communication technicians and operators, radar technicians and operators, signals officers, and radar controllers. Members receive three evening lectures per week from key-civilian research men and scientists in the electronics industry in Montreal, who may or may not have been affiliated formerly with the RCAF.

Operating the communications net and radar screen for the Montreal auxiliary squadrons, the R&C Squadron works in close conjunction with the auxiliary commanders but is detached from them.

Sub-units of the R&C Squadron are operated at the University of Montreal, Dawson's College at St. Jean, and St. Anne de Bellevue. Soon they hope to extend the coverage by deploying their units still further afield.

Assisted by Regular RCAF officers Flt. Lt. "Rudy" Rocheleau, D.F.C., and F/O R. E. Patterson, Wing Cdr. Patrick is building up an organization that promises to be a model for similar projects in other Canadian cities.

438 Auxiliary Squadron, commanded by ex-fighter pilot Wing Cdr. Claude Hebert, D.F.C., perpetuates the now famous record of the Alouette squadron. Maintaining its wartime tradition, the squadron is composed largely of French-speaking personnel.

The Alouettes, like their sister squadron in Westmount, have provided their headquarters with all the facilities and conveniences of a modern Air Force station. From welding shop to airmen's lounge, the squadron exemplifies the zeal of those who are making the RCAF auxiliary programme the success that it is. Contributing to the momentum of 438 squadron is F/O F. N. Thompson, a recent immigrant to Canada from the RAF, who organized and now directs the auxiliary armament and photographic sections.

An important aspect of auxiliary activities, in addition to the attractions of flying and practical trade training, is the camaraderie which is so prevalent in our Service. The various institutes provided by the squadron for the convenience of all ranks make for a fellowship to which all subscribe. Veterans who join the squadrons find the canteens more comfortable and attractive than they had known before, and the recruit discovers a club whose like might ordinarily have been beyond his means.

### The Inner Sanctum

The Station Headquarters, from which control of the complex structure of St. Hubert is exercised, is directed by Wing Cdr. Baxter Richer, D.F.C. His association with the station began in 1941, when he was the Chief Flying Instructor of the S.F.T.S. In 1944, after two years with Bomber



(Left to right) Group Capt. R. H. Foss, O.B.E.; Air Cdre. Sir Frank Whittle, K.B.E., C.B., famous English jet expert; Wing Cdr. J. W. Reid, D.F.C.

Command in U.K., and again in 1947 after attending the RCAF Staff College, he was appointed to St. Hubert as Commanding Officer.

Trustee of station housekeeping is Sqdn. Ldr. Cail Vinnicombe, the C.Ad.O. With his faithful mascot, "Spike," a brindle boxer, and a fire-engine-red MG, he tours the station, checking for the inevitable loose ends that arise in day-to-day administration.

The Station Warrant officer, F/Sgt. J. J. A. St. Laurent, divides his time between routine disciplinary duties and the difficult task of keeping the P.T. and recreation programme abreast of the rapid expansion of the station. The airmen are unanimously in favour of any steps which will improve extra-curricular facilities. Typically enthusiastic in this respect is fire-fighter LAC "Pete" Lemay, ex-member of Ottawa's renowned "Dollard" Air Cadet Sqdn., who vigorously champions such distinctive innovations as intersection six-man football and the introduction of fencing into Service P.T.

### Conclusion

RCAF Station St. Hubert, despite its tremendous achievements in the short space of three years, is nevertheless only in an embryo phase. The emphasis on interceptor defence will continue to grow, and St. Hubert will undoubtedly grow with it.

Meanwhile, as a design for the future, the record of this station speaks for itself.

# The ROYAL CANADIAN AIR CADETS



by ARTHUR MACDONALD

Director of Publicity, Air Cadet League of Canada

## AIR CADETS . . . ATTENTION!

IN A RECENT ISSUE of "The Roundel" that unofficial spokesman for "the boys in the field"—Sgt. Shatterproof—suggested that Air Cadets should contribute articles, cartoons or other items covering the more interesting aspects of Air Cadet life. Well, anything that's good enough for the boys in the field is more than good enough for us, so we would like to add our own comments to those of the voluble Shatterproof.

In the first place, Air Cadets, there seems to be no reason why you shouldn't be writing for "The Roundel." In a sense, this magazine belongs to you, for you are now considered a vital part of Canada's peacetime Air Force. Then, too, you have much to gain by submitting material for publication in the official journal of the RCAF. Your squadron is certain to benefit from the resultant publicity, just as you are sure to get a real thrill out of seeing your name in print.

All of this seems so obvious that we won't labour the point any further. We'll just assume that you feel the same way about it as we do and that all you need is a little encouragement.

Your first problem, of course, is one that occurs to every writer: "What should I write about?" The answer is surprisingly simple. You can write about any phase of Air Cadet activities which might be of interest to someone else.

For example: your squadron has just completed a "ham" radio installation. It works fine and

you're having so much fun with it that attendance on parade nights is going steadily upwards. This is something that other squadrons with attendance problems would like to hear about. Why not put the story down on paper and send it along to "The Roundel"?

Or perhaps you've figured out a new scheme for boosting squadron enrolment by giving prizes or flying time to cadets who bring in the most recruits. If this system works with your squadron it should also work with others. Tell them about it by telling it to the Editor of "The Roundel."

We are aware, of course, that the majority of our squadrons have no time for frills or "extras." They do a good job because they have developed a solid training programme which fulfills a definite need in the community. Well, this is a good story, too. How was the year-round training programme organized? How do your officers and instructors manage to hold your interest? Have you a special building?—a canteen?—a Mothers' Committee?

These are matters of interest to other squadrons throughout the Dominion, practically all of which have training problems of their own. Perhaps your article will help to improve the standard of Air Cadet training in some other part of the country. In turn, your squadron may benefit from the experience of others.

On the purely personal side, there is hardly an Air Cadet in Canada who hasn't some sort of story to tell. What about that first thrilling flight at summer camp? Or your flying training course? Or that trophy you won for outstanding proficiency and good attendance? All around you

there are stories waiting to be told, or amusing cartoons fairly begging to be drawn.

The Editor of "The Roundel" assures us that he will be happy to print anything of general interest—and to give you full credit for your contributions. When it is considered that "The Roundel" has a wide circulation not only in Canada but in other countries as well, this seems like an easy way to become famous.

Another nice thing about writing for "The Roundel" is that you don't have to be a slick professional. Just set the story down as it occurred to you and leave the rest to the Brass in Ottawa.

The Editor, by the way, is an extremely friendly and personable citizen. He has no objection to polishing up the odd phrase here and there—in fact, he's doing that sort of thing every day.

tracy, too, is an amiable character—for an

artist. He will welcome competition from any budding cadet cartoonist and will even pass along the occasional professional tip.

As far as preparation of your material is concerned, typewritten copy helps but is not absolutely necessary. Just make sure that the Editor will be able to read your copy, and write on one side of the page only. Cartoons, though, should be drawn with India ink on white art paper or cardboard.

That seems to take care of our part of the bargain. The rest is up to you. Address all your contributions to:

**"The Roundel,"  
Room 3130,  
D.N.D. Bldg. "B,"  
Ottawa, Ont.**

## First Cadet Wings in Peace River



(Left to right) Mr. E. Carberry, Chairman of the Junior Chamber of Commerce; P/O S. Harry, No. 353 Squadron; Flt. Lt. Futer; Flt. Sgt. Morrison; F/O A. W. Sharp, Commanding Officer, 353 Squadron.

Last April, Air Cadet Week saw Cadet Flt. Sgt. J. Morrison bring to the Peace River country the first wings awarded to an Air Cadet in those northerly regions. Flt. Sgt. Morrison, who is a member of No. 353 Squadron, Dawson Creek, B.C., received his wings from Flt. Lt. Futer, the

Adjutant of RCAF Station, Fort St. John. He is shown here after the banquet in Dawson Creek at which his own and other promotions and certificates were awarded. During the same week similar ceremonies occurred in every city and town of Canada that boasts an Air Cadet Squadron.

# THE SOUTH AFRICAN AIR FORCE: Part 1

*(This is the first of two articles on the history of the South African Air Force, by Major P. E. Stableford. They are reprinted, in slightly condensed form, from the "South African Air Force Journal." It is a record of a remarkable achievement.—Editor)*

## The Early Days

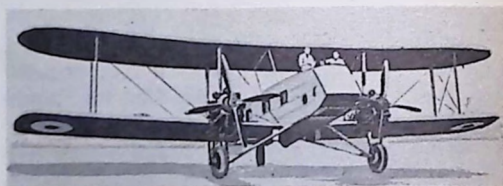
THE EARLIEST RECORD of flying by members of the Union Defence Forces (of which the South African Air Force now forms a part) tells of ten officers undergoing flying training in 1913 at a flying school near Kimberley. When World War I flared up in Europe, six of these early South African airmen were attached to the newly formed Royal Flying Corps, where they saw action almost immediately. It quickly became apparent that these men from the new Dominion had a natural aptitude for flying. Their successes in the R.F.C. encouraged the authorities in South Africa to form the South African Aviation Corps, for service in German South West Africa in 1915, where the airmen made an appreciable contribution towards the success which attended South Africa's effort against the Germans in that theatre. At the conclusion of these operations, the South African Aviation Corps was transferred to German East Africa (Tanganyika) to serve under the command of Gen. J. C. Smuts, then G.O.C.-in-C. of the forces opposing Von Lettow Vorbeck. Again the air operations consisted mostly of reconnaissance flights, but some bombing attacks were carried out against enemy positions. At the conclusion of hostilities in East Africa, the squadron returned to the Union, where it was disbanded in 1919.

By the end of the war over three thousand South Africans had served with the R.F.C., the Royal Naval Air Services, and the R.A.F. Many of these men distinguished themselves, and some were considered to be among the outstanding airmen of the War. Prominent among them was Major Beauchamp-Proctor of Mafeking, who by

the end of the war had over 60 victories to his credit, and had been decorated with the V.C., D.S.O., M.C. and Bar, D.F.C., Croix de Guerre, and Legion of Honour. Other South Africans who served with distinction during the First World War were Flight-Lieutenant Kinghead, D.S.O. and Bar, D.S.C., D.F.C. and Bar (later of Schneider Trophy fame); Lt.-Col. van Ryneveld (later Gen. Sir Pierre van Ryneveld, K.B.E., C.B., D.S.O., M.C., Chief of the General Staff); Major Venter, D.F.C. and Bar; Major McCubbin, D.S.O.; Major H. Daniels, M.C., A.F.C.; and many others.

## Formation of the S.A.A.F.

In 1920 the Government of the Union passed the necessary legislation to bring into existence the South African Air Force. The first practical step towards its formation, however, was made by the Government of the United Kingdom, when they contributed 100 Service aircraft and the necessary spares and equipment, to enable the new Service to start operating. These aircraft consisted of D.H. 4 and D.H. 9 day bombers, S.E. 5 fighters and Avro 504K trainers. About this time interest in aviation in South Africa was considerably stimulated by the epic flight of van Ryneveld and Brand from England to the Cape.



Gloster survey aircraft



*Zwartkop to-day*

For their achievement, both men were knighted, and Lt. Col. van Ryneveld was appointed to command the newly established S.A.A.F., which was formed at Zwartkop aerodrome near Pretoria in 1921, and at that date consisted of 176 officers and men and 54 boy apprentices.

### **First Operations**

Within a very short time of the S.A.A.F. coming into existence, it was called on to carry out its first operations. These were in support of the ground forces engaged in suppressing what was generally known as the "1922 Strike." This was an industrial disturbance that followed in the wake of World War I, and which assumed such serious proportions that General Smuts (by now Prime Minister of the Union) was obliged to resort to the use of armed force to restore law and order. Shortly afterwards the S.A.A.F. was called on again, this time to assist in quelling the Bondelzwart Hottentot Rising and The Rehoboth Native Rebellion, both of which occurred in South West Africa. In 1932 another native rising in Ovamboland (S.W.A.) was suppressed with the aid of aircraft of the S.A.A.F. From then on no shot was fired in

anger by a member of the S.A.A.F. until June 10th 1940, when the first operations against the Italian Air Force in Abyssinia were carried out in a raid on Neghelli.

### **Flying Training**

Flying training was the main occupation of the S.A.A.F. in the period between the wars. The majority of such training was carried out at the Central Flying School, which had been formed at Zwartkop aerodrome in 1925. This unit was for some years entirely responsible for all Service flying training that was carried out in the Union, and indeed, until 1938 Zwartkop was the only purely S.A.A.F. aerodrome in the country. In 1936, however, the Union Government approved the Air Force Development Programme, which made provision for a substantial expansion of the Air Force, including the formation of a number of Service squadrons and the building up of a reserve of 1,000 pilots and 1,700 artisans by 1942. Out-stations were established at the civil airfields at Durban, Bloemfontein and Cape Town. These out-stations were designed to provide flying on Service types for pupils that were learning to fly on civil types at the Civil Flying Clubs, the latter having



*Zwartkop Aerodrome as it was in 1922*

been entrusted with the *ab initio* training of the Air Force Reserve. Central Flying School continued to operate, training Permanent Force Cadets and Instructors (both P.F. and Civil), and providing refresher flying for Reserve Officers and intensive flying training courses of one month's duration for the pupils from the Civil Clubs.

The aircraft in use during this period were Avro Tutors, Westland Wapitis and Hartbees (a South African version of the Hart). To help meet the extra training commitments, the Government of the United Kingdom supplied 200 Harts to the Union at a nominal price. These aircraft began arriving in South Africa from 1938 onwards, and eventually played an invaluable part in the Joint Air Training Scheme during the early days of the Second World War.

### Other Activities

In addition to flying training, the S.A.A.F. took part in other activities of a semi-operational nature during this period.

These included liaison flights to visit the R.A.F. in Egypt. These flights, in conjunction with the expanding civil traffic and reciprocal R.A.F. visits, helped to develop the chain of airfields up Africa which proved so strategically important during the war. Other activities included aerial survey in the Union, meteorological ascents, anti-locust spraying operations, diamond-ferrying from the State Alluvial Diggings at Alexander Bay, and carrying sleeping sickness serum to the Caprivi Strip (north of the Kalahari Desert) from aerodromes in Rhodesia. At times, when surface communications were severed by floods or other

causes, the S.A.A.F. undertook delivery of mails and food to stranded communities. To stimulate public interest in aviation, Service aircraft took part in civil air displays. This policy paid a rich dividend when the Defence Department embarked on its plan to train a reserve of a thousand pilots shortly before the war. Another operation worthy of mention was the Kalahari Expedition of 1936, in which aircraft co-operated with a ground party engaged in testing various items of Service equipment under desert conditions, and surveying this little-known territory.

### Aircraft Construction and Servicing

Concurrent with the establishment of the aerodrome at Zwartkop, the Aircraft and Artillery Depot was set up at Roberts Heights. As the name implies, the function of this unit was to service aircraft and artillery equipment. In 1926 the A. & A. Depot embarked on a programme to construct 27 Westland Wapiti aircraft, the type then replacing the D.H. 9 and Bristol Fighter in the R.A.F. and other Dominion Air Forces. The material for the construction of these aircraft was imported, but all parts were manufactured locally, with the exception of the engines and instruments. Later 51 Avro Tutors and 65 Hartbees were constructed under similar arrangements, the latter being used operationally by two Army Co-operation squadrons in the Abyssinian Campaign.

In addition to building and servicing aircraft, the A. & A. Depot was used as a School of Technical Training for Artisan trainees. This training was both practical and theoretical, and the latter was provided largely by the Pretoria Technical College, which co-operated with the Defence Department in this connection.

### Strength of the S.A.A.F. at the Outbreak of Hostilities

By September, 1939, the South African Air Force consisted of a Central Flying School (still located at Zwartkop), two light bomber squadrons which were equipped with Hartbees and located at the new Air Force Station at Waterkloof (near Pretoria), the A. & A. Depot at Roberts Heights (now called Voortrekkerhoogte), and a number of

detached flights operating at the outstations. The majority of its aircraft were obsolete, only 6 Hurricane I's, a Battle and a Blenheim being current operational types. The actual strength in men and aircraft was as follows:—

Permanent Force Officers (all pilots) . . . . .	160
Permanent Force Cadets . . . . .	35
Permanent Force, Other Ranks, . . . . .	1,400
Reserve Officers . . . . .	170
Reserve, Other Ranks . . . . .	300
Aircraft (of which only 8 were operational) . . . . .	104

In addition to the above, the whole of S.A. Airways, both men and aircraft, constituted an automatic reserve for the Air Force. These numbered approximately 100 aircrew, and 200 maintenance personnel, and the aircraft consisted of 11 Junkers JU 52's and 18 JU 86's—the former providing a useful reserve of transport aircraft, and the latter a valuable potential light bomber force.

### The Second World War

The immediate problem of providing protection for shipping off the South African coast was met by the formation of General Reconnaissance Flights, equipped with the converted JU 86 air-

liners of S.A. Airways, and stationed at Durban, Port Elizabeth, Cape Town and Walvis Bay. One of these units scored the S.A.A.F.'s first success of the war, when the German liner S.S. "Watussi" was intercepted off the Cape in December, 1939, as she tried to run for home. In true German style, she scuttled herself.

With Italy's entry into the war, the importance of the Cape route as a lifeline to the Middle East became vital, but by then the S.A.A.F. had overcome many of its early shortcomings, and was ready not only to play its part in safe-guarding those all-important lines of communication, but also to send three urgently needed squadrons to Kenya and the Sudan.

During the course of the Second World War, units of the S.A.A.F. saw service off the South African Coast, in East Africa, the Sudan and Abyssinia, North Africa, Sicily, Italy, the Mediterranean, Madagascar and the Atlantic. Individual members of the S.A.A.F. served in almost every theatre of operations in the world, in most cases while attached to one or other of the Allied Air Forces. Had the War in the Far East not ended when it did, a fighter wing of the S.A.A.F. would have operated in Burma. This unit actually reached India before being diverted back to Durban.



The Westland Wapiti

## The South African Coast

As already indicated, the first operations carried out by the S.A.A.F. after the outbreak of hostilities were by the Junkers flights on the coasts of the Union and South West Africa. These aircraft were replaced by Ansons early in 1940 and a year later a number of Marylands and Beauforts were also put into service to enable patrols to be carried to a greater depth. All these aircraft were replaced in turn by Catalinas (operated by the Royal and Netherlands Air Forces) and Venturas. Although nearly a quarter of a million tons of shipping was lost off South Africa, the U-Boats did not go unscathed, and in all, 26 of them were attacked by aircraft operating from the various bases around the South African Coast. These aircraft were also instrumental in intercepting 17 blockade runners (totalling 65,000 tons) and rescuing 435 survivors from sunk shipping.

During this period there was a strong possibility of a Japanese carrier force attempting to disrupt shipping using the Cape route to the East, and in anticipation of such tactics, two fighter squadrons were established on a mobile basis, and kept at readiness on the coast.

The following are the units that at one time or another operated off the South African Coast: the Junkers flights; Nos. 31, 32 and 33 Flights equipped with Ansons; Nos. 36 and 37 Flights equipped with Marylands and Beauforts; Nos. 22, 23, 25, 27 and 29 Squadrons operating on Venturas; No. 262 Sqn. R.A.F. (later No. 35 Sqn., S.A.A.F.) with Catalinas; and No. 6 and 10 fighter Sqns., which used Mohawks.

## East Africa, The Sudan and Abyssinia

The Italian forces in Abyssinia, consisting of

200,000 troops and nearly 400 aircraft, constituted a grave threat to Kenya and the Sudan. To meet this threat, three squadrons were formed early in 1940 and sent North. They consisted of No. 1 Fighter Squadron, equipped with Hurricanes, Gladiators and Furies, and Nos. 11 and 12 Bomber Squadrons, equipped with Hartbees and JU 86's respectively. These squadrons met the initial impact of air operations when Italy entered the war, but they were joined shortly afterwards by another fighter squadron (No. 3) mounted on Hurricane 1's, and two Army Co-operation squadrons (Nos. 40 and 41) flying Hartbees.

Meanwhile No. 11 Sqn. had re-armed to Battles, and the East African flight of No. 1 Fighter Sqn. was brought up to squadron strength and redesignated No. 2 Sqn. No. 60 Sqn., on Ansons, carried out photographic survey duties to provide the much-needed maps for the Army's use, and the Glen Martin flight of No. 14 Sqn. carried out strategic reconnaissances at long range. These units operated on all fronts in Somaliland and Abyssinia, and made a considerable contribution towards the victory that was achieved in that campaign, despite an Italian superiority of over four to one in the air.

Speaking of the part played by the S.A.A.F. in Abyssinia, Sir Archibald Sinclair, then Under Secretary of State for Air, made the following comment:

"When the Italians come to draw up a list of the factors that caused them to lose their East African Empire, they will place the South African Air Force somewhere near the top of the list."

*(To be continued)*



## Honour

Honour is the judgment which the opinion of others forms about our acts and conduct. The man of honour is one who fulfills his duty: the honoured man is one who receives credit for fulfilling it. Midway between these two stands the hypocrite, who, without being a man of honour, appears as an honoured man.

*("Revista de las Fuerzas Armadas")*

# Weather Hazards in Summer Flying

by J. M. LEAVER,

Met. Adviser, Directorate of Air Staff Duties

*Summer weather conditions normally present fewer flight problems than winter conditions. None the less, there are still problems; and the two worst of these are thunderstorms and fog. It is hoped that this article will help pilots in their encounters with either.*

## THUNDERSTORMS IN GENERAL

UNDER SUITABLE CONDITIONS of temperature and humidity, rapid convection and condensation take place, resulting in the formation of large cumulonimbus clouds and thunderstorms. These thunderstorms may be more or less isolated or they may be so general in occurrence as to give an almost continuous storm over a considerable area. In other cases the thunderclouds may be imbedded and hidden in extensive sheets of nimbostratus cloud. Fig. 1 illustrates the main features of a thunderstorm cloud.

The up-draft blows gently towards the storm for some distance in advance. As the storm approaches, the vertical speed of this wind increases and the air enters the cloud just at the base of its extreme forward portion. The squall wind leaves the base of the cloud immediately behind the up-draft. Some of the raindrops which form in the ascending current are carried so high that they

freeze at the low temperatures encountered, thus giving rise to the formation of hail.

There are two main types of thunderstorms: air mass and frontal.

### Air Mass Thunderstorms

These storms result from the heating of the atmosphere over land or sea. They are most frequent during the daytime; and they are usually isolated in nature, or at any rate considerably removed from adjacent storms in the same general region. This type of storm is readily recognized by the fact that the cumulonimbus cloud causing it is generally isolated, and the identifying features (fig. 1) can be easily distinguished.

### What to Do

The most practicable method to adopt with this type of storm is the "roundabout" method—i.e. fly around them whenever possible. The added mileage and time are usually negligible. You can fly around these thunderstorms at low, intermediate or high levels, depending on local circumstances. If the storms happen to be closer to one another than normal, you should fly between them, heading in at right angles to the line of storm centres. Once you have entered the general storm area, at right angles to the storm line, do not alter course on account of turbulence, rain or hail, or you will find yourself flying through the same condition twice.

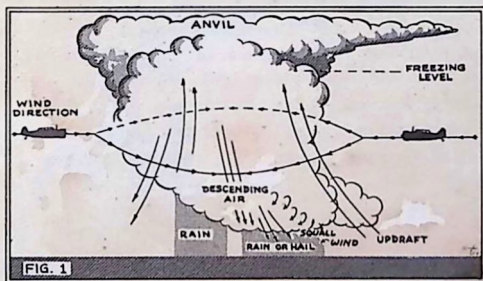


FIG. 1  
A typical thunderstorm cloud. Go around isolated storms.

## Frontal Thunderstorms

This type of storm, as the name implies, forms at fronts. It may occur at any time during the day or night. Distinction should be made between the cold frontal thunderstorm and the warm, since there are rather marked variations in their characteristics.

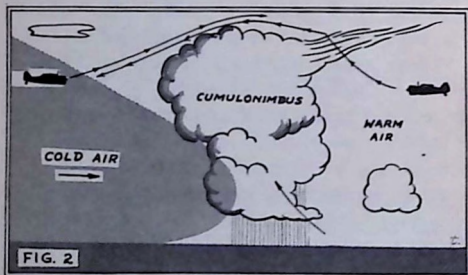
## Cold Front Thunderstorms

The chief difference between this type and the air mass type is the greater violence of the storms occurring with the cold front. Moreover, these storms tend to form in a line along the front and there are not the relatively clear areas through which flight can be carried out as in the case of the air mass type of thunderstorm.

The cross section (fig. 2) through a cold frontal surface at which thunderstorms are occurring will give an idea of the "line" formation of these storms, and of the appearance they present when flying towards them. When the cold front is very strong the associated weather phenomena are most intense. In particular, a very sharp wind-shift will occur across the front, and the frontal passage will be accompanied by very high and gusty surface winds with squalls and thunderstorms. Under these circumstances the cold front may be referred to as a "line squall."

## What to Do

The "roundabout" method which should be employed with air mass thunderstorms is usually not practicable. If your equipment permits, the



Cross-section through a cold frontal surface.  
If possible, go over.

best method of dealing with cold front thunderstorms is to fly over the top of the main body of the storm, or over the saddle backs (the lower and less turbulent cloud regions between the main cumulonimbus clouds causing the cold front thunderstorms).

## Warm Front Thunderstorms

This type of storm usually occurs at a considerably higher level than either the cold front or the air mass thunderstorm. The storms themselves are imbedded in the warm air mass ahead of the surface position of the warm front. The presence of the warm front will, of course, be indicated by the characteristic cloud formation—i.e. cirro type clouds lowering to altocumulus and altostratus, and then to nimbostratus and stratus. However, the cumulonimbus cloud causing the thunderstorm may well be hidden within the nimbostratus cloud and give little advance warning of its presence. The cross section (fig. 3) through a warm frontal surface will illustrate this point.

## What to Do

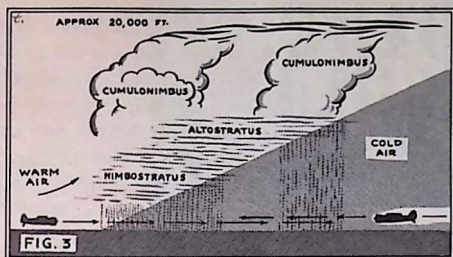
Generally speaking, flying conditions in the cold air mass below these thunderstorms will be satisfactory. Thus the best method to adopt with warm front thunderstorms is the "underneath" method, assuming local terrain is not too rugged. The warm front thunderstorm is not usually so severe as the cold front type, and most of the turbulence can be avoided by flying below the cloud.

## FOG

Fog results from the condensation of water vapour in the lower layers of the atmosphere. Thus, any process which will bring about this condensation causes fog. Defined in terms of the processes which cause the cooling in the lower levels of the atmosphere, there are two main types of fog:

## Radiation Fog

This type forms through the cooling of the earth's surface during a cloudless night with light



Cross-section through a warm frontal surface.  
If terrain permits, go under.

winds. Thus, the fog may be expected to form during the night, reaching maximum intensity about sunrise or shortly thereafter, and decreasing as the sun gets higher. Although quite frequently the fog is not particularly deep, the drastic reduction in horizontal visibility is such as to preclude landings or take-offs from an airfield. This type of fog has a greater prevalence at low-lying airfields than at those located on higher ground.

If, on arrival, a destination airfield is fog-bound with radiation fog, try other airfields on higher ground if the fog is patchy; otherwise consider heading for a part of the country which is known to be fog-free. It is a poor bet to

circle an airfield waiting for radiation fog to clear. At times the fog will clear rapidly. At other times it may be slow in clearing, or, when it does clear, it will lift to form an extremely low deck of stratus cloud.

### Advection or Movement Fog

This type of fog results from the cooling of warm moist air moving over a colder land or sea surface. Thus it is essentially dependent on the movement of air, as opposed to the processes which cause radiation fog. During the spring and summer months advection fog is particularly common over the cold waters off Newfoundland and the Maritime Provinces.

With an on-shore wind the fog may be carried inland, adversely affecting airfields located along the coast. Normally the fog will not penetrate great distances inland, but under certain conditions it may lift slightly and result in low stratus cloud covering extensive areas.

Although two very diverse phenomena, thunderstorms and fog both present serious hazards in summer flying. Keep in mind their characteristics and employ proper procedures in contending with each.

## SKY MAP

IN OUR FEBRUARY ISSUE we published a brief note about the natural sky-map used by experienced Arctic pilots. In the U.S.A.F. "Manual for Coding Ice Reports" the following definition occurs:

**I** Sky Map—A pattern on the underside of extensive cloud areas created by the varying amounts of light reflected from the earth's surface. Snow surfaces produce a white glare in the sky (snow blink), and ice surfaces produce a yellowish-white glare (ice blink). Bare land and open water reflect little or no light, and for this reason the clouds above these surfaces appear relatively dark (land sky, water sky).

# NORTHERN SKYTRAILS

## Part 8

The Story of the Work of the RCAF in Canada's Arctic and Sub-Arctic

by FLT. LT. E. P. WOOD, D.F.C.

### THE RCAF IN THE ARCTIC

THE READER IS AGAIN ASKED to bear in mind that the limits of the arctic and sub-arctic are, for the purpose of these articles, those laid down by Trewartha in 1937. Thus, relatively little of the work described in previous chapters was carried out in the arctic of our definition. During the period that ended with the outbreak of World War II, the RCAF's arctic operations consisted almost entirely of routine summer photographic work, conforming in general pattern to those sub-arctic operations already briefly described. Indeed, the only outstanding operation in exclusively arctic regions was the Hudson Strait expedition of 1927-28.

First, however, as a matter of interest, let us glance at what was said in 1922 by Squadron Leader R. A. Logan, who was sent out with the Canadian Government arctic patrol vessel to report on the possibility of aviation in the Arctic Archipelago. Certain parts of his report are curiously apt even today.

#### Excerpts from Squadron Leader R. A. Logan's Report

"Much has been said of the possibility of future hordes of Slavs overrunning Europe. Aircraft operated from arctic or sub-arctic bases would swoop down and leave trails of destruction throughout the rest of the world, but would be almost inaccessible to the aircraft of countries to which 'cold weather' flying was unfamiliar. Whether war with such a country as Russia might or might not ever come, should not affect the

determination to develop flying in the Canadian arctic and sub-arctic regions. Canada, if she considers herself worthy to be called a nation, should have enough pride and spirit to take at least ordinary precautions and be prepared to defend herself in any emergency."

Squadron Leader Logan's report continues with detailed topographic and climatic descriptions, and then proceeds to discuss the uses to which aircraft might be put. Many of his suggestions have already been followed.

"Surveyors may be transported to otherwise inaccessible places or to places where their season of operation may be greatly extended by the reduction of time required for travel. The extent of grazing-ground capable of supporting animal life, such as musk-oxen, caribou or reindeer, may be found, as well as the number and location of existing herds and breeding grounds of these animals.

"In many ways the arctic is an ideal country for lighter-than-air craft. The sunlight is practically constant during a long season of the year, and this is one of the greatest factors in the operation of any type of airship, owing to the effect of sunlight and the expansion and contraction of the gas in the balloon. One great advantage of the airship over the aeroplane is that an airship is self-supporting independent of the engine. An airship can remain in the air for much longer periods than an aeroplane, and it can carry a fairly heavy load. Some of the disadvantages of airships are the bulky buildings required to house them and the number or men required to handle them in making landings, unless mooring masts are used. An airship is greatly affected by high winds, especially when near the ground, but it is possible that in such northern latitudes the high winds

may exist only at a comparatively low altitude.

"When regular navigation is established through the Hudson Strait, it will be necessary to have one or more detachments to watch the movement of ice and report positions to the ships. The only practical way of doing this is by the use of aircraft, wireless, and photography.

"Meteorological reports should be sent south by wireless every few hours to aid in weather-forecasting in the more inhabited parts of the world; and while this may not require the actual use of aircraft, it will require the use of the wireless stations operated in conjunction with aircraft."

"The compass," the report continues, "is a very unreliable instrument in the Northern Archipelago, because many of the islands lie to the north of the North Magnetic Pole, and it is probable that in many cases the compass needle will point straight south. By using a gyroscopic compass, however, much of the difficulty of direction finding will be overcome.

"It is recommended that one method that might be employed on the survey would be to determine the geographical position of prominent objects 20 to 30 miles apart by astronomical observations, and have the intervening country located by aerial photography. If wide-angle oblique aerial photographs were then taken at right angles to the line of flight, a great deal of territory could be explored.

"For any extensive aircraft operation a large amount of gasoline and lubrication oil will be required, and it would be a great advantage to have some source of local supply. Indications of such a supply have been found on Bathurst Island, where analysis shows oil shales yielding 140 gallons of oil to one ton of shale."

Recommendations for clothing include the following:

"The clothing worn by all aircraft personnel should be as much as possible similar in every way to that worn by the natives of the islands, with such improvements as may be found advisable.



*Igloo: Wakeham Bay*

The best material for all clothing is either caribou skin or seal skin tanned with the fur on; for, while woollen clothes are satisfactory to a certain extent, it is generally agreed that skin clothing is better.

"The foot-covering universally worn is made of seal skin sewn in such a manner that the boots, or "kamiks," are absolutely waterproof. Socks are generally made of seal skin with the fur inside. Sewing on the "kamiks" is very carefully done, and all repairs to the boots are made by the Eskimo women. It will therefore be necessary to employ at least one Eskimo woman at each base for the purpose of looking after the repairs of boots and other skin garments . . . and it will be necessary for the personnel of an air station in the North to learn the language of the natives of the country—the Eskimos."

## The Hudson Strait Expedition

The Hudson Strait Expedition in 1927-28 was sent into the field to determine an absolute time limit for marine navigation, to test the use of aircraft as an aid to navigation, and to test the possibility of establishing air operational bases in the Hudson Strait.

On July 17th, 1927, the expedition, consisting of forty-four permanent personnel aboard the Canadian Government ice-breaker "Stanley," and of non-permanent personnel such as construction men (together with all supplies and equipment) aboard the S. S. "Larch," sailed from



Golf at Wakeham Bay

Halifax for Port Burwell. Port Burwell, known as Base A, was to be the first of three similar bases. Base B was to be located at Nottingham Island, and Base C (Headquarters) at Wakeham Bay.

Port Burwell was reached on 27th July 1927, and the "Moth" seaplane carried on the after-deck of the "Stanley" was launched for the purpose of locating a suitable base.

It was decided to leave an investigation party at Burwell to explore the vicinity thoroughly for the most suitable base location. The officer in charge, his medical officer and two airmen, together with a motor-boat, supplies and equipment



Laying track at foot of slipway: Nottingham Is.

for two months, were left here to carry out the investigation, and the remainder of the expedition proceeded west towards Nottingham Island.

It took two weeks to complete unloading operations and to provide sufficient temporary accommodation for the use of personnel. Seven hundred tons is a close estimate of the amount of supplies and equipment unloaded during these two weeks, all of this material being towed one mile from the ships to the beach by the use of surf-boats and a scow. Crawler tractors were used to great advantage.

After leaving ashore the permanent personnel of this base together with their constructional staff, both ships proceeded to Wakeham Bay, where anchors were dropped on August 24th, 1927.

Unloading operations at Wakeham Bay were completed by September 11th, 1927, and after



*Grave of H. B. Co. factor: Wakeham Bay*

leaving ashore the permanent personnel and construction crew for this base, both ships went back to Port Burwell to establish the third and last Base, Base "A."

Routine patrols were carried out daily from each base (weather permitting), and also special patrols, on which aircraft from bases "C" and "A" were to rendezvous in certain areas between their respective bases. Floats gave place to skis around the end of November, and during the ensuing winter season three incidents occurred that might have ended disastrously.

The first of them happened when Flt. Lt. A. A. Leitch, M.C., D.F.C., was returning from Eric Cove at Cape Wolstenholme to Nottingham Island. Half way across to the Island, he ran into snow storms. He flew on through them for a time, but failing to sight land, he decided that it would be wiser to land on the ice floe and wait for clearer weather. A landing was effected safely, the oil was drained from the engine, and the crew made themselves as comfortable as possible. The following day brought clearer weather, and although land was not in sight, Flt. Lt. Leitch made a calculation of his error and decided to take off. Using the available engine heating unit carried in the emergency kit of the plane, the oil was heated and the engine started without trouble. Flying according to his calculations, Leitch was successful in picking up land, which proved to be the extreme northwest end of Nottingham Island. The aircraft arrived back at its base with about

one quart of fuel in the tanks. The temperature at this time was approximately 15° below, but only a few minor frost bites were experienced by the personnel.

The second incident occurred when Squadron Leader T. A. Lawrence was proceeding from Wakeham Bay to Nottingham Island in early January. Heavy snow storms were encountered about twenty miles east of Digges Island, and the pilot turned back and landed at Sugluk Inlet to await better conditions. The following day another attempt to get through to Nottingham was made, but the weather was still too bad. It was then decided to go back to Wakeham Bay, but snow storms near Cape Weggs necessitated a landing in Deception Bay. Here the aircraft and crew were forced to remain for nine days, during which time typical arctic weather and storms prevailed. On the eighth day, while making ready to take off, a search aircraft arrived from Wakeham Bay. Lawrence's plane was dug out, and both aircraft returned to their base at Wakeham the following day.



*Aircraft leaving Wakeham Bay*



Camp: Nottingham Is

The third and last incident was nearly a fatal one. F/O A. Lewis, on patrol from Port Burwell with a mechanic and native, became lost in a heavy snowfall on his return from Resolution Island. After picking up a point of land which he felt certain he recognized, Lewis took a course to bring him out at Port Burwell. After following this course until the fuel supply was exhausted, a forced landing was made on hummocky floe ice. The crew, fortunately, were unhurt; but although the machine had sustained only minor damages, it became necessary to abandon it. Lewis and his party, carrying their emergency kits, started east across the ice, and only after one full day's travel did they realize that they were actually on floe ice in the Atlantic Ocean off the Labrador Coast, and not in Ungava Bay, as they had at first estimated. They travelled westward for seven days, reaching the Labrador Coast after much privation. During this time their food supply became exhausted and they were forced to live on raw walrus shot by their native companion. The ice over which the party was forced to travel was very rough and highly rafted. Endless lanes of open water had to be crossed by means of the inflatable rubber raft carried as part of the emergency kit.

After reaching the land, the party travelled north along the Labrador Coast for four days. During this time they saw no signs of life of any description, human, animal, or bird; and having

no fuel for their primus stove, they suffered greatly from cold as well as hunger. On the fifth day they were favoured by fortune and came in contact with an Eskimo hunter and his wife. Through their native companion they were able to make known their requirements and arrange for food (of a kind) and transportation by dog-team back to Burwell, at which point they arrived at midnight on the thirteenth day of absence from their base.

During the absence of Lewis and his party, three aircraft (one from each base) were engaged in searching for them. That particular period, however, was the coldest and stormiest part of the winter, and flying was utterly impossible on all but three of the thirteen days.

After the replacement of floats on the aircraft (about the end of June, 1928), operations were carried out until Aug. 3rd in accordance with previous original orders. By August 3rd, all ice had left the Strait and further aerial observations were unnecessary. Recommendations were then made to the leader of the expedition to have flying operations cancelled and to commence at once the conditioning of aircraft for the flight south to Ottawa, as it was the intention to fly all serviceable machines out from the area of operations. The condition of the aircraft proved inadequate, however, and they were eventually shipped home aboard the "Canadian Voyager."

The only maps and charts available on this expedition were found to be very inaccurate. Some parts of the coast-line were not even recognizable. Countless islands existed which were not charted, and others, though charted, were incorrectly located. Compasses, too, were hopelessly misleading. The only way in which pilots were actually able to arrive at the proper courses to be followed on patrol, was by making careful observations while flying over the patrol route on days of good visibility, and by flying from point to point within sight of each other and noting the compass readings.

Clothing presented no very serious problem, as the following experience shows. On February 19th, 1928, with a ground temperature of 30° below zero, there was occasion for a flight of 3 hours and 40 minutes' duration. During the greater part of this flight an altitude of 8,000 feet was maintained, where the temperature was approximately 56° below zero. None the less, the pilot was very comfortable. He was wearing silk underwear beneath medium weight wool, chamois leather breeches, flannel shirt, wool sweater, duffle socks, moccasins and sheepskin-lined flying boots, deer skin mitts with duffle interlining, leather and skin-lined helmet, fur-lined face mask, goggles, and outer Sidcot suit.



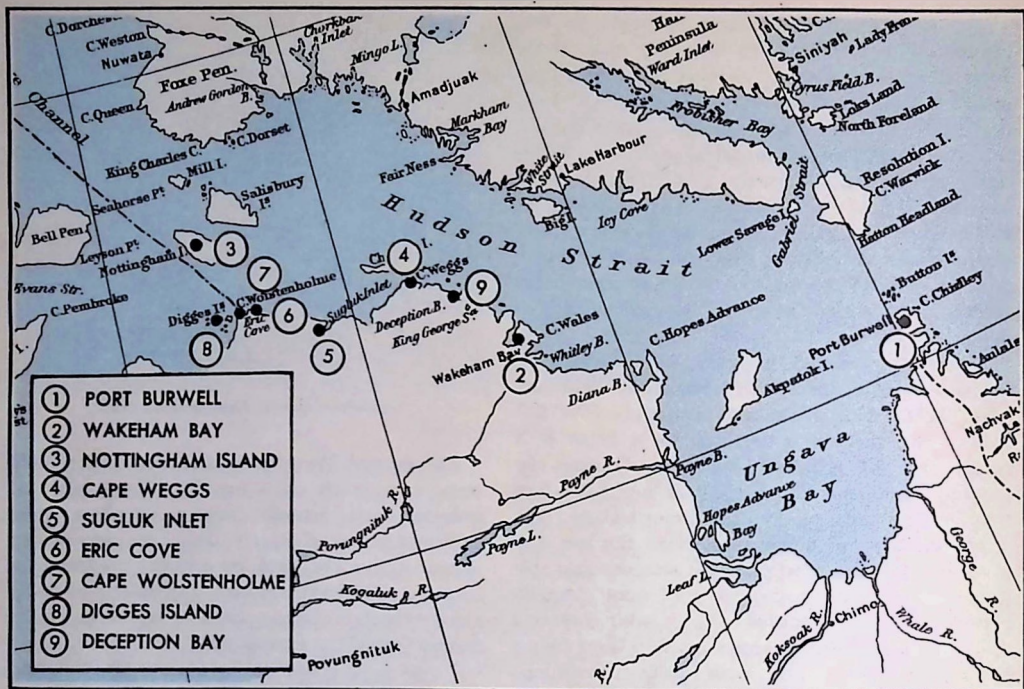
*Squadron Leader Lawrence on trail*

The general living conditions at all three bases were very much on a par. No direct sense of isolation was actually felt, since there were sufficient personnel largely to eliminate any feeling of monotony. There existed a hearty co-operation between all officers and men, and only once was a charge sheet required—within a few days of the completion of the expedition.

Nothing was lacking in variety of diet and fresh meats. Aquatic game existed in quantities—seal, white whale, walrus, and occasional fish. At



*Building camp: Wakeham Bay*



Wakeham Bay land game was very scarce and the lack of fresh food was much more keenly felt. The RCMP. member of this Base made a 21-day hunting trip to the south of Wakeham Bay, accompanied by one native and a dog team and with sufficient rations for about one month. When eventually they returned to base, they reported never having had occasion to take their rifles out of their cases.

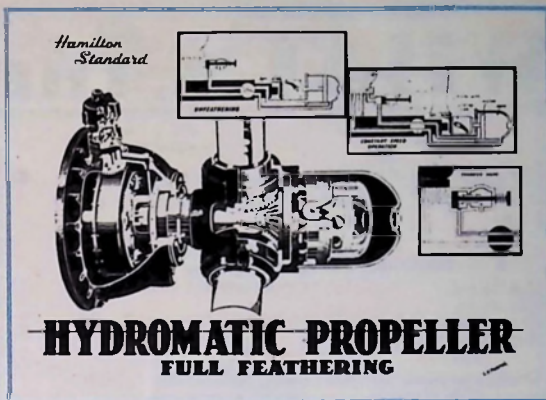
For pastime, the personnel had sporting equipment, libraries, radio, and some of them had skis and snowshoes. A few had even brought golf

clubs along with them, and strange as it may seem, this game could be indulged in for considerable periods of time during the winter months. The snow on the Bay ice at Wakeham for the greater part of the winter presented a hard wind-packed surface, and, with balls painted a dark colour, golfing was not at all impossible.

(Our next issue contains extracts from F/O Lewis' personal story of the adventure briefly mentioned in the present instalment of this series.—Editor)



# Have You Seen these Posters?



RCAF Poster No. 56: Low Level Map Reading Doesn't Mean This

RCAF Poster No. 58: Hydromatic Propeller

RCAF Poster No. 59: Crashes Cost Dollars

RCAF Poster No. 60: Public Relations Is Your Job Too

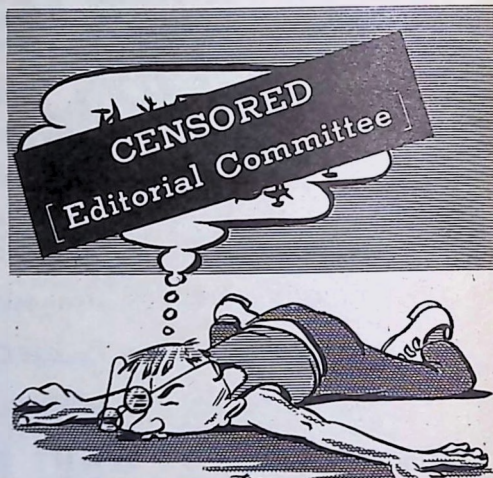
**ORDER WHAT YOU WANT FROM YOUR SUPPLY SECTION**



# WHAT'S THE SCORE

How carefully did you read the last issue of "The Roundel"? Answers to this quiz appear on page 48.

1. The average man has a horsepower rating of:
  - (a) .25 hp.
  - (b) .50 hp.
  - (c) .37 hp.
  - (d) .48 hp.
2. The purpose of the piece of string which flutters from the pitot head of most sailplanes is:
  - (a) Purely ornamental, like a fox-tail on a car
  - (b) To indicate the strength of the wind
  - (c) To assist the pilot in instrument flying conditions
  - (d) To scare away birds
3. The world's record of 12,000 tons of air freight was carried in 1937 by:
  - (a) Pan-American Air Lines
  - (b) Canadian planes
  - (c) French planes
  - (d) Imperial Airways
4. A snye is:
  - (a) A type of quick-release dog-harness used by the Micmac Indians
  - (b) A shrewd Indian at a Trading Post
  - (c) A Sub-arctic lichen
  - (d) A small subsidiary channel in a river
5. The organization in England which corresponds to our Canadian Air Cadet League is known as:
  - (a) The British Air League
  - (b) The Civil Air Patrol
  - (c) The Air Training Corps
  - (d) The Boys' Brigade
6. Roland Gissing is the name of:
  - (a) The President of the Air Cadet League
  - (b) The author of a book on strategic bombing
  - (c) The Dominion President of the RCAF Association
  - (d) A famous Canadian painter
7. One of the new air routes which C.P.A. intends to have in operation this summer extends:
  - (a) From Vancouver to Valparaiso
  - (b) From Halifax to Buenos Aires and Rio de Janeiro
  - (c) From Vancouver to Shanghai and Hong Kong
  - (b) From Windsor to Detroit
8. The true professor of floor-washing considers the use of lye:
  - (a) To be brutal on any floor
  - (b) To be permissible only on waxed floors
  - (c) To be encouraged for all types of floors
  - (d) To be desirable for painted floors when mixed with sulphuric acid
9. In the U.S. Navy the prefix VP, as applied to an aircraft, means:
  - (a) Search
  - (b) Vice-presidential
  - (c) Helicopter
  - (d) Very potent
10. The description "flat, ill-smelling, blood-sucking insect," applies to:
  - (a) A woodtick
  - (b) A gila monster
  - (c) A bed bug
  - (d) A cockroach
11. When LAC Bladder hit his nose on the concrete while practising ju-jitsu breakfalls, he shouted a Japanese word meaning:
  - (a) "I've done it!"
  - (b) "Forever!"
  - (c) "To hell with it!"
  - (d) "Bother!"



12. Para. 405 of KR (Air) relates to:

- (a) Redress of Grievance—Airmen
- (b) Misuse of Service signals
- (c) Accelerated Promotion
- (d) Sanitation in Officers' Messes



13. An Archaeopteryx is:

- (a) A fossil-hunter
- (b) A builder of Gothic cathedrals
- (c) An extinct Australian invertebrate saurian
- (d) The first primitive bird

14. A friend of Plato's who constructed a small glider which he is reported to have actually flown by compressed air, was:

- (a) Arcopagus
- (b) Saxophones
- (c) Archimedes
- (d) Archytas

15. Destructively heavy hail is believed to occur:

- (a) Only in isolated thunderstorms in otherwise clear air over large continental areas
- (b) In cold front thunderstorms over extensive and flat terrain
- (c) In all thunderstorms occurring on land
- (d) In warm-front thunderstorms throughout the temperate zones

16. The comparatively new Government-subsidized Flying Training Plan in Canada may be taken advantage of:

- (a) Only by gliding enthusiasts
- (b) By anyone wishing to learn to fly
- (c) By ex-RCAF personnel only
- (d) By no one over 24

17. The USAF's strength in active combat type aircraft is approximately:

- (a) 8,500
- (b) 10,500
- (c) 3,500
- (d) 5,500

18. Dominion President of the RCAF Association is:

- (a) Mr. Roland Gissing
- (b) Air Chief Marshal Breadner
- (c) Air Marshal Curtis
- (d) Air Marshal Leckie

19. President of the Air Cadet League is:

- (a) Mr. G. M. Eaton
- (b) Air Vice-marshal Middleton
- (c) Mr. D. Alex Ross
- (d) Mr. Roland Gissing

20. The "pitch" of a screw is determined by:

- (a) The number of threads per inch
- (b) The ratio of the depth of penetration to one complete revolution of the screw
- (c) The thread angle
- (d) The distance from crest to crest of the threads



# AIR POWER

by FLT. LT. G. K. FINNIE, D.F.C.

*(Flt. Lt. Finnie's article does not necessarily reflect the RCAF's official views on the subject of air power. We believe, however, that it will be read with considerable interest by all strategically-minded members of our Service.—Editor)*

## The Problem

CAN STRATEGIC BOMBING be so effective that physical invasion of a country is no longer required to force surrender? Many airmen have thought so, but just how right are they? Has the war against Germany and Japan shown that a case exists for the airmen's theory? The writer believes that it has.

Although acceptance of this theory would necessitate a new role for the Army, Navy, and Tactical Air Forces, even its most enthusiastic advocate must realize that victory by strategic bombing cannot be accomplished without an adequate Army and Navy. The Air Force is not a Service apart; all three Services are interdependent. An Army and Navy cannot operate successfully without aircraft above them, but neither can an Air Force fly unless proper bases are established, secured and bulwarked by the Army, and supplied by the Navy. The breaking of any of these three links in the chain of victory can easily result in defeat.

Again (still assuming that we accept the airmen's theory), we must consider the other questions that inevitably arise. Is strategic bombing (in terms of manpower, resources and energy) a more economical method of forcing surrender than physical invasion? What policy changes would its adoption involve? How would the home front be affected? Where could the new policy be implemented, and how could it be applied against the only probable enemy of the Western Allies?

It is the purpose of the present article to explore the whole subject with an open mind.

## The Air Effort Against Germany: World War II

The Luftwaffe, in May and June of 1944, had consumed an average of 180,000 metric tons of gasoline per month. However, attacks on the hydrogenation and Fischer Tropsch plants which produced 92% aviation gasoline, 32% motor oil, and 36% diesel oil, resulted in the following reductions:

April 1944.....	348,000 metric tons
July 1944.....	86,000 metric tons
Sept. 1944.....	26,000 metric tons

The production of aviation gasoline alone fell to approximately 5,000 metric tons in Sept. 1944, i.e. 3% of the May-June average consumption. The planned production of motor gasoline from May 1944 onwards is indicative of German needs in this field. This was to have been 115,000 metric tons per month. From July 1944 onwards, however, production was always less than 50% of this figure. After July 1944, the consumption on each front exceeded the allocations, and the stocks with the Armies began a precipitous decline which continued its uninterrupted course to the point of practical exhaustion in October of that year. Early 1945 saw German economy with a definite oil shortage which would, in a few months, immobilize her Armies.

The by-products of oil such as nitrogen, methanol, and rubber were also affected. The production of nitrogen was reduced as follows:

April 1944.....	86,100 metric tons
Dec. 1944.....	21,000 metric tons
Feb. 1945.....	6,000 metric tons

Therefore at a time when more ammunition was needed, explosives were reduced from 46,000 metric tons in April 1944 to 22,800 metric tons in Dec. 1944, and powder consumption was twice the output from June 1944 to Dec. 1944. This resulted in a serious ammunition shortage during the last six months of the war.

Synthetic rubber fell to 15% of the January-April 1944 average, although this item was cushioned to such an extent that at the war's end the effect of this reduction had not reached the front line.

In July 1944 Germany's airframe production was 20,000 metric tons. This fell to 11,446 metric tons in Dec. 1944. A further and more rapid deterioration occurred in early 1945, when 4,000 daily Allied sorties could only be answered by 300 from the Luftwaffe. The oil shortage, Allied air superiority, and the bombing of the aircraft industries had taken their toll. Attacks on the Ruhr in the latter part of 1944 reduced steel 80%, but this was not completely reflected in the front line at the war's close. Bomber Command's attacks on the Ruhr during this period practically destroyed Germany's heavy industry.

Transportation proved to be the weakest link in Germany's logistic chain. Its failure was the immediate cause of the breakdown of the supply system and consequently was a decisive factor in the collapse of the German Army. The following table shows the actual freight car loadings of the Reichshahn and the extent to which they were curtailed:

Week of 19th Aug. 1944.....	899,091 cars
Week of 28th Oct. 1944.....	703,580 cars
Week of 23rd Dec. 1944.....	547,309 cars
Week of 3rd Mar. 1945.....	214,000 cars

The week of March 3rd was the last in which records were kept; but the decline continued. By this time Germany's only reserve was that being transported from factory to front line. Franz Hayler, Secretary of State and Economic and Political Counsellor to Field Marshal Kesselring said: "In Feb. 1945 Germany's entire war production for a month and a half was loaded on railway cars—components going here, assemblies



One flying bomb did this in London ("Impact")

going there, raw materials going somewhere else." Because of this precarious situation, transportation shortages thus had tremendous effects on the front line.

Shipments of coal, by rail and water, were reduced from 7.4 million tons in August 1944 to 2.7 million tons in December 1944. Use of the Dortmund Ems and Mitland Canal was prevented. All industries and utilities needed coal by January 1945. On 15th March, 1945, Speer concluded a report to Hitler of the figures of coal deliveries from the Ruhr as follows:

"These figures mean that neither the coal supplies for shipping, for the Reichshahn, for the gas and electricity plants, for the food economy, nor for the armament economy (which occupies the last place) can by any means be assured . . . The final collapse of the German economy can therefore be counted on with certainty within four to eight weeks . . . After this collapse even military continuation of the war will become impossible."

German records indicate that, during the first quarter of 1945, German armament production (excluding the oil industry) was reduced by 45%. Since car loadings were reduced to 15% and coal deliveries to 4% of normal, it was clear that production itself must rapidly come to a complete standstill.

Here was air warfare, driven home to the point of occasioning complete economic collapse and, as its corollary, political and military collapse. This was the unseen war. Recent analysis shows that if the bomber offensive had continued at the then current rate, and even if the Allies had not crossed the Rhine and Oder, armament shortages would probably have been decisive by May 1945. The Army, bereft of arms and motive power, would have been utterly helpless by June or July. It is apparent that the accomplishments of the Allied air war against Germany during World War II justify a conclusion that a nation might be reduced to surrender by properly applied strategic bombing.

### The Air Effort Against Japan: World War II

It was in the Pacific theatre that the concept of physical invasion, as the principal means of im-

posing surrender upon a nation, appeared to be most firmly established. Right up to the final surrender, the Allied military leaders never swerved from their basic plan: Japan must be invaded.

By June 1st, 1945, the Japanese Air Force had ceased to exist. It had anywhere from 5,000 to 9,000 aircraft which could be used only for suicide missions and were being kept against invasion. They were flyable, and that was all that was required. Efficient pilots no longer existed.

The Japanese Navy had been reduced to impotency (partly by air action), and air power was relentlessly sinking what pitifully few ships were left in their harbours. Carrier Task Forces were ranging up and down the coast at will, destroying harbours, shipping, communications, and anything their guns and aircraft could find. Submarines were running out of targets and were often employed as pickets for bomber crews who had ditched.

The strategic Air Forces based on Guam, Tinian, and Saipan were heavily bombing Japan. Opposition was practically nil, and the campaign was mounting with great intensity. Whole cities were being wiped out in incendiary raids, while all industrial targets were being reduced by precision bombing. Long-range fighters from Iwo Jima and aircraft from Okinawa were ranging over Japan and sinking and interdicting shipping off her coast. An effective aerial mining campaign was being conducted. The full meaning of air power was being driven home to the Japanese in every corner of every island.

That was the air and naval situation on or about June 18th when final plans were approved for the invasion. Yet an intact Army of 2,000,000 troops was ready on the home islands to defend Japan from invasion. Could there be a more ideal situation to force surrender by blockade and bombing?

\* \* \*

It is interesting to note what plans were made as the detonation of the first "A" bomb was about to take place in New Mexico. An Interim Committee was established, composed of high state officials and top scientists, to recommend a policy



*Trappes marshalling yards. Paris, 1945. ("Impact")*

for the employment of the "A" bomb. On July 1 this committee unanimously recommended that the bomb be used against Japan as soon as possible. Its decision was based on estimates of the military situation given them by the Joint Chiefs of Staff. The Joint Chiefs of Staff had planned the invasion of Kyushu for Nov. 1945. This was to be followed up by an invasion of the main island of Honshu in the spring of 1946. Some millions of men would be engaged and it was anticipated that the invasion would cost 1,000,000 American casualties, not including the other Allies. It was to avoid the appalling cost of such an invasion that the decision to use the "A" bomb was made.

Just about this time peace feelers were being put out by the Japanese through Moscow. The Japanese ace in the hole was the threat to exact a terrific toll from the invaders if an invasion was carried out. In this instance the invasion concept was to be used as a bargaining point by the enemy. However, the "A" bomb furnished the coup de

grace; and, despite strong protests from many high Japanese Army officials (but at the Emperor's insistence), the Allied peace terms were accepted. The "A" bomb was thus added to weapons to be used in strategic air action.

#### **What Do These Victories Mean**

During World War II the full impact of air power was felt for the first time in history. Air power was assigned the primary objective of the destruction and dislocation of the German military, industrial, and economic system, and the undermining of the morale of the German people to the point where their capacity for armed resistance was fatally weakened. At first, many doubted that air power could carry out this objective. With the invasion of the continent and the defeat of Germany, however, all doubts were dispelled.

If the U.S. Strategic Bombing Survey is correct in its conclusions, it is possible that the Allies really beat Germany twice. The first time by the

spring of 1944, and the second time within 11 months after the Normandy landing. At the very time when air power was ready for the kill, the air forces were switched primarily from their strategic role and henceforth were subject to the needs of invasion and then the progress of the inland fighting.

Japan was the first major power in history to surrender without an invasion by surface forces. The U.S. Survey, based upon a detailed examination of all the facts and through interrogation of high Japanese officials, reaches the conclusion that even without Russia's entry into the war, and without the atom bombs or the contemplated invasion, Japan would have surrendered to air attacks certainly before 31st December 1945 and quite probably before 1st November.

Until the summer of 1943 Germany had just been scratched. The following summary gives a fairly good idea of the Allied build-up in the tonnage of bombs dropped in the European theatre of operations:

	USAAF	RAF	TOTAL
1939		7	7
1940		15,603	15,603
1941		46,026	46,026
1942	2,003	74,489	76,492
1943	133,089	213,077	346,166
1944	890,661	703,075	1,593,736
4 months of 1945	437,670	254,840	692,510
<b>TOTAL</b>	<b>1,463,424</b>	<b>1,307,117</b>	<b>2,770,540</b>

Note that in the single month of June 1944, a 25% greater tonnage was dropped than throughout the whole of 1939-40-41-42. Of the overall total tonnage dropped, 66% was during the last 11 months of the war. Note the inadequacy of the first 4 years—although experience was being gained, techniques evolved, and the forces built up. Yet the comment is often made that air power had five years in which to win the war but still failed. No statement could be less near the truth. It is obvious from what has been said that by the spring of 1944 complete air superiority had been won and that aerial blows had assumed proportions too terrible for the German war economy to

withstand. What might have been the situation if the Allies had placed a higher proportion of their resources in the air arm at an earlier date?

In Air Marshal Harris's book, "Bomber Offensive," he sums this question up as follows: "It is an obvious and most certain conclusion that if we had had the force we used in 1944 a year earlier, and if we had then been allowed to use it together with the whole American bomber force and without interruption, Germany would have been defeated outright, as Japan was. To have had the force we built up in 1944 a year earlier would have been perfectly feasible."

Again, this is what Air Marshal Tedder has to say on the subject: "There have been some enthusiasts who have stated that air power can by itself win wars. As regards the late war, it is clear that we did not attempt to win by means of air power alone—or even by air power as the primary factor. It is true that in the autumn of 1940 and again in March 1941, aircraft production was given by the Cabinet the highest possible priority with the special object of building up Bomber Command to the greatest possible strength. As regards man-power within the Services, the Army in 1939 had about six times, and in 1944 three times, the strength of the Air Force. Of the direct war effort of the nation the Army accounted for about half, the Air Force just over and the Navy just under a quarter. Civil Defence absorbed about 3 per cent. The bomber force itself, taking into account the man-power cost of production, maintenance and training, and also of the actual bomb loads dropped, took approximately 12 per cent at the peak, and, over the whole war, 7 per cent of the direct war effort of the nation. Seven per cent! Moreover, in considering that figure one must remember that the bomber force, even more perhaps than the Navy, was fully engaged in operations throughout the war, whereas for some four years only a part of the Army was fully engaged, and the Army as a whole was therefore not making such heavy demands as it would otherwise have done. No, whatever some enthusiasts may have claimed as possible, in practice we did not try to use the air as the real war-winner."

Was England wrong in putting only 7% of her

total effort into strategic bombing?

With regard to economy in manpower of the actual hitting force, the bomber crews, the overall total is ridiculously low by land warfare standards. 125,000 members of air crew entered RAF Bomber Command during the war. Assuming that a similar hitting force entered the American 8th and 15th Air Forces, then the combined total gives us 250,000 men engaged throughout the war in combat strategic air operations against Germany. Compare this number with the hitting force required for invasion. Surely we are forced to the conclusion that, if strategic bombing can win a war, then it will do so with a tremendous saving in human life. Have the total dead and wounded of the invasion force exceeded the number of persons who were engaged in a form of warfare that might make invasions obsolete? It is not logical to assume that strategic bombing, if it forced an enemy to surrender, is by far a more economical procedure?

### The Bases For Strategic Bombing

It is apparent that all three Services cannot possibly be allotted all the men and material they would like to have. The supply barrel is not bottomless and a compromise must be made. It also follows that the compromise agreed upon must be dependent upon a number of factors, e.g. our own position and potential, the position of the enemy and his potential, etc. In other words, the balance of men and material finally allotted must depend upon the concept of the conduct of the war.

Let us assume that a nation overruns the land mass of Europe. Our first task is the allocation of men and material and the division of the home front so that:

(a) Our vital bases can be held and supplied by the tri-Service team against major and all-out moves by the enemy, and

(b) strategic bombing will be given its full chance to achieve the victory.

The next step is to apply these conditions to what are considered our vital areas.

Assuming these areas to be England, Japan, and the North Coast of Africa, it is considered that from these bases a strategic bombing war can be

successfully carried out.

When we analyse the defence requirements of these areas, some common factors become apparent. In each case, air power is the first line of defence. In England, Japan and North Africa, only air power can prevent or make possible a successful sea or airborne invasion. Further, in the case of England and Japan, only air power can prevent their reduction to a degree of defeat or neutralization.

A second common factor is the soldier. In each theatre he will be required to bulwark and back up the security of that area.

The third common factor is the rôle of the Navy. Supply and control of the sea lanes must be maintained. The Navy must be able to combat aircraft and submarines, its composition involving destroyers, carriers, etc. In the early stages of a war, carrier aircraft operating in the Mediterranean could supplement our Air Forces. However, their ability to continue unrestricted operations in that sea is doubtful and can only be answered by the future.

Thus in the base of the structure is found the same tri-Service team, each playing an integral part.

Now, having allotted the basic roles to be played by each Service in the defense requirements, the next step is to decide upon their relative importance.

First we must consider the capabilities, limitations, and geographical positions of the two most important contributors, the United States and England. The whole question will be treated here merely in its broader aspect.

England's first line of defence is air power, and of necessity she will remain strong in this field. Her position, both geographically and commercially, necessitates a large merchant navy. An adequate fighting navy will therefore be required to protect her commercial fleet. Financially she is no longer able to maintain soldiers in the many outposts of her Empire: indeed, her Empire has shrunk and many of her troops have been withdrawn. Thus, we may assume that in a future war



circumstances will of themselves force upon her a breakdown of forces not unlike that already recommended by the airmen—a breakdown that will make her strong in the air and on the sea lanes, leaving her an Army which, although insufficient by last war standards, will be adequate in the future.

The position of the United States is quite different. She is much more secure and comparatively free from physical invasion for at least the foreseeable future. Time, however, will gradually diminish this. Unlike England, she is self-supporting—apart from some raw materials vital for war. Her first line of defence is in the air, and because this defence will in time guard the world's greatest guarantee for freedom, American industry, no words can describe the importance of always maintaining the highest state of protection. As the main arsenal she must maintain a large merchant navy and an adequate fighting navy to assure the safe delivery of her products. In the broad picture she can, with reservations, swing her industry to whatever fields she chooses and as the situation directs.

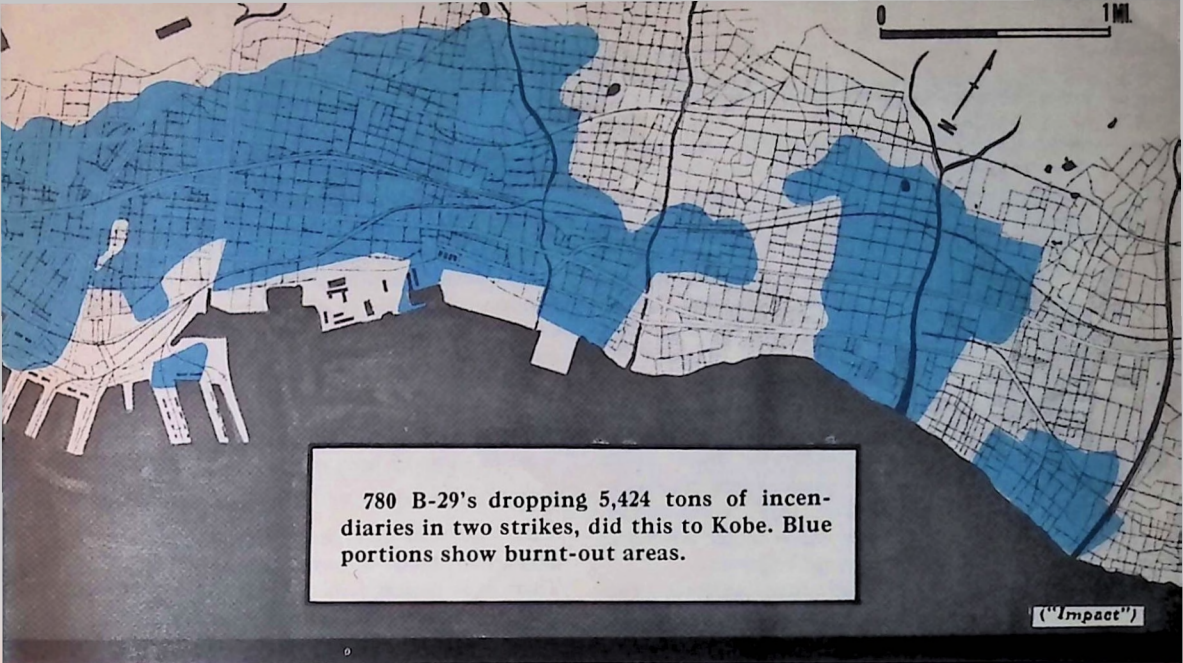
In short, England's position will necessitate the foundation of a strong Air Force and Navy, with

the balance of resources going to the Army. The United States, on the other hand, will have a greater opportunity to turn her output to whatever fields the concept of war will direct, nor will the airmen's concept of it have any economic barrier to contend with.

When we turn to the problem of the distribution of manpower, we part company with the past. Air Marshal Tedder, speaking of our past attempts to be strong everywhere and of our consequent overall weakness, says: "On neither military nor economic grounds can we afford a repetition of that. We must re-assess the problem of our security and re-allocate our defense effort so as to ensure the maximum power with the minimum expenditure of man power and material." As we have already tried to point out, our minimum requirements are control of the air by the Tactical Air Forces, supply by the Navy, and eventual occupation by the Army.

What, in the broad picture, will this involve, and what will be left for the strategic offensive? Let us deal with England.

The last war saw a tremendous build-up in the Army for a cross-Channel invasion. But now this build-up is no longer required. Obviously an



780 B-29's dropping 5,424 tons of incendiaries in two strikes, did this to Kobe. Blue portions show burnt-out areas.

(*"Impact"*)

appreciable switch can be made in England's armed forces. A much greater effort can be put into enlarging the forces of those carrying the ball, the long-range bombers. The 7% strategic effort could be tripled, the Navy remain approximately the same, and the Army reduced accordingly. However, one more cut is needed to balance England's forces. Because of the prime importance of air superiority in all areas, especially over England, the Tactical Air Forces must be stronger than they were in the last war. The Army again must be cut by 6% and this given to the Tactical Forces.

To sum up England's contribution and to compare it with the last war we have:

	ARMY	NAVY
Last War	49%	22%
Future	30%	21%

\* Increase as stated goes to TAF

enemy nor is an amphibious war contemplated. The Navy and Marines can be cut from 31% to 20% of the total forces and still have 2,400,000 men, quite adequate for their allotted rôle. The Army can be cut from 49% to 36%, still leaving them with 4,100,000 troops. Thus 24% more manpower can be allotted to the Air Force, so giving them 5,100,000 men

It is considered that a re-allocation of forces in England and U.S. along the lines indicated will meet all security problems. The expansion of our Air Forces will enable us to bring sufficient aerial power to bear upon the enemy so that he will be forced to sue for peace without involving the maximum expenditure of man power and material

AIR FORCE		CIVIL DEFENCE
Coastal, TAF, etc.	Strat.	
19%	7%	3%
* 25%	21%	3%

Now to re-allocate the division of forces in the U.S.

The Navy had built up tremendous forces in the Pacific to fight an amphibious war as well as an opposing Navy. There no longer exists an

that physical invasion would necessitate.

Considering the economy possible in other fields, it is reasonable to assume that requirement for large scale production of "A" bombs can be met. As far as manpower is concerned, the millions of

people on the home front who would ordinarily be employed in the production of arms and ammunition for an invasion can be switched to this field.

If the concept that victory is to be attained through strategic bombing is adopted, then it follows that the future Eisenhower should be an airman. Under this direction, the grand strategy would lay out from what bases a successful bombing war could be carried out, taking into consideration the possibility of holding and supplying these bases. Security and supply would be channeled out to the tri-Service team as its responsibility. Theatre commanders would be appointed. A closely knit team, such as that which existed in North Africa under Alexander and then Eisenhower, would be set up.

Meanwhile the strategic bombing forces, controlled by a central headquarters outside the theatre, would be carrying out their assigned mission—*i.e.* the destruction and dislocation of the enemy's military, industrial, political and economic systems and the undermining of his morale to the point where resistance could no longer continue.

North Africa is considered to be an excellent base. The tri-Service team would be responsible for the protection of this base and for supplying it. A fight for control of one of its entrances would probably develop. The entrance would almost certainly be the Middle East, in view of its im-

portance as a source of oil. Here the Army would be committed with the Tactical Air Forces. To supply this theatre the Navy must keep open the sea lanes. If the enemy tried to jump across from Italy, our forces must be quickly positioned to meet them. The need for adequate, modern Services will surely be tested in any war in the immediate future. They can make our position secure from strong enemy attacks. They can make a large land-locked Army a prisoner while that Army's homeland is being pulverised by bombing. Not being able to penetrate our barrier, that Army becomes virtually useless.

\* \* \*

No one man can give definite and accurate answers to the questions involved in this article. There is no perfect concept of how to fight a war, because no man or group of men yet has enough information, ability or foresight to plan such a war. It is believed, however, that the airmen's concept has merit, and most certainly the time has arrived when it should receive open-minded consideration from those with the necessary information and authority. Now that war has reached into the home of every man, woman and child, there is no longer any place for Service pride and tradition.

The question is not whether we dare adopt a new concept of warfare, but whether we dare retain the old.



---

## GADZOOKS!

We gather from "The Aeroplane" that 13 aircraft accidents were caused by birds in England during 1947, and 17 in other parts of the world. To combat this menace—at least in the immediate vicinity of certain aerodromes—two Flight Sergeants, one Corporal, and three Air-

craftmen were trained in the ancient sport of falconry. By the end of last Fall, the RAF had 15 operational peregrine falcons stationed at Duffield in Yorkshire and at Cottishall in Norfolk.

---

---

# ROYAL CANADIAN AIR FORCE

# Association



*(Published below is a paper by Mr. Chester H. Wallace, of No. 700 (City of Edmonton) Wing. Sergeant Wallace, now with the Alberta Liquor Control Board, is Assistant Secretary of his Wing. His paper was distributed at the Wing's second meeting held in the Legion Memorial Hall on 14th March, and we are sure that it will be of interest to other Wings and to all members who are at present engaged in organizing Wings in their own communities.—Editor)*

\* \* \* \* \*

## One Man's Opinion

IN SPEAKING TO PROSPECTIVE MEMBERS, this question is frequently asked: just what is the purpose of the organization? Is it merely to be another ex-servicemen's organization? In other words, prospective members want to know exactly what they are likely to get for their money. Although the better-known organizations have done, and are doing, magnificent work for ex-servicemen in general, they have not entirely filled the bill for ex-RCAF personnel.

The aims and objects of the Air Force Association are so general that they may, at first sight, seem meaningless to the average ex-airman or ex-airwoman seeking information on the subject. The day is past, for the time being at least, when we are required to look to the Chief of the Air Staff for direction. In any association of this sort, the shoe is on the other foot. It is up to the rank and file to work out their own answers to their own problems.

Let us examine the situation that confronts us.

To begin with, if the pattern followed by existing organizations had filled our needs there would have been no real demand for a new organization, nor would there have been any real response to it. Therefore we must not be in too much of a hurry to follow existing patterns. We must first be sure of what we want.

It would, of course, be very nice to have a club room, and many of us would enjoy having the odd glass of beer in it. Yet that alone would not be the answer. There are plenty of places already where such a taste can be indulged. Desirable though a club room is, therefore, it certainly cannot be regarded as the "big idea" behind the Association.

Another consideration that comes to mind is the need for vigilance with regard to treatment accorded ex-RCAF personnel and the necessity of keeping government legislation fully abreast of our needs. There is a possibility that, lacking an organization interested primarily in their affairs, ex-Air Force men and women may not have received the full benefits extended to ex-members of the other Services. If that is so, however, it has not been too noticeable. As a matter of fact, existing organizations have been very ready to place their facilities at our disposal. If there has been any failure at all, it has probably been on our part and not on theirs. An Air Force Association might conceivably be a little more enthusiastic than existing clubs on behalf of ex-RCAF personnel as such, but there is no evidence that the difference would in itself be great enough to justify a new organization.

The need for the Association lies, I think, in a slightly different direction. I have come to this conclusion after doing my best to analyze my own

reactions and after hearing a number of others trying to clear up their own thinking on the subject.

The RCAF differed materially from either the Army or the Navy in the conditions of service. Most of us were treated as individuals in postings or in formation of crews. Where we came from made little difference. Thus the camaraderie built up on active service was broken when pals took their discharge and proceeded to their respective homes all over the country. Army units in particular were built up in restricted areas, served throughout the war together, and returned to the same general area on discharge. Thus, former comrades are frequently still together in other Service organizations and feel "as if they belong." Any time they drop around to their club rooms, they are almost sure to find one or two bosom pals there.

With those who served in the Air Force it is different. We can go to the same club room, wander about for a while like comparatively lost souls, and leave unsatisfied. Any hotel holds nearly as much attraction. At official meetings of the organization, the story is apt to be much the same. We spend an uncomfortable hour or two listening to old soldier grunts and groans with which we have little experience and therefore possibly little sympathy. In such circumstances, it is little wonder that we have felt a little "out in the cold."

One thing that attracted me to the Air Force Association was the feeling that here I would belong. When, in the Service, a stranger came to an Air Force Mess he was soon absorbed into the scheme of things. I felt that here with an Air Force gang, the fact that most of us were strangers to one another would be no hindrance. Furthermore, there would be a much greater chance of bumping into old acquaintances.

Again, most of us have a greater or less desire to keep in touch with things. Though we may lack either the opportunity or the wish to take a more active part in Air Force affairs than lying dormant in the Reserve, yet at the same time it's hard to keep our inherent curiosity in check. If, therefore, I can achieve the twin objectives of

chumming up with kindred souls and at the same time of satisfying part of my curiosity, I, for one, will feel the Association has been completely worth while.

Quite a bit has been said of late about organizations requiring a worthy objective in order to survive. This idea has sent Service and other Clubs scurrying about the country in an attempt to find some cause to justify their existence; but although it has already caused some ludicrous situations, it remains none the less worthy of consideration. There would be definite satisfaction in sharing some meritorious duty with the same group which, as a corporate whole, did such a thorough job of laying Germany and her ambitions in ruins. It may be that getting established and arranging for club rooms may be sufficient to keep us out of mischief for the time being. But we will also have plenty of opportunity to give a helping hand to fellow airmen who happen to be in difficulties—not to mention airwomen. We could get a finger or two in the general air pie around Edmonton by helping the Auxiliary Squadron or the Air Cadets, if such help is needed. Needless to say, it would be foolish to horn in if we are not needed. The projected Air Show that may take place at Edmonton sometime in the future is another objective that may require our assistance. These, however, are just ideas, and they will have to work themselves out. If the Association really fills a need for its membership, there will be plenty of time and more than enough energy for any and all of these things.

Thus, I personally feel that there are several things the Association should do.

First, of course, it should give an opportunity for the fellows and gals to get together in a social sense. I am certain that it is the wartime camaraderie that most of us have found mainly lacking since joining civilian ranks. The Association must give us facilities and an opportunity to recapture something of this. At the same time, I believe that many of us will certainly welcome a few informative movies on Air Force topics together with an occasional talk from, and an opportunity to meet, those at present in charge of air work and air policies in the Dominion. While

none of us would appreciate anything as intensive along this line as a full course of Air Force instruction, a reasonable amount of information would be very enjoyable and welcome.

Secondly, we should be ready to take up cudgels with the authorities when necessary, either on our own, or in conjunction with other Service organizations. But this is an activity to be engaged in with discretion. I am sure the large silent majority would not appreciate too much of it and would begin to stay away in droves if subjected to constant "gripe and groan" sessions. We can't ignore this phase, but we can handle it by generous use of committees, changing them frequently to avoid (a) overworking them, and (b) giving any member the idea that he may be getting the runaround from any particular clique. Only questions of general importance should come up for general discussion—and then only after unbiased committees have been able to gather all available facts. I believe such precautions will add tremendously to the usefulness and effectiveness of our efforts despite any delay that may result.

Thirdly and last—but not least—we should keep a sharp eye on the general aviation picture and be ready to perform any useful service as and when the opportunity arises.

### A Note on No. 700 Wing

No. 700 (City of Edmonton) Wing has gone steadily forward since its election of Officers on February 14th, and has a membership now of over two hundred. Don (Tiny) Ferris, D.F.C., popular President of the Wing and Group Captain of Bomber Command fame, is now with the Aviation



Group Capt. Don (Tiny) Ferris, D.F.C.

Division of Eldorado Mining and Refining Company. Other Officers are:

1st Vice-President, Murray Cooke, 9818-78th Ave.

2nd Vice-President, Dave Roberts, 9611-83rd Ave.

Secretary, Jim Rowand, D.F.C., 521 Tegler Bldg.

Assistant Secretary, Chester Wallace,  
9931-83rd Ave.

Treasurer, Ross Gould, 11315-58th St.

Additional Members, Jim Cox, 10944-77th Ave.

Mrs. Ishbel Ferris, M.B.E., 10031-143rd St.

Seven members of the Wing serve on each of several committees—Ways and Means and Finance, Entertainment, Publicity, Membership, etc.



## AN OLD MASTER

*About the middle of the fifth century B.C. the Chinese writer Sun Tzu Wu defined as follows the various methods of attack by fire:—*

*"There are five ways of attacking with fire. The first is to burn soldiers in their camp; the second*

*is to burn stores; the third is to burn baggage trains; the fourth is to burn arsenals and magazines; the fifth is to hurl dropping fire amongst the enemy."*

*(From an article by Capt. H. Sorensen in the "Canadian Army Journal")*

# Men, Birds and Planets:

## Part 2

(Reprinted by courtesy of "Interavia")

THE FALLACY THAT MAN was capable of flying like a bird can also be reversed: since man cannot fly like a bird, he is incapable of rising into the air at all.

Descartes wrote in 1640:

"Metaphysically speaking, it is obviously possible to construct a machine capable of maintaining itself in the air like a bird, for birds themselves are such machines. But physically speaking, this is not possible, since the devices required would have to be so delicate, yet so strong as to make their construction by Man impossible."

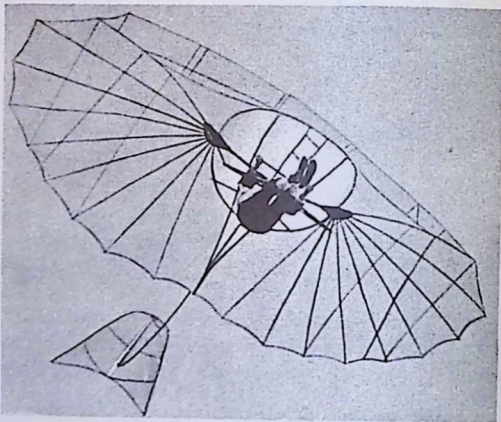
Descartes and many of his contemporaries who voiced similar views deserve to be excused. They lived before the machine age. But that the great physicist Helmholtz rudely attacked that pioneer of aeronautics, Otto Lilienthal, with exactly the same arguments seems a little less pardonable. For it was Lilienthal who in his epoch-making book, "The Bird as the Fundament of the Art of Flying," took extraordinary care not to use popular fallacies or potential sources of error. Critical observation of nature, together with a talent for mathematical theory and practical technical application, enabled this precursor of aeronautics to exercise that rigid mental self-discipline which characterised him until the end of his days.

Here is an example of the way Lilienthal observed natural phenomena. In their youth Otto and Gustav Lilienthal read a book for boys written by the Italian balloon pilot, Count Zambeccari. Zambeccari related the old fable of the soaring stork inviting the tired wren to settle on his back and travel with him. (In fact, the stork did three things: He took the wren for a ride; he invented the first pick-a-back combination; and inaugurated the aerial hitch-hiking system.)

From that moment on the two brothers indefatigably watched the storks in the marshes outside their home town. Gustav Lilienthal described one of their expeditions in a preface to Otto's book:

"Quite often we crept very close to the storks, and we did this with the wind, for the bird's olfactory sense is negligible. When the stork suddenly perceived us, he always took to the air by hopping towards us until he was able to lift himself by the force of his wing beats. This demonstrated to us that it must be easier to arise into the wind, for the timid bird would never have moved towards the source of danger without a very good reason."

The stork rendered considerable service to the Lilienthal brothers. Doubtlessly, it also led them along false tracks. Its not very good example misled them into choosing the centre of gravity of their aircraft, the "Flügel," too low, and many other deficiencies of their devices may be blamed on Mother Stork.



Otto Lilienthal flying his biplane glider.

The most seductive temptation offered by their feathered friend consisted, however, of the constant illusion that the strength of the human musculature was sufficient to permit ornithopter flight.

On the basis of his knowledge of bird anatomy, modern man should be aware of the fact that he cannot compete with the muscular system of birds. According to Sir J. Arthur Thomson, the chest muscles of several pigeons account for about half the weight of the bird's entire body. Dr. William Beebe discovered that the pectoral muscle of a pigeon weighs one-fifth of the bird's all-up or gross weight, complete with skeleton and intestines.

The news of these discoveries seems to have fallen on deaf ears. Modern man still dreams the old dream of human flight by muscular effort. Winged bicycles have jumped and still jump over eight-inch obstacles. Cranks have been cranked, treadmills trodden, and stretchable chords stretched.

We shall beware of annoying muscular flight enthusiasts and merely invite the reader to carry out an experiment at home, so to speak:

If a man weighing 165 lbs. runs up the stairs to the third floor of his house (33 ft.) and succeeds in doing so in ten seconds, he will have used one horsepower. We would then recommend him to climb to the thirtieth floor (330 ft.) of the Empire State Building of New York in one hundred seconds, in order to convert his momentary success into a continuous performance.

Should he also pass this test, he would still lag considerably behind the average performance of a sparrow, but would nevertheless qualify for permission to join the discussion on muscular flight.

It would be an idle undertaking to try to equal the physical endurance of birds, since aviation has long ago outpaced the bird and has surpassed its performance many hundred times over.

There is no doubt that birds fly fast. Most of us do not even imagine that certain birds fly at speeds of up to 200 m.p.h. Colonel Meinertzhagen, a Britisher, computed with anti-aircraft measuring instruments that the martlet, one of the fastest birds, often attains more than one hundred miles per hour. Mr. E. C. Stuart-Baker records that in

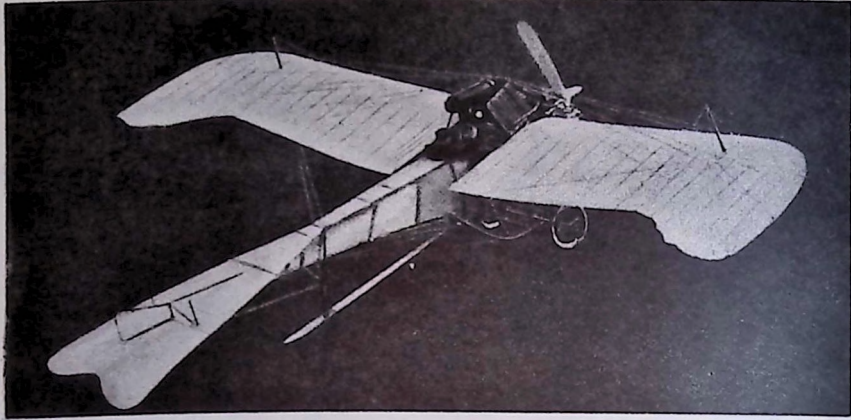


*Gustav Lilienthal's workshop and his grandchildren.*

India he checked the flight of two species of martlet by stop watch over a two-mile distance and recorded speeds between 170 m.h.p. and 200 m.p.h. Nor does the service ceiling of these feathered flyers leave anything to be desired. A Royal Air Force squadron observed peewits at over 7,000 feet, ducks at 7,500 feet and rooks at 11,000 feet.. The longest flight recorded with a ringed bird is the one made by a common tern which was marked as a fledgling on July 23rd, 1928, in its nest on Turnevick Bay, Labrador. It was found again on November 14th, 1928, on a beach at Margate, fifteen miles southwest of Port Shepstone, Natal, on the East Coast of South Africa. The shortest distance between the two points measures about 8,000 miles and the actual route covered by the bird was probably near 9,000 miles.

However, modern aeronautical science has not much more to learn from birds. As "guinea pigs" they have long been superseded by the wind-tunnel model.

Nevertheless, we have no reason to be presumptuous. Today, on the eve of rocket space flight, we once again find ourselves faced with a tedious job



*The earliest aircraft designs revealed the forms of gulls, pigeons, falcons and bats. The "Rumpler Taube" (dove) dates back to 1911.*

of observation. We shall always be Nature's apprentices. The scientific research methods of modern astrophysics have given us astonishingly accurate information on the composition, weight, and physical properties of the celestial bodies. But nobody knows what things really look like up there in space. Nobody can tell what shape a vehicle must have in order to move successfully through the endless space of the planetary system. A well-known astronomer, asked to give his views on the efficiency of the design of modern rockets, declared: "For the time being, the celestial bodies do quite well in moving through the universe. That is probably so because nobody interferes with them. Nobody expects them to do anything but rotate about their own axis and revolve about the major celestial bodies. Now, if they were suddenly required to move from a determined

point of the universe to another determined point, according to a determined schedule . . . who knows what forms they would then have to assume?"

You see—once again we have come to a point of utter ignorance. We shall have ample opportunity of making errors of observation as spectacular as those of our predecessors in their interpretation of the whys and wherefores of bird flight. It is the fate of Man ever to remain a pioneer. The great Newton himself said:

**"I do not know what I may appear to the world, but to myself I seem to have been only a boy playing on the sea-shore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me."**

Dr. H.



# How the AIR FORCE Spends its MONEY

by AIR COMMODORE R. C. RIPLEY, O.B.E.

## Introduction

THE RCAF IS BIG BUSINESS. During the fiscal year of April 1st, 1949, to March 31st, 1950, it will commit \$235,000,000 for materials or services. More than \$140-million will actually be spent during the present year, and the balance will be spent during the following years—largely on items of major equipment, such as aircraft, and on big construction projects. Apart from the major Government agencies, few organizations in Canada have a turnover of this magnitude.

Every single man or woman and every building or piece of equipment or property in the Air Force has its effect on the annual estimates. It might be interesting, therefore, to outline how the RCAF determines the amount of money it will require and how it goes about getting its needs approved. Having done that, I propose to give a further brief description of the way in which the RCAF will spend its money in 1949-50—thereby affording some indication of the stage that has been reached in the post-war development of the Air Force.

## Planning

In the first instance, it must be realized that any organization of the size of the RCAF must have a firm general policy to follow. Changes in policy which have a major effect on financial expenditures usually take some considerable time to put into effect. This is particularly true in peacetime. For example, if a large increase in personnel is approved, there are many time-consuming problems which must be overcome before this approval can be implemented. Provision must be made for

accommodation and additional food and clothing. The new entry must then be recruited, transported to training units, trained, and finally transported to places of employment. It might take two years to obtain delivery of extra equipment, such as aircraft. In other words, from the time that the initial government approval has been given to expand, it can conceivably take (under normal conditions of peace) as much as two to three years to complete what might be considered a minor expansion. This period would, of course, include the time taken by training to actual operational standards.

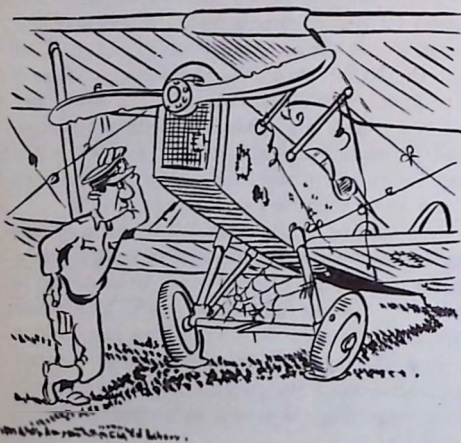
After the last war the Canadian Government determined to follow the intent of the Charter of the United Nations. The Canadian armed forces were cut to the minimum in accordance with this policy. In 1947, however, it became apparent that the United Nations was not providing an immediate answer for peace. After a thorough review of the Canadian air defence problem, it was decided that the RCAF should be increased in size and re-equipped with modern aircraft. The Army and the Navy were also given authority to increase their strength—and needless to say, they are both facing many problems similar to those with which we ourselves are confronted.

In preparing the general RCAF plan, it was necessary to establish priorities to ensure that a proper distribution of effort would be made and to determine how the funds made available each year should be allocated. This was not an easy task. A general shortage of material and labour existed, and furthermore the government was anxious to avoid upsetting the return to normal of civilian economy.

Improvement of conditions for Service personnel was considered of first importance. The majority of personnel were married, and housing was at a premium. This was recognized by the government and a large-scale housing programme was started. Similarly, adjustments were made in scales of pay and allowances, and clothing and food are being improved. A programme to improve the living accommodation of single men was also planned.

Next in priority was the necessity of recruiting to the newly approved strength. This brought up the question of basic training. Fortunately, the training organization had been maintained in a reasonable state of activity and, although many difficulties have arisen, it has been capable of accepting the increased load.

The next and probably one of the most important problems was to re-stock normal items of supply, to modernize equipment, and to commence a systematic replacement of outdated and worn equipment. The RCAF had made very few major purchases of equipment from 1945 to 1947, and any increase in operational activity was impossible without heavy expenditures. Further, many wartime aircraft had been in storage for several years and required complete reconditioning and many modifications to bring them up-to-date.



The introduction of new high-speed jet fighters necessitated a more elaborate navigational and communications network. Much of the wartime signals equipment was inadequate for the new conditions, so that one of the biggest allocations of funds had to be made for its improvement. Aerodromes, too, were found to be unsuitable. Many of our aerodromes had been training units during the war, and their runways were too short for the new aircraft. The plan therefore had to include a programme of aerodrome improvement which would run into millions of dollars.

It was stated earlier that the initial decision to increase the Air Force came in 1947. In actual fact, the RCAF laid the groundwork in 1946 by reducing operational activity to a minimum and giving priority to recruiting and training. Had that not been done, the expansion of training facilities in 1948 would have been a far more serious problem than it was.

The main estimates for 1948-49 were only slightly greater than those of 1947-48. They were quickly followed by supplementary estimates which increased the cash authority to \$88-million and allowed a further commitment of approximately \$45-million on items which would not be completed or delivered until the following year.

1948 saw a decided change in tempo. Flying increased to a total of 128,000 hours. All types of training gradually increased as the recruit flow steadied down to approximately 200 a month. Construction activity (although restricted by controls, shortages, and lack of labour) increased. The first new married quarters were completed. Parliament voted another \$3-million cash to add to the \$88-million previously authorized.

The general programme for 1949-50 was given approval in the Fall of 1948. This programme was, in effect, a continuation of the development of the plans approved earlier. The various Commands submitted their requirements, from which Air Materiel Command and RCAF Headquarters computed the total sums that would be needed. Then it became necessary to determine (after consultation with other government agencies) which items could or could not be included. Some construction items, for example, were reduced

because of area labour problems or shortages of materials. The housing programme was removed from the Department of National Defence estimates and was included in the estimates of another Department, so that all Government housing projects could be co-ordinated in one agency. The original plan was to build some 7,000 units over a ten-year period. This plan has been greatly accelerated; and, on top of the 887 new units which were started in 1948, another 1,790 will be added this year. These are, of course, in addition to 686 temporary and 906 emergency family units now being occupied.

## The 1949-50 Estimates

Now let us examine the main items of the 1949-50 estimates in detail and see how the money will be spent.

**Civil Salaries and Wages** for over 4,500 civilians will require \$8½-million.

**Pay and Allowances** for Service personnel will absorb \$38.7-million. This amount, as in the case of the civil salaries, is much larger than it was last year, partly because of the recent increase in pay and partly because of an anticipated increase in strength.

**Travel, Transportation, Freight and Express** costs amounted to just over \$6-million. Every recruit, for example, makes at least two trips and sometimes three before he is fully trained and employed. Freight costs, too, are very high, in view of the movement of newly purchased equipment, the opening of new units, and the increasing activity of the Force.

**Properties**—Authority for \$31-million cash and \$6½-million future expenditure is required. About \$10-million of the amount to be spent this year will go in the renting of property, in heating, water, and other services, and in the repair and maintenance of buildings. Construction will take more than \$20-million. As shortages of labour and building materials make it necessary to restrict certain types of construction in specified areas, the construction which remains is of the highest priority with respect to the plan. A definite start in the plan to improve single quarters will also be made. This is a big programme and will take more than one year.

**Personnel Supplies and Services** include clothing, barrack equipment, food, laundry, and medical supplies and services, and will absorb more than \$11-million. In addition, almost \$1-million dollars' worth of orders for delivery in the following year will be placed. The clothing will include the new pattern blue uniform and the new raincoat, the issue of both of which will, it is hoped, begin later this year. An improved scale of rations is being introduced at a cost considerably in excess of that of previous scale. The new rations will include greater quantities of fruits, vegetables, milk, etc. In addition, a cash allowance to Unit Commanders will allow the purchase locally of seasonal fresh foods or other supplementary items.

**Stores and Equipment** will consume by far the largest share of available money. The amount allotted comprises

\$64.8-million cash and \$58.7-million for future year deliveries. Of this, \$27-million cash and \$49-million in future years will go into the purchase of aircraft and aircraft spares alone. These purchases constitute the real starting-point of the re-equipment programme, as the authority includes production of the F-86 interceptor fighter and the XC-100. The latter is a fast two-seat all-weather jet fighter now being developed in Toronto. These types will provide the Air Force with aircraft comparable with those of any other Service.

Out of the stores and equipment allotment will come the first major expenditure (\$4-million) for mechanical equipment since the war. Apart from recent urgent purchases of snow-removal equipment and a few other items, a goodly proportion of RCAF mechanical equipment (particularly motor vehicles) is approaching a condition of write-off. The bulk of the new equipment to be purchased is largely to fill up current establishments and it should assist greatly in overcoming many of the transport difficulties of the past few years.

**Miscellaneous Stores** will require over \$4-million. This includes small tools, parachutes, and a multitude of small bits and pieces. The sum may appear to be large, but RCAF stocks are very low on many of these items because of low expenditures in previous years.

**Photo and Armament Equipment** need another \$2-million, and

**Signals and Wireless Equipment** will take \$13½-million cash and \$8½-million for future years. Much of the equipment will be of new design and much of it is equipment never before made in Canada.

**Aircraft Repair and Modification** will have its second big year. \$13-million will be spent, and almost every aircraft completed by the contractors will find immediate use in our expanding flying programme.

**Fuel Costs** amounting to \$5-million reflect the increased flying programme. Approximately \$¼-million of it will be for M.T. and marine craft.

**Sundries**—Another \$4½-million will find its way into special training equipment, fees for special courses, maintenance grants to libraries, printing and stationery, recruiting advertising, and many other items. Printing and stationery alone require over \$900,000. It has been swelled this year by the necessity of bringing technical manuals and equipment vocabularies up-to-date and printing them in sufficient quantity for general distribution.

## Summary

The distribution of funds which has been generalized above amounts to a cash requirement of \$169-million, of which, as mentioned earlier, only \$142-million will actually be spent during the fiscal year 1949-50.\* The latter proviso is to ensure that a minimum desirable programme can be completed should supply or other difficulties be encountered. The part of the programme not completed is carried on into the next year, and thus becomes a future year project. The future year authority of \$66-million—which is largely composed of the long term aircraft programme, major construction projects, and purchase of

signals equipment—extends for several years.

As a point of interest, it may be noted that if the cost of all the items, such as pay, food, clothing, transportation, medical and laundry, are added together, it will be found that the RCAF will spend approximately \$58-million, or more than 1/3 of the total, on direct personnel costs—and this figure, be it noted, does not include the cost of operating single and married quarters or numerous other indirect costs.

\* The difference of \$27-million represents additional cash commitment authority.

### Conclusion

One of the vital necessities is to ensure that the RCAF is getting its dollar's worth—which is tantamount to saying that we must satisfy the public that its dollars are well spent. In peacetime this is always difficult to do, and even more so when a Service is growing. There are, however, many broad indications even now which indicate that the RCAF is getting its dollar's worth.

Flying activity is a good index. The ultimate end of all effort is to get and keep the Air Force in the air and to see that its flying is productive. In the fiscal year 1946-47, during which time the RCAF was completing wartime demobilization and was rebuilding and reorganizing for peace, the flying hours reached a low of 59,792 hours. By the end of the fiscal year 1948-49, the total flying hours—on all types—had jumped to almost 130,000 per year. The wastage rate was extremely low.

The overall turnover of personnel during 1948-49 amounted to only 6%. It included normal retirements, the retirement and discharge on first entry of personnel who were not suitable, and losses of personnel for all other causes. Six per cent is not a high figure when compared with the loss figures in large civil industries. It indicates very definitely that general living and working conditions in the Service have steadily improved.

Another gratifying improvement has been the consistent increase in the numbers of personnel who are successfully advancing themselves in their trade. The results of trade tests immediately

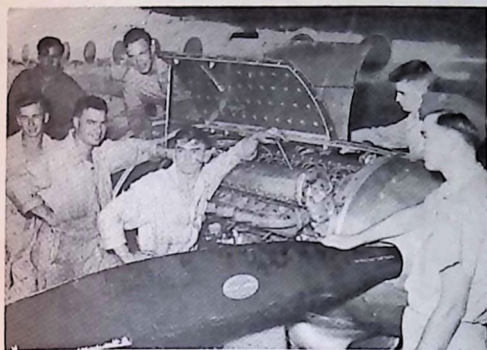
after the war were understandably low, but there has been a marked advance with each succeeding year. This alone indicates the mounting efficiency of the Air Force, as it has been shown many times in the past that, under normal circumstances, good results in trade advancement occur only on good units and under good conditions. The results in the basic training of new recruits have likewise taken an upward curve as against the downward curve of wastage on course, reflecting credit not only on the trainees but also on the teaching methods used.

Although all indications show that the RCAF is improving its efficiency with commendable rapidity, the increase in appropriations for 1949-50 can only mean that there is still much to be done. Large numbers of new recruits will be entering and must be fitted into the organization. New and improved equipment will be delivered continually and will increase the load of those who handle it and those who operate it. The emphasis has hitherto been on rebuilding the basic supporting organizations of the Air Force—in addition to maintaining heavy commitments of a more civil nature, such as air photography and search and rescue. Now, however, it is swinging towards the operational or combat element, as is evidenced by the heavy appropriations for new aircraft, aerodrome development, radar and communications.

In conclusion, it might be stressed that the newest developments in fighting equipment are considerably more complex than have ever been used before, and that their maintenance and operation will require the highest degrees of skill. The programme that is ahead of us will exact the best from every individual. The RCAF will have no time to sit back on its heels and dream of past glories.



## Glimpses at 426 (T) Squadron, Dorval



*Maintenance crew checking a Merlin 620.*



*North Star arrives from U.K. with a load of Air Cadets.*



*Sailors from Dartmouth, en route home on leave.*



*Passengers strapping themselves in prior to take-off.*



*Officers of Squadron indicating terminal points of Squadron's activities: Whitehorse, Cambridge Bay, home base, Goose Bay.*



*Passengers in waiting room.*



## "We Keep Watch Over the Waters"

LAC H. B. Turner is here shown painting No. 413 Squadron's wartime symbol on one of its aircraft. In case our readers have forgotten it, No. 413 Squadron last year watched the waters to such good effect that it added more than 5,000 square miles of territory to Canada by discovering two previously unknown islands in Foxe Basin, off the west coast of Baffin Island. The larger of the islands is between two and three times the size of P.E.I.

### LETTERS TO THE EDITOR

#### NO. 701 (CALGARY) WING

Dear Sir:

Below are a few news items in connection with No. 701 (Calgary) Wing, which was formed in March 1949. Though they will not be very "hot" by the time they appear in "The Roundel", possibly they may still be of interest to other Wings of our Association.

The Calgary Wing of the RCAF Association was the sponsor of the N.W.A.C. Headquarters Band at a concert held at the Armouries on Sunday afternoon, March 20th, 1949. The Band was under the direction of Warrant Officer Carl Friberg. Approximately 1,000 people attended the concert, a silver collection being taken. Art Smith of the Association acted as Master of Ceremonies, while other members served as ushers, looked after the collection, etc. The net proceeds, amounting to \$92.68, were turned over to the Red Cross to go towards the fund for the building of the Crippled Children's Home.

The Association here meets monthly. A well-known local speaker addresses us at each meeting, and his address is followed by entertainment and discussion. In April, the showing of the film "Bomber Command" was added to our normal programme.

J. O. Taylor,  
Secretary, No. 701 (Calgary) Wing  
RCAF Association.

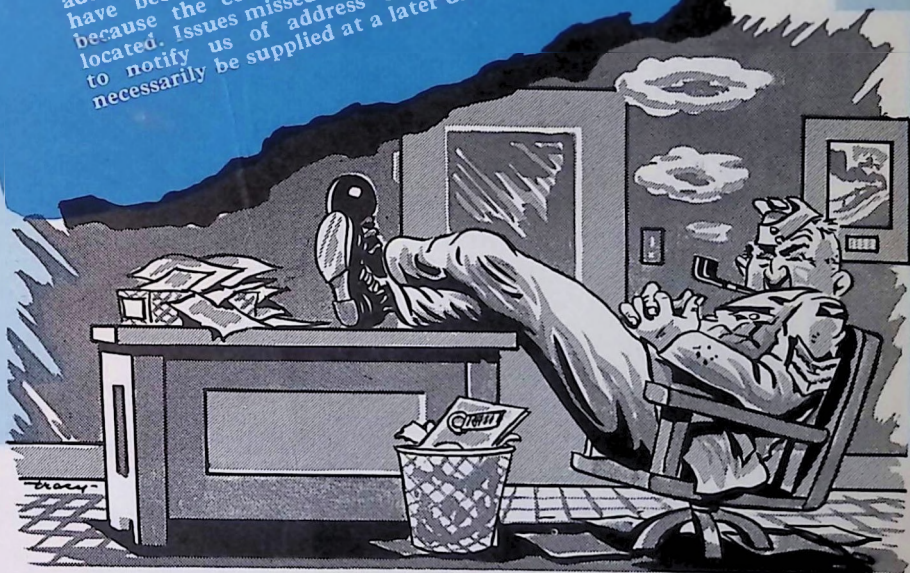
### Answers to "What's the Score?"

1: A	2: C	3: B	4: D
5: C	6: D	7: C	8: A
9: A	10: C	11: B	12: A
13: D	14: D	15: A	16: B
17: D	18: B	19: C	20: A



# Changes of Address

It is very important that the Editor of "The Roundel" be notified of all changes of address. Several shipments of the magazine have been sent back by the Post Office because the consignees can no longer be located. Issues missed on account of failure to notify us of address changes cannot necessarily be supplied at a later date.



*The*  
**ROUND**