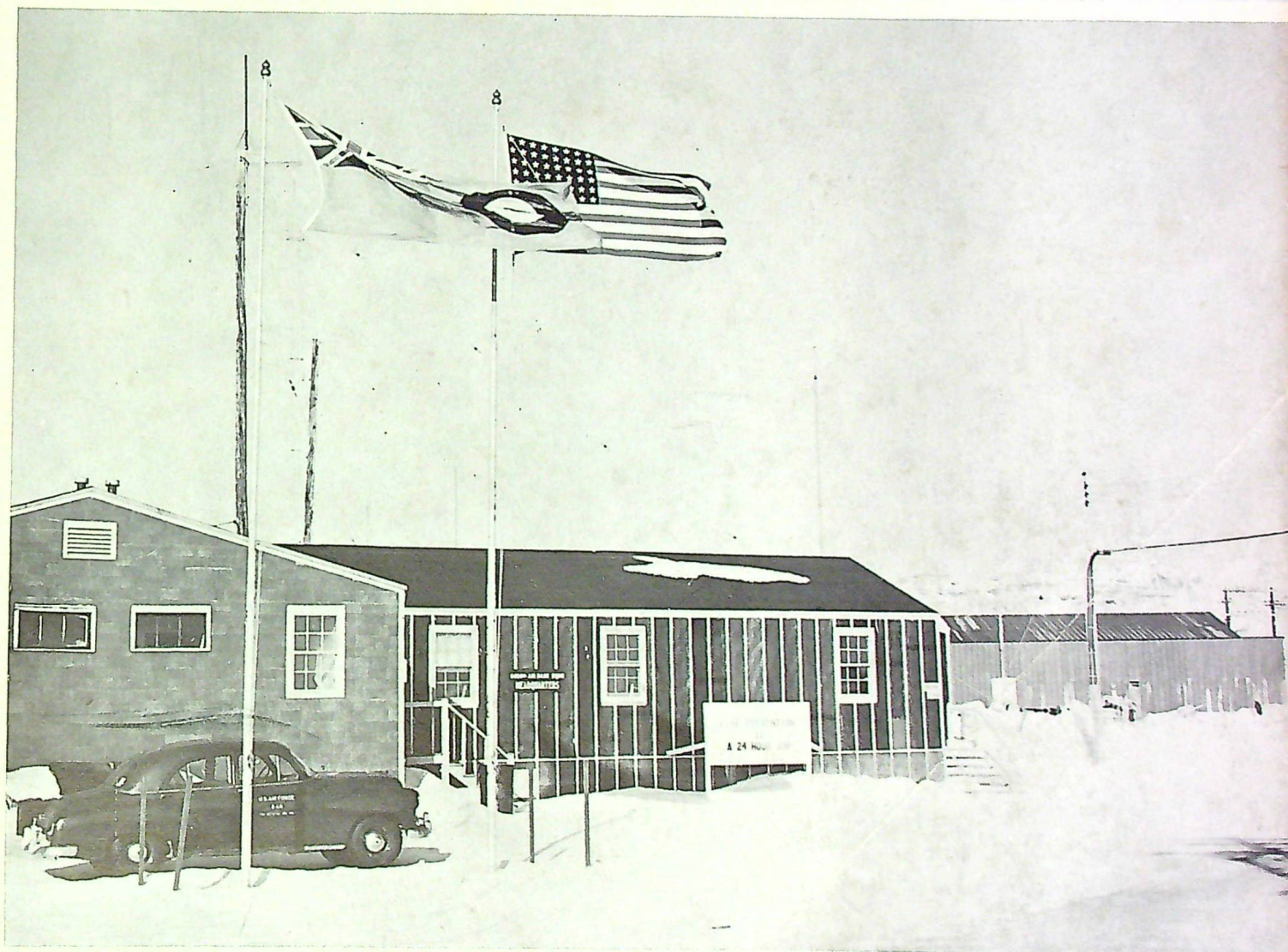


# The **ROUNDDEL**

Vol. 8, No. 6  
JULY-AUGUST 1956



**ROYAL CANADIAN AIR FORCE**

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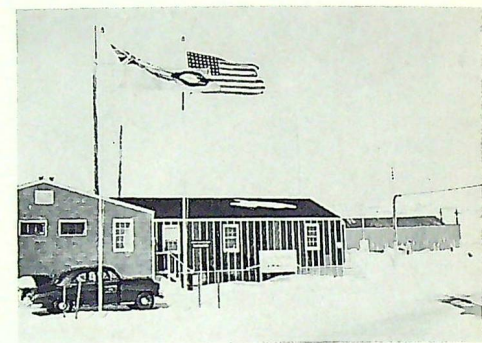
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*This Month's Cover*



The ensign of the Royal Canadian Air Force flies side by side with the Stars and Stripes at Frobisher Bay, Baffin Island.

**EDITORIAL OFFICES:**  
 R.C.A.F., Victoria Island,  
 Ottawa, Ont.

# SGT. SHATTERPROOF DISPELS OUR FEARS

Sir:

Fears have lately been expressed in literary circles that Cpl. Clam, the Nootka, Nightingale, has laid aside his lyre for good. Such, Sir, is not the case. I received a letter from him yesterday, with which he enclosed a copy of his most recent work. I trust that you will extend to it the same hospitality which you displayed five or six years ago to those immortal masterpieces, "Charter Night in Pilchard Pass" and "Out of the Night Comes Shatterproof".

It might be as well, perhaps, if you first explained for the benefit of your newer readers that Cpl.

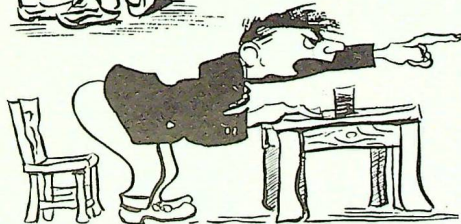
Clam served with me on the West Coast during the Second World War. In 1946 he returned to his former profession of fishing, and since then he has led a full life in pursuit of both the salmon and the Muse. His output, exquisite though it is, is not large: the steady drizzle of the B.C. coast is not conducive to sustained inspiration.

The gem which I am sending you was, of course, evoked by the recent Sixth Annual Convention of the R.C.A.F. Association, in Windsor. Clam, you will recall, is president, chairman, secretary, and treasurer of the Sockeye Wing, of which he is also the only member.



Oh, it's blazers and it's flannels and it's badges and it's pins,  
And a possible pre-prandial before the show begins —  
And heaven help the delegate who wanders from his quarters,  
For the Border City's noted for the beauty of its daughters.

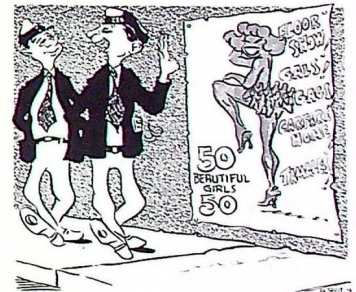
Brunettes and blondes, dear, come and go,  
And I am far from thee . . .  
I would be blind if neither kind  
Began to fizz on me!



## MORCEAU

A cry has gone through Canada from east to western shore:  
"The Annual Convention is approaching us once more!"  
The ploughshare is abandoned and the sail is left to flap,  
And the bowler is exchanged for an Association cap.

Brunettes and blondes may come and go  
While I am far from thee;  
But I am blind to ev'ry kind —  
They do not fizz on me!



In session cataclysmic and tempestuous debate  
The delegates determine the Association's fate,  
Until at last, the meeting o'er and silenced every talker,  
They drop their cards on Mr. Ford and also Hiram Walker.

Brunettes and blondes have come and gone,  
So different from thee . . .  
Let's draw the blind; for they were kind  
And fizzed, I fear, on me.

Now, properly accoutred and with weary heads on high,  
And a military fixity in ev'ry glassy eye,  
They're parading to the Cenotaph — and wondering, perhaps,  
How long a delegate can last before complete collapse.

Brunettes and blondes — but I must go,  
Nor wait a call from thee:  
My date, though blind, may be the kind  
Of physic good for me.



The President installed and all the final speeches made,  
Executives elected, and the Anthem duly played,  
The delegates, in fettle fine though looking somewhat thinner,  
Fly homeward to their families in time for Sunday dinner.

Brunettes and blondes — now all are gone,  
And I return to thee.  
Though not so blind, I like thy kind  
Old physiognomy!

In conclusion, Cpl. Clam asks me to note that he has not yet given his poem a title. The only two titles that have so far occurred to him are "Their Finest Hour" and "The Gathering Storm." Quite apart from the fact that both have been

used already, he feels that neither of them would make for sound family relationships or a carefree atmosphere at future Conventions. I have therefore, Sir, taken it upon myself to call it simply "Morceau".

*Shattuck*



## The Suggestion Box



The Chief of the Air Staff has written a letter of thanks to the undermentioned N.C.O. for an original suggestion which has been

adopted throughout the R.C.A.F.

Cpl. W. A. Plumridge, of R.C.A.F. Station Cold Lake, devised a tab-dispenser for use at Filter Centres. By simplifying the work of the raid-clerk, the dispenser materially increases a Filter Centre's efficiency.

# R.C.A.F. Association



## SIXTH ANNUAL CONVENTION

The Sixth Annual Convention of the Royal Canadian Air Force Association was held in Windsor, Ontario, on 17, 18, and 19 May. This marked the first occasion on which the convention was held outside Ottawa.

No. 412 (Windsor) Wing was host for the occasion, and the Convention Committee, under the joint chairmanship of Mr. J. Burnet and Mr. J. Taylor, provided a full programme which was enthusiastically acclaimed by those who attended as the best convention

which the Association has enjoyed since its formation.

\* \* \*

The Seventh Annual Convention will be held in Saint John, New Brunswick, on 16, 17, and 18 May 1957, with No. 250 (Saint John) Wing acting as host.

### 1956-57 National Executive Council

The National Executive Council



Air Vice-Marshal F. G. Wait, C.B.E.,  
National President of the R.C.A.F.  
Association.

*National Executive Council, 1956-57. Front row (left to right): D. Cain, L. M. Baldock, Miss M. A. Macdonald, Air Vice-Marshal F. G. Wait, Miss E. A. Raeside, Air Vice-Marshal K. M. Guthrie, Miss H. M. Thompson, A. F. Wigglesworth, Miss J. D. Williamson. Back row (l. to r.): J. C. Gray (National Secretary), T. Frazer, C. Z. Korbut, S. T. Malach, E. B. Fitzgerald, Air Vice-Marshal A. L. James, N. Jackson. (Several members are missing from this photograph.)*

lected at the Convention for 1956-57 consists of:

- Grand President:  
Air Vice-Marshal G. E. Brookes, C.B., O.B.E.
- National President:  
Air Vice-Marshal F. G. Wait, C.B.E.
- Vice-President:  
L. N. Baldock.
- Second Vice-President:  
Air Vice-Marshal A. L. James, C.B.E.
- Third Vice-President:  
E. B. Fitzgerald.
- Fourth Vice-President:  
C. Z. Korbut.
- National Chairman:  
A. F. Wigglesworth, B.E.M.
- Vice-Chairman:  
S. T. Malach.
- Legal Adviser:  
E. R. Hopkins, Q.C.
- W. D. Representatives:
- National:  
Miss M. A. Macdonald.
  - Eastern:  
Miss H. M. Thompson.
  - Central:  
Miss J. D. Williamson.
  - Western:  
Miss E. A. Raeside.

### The Programme

The programme for the three days commenced with a buffet sup-





*Delegates parade to the Cenotaph.*

per at the clubrooms on Wednesday night. Thursday was taken up by business sessions, and in the evening a highly entertaining stag party was held at the Wing headquarters. Lady delegates and wives of delegates were entertained by the Ladies Auxiliary of No. 412 Wing. Friday morning saw another business session, while the afternoon was spent in a tour of the plants of both the Ford Motor Company and Hiram Walker & Sons Ltd. In the evening, the annual Convention Dinner was held in the Elmwood Casino. After a short business session on Saturday morning, the parade to the cenotaph took place, headed by the Royal Canadian Air Force Central Band. A fly-past of jet aircraft made it a very impressive memorial service. The closing business session met on Saturday afternoon, and the three days wound up with a dance on Saturday night. At the business meetings, Mr. A. F. Wigglesworth, of Liverpool, N.S. was chairman. On the platform with Mr. Wigglesworth were Air Vice-Marshal K. M. Guthrie, C.B., C.B.E., and Mr. E. R. Hopkins, the legal adviser. On Sunday the delegates, in a very happy mood, dispersed for their respective homes.

#### Speakers

The Association was fortunate this year in having four outstanding speakers.

At the luncheon on Thursday, at

which the Chrysler Corporation was host, the guest speaker was the Hon. Paul Martin, Minister of National Health and Welfare. Mr. Martin discussed the world situation as it exists today and stressed the need for continued participation in N.A.T.O. The Minister said that "in these troubled times, when the possibility of conflict has become a part of our everyday lives, it is reassuring to know that we have in the Royal Canadian Air Force Association a group of men and women 10,000 strong who have had first-hand experience in our air services and who maintain a close and continuing interest in the many complex problems related to the defence of Canada."

\* \* \*

*Air Cdre. C. H. Greenway places a wreath on the Cenotaph.*



On Friday, the luncheon speaker was Mr. Crawford Gordon, O.B.E., President of A. V. Roe Canada Limited.

The R.C.A.F. Association and the aircraft industries of Canada, said Mr. Gordon, have a big responsibility to the regular Air Force and the maintenance of effective air power. He said that members of the Association could be called the Air Force's "elder statesmen". "One of your main objectives is to support, assist, and give encouragement to the new generation that has assumed the heavy burden of responsibility that was once yours . . . Canada might well be the battleground of any future conflict. Self-preservation indicates the path we must follow, for defensive and offensive air power is today the chief deterrent to aggression. . . I believe you elder statesmen can render a signal service by getting these facts across to the Canadian people. . . As a result of lessons learned during the past war, it is imperative that Canada design and produce aircraft for Canadian needs within our own Dominion. . . We in Canada are successfully meeting this challenge. . . The aircraft industry in Canada is now ninth among all industries in



# THE Roundel



Hon. Paul Martin

terms of factory value and its products, and third in terms of industrial employment.”

\* \* \*

The guest speaker at the dinner on Friday evening was Major-General Robert E. L. Eaton, of the United States 10th Air Force. General Eaton placed emphasis on the importance of air defence of the North American continent. “We must above all be prepared”, he said, “to defend ourselves here in this country. It is equally important, however, to possess the retaliatory capability to secure our way of life.” The General went on to praise the high degree of defence developed on the North American continent by Canada and the United States, and, in closing, emphasized that “in the future as in the past solid public relations were necessary to generate the support for the air forces in the United States and Canada.”

\* \* \*

On Saturday, Air Vice-Marshal W. E. Kennedy, A.F.C., was the guest speaker at luncheon. All the

delegates were delighted to have him with them and to know that he was back on duty again after his recent enforced rest.

The Air Vice-Marshal's speech dealt almost entirely—and in realistic terms—with the importance of a sound R.C.A.F. Association to the vital rôle which the Air Force is called upon to play in the safeguarding of Canada. It is intended to publish it at some length in the next issue of “The Roundel”.

\* \* \*

Mr. George Ross, General Manager of the Air Cadet League of Canada, gave an interesting and in-

formative talk on the sponsorship of Air Cadet squadrons. This, of course, is the Association's number one project, and delegates expressed their appreciation for having received so much first-hand information on the different phases of this important work.

### Guests

In addition to the guest speakers, the guests attending the annual dinner included:

- E. Duggan, president of the Air Cadet League of Canada.
- Mayor M. Patrick, Windsor.
- J. Dickson, vice-president of the Army Navy Air Force League of Canada.
- T. D. Anderson, Dominion secretary of the Canadian Legion.
- F. Lorenzen, R.C.A.F. Benevolent Fund.
- Rev. M. C. Davies, M.P.P.

The R.C.A.F. observers were:

- Air Cdre. C. H. Greenway, O.B.E.,
- Wing Cdr. T. T. Scovill.
- Sqn. Ldr. C. E. Harris, D.F.C.
- Sqn. Ldr. S. I. Evans.

### Resolutions

A number of resolutions were put forward and adopted. Among them were the following:

- That the Association urge the Government of Canada to re-examine the question of “flying pay” for qualified operational aircrew and to provide remuneration commensurate with the greater responsibility and risk associated with modern aircraft operation.



Air Vice-Marshal W. E. Kennedy, A.F.C.

Mr. Crawford Gordon, O.B.E.



- That the qualifications for life membership in the Association be eased. The present requirement of 10 years' membership in the Association as a condition of eligibility for life membership was reduced to 5 years.
- That the R.C.A.F. Association express to the R.C.A.F. its appreciation of the value of "The Roundel" in respect of its information features, its lively humour as exemplified by Sergeant Shatterproof, and in particular the space accorded therein to the affairs of the Association and its Wings.

### Industrial Associates

It was unanimously approved by the meeting that the by-laws be changed to permit a new type of membership known as "industrial associates". Eligible to join the Association in this category would be "any firm engaged in manufacturing or supplying aircraft, aircraft parts or components, etc. It was decided that the annual yearly dues for such membership would be \$250.00

### A MESSAGE FROM THE NATIONAL PRESIDENT

"Past Presidents of the R.C.A.F. Association in their 'message from the new president' have thanked the delegates at the Convention for the honour they have done them in electing them National President.



Major-General Robert E. L. Eaton.

I do the same most sincerely, and I am deeply conscious of the responsibilities that have been placed on my shoulders.

"Unlike my predecessors who were

exposed to the trials of civilian life and to the Association as active members for some years before taking office, I come to you as a fledgeling without too much experience either as a civilian or as a member. For these reasons, I will need the support and co-operation of the officers and members of the Association to an even greater extent than those who have gone before.

"The real strength of any association lies, not in its senior officials, but in its general membership. The R.C.A.F. Association can, therefore, only hope to be as successful as you—the members—make it. With a continuation of the kind of enthusiasm, interest, and plain hard work that has been displayed by our Groups, Wings, and individual members over the past several years, we cannot fail to prosper."

### NOTE

Photographs of Group representatives will be published in the next issue of "The Roundel", together with Air Vice-Marshal Kennedy's speech.

## ACCOUNTS TRAINING STAFF



Our photograph shows the six senior N.C.O.s at R.C.A.F. Station Aylmer who are responsible for all the accounts training given at No. 1 T.T.S. Their students consist, primarily, of personnel without previous training in the subject, either recruits or airmen and airwomen remustered from other trades. They also conduct refresher courses for N.C.O.s of the Accounts Branch, and each summer they give an eight-week course to twenty first- or second-year commerce students who are members of the R.C.A.F. University Reserve.

Standing (l. to r.): Sgt. D. F. MacDougall, Flt. Sgt. E. Russon, Sgt. A. Wade, Flt. Sgt. W. Warnock, Sgt. A. Parks, Seated: W.O.1 D. R. Pirie, o/c accounts training.



# The Party Line

## GROUND TRAINING IN THE R.C.A.F.

*(Each time an R.C.A.F. aircraft takes off, it is the hand of one man — the pilot — who pushes the throttle forward. His simple action, however, is merely the end result of the work of a vast army of highly trained Service men and women who have combined their skills to bring the right type of aircraft to the right position on the right sort of runway, and to put the best possible aircrew into it. By far the larger part of these men and women have enlisted for non-flying duties; and it is the purpose of this article to give the reader a broad outline of the way in which the Director of Ground Training, at A.F.H.Q., and Training Command, at Trenton, go about the task of training them. The Directorate of Ground Training serves, in effect, as an advisory staff to the C.A.S. (see Fig. 1), while Training Command's function is the execution of training policy, both air and ground, as determined by A.F.H.Q. — Editor.)*

### INTRODUCTION

GROUND Training in the R.C.A.F. has undergone several major changes since the Second World War. Shortly after the war ended, trade courses were generally long and very comprehensive; the students were able to meet the strict academic requirements. It became apparent in time, however, that this type of training, which was largely theoretical, equipped a graduate with much knowledge that he could not use for some years, and at the same time gave him too little experience of the practical tasks on which he would be immediately employed and of the tools he must use. Courses were revised to eliminate much of the theory and to emphasize the practical aspects of the training. A "job analysis" programme throughout the Air Force paved the way for the Trade Structure Committee and ultimately resulted in the production of C.A.P. 471, which specifies the skills and knowledge required for each level in all airmen trades.

The rapid expansion of the R.C.A.F., which began in 1951, made it imperative that field establishments be filled as quickly as possible. Basic training was therefore streamlined, particularly in the aircraft maintenance and telecommunications fields, so as to turn out a large number of tradesmen who, though lacking in some of the ancillary skills and knowledge desirable, were none the less thoroughly capable of performing the *specific* jobs demanded of them.

In the aircraft maintenance trades, this streamlining was accomplished by giving the basic training in the actual trade specialities. The student was given intensive training on the type of aircraft equipment on which he was to be employed. Graduation from one of such specialized courses qualified the tradesman in that particular speciality only and fitted him for field employment only on a specific type of equipment.

In the telecommunications trades, the situation was met by the in-

roduction of "performance checkers". The performance checker was a tradesman who could carry out routine checks and inspections, under supervision, and thus facilitate full employment of skilled technicians in the maintenance and repair of telecommunications equipment.

In 1954, when the strength of the R.C.A.F. was up to 37,000 and the expansion was tapering off, the requirement for an accelerated training programme was sharply reduced. The "speciality" type of training and the introduction of performance checkers had served its purpose in the supply of tradesmen to the field, but did not take full advantage of the tradesmen's services. It was therefore decided to introduce longer courses for the aircraft maintenance trades, thus giving instruction in all the specialities of each trade, and to discontinue the training of performance checkers and to convert into technicians those who had been already trained.

### INDUCTION

Officer recruits report to No. 1 Officers' School at London, Ont., where an eight-week indoctrination course is provided for officers of the non-flying list. English language training is also available at this school for French-speaking officer recruits.

Airmen recruits report to No. 2 Manning Depot, St. Johns, P.Q., for selection and indoctrination. A battery of aptitude tests enables the selection units to place an airman



Pupil at work on the electrical switches of a Harvard.

in the trade or career field for which he is best suited — subject, of course, to Service requirements. An eight-week indoctrination course is provided, as well as an 18-week English language course for French-speaking recruits.

### BASIC TRADE TRAINING

Formal basic trade training is given for most R.C.A.F. trades. The trades for which no formal courses

are conducted are generally those which require tradesmen in numbers too small to provide a regular flow of trainees. In most cases, the smaller trades are manned by personnel who, possessing certain skills in these trades on enlistment, round out their training on the job. Airwomen may receive training as clerks, supply technicians, photographers, fighter controllers, radio and teletype operators, Air Force policewomen, meteorological observers, medical assistants, recreation specialists, safety equipment technicians, and aircraft refinishers. The principal basic trade training centres are located at Aylmer, Camp Borden, and Clinton (Fig. 2).

Basic trade training syllabi are intended to qualify the graduate as an *apprentice* in his trade. This means that he can only *assist* in the duties of his trade and that he requires supervision at all times. Progression to higher levels of skill is achieved by trade advancement training and trade examination.

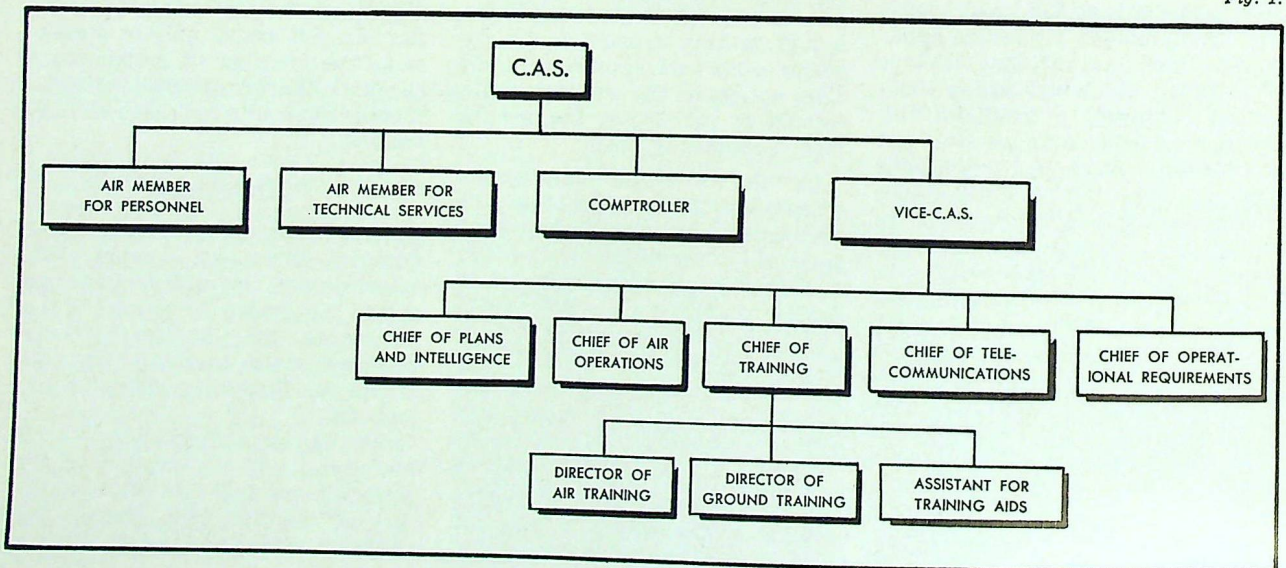
Basic training for officers is provided in certain non-flying branches. Courses for aeronautical engineers and supply officers are given at No. 1 Technical Training

School, Aylmer, Ont. Telecommunications officers receive their training at No. 1 Radio and Communications School, Clinton. Armament officers are given basic training in three phases: the electronic phase is conducted at No 1 R.&C.S., Clinton; the munitions and weapons, and the armament systems phases, are given at No. 2 T.T.S., Camp Borden. Flying control officers receive their basic training at the School of Flying Control, Centralia. Officers in the Fighter Control Branch receive their basic training with the U.S.A.F. at Tyndall Air Force Base, Florida.

### FIELD TECHNICAL TRAINING

Since it is not possible to provide training on all types of aircraft during the basic course, field technical training units are provided for the "user" Commands. Units have been established for training on CF-100, F-86, T-33, and C-119 aircraft. Courses vary from two to four weeks in length, depending on the trade. These units are employed for refresher, trade advancement, modernization and familiarization training.

Fig. 1.



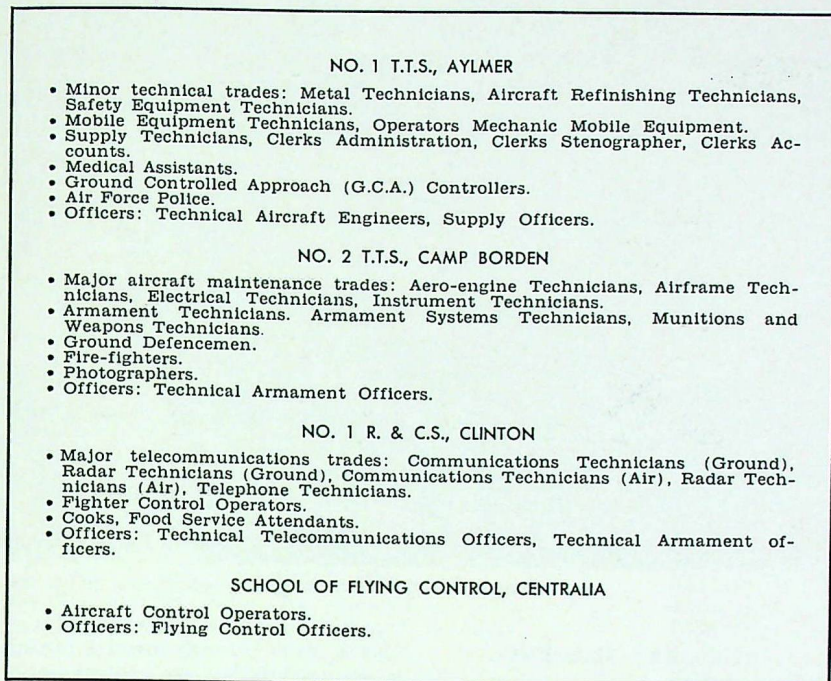


Fig. 2. Principal basic trade training centres.

### ADVANCED TRAINING

Advanced training courses provide instruction on new types of equipment, and are also intended to prepare N.C.O.s for supervisory duties (Fig. 3). A six-week course at No. 1 Supervisor Service Training School, Camp Borden, graduates approximately 1,000 N.C.O.s each year and provides training in Service management, leadership, effective speaking, current affairs, and other essential subjects. Where required, advanced trade training courses are given in addition to the Service training course at No. 1 S.S.T.S. The ultimate aim is to give supervisor training to corporals in preparation for greater responsibilities. At the present time, however, the course is restricted to senior N.C.O.s.

### SPECIAL TRAINING

Special training consists both of courses given within the Service

and of training outside the R.C.A.F. Special in-Service training is generally given on new equipment or in new techniques when the numbers to be trained do not warrant the establishment of a continuous course. The only exception to this is the School of Instructional Techniques, which provides instruction in pedagogy to prospective instructors of the R.C.A.F., R.C.M.P., and Civil Service. The course is of two weeks' duration and is operated continuously.

Approximately 1,200 officers are trained annually on 250 to 300 courses which are held outside the R.C.A.F. These courses range from flying training on new aircraft (e.g. at the Lockheed plant, Burbank, Cal.) to telephone-pole climbing techniques (Army Service Corps, Kingston, Ont.). Outside training may be given at Canadian and American universities, military academies (both Canadian and for-

ign), and by the manufacturers of the equipment concerned.

In 1955, more than 1,500 officers and 17,000 airmen received training in the R.C.A.F. At the same time, training in one form or another was given to members of the Primary Reserve, the Auxiliary, and to the Air Cadets (Fig. 4).

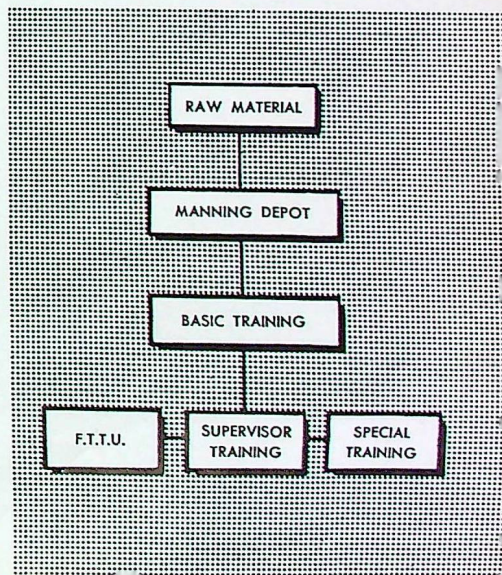
### PRIMARY RESERVE TRAINING

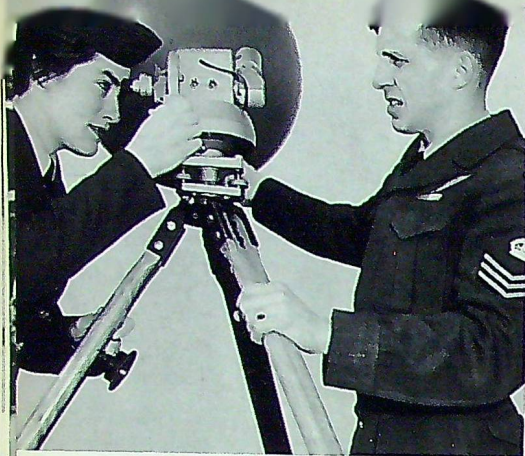
The Reserve Tradesmen Training Plan (R.T.T.P.) was set up in order to provide the Auxiliary with an annual flow of Group I tradesmen. It provides for a maximum of 80 hours' training during the winter and 240 hours' during the summer, over a period of one year. Candidates for the R.T.T.P. fall into two main categories:

- Serving Air Cadets, and
- other personnel, particularly high school students.

The Mobilization Assignment Training Plan (M.A.T.P.) is designed to provide training for officers and N.C.O.s in the specific assignment or type of appointment to which it is anticipated that they would be detailed in the event of mobilization. Under this plan, employment for an annual period of not less than 15 days, and not more than 30 days, is provided at a time acceptable both to the individual and to the R.C.A.F.

Fig. 3.





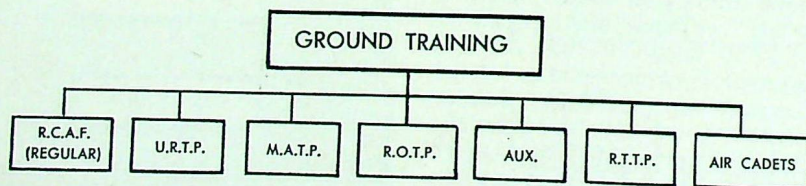
Preparing to launch a pilot balloon during meteorology training.

### UNIVERSITY FLIGHT CADET TRAINING

The Regular Officer Training Plan (R.O.T.P.) and the University Reserve Training Plan (U.R.T.P.) are designed to stimulate interest in the Air Force among members of university faculties and student bodies, and to provide a flow of trained university graduates into the commissioned ranks of both the Regular and the Reserve Forces. The R.O.T.P. is a programme whereby flight cadets of the Regular Force are subsidized at a Canadian Service College or at a Canadian university. The U.R.T.P. is composed of flight cadets of the Primary Reserve who are attending Canadian universities.

During their undergraduate terms, university flight cadets are provided with general and technical training by the R.C.A.F. so that on graduation from the university, and on successful completion of the Service courses, they can be enrolled in the Regular or Reserve Forces as fully qualified officers in their respective branches.

Fig. 4.



Cookery. "It had better be good — you'll have to eat it!"

### AUXILIARY TRAINING

Since the Reserve Tradesmen Training Plan now supplies auxiliary formations with qualified Group I tradesmen, the major training requirement at Auxiliary units is trade advancement training. This training is conducted in much the same manner as for the Regular Force — supervised on-the-job training and lecture programmes, supplemented when possible by contact training at Regular Force units.

### AIR CADET TRAINING

Annual training for the Royal Canadian Air Cadets consists of a three-year programme of approximately 180 hours of instruction. A

fourth year for advanced training is also available. An annual summer-camp training course of two weeks' duration is provided for up to 5,000 cadets. Senior Leaders' Courses and Drill Instructors' Courses, both of seven weeks' duration, are also conducted annually for selected air cadets.

### CONCLUSION

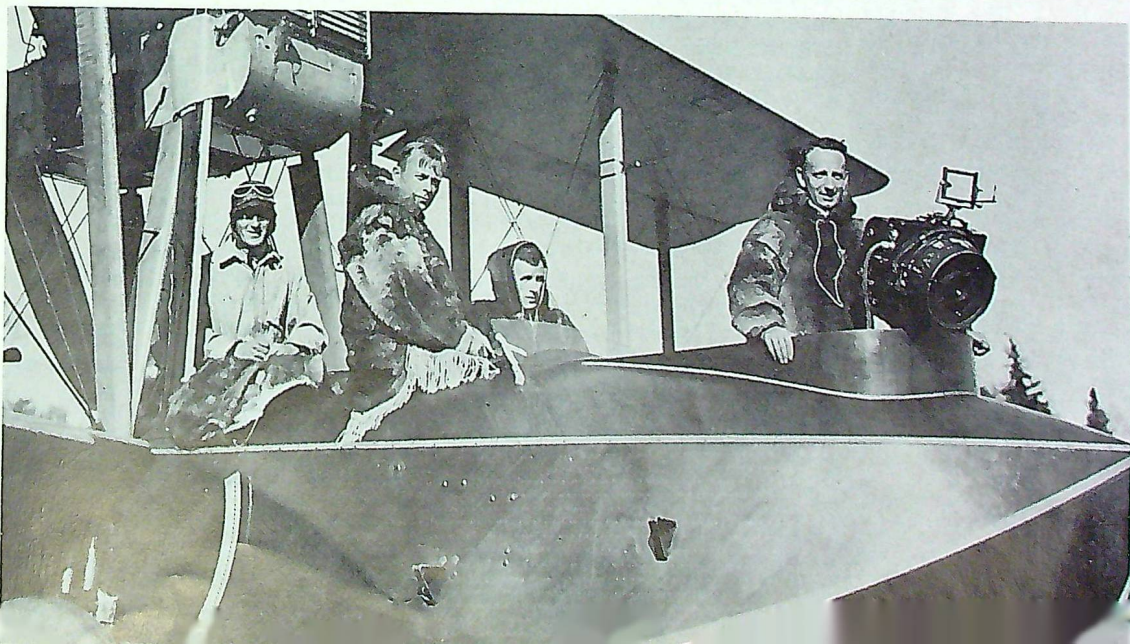
Air Force records show that, in 1928, it took 77 man-hours to keep an aircraft in the air for one hour. Since that time, however, the greatly increased complexity of aircraft, with their multitude of electronic servo-mechanisms, has boosted that ratio until, in 1955, 120 man-hours were required for each flying hour. With aircraft becoming more complicated every day, and with the possibility that guided missiles may soon make their appearance on the Canadian scene, the need for highly skilled tradesmen is increasing.

In the R.C.A.F., the present need is being met and future needs are being anticipated.

# PIN-POINTS IN THE PAST

Our two pin-points this month, both of which come from the Air Historian's files, relate to an aerial survey undertaken, in July and August 1924, to examine water routes in N. Manitoba and Saskatchewan. The operation, "the greatest ever undertaken for aerial survey" up to that time, was carried out in a *Viking* aircraft and covered the area outlined in the accompanying map.

In one of our photographs the members of the crew are shown standing beside the aircraft. They are (left to right): Flying Officer D. J. R. Cairns, photographer (Wing Cdr., retired); Cpl. A. J. Milne, mechanic (Flying Officer, retired); Sqn. Ldr. B. D. Hobbs, D.S.O., D.F.C., pilot (Group Capt., ret.); and Mr. R. Davidson, Dominion Land Surveyor. The other photograph shows the crew on their return to Victoria Beach, Winnipeg, wearing the Eskimo clothing presented to them at Brochet.



# VAPOUR TRAILS: 5

BY FLYING OFFICER D. G. TURNER

*(The fourth instalment of Flying Officer Turner's memoirs loosed him upon the world as an R.C.A.F. pilot. The episode which follows — and which has already been published in R.C.A.F. Station Macdonald's "Rocketeer" — takes him into the Canadian hinterland on a summer survival course. — Editor.)*

I CAN think of nothing which distresses me more than listening to someone who is classified as the "outdoor type". These specimens, who always seem to smell of old saddles and wet dogs, are ever on the lookout for such indoor types as myself. Theirs is the spirit of the missionary, and their mission it is to regale me with all the latest gossip about Mother Nature, even though I decided long ago to leave the woodlands well alone after hearing of the shocking things that happened to Little Red Riding Hood.

After years of practice in dodging these Davy Crocketts, I must have developed a strangely furtive expression; for, as soon as I recognize a huntin'-fishin'-and-shootin' character, in the very same moment he always recognizes me. He sees my indoor pallor and his face lights up with an expression of "Tally-ho, the fox!" The chase is on, and, before I can go to earth, the hunter is upon me and I am lost in a two-hour story of how he stalks bears and fish.

It's always bears and fish! If only they'd come up with something different once in a while, like a mermaid or a leprechaun, then I might manage a spark of interest. Talking to me about hunting is like trying to discuss the Kinsey Report with a woodpecker, and to invite me on a fishing-trip is comparable to offering Mae West a mount in the Grand National.

\* \* \*

Shortly after I became a pilot, the Air Force sent me on a course. It was a course in survival techniques, and it was calculated to teach me the art of living in the forest should I happen to fall or be pushed into one from an aircraft. It achieved far more. It instilled in me so hearty a dislike of closely grouped trees that I can no longer walk past even an orchard without shuddering.

To equip me for a week of life in the wilderness, the Service gave me what I assume to be the official regalia of a woodsman. I was issued with a grotesque suit rejoicing in the name of "bone-drys" — and they certainly were. As I moved about, a faint crackling could be heard, and whenever the material touched my skin I had the sensation of being rubbed with a slice of toast. I therefore went around holding my arms out sideways to minimize the risk of such physical contact, thus achieving a striking resemblance to a village idiot or a milkmaid in serious trouble.

Hoping to exchange the outfit for something softer, I approached the maiden who had issued it, and said: "Look, it doesn't fit!"

"It's not supposed to," she said haughtily; and while I digested this logic, she sashayed off to find me a pair of boots to complete the outfit.

The boots were made for left and right feet, and there all the simi-

larity to normal footwear ended. They were old and tough, and had apparently been in the service of the Crown since the days of Edward the Confessor. With the passage of time they had achieved the resilience of bronze, and when I laced them to my feet I found I was unable to bend either my ankles or my toes. I was thus forced to proceed in a series of curious little jerks.

Just before we were turned loose in the woods, we were given a short course of lectures, and a list of rules was read out to us. It seems that it is considered unsporting to shoot a duck while it is sitting on the water. The gentlemanly thing, I suppose, is to wade out to it, slap its face, and challenge it to a fight. There was also a session during which I learnt how to camouflage myself in foliage so that I could sneak up on an animal and assassinate it without being seen. During the practice period, while I stood holding a twig in my mouth like a dove of peace, one of my companions equipped himself with a little crown of rubbish which hung over his eyes and gave him the appearance of a drunken May Queen.

The day before we actually started for the woods, an instructor noticed my peculiar gait and offered me a tin of evil-smelling grease with which to soften my boots. A couple of hours spent in spanking and massaging them with the grease did little to change the condition of the leather, but it did endow me with a fragrance of decaying fish which stayed with me the entire week and attracted clouds of mosquitoes to my legs.

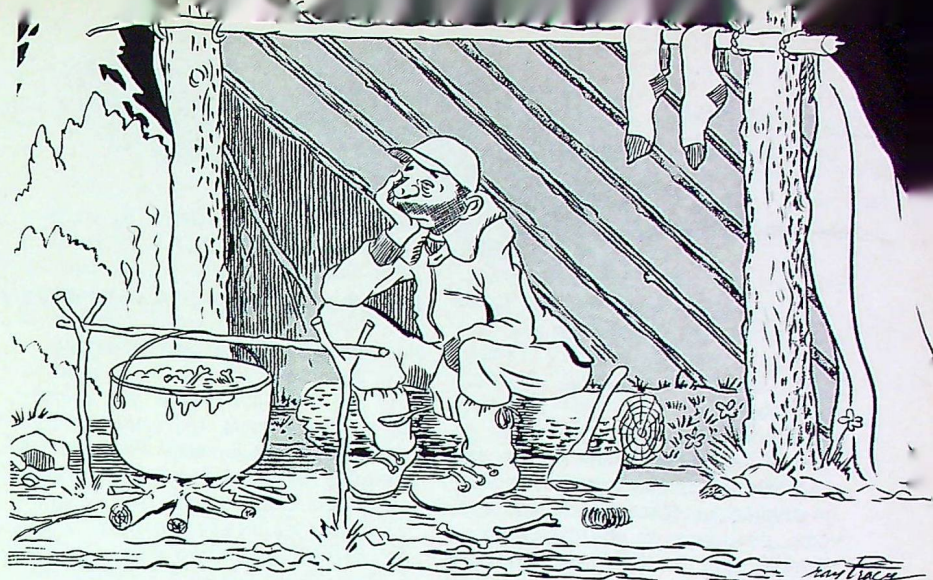
Once in the woods, five of us were selected from the main band and told to make camp in a clearing.

Immediately my four companions started on a housing project and whipped up natty little rustic dwellings floored and thatched with supple spruce boughs. I tried to do the same; but, after I had toiled through the night, the dawn found me the proud possessor of a pile of twigs resembling a compost heap or a monstrous bird's nest. I was uncertain whether I should crawl underneath it or mount it and roost.

Our camp was hungry and foodless — foodless, that is, unless you count as food the pressed meat bars we had been given as “emergency rations”. These slabs of yak meat, embalmed in guano, were wrapped in sturdy tinfoil to protect them from the atmosphere, and *vice versa*.

Having been nominated as camp cook, I built a fire. After refusing for some time to go, it suddenly exploded with a roar and consumed my nesting-place of the previous night. Between encouraging the dying embers and then fighting the twenty-foot flames which threatened to engulf our home, I managed to launch three or four meat bars into a pot of boiling water. These I left to simmer while I unfrocked a young squirrel caught by one of my companions and added it to the heaving brew. Presently another of the huntsmen returned, proudly bearing over his shoulder a ragged-looking fowl which he claimed was a prairie chicken. When plucked, this prairie chicken exposed the physique of a humming bird. It, too, went into the stewpot.

As the mixture boiled, it gradually took on a slate-grey colour from the ashes that poured into it. An occasional wasp, overcome by the fumes, fell into the pot; and now and then the hind-quarters of the squirrel rose to the top, closely followed by a feather or two, while the whole mess gave forth “plopping”



noises like molten lava at the foot of a volcano.

Seeing the results of my labours, the four huntsmen gazed sadly at each other and slid off into the woods again. It just goes to show you what fakers these woodsmen are. Having just dined on a T-bone steak in a comfortable restaurant, they'll sit back in their chairs and say “Ah, yes, very nice, but . . .”; then they'll go on to tell you about the time they tracked a bear for a couple of days and how delicious it tasted when boiled in an old Wellington boot. When it comes to the point, though, when they're faced with something that isn't straight from a grocer's counter — where are your sons of the woods then? — Hiding somewhere, devouring a chocolate bar and hoping nobody's going to catch them!

We took turns in foraging for food with a shotgun, and I made up my mind, when my turn came around, that I — the paleface — would show these hunters a thing or two. Loading both pipes of the gun, I set off by the dawn's early light, tip-toeing around the trees and peering into the bushes in search of game. I had only progressed a few hundred yards when something rustled in a bush ahead of me. I froze, just as the instructor had taught me, and cocked the gun. The bush moved again, and I began to sneak towards it with the gun

held out in front of me. “It's now or never,” I thought, and I burst through the foliage, my eyes blazing.

“Gawdamighty!” said my quarry, springing back — not without embarrassment — from his crouched position. “Don't you know better than to point a gun at anybody?”

I apologized meekly. It somehow seemed superfluous to tell him that I thought he was a pheasant and had almost shot him on the rise.

For the rest of the day I stalked wearily and found nothing that lived. I was apparently alone in the forest. After I had slunk shamefacedly into camp at sundown and crawled into my nest, the woods became alive with a variety of squeaks and grunts. Something large was gargling at the river's edge, a furry animal chased another across my chest, and a vague shape a few yards away sniffed in my direction and smacked its lips at me throughout the night. . .

\* \* \*

I might go on indefinitely about our course, but it would be sordid reading. Moreover, I am a kindly man, and have no wish to expatiate further on the folly of my fellowmen. Let others blather away about life beneath the greenwood tree. Me — I'm quite content leading my nasty unhealthy indoor life.

*(To be continued)*

# Feminine Gen

## GARBAGE RUN AT TORBAY

BY ROSEMARY HUTCHINSON

Lots of people have fallen into the Atlantic Ocean, some with aeroplanes, some from boats, and some (on purpose) in bathing-suits — though not usually in December. I, however, am probably the only person who has almost fallen in with a whole load of Air Force garbage.

It happened in 1942, around Christmas time, when I was in the Women's Division of the Air Force and drove a car in Torbay, which is in Newfoundland. The M.T. section was short of drivers that day, so I was "joed" for the Station Garbage Run. At first, this seemed to me sort of "cushy", for, as usual, it was snowing like anything, and the wind was shrieking around the buildings. It was, I felt, much better than taking the Duty Run to St. Johns, six rocky miles away, and doing all sorts of futile errands for people who should have done them for themselves.

I went out to the garage where "Irma" slept (she was a Chev. dump-truck), tapped the gas-gauge, and started her up. After a few abortive attempts, I even got her dump mechanism to work. I did notice that I never knew whether I was in low or reverse, but I didn't think much of it at the time. Then I picked up the official garbage-collector at the Station Warrant Officer's office. He, of course, was to do the actual collecting; after all, I had a TRADE and couldn't be expected to come into actual contact with the garbage. However, he was awfully small and quite a bit younger than I, so in the end we were both heaving all kinds of junk on to my dump, and I was rapidly peeling off mounds of clothing.

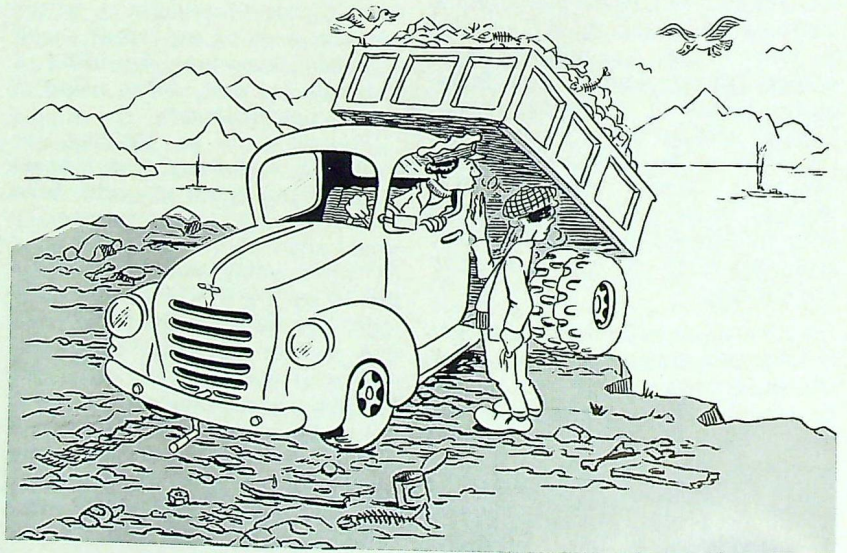
Fortunately, I could do a certain amount of strip-tease with great propriety. I was wearing a set of airman's underwear, a pair of battle-dress pants (two sizes too big), a turtle-neck sweater, a tartan scarf of the clan MacDhu (it said so on the label), an airman's parka with hood, a pair of fifteen-dollar sheepskin gloves (a present from my mother "in case your hands get cold, dear, when you're driving"), and a pair of old-type flying boots. Incidentally, all winter long, whenever I met the W.D. officer, I had to leap into a snowdrift and salute smartly with my legs hidden. I often wonder what she must have thought of me, but then all of us in Newfie were slightly demented: it was the "thing".

In about an hour my friend and I had collected quantities of garbage,

plus three cups of coffee, two chocolate bars, and several snorts of Drambuie. (I can't say where I got the last, of course, but it wasn't at the Officers' Mess; they were never as generous as the Sergeants). The time had come to DUMP!

Imagine my horror when Junior directed me to the cliffs at Torbay. Even my fifteen-dollar hands grew numb. I didn't feel I knew Irma well enough to ask her to lean over cliff edges, particularly backwards. I should explain, by the way, that Torbay Station lies a mile or so inland, and that the village lies in a hollow between two cliffs beside the sea. A perfect dumping-place for garbage — provided I wasn't driving Irma.

Nevertheless, in due course we ground our way up to the top of the cliff, stopped on the road, and



surveyed the tossing Atlantic as it crashed on the rocks below. Only six inches of grass separated the road from that abyss. I backed Irma to the edge, and, with much grinding and clashing, upended my garbage into the briny. Feeling rather pleased, I brought the dump back into position and glanced out at my rear wheels. One glance was enough. Shuddering, I prepared to advance to safety. Then a terrible thing happened. I couldn't remember which was low and which was reverse, and there was no room — *none at all* — for trial and error. I examined the gears at length, and simply couldn't bring myself to do anything. We sat there for some time. Junior was very sympathetic, but he couldn't help.

We'd probably still be there, encrusted with three feet of salt and serving as a National Historic Site, had not an American soldier heaved into sight, complete with gun and bristling police dog. This nice man showed me the right gear and even turned my truck around for me while I guarded Newfoundland by holding his gun and his dog. I'm terribly glad he didn't go over the brink, for I don't think we W.D.s were allowed to keep guns, and the dog would have been an awful nuisance in the barracks.

Junior and I returned to the station just in time for lunch—and, to my intense relief, I was told that Irma had to have her 1000-mile check that afternoon. Heaven only

knows what happened to the rest of the garbage!

I've got lots of interesting stories about driving around Torbay. There was the time when a hundred and twenty parcels of clean officers' laundry (that is, officers' clean laundry) fell out of a panel truck en route from St. Johns; and there was also a certain trip to Cape Spear with beer, which was very exciting. We drivers were like H. M. mail: nothing stopped us — though I must admit that the officers' laundry was rather a blot on our record. But, since I myself got by with a turtle-neck sweater and only used a shirt on Sunday, when I sang in the choir, I never quite understood why the Adjutant had to make such a fuss about it all.

## R.C.A.F. BOXER



A small clerk, who occasionally turns up for work in No. 1 Group H.Q.'s Accounts Section with a black eye, may well box his way to the Olympic Games in Australia this year. He is 24-year-old L.A.C. Jerry Boucher. Jerry, who began boxing in 1948 with the Wanderers Athletic Club in Halifax, won the Maritime Amateur Flyweight championship each year for the following four years.

He joined the Air Force in January 1951, and, on completion of the Clerk Accounting course, was transferred to Maritime Air Command H.Q. He remained in Halifax until August 1952, when he was transferred to Station Sea Island.

While on the west coast, Jerry won both the B.C. Golden Gloves and West Canada title for his class in 1953 and 1954. He also won the Pacific Northwest International Golden Gloves in Seattle in 1953.

In September 1954, he was transferred to No. 1 Group H.Q. in Mont-

real, and at present boxes for the Point St. Charles Boys' Club.

Highlighting his boxing career were the British Empire and Commonwealth Games in Vancouver, where he represented Canada after becoming Canadian flyweight champion in Toronto in 1954. The decision was lost to Dickie Currie of Scotland, who went on to win the championship.

Later that year Jerry fought in an exhibition bout with the Hawaiian flyweight champion and succeeded in breaking the Hawaiian's run of 59 straight wins. To date his fights number 72, of which only eight were lost, each by a decision.

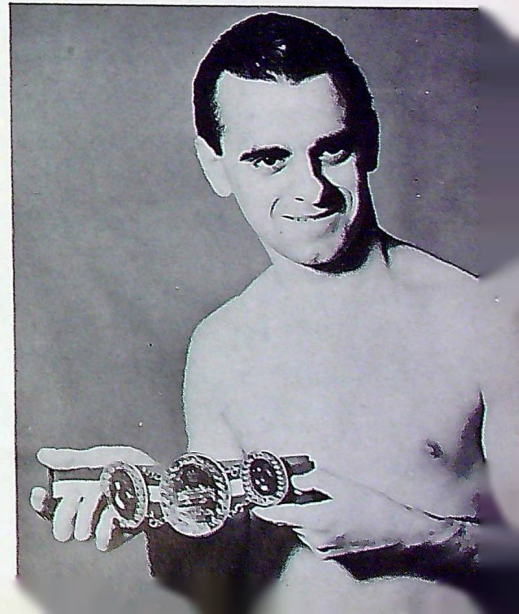
The name of Jerry Boucher is becoming increasingly familiar in amateur boxing circles, so it is not much of a surprise that he has recently become a Golden Gloves champ once again — this time in the featherweight division for the Province of Quebec. He now has his eye on the Canadian title and a

chance to take the trip to Melbourne and the Olympics.

"If", says Jerry, "I get to represent Canada at the Olympics, it will have been worth all the black eyes!"

(Col. Norman R. Avery.)

L.A.C. Boucher displays the Golden Gloves Belt for the province of Quebec which he recently won in the featherweight class.



# JET STREAMS

BY R. LEE

Meteorological Service of Canada,  
Department of Transport.

*(Much has been written during the last few years on the subject of the high-altitude, high-velocity winds known as "jet-streams". In the following article Mr. R. Lee, who is engaged in meteorological research for the Government of Canada, sums up briefly for readers of "The Roundel" all that is so far known about these interesting phenomena.—Editor.)*

## INTRODUCTION

ON 1 April 1954, three United States Navy F-9F fighters streaked across the United States on a cross-country flight. The lead plane of the trio unofficially broke the speed record with a flight time of 3 hours and 45 minutes, assisted by tailwinds as high as 170 m.p.h. Spectacular as the flight was, an even more remarkable aspect of it remained unpublicized — for, before the flight took off, Lieutenant Dickson, Navy Meteorologist, estimated the flight time to be 3 hours and 41 minutes! The take-off time and route were deliberately planned to take advantage of the jet stream high in the upper troposphere. About fifteen years ago, the possibility of such a flight would have belonged to the realm of fancy, yet today such feats of planning and flying are accepted as commonplace by the men who fly our modern jet aircraft.

Let us look for a moment at the phenomenon which made this flight possible — the jet stream. In a sense, the accumulation of knowledge leading up to this successful forecast began as early as 1933, when Professor V. Bjerknes, famous Norwegian meteorologist, first gave evidence for the existence of jet streams in his classic textbook, *Physikalische Hydrodynamik*. Eleven years later, in 1944, Professor

Willett of the Massachusetts Institute of Technology published a paper showing a jet stream; but it wasn't until the closing phases of the Second World War in the Pacific that its practical importance became widely recognized. As the scene of operations in the Pacific Theatre shifted northward in 1944 and 1945, United States high-altitude bombers began to report westerly winds of up to 250 knots over Japan. The air speeds at that time were such that a high-level bombing run from east to west under such conditions meant that an aircraft would present a stationary target for the anti-aircraft batteries below. Here, then, was a meteorological phenomenon whose military significance could not be ignored.

The impact of this discovery on the meteorological world left little time for serious reflection on the nature of these strong, high-level air currents, which were later to be named "jet streams". Many questions remained unanswered. For instance, where are jet streams found? What is their structure? How do they behave? To answer these and other questions, the Office of Naval Research of the United States Navy sponsored a general atmospheric circulation project at the University of Chicago in 1946. Dr. C.-G. Rossby, one of the world's leading meteorologists, was

called upon to direct the project. His colleagues were Palmén, Riehl, and many other outstanding meteorologists. Since then, research activities related to jet streams have spread to all parts of the world.

For a period of time, attention was focussed on meteorological analyses of upper winds and temperatures obtained by radiosondes, which consist of meteorological instruments coupled with a small transmitter carried aloft by hydrogen- or helium-filled balloons. Winds were obtained by tracking the balloons with radar equipment. Out of these studies emerged a fairly complete large-scale picture of jet streams which has remained substantially unchanged in the light of subsequent research. In more recent years, research has been directed to the finer details of the wind field. A large part of jet-stream research is still being conducted by the United States Navy, Bureau of Aeronautics Project AROWA (Applied Research Operational Weather Analysis), at various locations in the United States and other regions of the world. Also actively engaged in this field is the Geophysics Research Directorate, Air Force Cambridge Research Center, which is sponsoring Project Jet Stream. The main task is to determine precisely the horizontal and vertical distribution of wind in jet streams in a large number of cases. For this purpose, specially-instrumented aircraft are flown through jet streams, taking continuous observations whose analyses will yield

details unobtainable in any other way.

### STRUCTURE OF THE JET STREAM

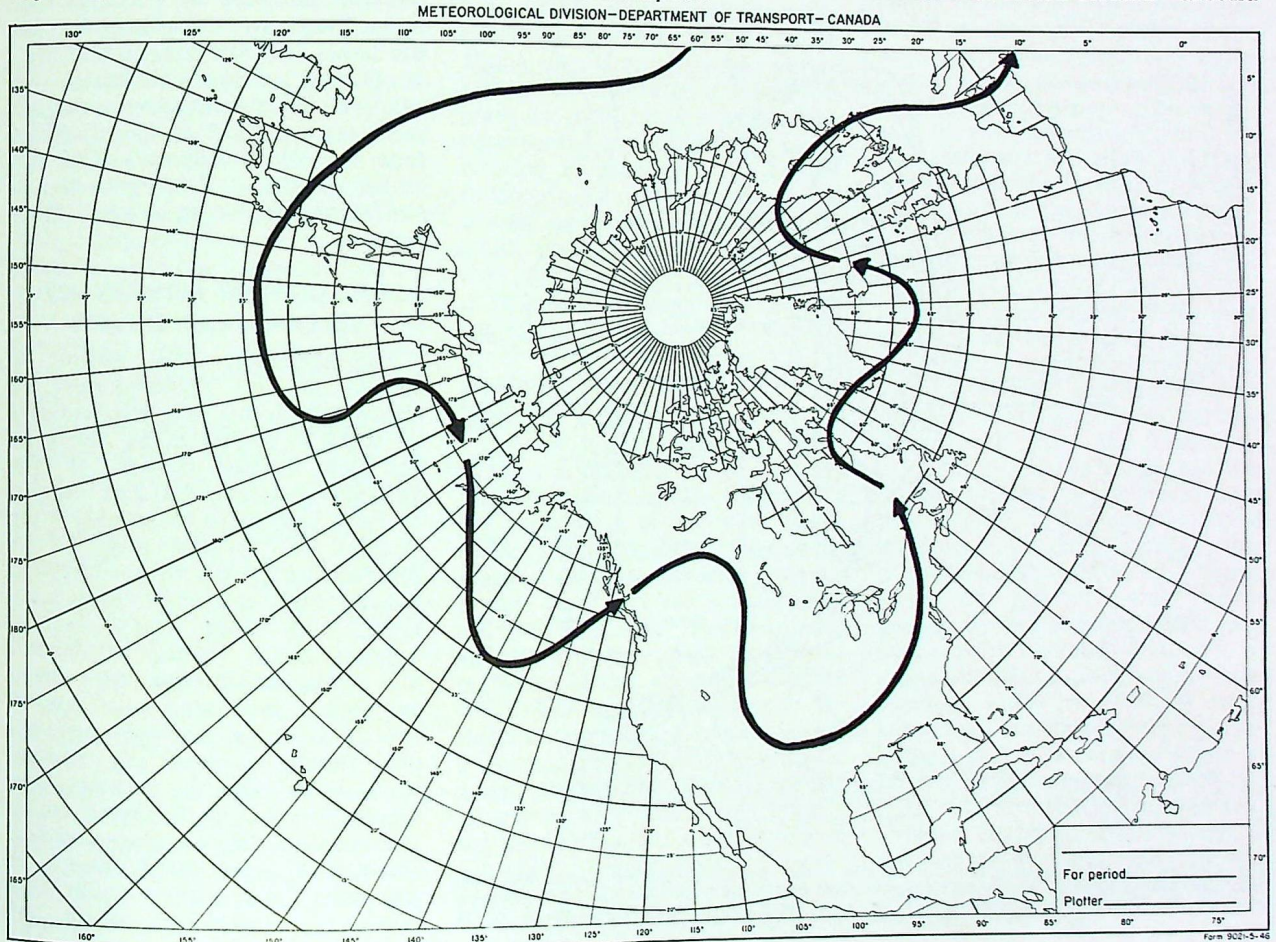
As a result of the intensive preliminary studies at the University of Chicago and other institutions throughout the world, a relatively clear picture of the jet stream began to emerge. It was found that jet streams are world-wide features of the atmosphere. That is, they are essentially high-speed rivers of air that encircle the earth in the middle latitudes of each hemisphere. Air motion is generally from west to east; however, on any individual day, a jet stream may follow a

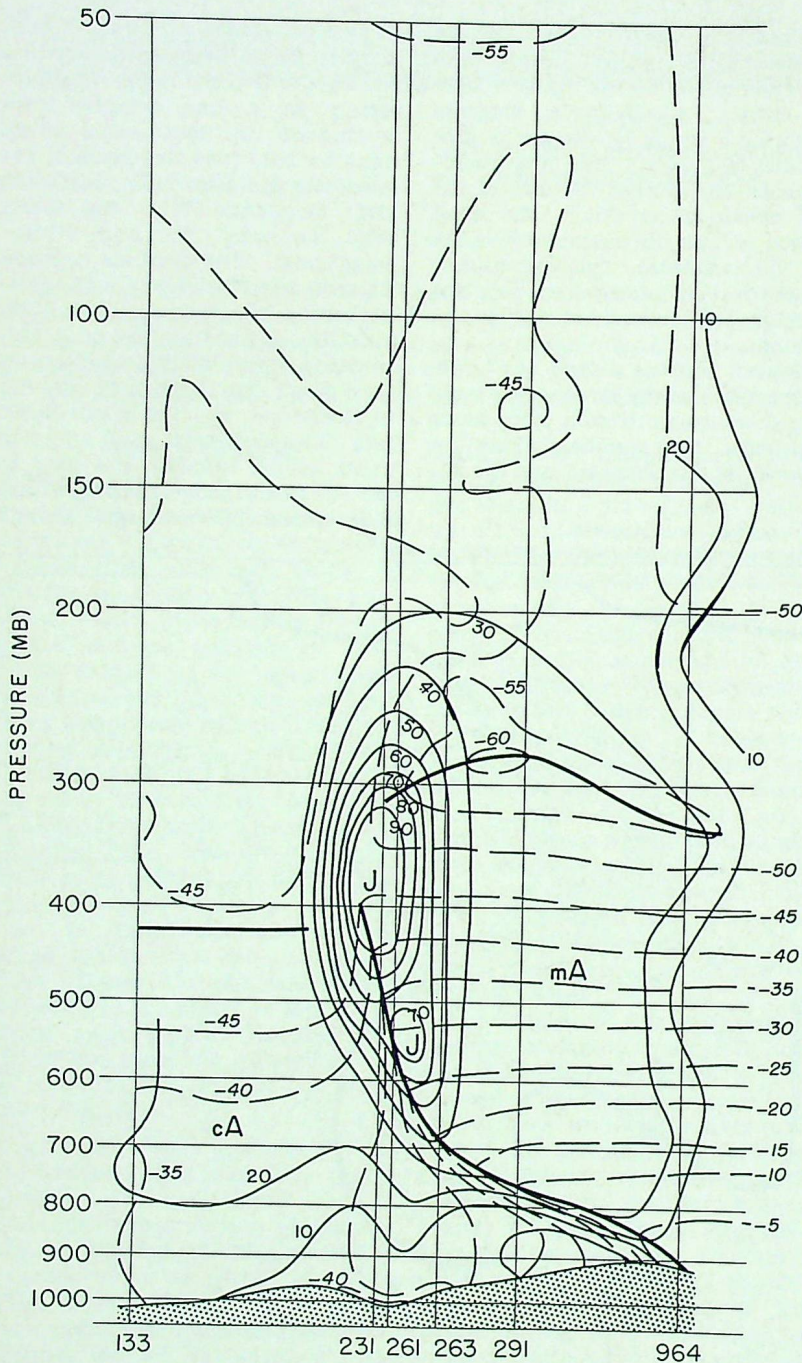
meandering course that dips in some regions into the tropics and extends north of the Arctic Circle in others. A schematic diagram showing a single jet stream is presented in Figure 1. The heavy continuous line defines the axis of the jet stream along which the wind speed attains its maximum values in the horizontal. One can usually find the axis of a jet stream encircling the globe on any given occasion.

Figure 2 shows a view of a jet stream as seen by an observer looking downstream from a point along the axis. The numbers along the bottom of the diagram are the In-

ternational Station Numbers which identify five stations in Alaska and one in the Yukon, lying approximately in a line oriented from north-west to south-east. From right to left, they are named, respectively, Kotzebue (133), McGrath (231), Fairbanks (261), Big Delta (263), Northway (291), and Whitehorse (964). The distance between Kotzebue and Whitehorse is 735 nautical miles. The ordinate is pressure in millibars (mb) plotted on a logarithmic scale. 500 mb corresponds very nearly to 18,000 feet, 200 mb to 39,000 feet, and 100 mb to 53,000 feet. Lines of equal wind speed in knots, called isotachs, are used to portray the wind field. Thus, within the central closed isotach around

Fig. 1. Typical path of the polar jet stream in the northern hemisphere.





the main jet axis, labelled J, above 400 mb, the wind speed is in excess of 90 knots.

If we consider the horizontal width of that band of winds in excess of a given value, say 80 knots, we would find it to be surprisingly narrow—of the order of 100 miles in this example, but generally about 300 nautical miles. The vertical depth of the winds greater than 80 knots in Figure 2 is less than 2 miles. A comparison of the horizontal width of this jet core with the depth would lead us to the conclusion that the jet stream can be represented fairly accurately in shape by a flat ribbon parallel to the earth's surface. Other features on the cross section are the tropopause, indicated by the discontinuous heavy line around the 300-400 mb levels, and the continental arctic frontal surface separating the relatively warm maritime arctic air mass on the right of the diagram from the cold continental arctic air to its left. The broken lines are isotherms labelled in degrees Centigrade.

#### RELATIONSHIP BETWEEN JET STREAMS AND FRONTS

This particular cross section is typical of the northernmost jet stream which has been encountered by R.C.A.F. flights many times in the past. Further studies of jet streams have revealed that, on the average, four main tropospheric jet streams are present over North America during the winter months. Except for the southernmost subtropical jet stream which usually appears in the vicinity of Florida and Cuba, each of the other three are closely associated with one of the three main frontal surfaces over North America in winter. These three frontal surfaces are respectively called the polar front, the maritime arctic front, and the continental arctic front, found in this order from south to north. The polar and maritime arctic jet

Fig. 2. View of continental-arctic jet stream seen looking downwind (after McIntyre and Lee, 1954). Lower numbers identify Alaskan and Yukon stations. Ordinate is pressure in mb. Solid lines are isotachs in knots. Broken lines are isotherms in °C. Heavy solid lines show frontal surface and tropopause.

streams have structures very similar to the continental-arctic jet stream in Figure 2. There is one fundamental difference between them, namely, that the height of maximum wind speed is found at higher altitudes as one proceeds southwards. For instance, the axis of the continental-arctic jet stream is normally found between 25 and 30 thousand feet, the maritime-arctic jet stream between 32 and 36 thousand feet, and the polar-front jet stream between 35 and 40 thousand feet. These jet streams are also found over Japan in winter. Thus we can see why the strong winds were not encountered by the high-altitude bombers of the Second World War until the scene of operations moved sufficiently far north in the western Pacific.

Another notable fact about the three northernmost jet streams is that the axis of each jet stream is always found in the warm air above its respective frontal surface and most often above the 500 mb (18,000 feet, very nearly) position of the front. This relationship has immediate value to the meteorologist, for, by means of it, he is able to estimate the location of a high-level jet stream from temperature data at the relatively low level of 500 mb, even in the absence of high-level wind observations. Furthermore, knowing which front he is dealing with, he can provide a reasonable estimate of the height of the axis. One other feature brought out by extensive cross-section studies is that the strongest winds at any level below the axis are invariably found in the warmer air.

### JET STREAM WINDS

The wind speeds in the jet-stream cross section shown in Figure 2 are not particularly high compared with those found at lower latitudes. Both the maritime-arctic and polar jet streams consistently exhibit stronger winds on any given occasion. In fact, the strongest winds are found where

two or more jet streams move closely to one another. Although this can occur anywhere, the preferred locations for such intense jet streams are the eastern coastlines of the Asian and North American continents.

What are the highest wind-speeds likely to be found in jet streams? In the past, wind-speed measurements as high as 400 knots have frequently been reported in weather messages. However, when the original observations, which are obtained by balloon-tracking methods, are carefully checked, they are invariably found to be in error. For example, a reported 400-knot wind over Philadelphia late in January 1955 was checked and found to be incorrect on account of instrumental difficulties. The revised estimate of the maximum wind was around 270 knots. Recently a number of accurate wind measurements have been made by aircraft flying across selected jet streams. The highest reliable measurement made by this method up to November 1955 is 290 knots. However, it must be stressed that this figure does not necessarily belie the accuracy of winds reported by other aircraft not similarly equipped. A case in point is the encounter by a *Comet* of a 350-knot wind over Tokyo.

Another significant feature of jet streams is brought out by the vertical cross-section in Figure 2—the asymmetry of the wind distribution about the axis. The speeds decrease more slowly with distance on the right side of the axis than on the left side, facing downstream. Thus, a pilot, wishing to maintain strong tail winds would find it advantageous to stay to the right of the jet-stream axis, where a slight shift in location relative to it will produce little change in the tailwind component. A corresponding shift on the left side of the axis will result in a considerably larger decrease in the tailwind. Now, on the right side of the jet stream, the

wind can drop off at a rate as high as 35 knots per hundred nautical miles. On the left side, however, there can be a much greater rate of decrease in wind speed with distance; actual measurements have shown rates as high as 100 knots per hundred nautical miles.

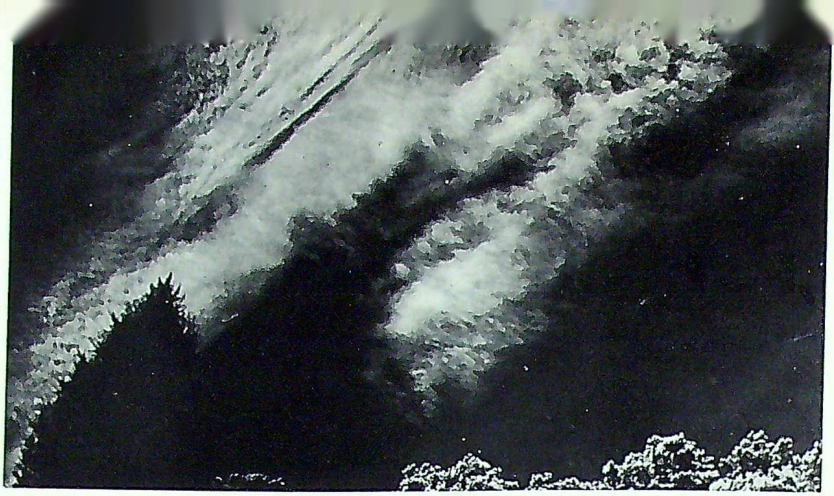
It is also important to know the wind-speed variations in the vertical, or vertical wind shear. Above and below the jet axis, the wind speed decreases at an average rate of 10-15 knots per 1000 feet. Extreme values of the vertical wind shear have been found to be as high as 30-35 knots per 1000 feet by B-47 flights. Generally speaking, it is only necessary to fly at right angles to the wind for a short distance at the same height, simultaneously taking frequent observations of air temperature, to find whether one is above or below the axis. If the temperature changes very little, one will know the flight level is near the level of maximum wind speed. If the temperature increases while flying to the left of the wind, one can conclude that the flight level is above the level of maximum wind. Finally, if the temperature decreases while flying to the left, the flight level will be below the level of maximum wind. This association of the vertical wind shear with the horizontal temperature field is known to meteorologists as the "thermal-wind relationship". It has been exploited by many commercial airline pilots to locate high winds on long flights across the Atlantic and Pacific Oceans. By way of example, Captain Bernard C. Frost of B.O.A.C., in flying the North Atlantic routes between 15,000 and 25,000 feet, found that the outside air thermometer was a very valuable guide to the location of jet-stream winds. Once, in a strong wind at a certain altitude, he found that the strong wind could be maintained by flying along the same isotherm. He further states:

"An amazingly accurate guide for calculation of wind strength on either side of the jet stream (within altitude limits normally flown; viz. 15,000-25,000 ft.) was that the wind decreased some 8 knots for every degree Centigrade drop in temperature on the polar (or cold) side; and it decreased some 16 knots for every degree Centigrade rise on the equatorial (or warm) side."

N. E. Davis, writing in the September 1954 issue of the "Meteorological Magazine", described a successful trans-Atlantic crossing in a jet stream by a B.O.A.C. *Stratocruiser*, under Captain L. V. Messenger and Navigating Officer M. H. Sutcliff, on 2-3 August 1953. By the judicious use of their outside air thermometer, they were able to locate and fly for three hours (about 1000 miles) in the strong winds below a jet stream. The penetration of the jet stream from the cold side was indicated by a sudden rise in air temperature.

Therefore, to maintain strong tail winds when flying below the jet axis, one should endeavour to stay in the warm air. Above the jet stream, one should try to stay in the colder air to the right of the jet axis. In a similar manner, the temperature field can be used to detect and maintain a track along which the headwinds will be more favourable, if one is flying into the wind.

Research flights across jet streams have revealed some interesting details of the wind field in the vicinity of their axis. The results of several such flights under Project AROWA have recently been published. They have shown that the wind speed is rather variable within a jet-stream core. Winds have also been found to vary considerably with time at a fixed point. For instance, Lt. Col. R. C. Bundgaard, U.S.A.F., reported that the wind speed changed from 120 knots to 60 knots, and again to 120 knots, within 4 hours at 34,000 feet over



Figs. 3, 4 and 5. Typical jet-stream clouds as viewed from the ground. (Photographs by courtesy of Dr. Vincent J. Schaefer.)

Dayton, Ohio, on 5 March 1954. On another occasion, five B-47s observed a wind change from 200 to 72 knots at 40,000 feet over Alabama during a three-hour period on 14 April 1953. Such variations are impossible to forecast at the present state of knowledge. It is hoped that further research into the mechanics of air motion will provide answers in the future.

### CLOUD FORMS OF THE JET STREAM

Through the work of Dr. Vincent J. Schaefer, of the Munitalp Foundation Inc., and many military as well as commercial pilots, there has now been gathered considerable information on cloud forms associated with jet streams. This knowledge can be used as an auxiliary tool to locate jet streams.

Dr. Schaefer has found four main cloud types associated with jet streams. They are cirrus, cirrocumulus, lenticular altocumulus, and altocumulus, extending from horizon to horizon and having waves at right angles to the air flow. From the ground, these clouds can be observed to move at great speeds, often resulting in rapid local changes in cloud cover during short intervals of time. Figures 3, 4, and 5 show three of Dr. Schaefer's remarkable photographs of typical jet-stream clouds as observed from the ground.\*

Aloft, cloud formations at various levels can often give indications of the wind direction. Under conditions of high winds, an upper cloud surface will show streaks in the direction of the wind and a billow structure at right angles to these streaks, in a manner analogous to wind lanes on a sea surface with a superimposed transverse wave-pattern.

### CLEAR-AIR TURBULENCE

It was once thought that aviation

\*The writer wishes to express his gratitude to Dr. Schaefer for permission to publish these photographs here.

hazards, such as icing and turbulence, were confined to the lower troposphere, and that, once aircraft could fly "above the weather", all problems of flight comfort would be solved. This myth exploded when high-altitude aircraft encountered turbulence as violent as that encountered at low levels. The bumpiness, or turbulence, is described by those who have experienced it to be like the pounding of a fast speedboat racing across a very choppy sea surface. Since there is no visual warning, it has been called clear-air turbulence.

In order to ascertain the nature of this phenomenon, many special research flights have been carried out over the British Isles, Europe, and the United States. Through the kind co-operation of R.C.A.F. personnel, the Meteorological Service of Canada has also acquired and studied numerous turbulence reports. The conclusions reached by various investigators are largely in agreement, but there are also contradictions which will only be resolved by further research.

Clear-air turbulence can occur at any level of the atmosphere flown thus far. It is generally found in isolated patches 50-100 miles in length and width. These patches consist of one or more layers, the vertical thicknesses of which are generally not great, being of the order of 500-3000 feet. On occasion, thicknesses of 6000 feet or more have been reported. Because clear-air turbulence occurs in layers, a satisfactory method of moving out of turbulent air is to change altitude by 1500 to 2000 feet.

Clear-air turbulence has been found to occur in the vicinity of jet streams where the wind speed varies greatly with distance in the horizontal or vertical. Thus, the regions above, below, and to the left of the jet axis, facing downstream, are the preferred locations of turbulence. The air in the core of the jet stream and to its right is smooth

by comparison. If an aircraft is flying parallel to a jet stream, an attempt should be made to fly on the right side of the jet axis, because not only would there be a smaller chance of encountering turbulence, but there would be the added advantage of maintaining strong tailwinds.

The frequency of various intensities of turbulence has been studied by Mr. J. Clodman, of the Meteorological Division. Analysis of more than 500 reports of aircraft turbulence over a height range of 18,000-45,000 feet revealed the following results. For three stations where reports of non-occurrences were also made, about a quarter of all flights encountered turbulence. Fifty-two per cent of these occurrences were classed as light, 25 per cent as moderate, 5 per cent as heavy, and 3 per cent as severe. The remainder were classified as light to moderate or moderate to heavy. Hence the majority of these occurrences were in the light or moderate range. The few cases of moderate and heavy turbulence occurred in layers not greater than 3500 feet in depth, in agreement with the results obtained in Britain.

A comparison of the frequency of turbulence reports at each level with the frequency of time flown at each level showed that they were almost identical, from which it is inferred that the probability of encountering turbulence at any level from 18,000 to 45,000 feet is approximately the same.

A study of turbulence reports collected on *Canberra* test flights over Britain was described by Eric Hyde, test pilot of Short Bros. and Harland Ltd., of Belfast, in the April 1954 issue of "Flight". The general conclusions are similar to those reached elsewhere. However, they do report that the intensity of turbulence decreased with increasing height. For example, all cases of severe and violent turbulence were encountered below 30,000 feet, the

area most affected being around 25,000-29,000 feet. The highest recorded altitude of turbulence was 49,000 feet, where only light

turbulence was felt. Only rarely was turbulence encountered above the tropopause, and it was never greater than moderate. In contrast

to experience elsewhere, there were many flights through well-documented jet streams which yielded no trace of turbulence at all.

## GRADUATION at C.M.R.



Our two photographs were taken at the graduation ceremonies held during the second week of May at Le Collège Militaire Royal de Saint-Jean, St. Johns, Quebec. The top three students in their class, Cadets Duval, Boulay, and Béchamp, are all from the Ottawa district. Cadet Duval won the Lieutenant-Governor's silver medal for academic proficiency, the prize for the best average, and also first prize in chemistry, mathematics, history, economics, and French.

The Hon. Hugues Lapointe, Minister of Veteran's Affairs, took the salute. Then, accompanied by Col. M. L. Lahaie, Commandant of the College, he inspected the cadets. The band of the Royal 22nd Regi-



Left to right: Cadets C. Boulay, R. Béchamp, and F. Duval.

Accompanied by Cadet Wing Commander J. P. Reilly, Mr. Lapointe, inspects the graduating class.



ment provided music for the occasion.

Diplomas were presented by Mr. Lapointe to 58 cadets who had successfully completed the three-year course. Most of these cadets will complete their training at the Royal Military College, Kingston, Ont.

Representing the three armed Services of Canada were: Maj.-Gen. Bernatchez, G.O.C. Quebec Command; Air Vice-Marshal Bryans, A.O.C. Training Command; Air Vice-Marshal Wray, A.O.C. Air Defence Command; Rear-Admiral Rayner, Chief of Naval Personnel; and Commodore Earl, Naval Officer-in-Charge of the Port of Montreal.

# "FLIGHT HANDBOOK"

A Review-article

BY SQUADRON LEADER I. S. McLEISH,  
Directorate of Aircraft Engineering, A.F.H.Q.

"Two main objects are associated with the publication of this book; one is to form the nucleus of what it is hoped will become a standard work of reference on flight and aeronautics; the other is to provide a key to the articles appearing in the weekly periodical 'Flight', whereby new readers may be enabled to pick up the essential threads of the subject with facility."

These words formed part of the preface to the "Flight Manual" of 1910, the predecessor to the five editions of the "Flight Handbook" that have been published since then.

How little these basic intentions have altered in almost forty-five years, yet how much has aviation changed! The fifth edition\* of the "Flight Handbook" has been published to meet the needs of aviation enthusiasts who require basic information on the subject of aircraft, engines, and the theory of flight as it is today. No special technical knowledge or training is assumed, but all the main essentials of each subject are given in a form readily understandable by the intelligent layman.

The earlier part of the book deals with the nature of the atmosphere, the first principles of aerodynamics, and the development of aircraft structures. The chapter on aerodynamics in general, and the section on supersonic aerodynamics in par-

ticular, are extremely interesting and simple, though some might consider them to imply that current knowledge of the fundamentals is fuller and more firmly based than is in fact the case. Because the section on supersonic aerodynamics gives such an interesting physical description of a subject that is usually presented in an abstract mathematical way, it will be dealt with in some detail at the end of this review.

Following the chapters on the general subjects of aerodynamics and structures, the book deals with the various basic types of aircraft — fixed-wing powered aircraft, gliders and sailplanes, rotorcraft, balloons and airships. Each subject is brought well up to date, and, while there is a good deal of overlapping between these and other chapters in the book, this can be excused in a handbook where a continuous thread of story does not have to be woven from cover to cover. The chapter on fixed-wing aircraft deals with requirements common to all aircraft as well as with the particular factors to be considered in aircraft designed specifically for civil use or for military use. It also contains an interesting section on the development of basic wing-plan forms, and it illustrates the configurations which have been, or are being, used in the Mach range 0.8 to 3.

The book continues on the practical side, with full and well illustrated descriptions of the various types of aircraft power-plants, auxiliaries, controls and instruments,

furnishings and fittings, and armament; and it ends with a chapter on elementary navigation.

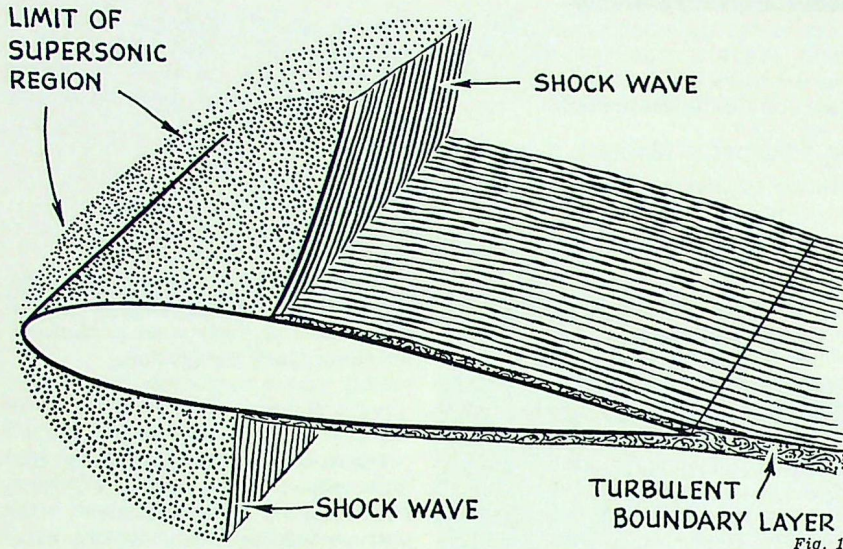
\* \* \*

Returning to the chapter of the book which deals with the "First Principles of Aerodynamics", the authors introduce the subject with a point that is very often forgotten in these days of exact science and mathematics: they stress the fact that the subject of aerodynamics is at present based upon well-known classical laws and practical calculations which are carried out with the aid of long-established empirical formulae. The modern aerodynamicist, faced with basic laws that do not give results of sufficient accuracy, must depend on the results of very recent research. This explains why it is necessary, when modern high-speed aircraft are being developed, to supplement by extensive and expensive test programmes those areas in which the results of research are not directly applicable.

High-speed aerodynamics is a vast and intriguing subject, and, in order to illustrate the simple physical approach that the authors of "Flight Handbook" have taken, a condensed version of their account of high-speed flow over a wing will be given.

As the speed of the air over a wing increases, there eventually comes a time when it is moving at the same speed as the normal rate of travel of small pressure-waves, i.e. sound waves. When this occurs,

\* "Flight Handbook", by the staff of "Flight". Fifth edition. Published by Iliffe & Sons Ltd., Dorset House, Stamford St. London S.E.1, England. Pp. 282. More than 200 illustrations. Price 15s. Postage 8d.



sound waves and other disturbances propagated from the rear of the wing will find the air-stream moving towards them at their own speed, so that they can make no progress forward over the wing. Each wave will then remain roughly stationary at the thickest part of the wing: this boundary is called a shock-wave (see Fig. 1).

The concept of a shock-wave is not easily grasped. A shock-wave is incredibly thin — perhaps one ten-thousandth of an inch from front to back — and in itself it offers little hindrance to the airflow. It is, in fact, a pressure wave of finite amplitude. As the air passes through the shock-wave, it experiences an extremely sudden and discontinuous rise in temperature and pressure, while its velocity is correspondingly reduced.

As the free-stream Mach number increases, the shock migrates from A (Fig. 2) to a position behind the trailing edge, and it develops a split root. The forward branch of the root adheres to the wing, but the original shock is eventually left far behind. At the same time, a new shock is formed at the leading edge. This is the position reached at

about Mach 0.95.

The condition will rapidly be reached when the flow behind (as well as in front of) every shock-wave on the wing becomes supersonic; and when this occurs the airspeed will be faster than the speed of sound throughout. The aircraft will then, in popular parlance, have "crashed through the

sound barrier", although this is an unfortunate name for what should be a smooth process. A wing in steady supersonic flight is shown in Fig. 3. The expansion waves emanating from the convex surface of the wing tend to bend the compression shock-waves and, eventually, to cancel them out. The downward deflection of the airflow provides the lift, as in supersonic flight, but in this case the streamlines have abrupt kinks as they pass through the shock-waves. Another effect which rapidly becomes predominant in the supersonic region is the energy-loss drag in the shock-waves themselves. For a shockwave is, in supersonic flight, towed through the air by the aircraft, the extra energy appearing as heat.

\* \* \*

Offhand, it is difficult to think of any technical field of aviation that is not covered by the "Flight Handbook", and one is left with the general impression of having been offered a considerable amount of useful information. Taken in con-

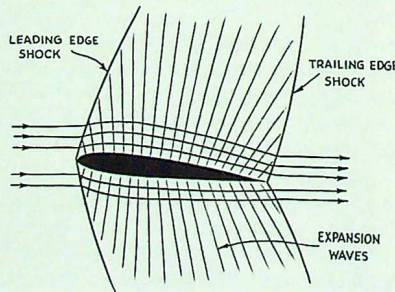
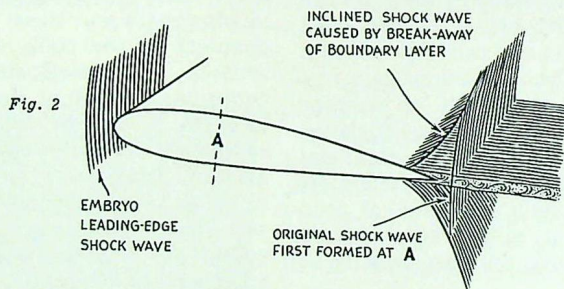


Fig. 3

junction with its index, the book provides a valuable source for quick reference, although it is regrettable that a bibliography was not included for those who wish to go more deeply into the subject.

# in PRAISE of PETROLEUM

BY STEPHEN LEACOCK

*(The following article was written by the late Stephen Leacock for a special issue of the "Imperial Oil Review" which appeared in September 1930 on the occasion of the company's fiftieth anniversary. It is reprinted here by kind permission of Imperial Oil Ltd.—Editor.)*

LET OTHERS TALK of the blessings that have accrued to humanity from the advance of our civilization in such things as morality, medicine, mathematics, music, and the manufacture of moonshine.

I want, on this pleasant anniversary occasion, to get down to rock bottom and talk about petroleum.

Man has been called by Aristotle a reasoning animal; by others a laughing animal; and by others again distinguished as a tool-using animal or as a fire-making animal. But in our day the true distinction between humanity and all the rest of the animate kingdom is that man is the animal that uses oil. The others don't. They can't. They don't know how. As a result, man, the oil-user, can beat them at their own game. The swallow is excelled in its flight. The horse has lost its speed. Unless it can make its legs rotate with gasoline, its future will get dark, its doom grow certain. The whale pants along behind the power boat; and no one cares for the whale's pants. He hasn't any, anyway. Even the skunk holds his own—or lets it go—on a narrow margin of superiority.

Such is man among the animals in this, his latest age, the Oil Age. The other epochs that have gone before look tame beside this rapid-moving, explosive period. There was first the Ice Age—long, slow and dull in the extreme. In the Ice Age nature scarcely moved. Primitive man sat immovable in his white bear skin on a chunk of ice, naked in the wrong place, gazing at the

blue ice cliffs and the leaden sea. Life moved with incredible slowness. Courtship lasted 12 years. It froze slowly into matrimony and stagnation, and at the end white death threw a mantle over everything.

Then came the Stone Age—not much better. Primitive man, now covered with hair as the result of sitting on the ice, spent his time in piling up huge stones, set on end to form circles. It took 120 years to raise each stone. Often it fell down and crushed its builders under it. They had to stay there. This was the beginning of tombstones, the only invention of the Stone Age.

Then came the Iron Age—much better, far more movement, something doing at last. Man now learned to make iron spears, axes, hammers; he could now crack his head open in one knock. Life became much shorter and much merrier.

After the age of Iron came the Booze Age, or the Age of Alcohol. This was brought about by the invention of wine and the finding of the wheat plant and the discovery of Scotland. This age lasted all through the centuries of Rome and Greece and medieval and modern world down to our own time. It had in it other features beside the use of alcohol—such as the invention of writing and printing and castle-building and shipbuilding. But its leading feature was that man became a booze-using animal.

This last age, as its speed increased, broke all of a sudden into the Age of Oil. All of a sudden, so

it seems now, man learned the uses of petroleum. How long it had had to wait! Primitive man slopped round in the marshes in pools of petroleum and never knew it was there. The ancient Britons mixed it up with a blue weed that they called "woad" and then stained themselves blue with it, feeling pretty saucy and smelling like a gasoline station.

The Chinese knew of petroleum as far back as the Ming dynasty, but they used it only as hair-oil.

The Persians knew of it and used it for making chest-plasters. The North American Indians, the Senecas, found petroleum oozing out of the ground in the valley of the Alleghany river, but only used it to make Seneca oil for rheumatism. Thus their childish pride in their own name prevented them from the great discovery still to come.

Then came into the world an American settler called Ker, and he gathered up the oil into barrels and drained the mud out of it, and soak an old shirt in it and made a torch. But even then the other settlers didn't catch on: they only saw that Ker had burned up a good shirt. Such is always the difficult upward path of progress; there is many a fall on the way. The telegraph, when first invented, was called an "interesting toy". No one would buy it. The telephone was, for its earlier years, only an amusing contrivance, the despair of its inventors and patentees. Something of the torpid mind of the Ice Age still chilled the warmth of human aspirations. Ker's "K e r o s e n e" wouldn't sell; it was used for burning stumps, for making bonfires, and for lighting up the creeks for sucker-spearing in the spring water. But that was all.

Coiled up in each of Ker's barrels of kerosene, infinitely compressed, was the expanding power of gasoline, like the Arabian genie imprisoned in a bottle. In the barrel there was locked the potential explosive engine that made possible the motor-car, the aeroplane and the submarine—in it there was peace and war, the noise and tumult of the Great World War to come, fought with gasoline—in it was the trans-Atlantic flight of Lindbergh, the new Icarus, white-winged across the sea—the humming of the transcontinental mail-planes—the spluttering of the farm motor on the country road, the grinding of the irresistible tractor, and the long procession on the highway with motorfuls of baskets, tents, mattresses and children overflowing at the windows—all rushed by a series of explosions from the heat of the city to the cool waters of the motor-camp. All this was in Ker's barrel of "Kerosene" which no one would buy.

But when at last it was opened, the contents flew out all over the world, like the magic contents of Pandora's Box. And with it all the

world changed. Mankind woke up; learned how to burn the oil, and tap the oil, boil it and distil and refine it—till from the rude sluggish fluid of the ancient British "woad" and the greasy Chinese hair tonic was made the beautiful white spirit of gasoline—with life and death and power imprisoned in a pint bottle.

All the world was speeded up. Our little globe seemed to shrink beneath our feet. Its vastness was all gone. From end to end it was searched and ransacked for oil. The white-winged 'plane and the motor-boat brought all civilization into one. The motor-car unified the world and turned the jungle into highways. The savages of the past—the queer peoples in the queer places with the quaint customs—had to get into line with the age of oil and gasoline. The motion-picture—a foster-child of the oil age—held up to the savage a picture of what he really was. He took one look, and decided never to be it again. The Afghan set his foot on the running board of a motor-car and was lost. The cannibal took a ride in a gasoline launch and lost his taste. The pygmy listened to the

gramophone and grew two feet. Thus all the world is being unified by oil.

Thus has come the oil world in which we live—smooth, pleasant, moving on oiled bearings, and certainly rapid. Gone now is the long stagnation of the Ice Age with its 12 years of courtship. Even love has to move fast now. Cupid's little wings tired out long ago; now he uses a cute little 'plane with a cute little seat for two. And even if, now and then, he falls in a cute little crash—at any rate that's quicker and better than freezing to death in the Ice Age or wheezing to death in the Stone Age or boozing to death in the Stewed Age.

In the Great Oil Age, which now is, all life moves along. Love and friendship, joy and sorrow move fast. Good news and bad news circulate the globe in a second. Kings rise and fall, republics roll over sideways, elections go off with a pop—so fast that each is forgotten before it is finished.

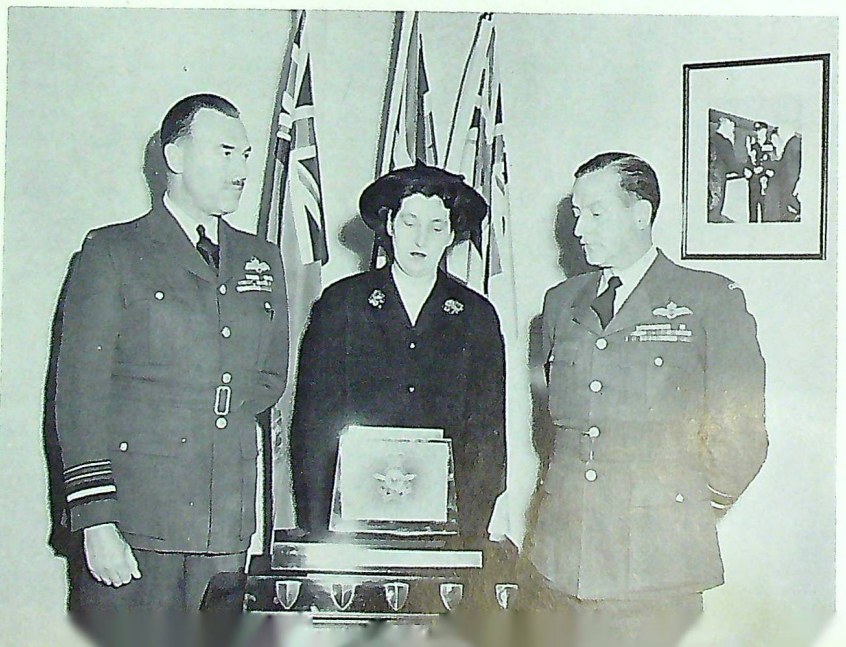
And at the end the rapid motor-hearse rushes man to oblivion with a last faint smell of gasoline as his requiem.

## THE STEINHARDT TROPHY



Mrs. A. A. Sherlock, daughter of the former U. S. Ambassador to Canada, the Hon. Lawrence A. Steinhardt, recently presented a trophy to the R.C.A.F. in memory of her father, who was killed in a flying accident in 1950. The trophy will be awarded annually on Air Force Day to the most efficient all-weather fighter squadron in Air Defence Command.

Left to right: Air Marshal C. R. Slemmon, C.B., C.B.E.; Mrs. A. A. Sherlock; Air Vice-Marshal L. E. Wray, O.B.E., A.F.C.



BY FLYING OFFICER K. R. WEAVER,  
No. 4016 Medical Unit (Auxiliary)

A LARGE transport aircraft circles the field before coming in for a landing. Fire-engines and ambulances rush out, groundcrews stop their work on the tarmac and watch the aircraft intently. It makes a perfect landing, and, followed closely by fire-fighters and ambulances, taxis to the tarmac.

A section of the huge fuselage opens outward and upwards, and a special ramp is wheeled into position. The first ambulance-driver backs up to the ramp, down which technicians are already bearing stretcher-patients. A smartly attired nurse signs the sheet presented to her by the flight nurse, and the ambulance drives off to the hospital. The door in the fuselage is closed, the motors cough into life again, and the aircraft takes off as smoothly as it landed.

This is air evacuation in action. This is part of the work of No. 4016 Medical Unit (Auxiliary).

\* \* \*

The unit first came into being in Vancouver, B.C., in March 1952. It started on a small scale, with a skeleton staff of medical officers and nurses drawn from other auxiliary units. Its function from the very outset was envisaged as the air evacuation of medical patients; and the unit has grown until today it is the largest auxiliary medical unit in Canada, with the most extensive programme of training.

Under the able command of Wing Commander J. M. Mather (who in civilian life is head of the Department of Public Health on the Faculty of Medicine at the University of British Columbia), the unit is

now very well trained and ready to set up an evacuation programme in the event of an outbreak of hostilities. This fact is quite significant when one considers that there is no counterpart to such an organization in the regular R.C.A.F. All the success of the programme has been based on training, and this is given in many ways. A series of lectures has been instituted, personnel take part in flying training, mercy flights are manned by unit personnel, and a comprehensive summer-training programme is carried out in the United States with the co-operation of the Military Air Transport Service of the U.S.A.F.

Lectures are presented each Wednesday at the Vancouver Reserve Centre and, on alternate Sundays, at Sea Island. The lectures, care-

fully prepared by the medical personnel, include such subjects as flight medicine, first aid procedure, intelligence, and basic Air Force instructions for all ranks. Airmen and nurses who have completed their courses at an earlier date are now giving instruction, under the direction of a medical officer, to more recent entrants into the unit.

At Sea Island, on the occasional Sunday, practice flights are made and demonstrations of air evacuation are given to the group by qualified personnel. A nurse in the unit, Flt. Lt. Gerry McIntyre, is a graduate of the Flight Nurses' course at Gunther Air Base, Alabama, and has flown as a crew-member in the Pacific Division of the Military Air Transport Services of the U.S.A.F.

Personnel of No. 4016 at McGuire A.F.B.





No. 4016 flight nurses learn the handling of patients in the air.

Mercy flights on the rugged B.C. coast provide excellent training for the personnel of the unit. B.C.'s mountainous coastal area supports the basic industries of fishing and lumbering, and there are many serious accidents in remote places. The R.C.A.F. is often called upon to bring an injured logger or a sick person to a well-equipped medical centre in Vancouver. Polio, during the last few years, has at times reached alarming proportions in B.C., and victims requiring treatment by respirator have been flown to Vancouver from small towns all over the province. These flights, conducted by Regular Force personnel, have provided No. 4016 M.U. with invaluable experience in the handling of sick personnel in the air.

Perhaps the most important ex-

perience, however, has been gained from contact-training with the U.S.A.F. during the two-week periods of summer camp. The unit has received such training on three occasions, and a brief description of last year's work may be of interest.

Thirty-three personnel of No. 4016 embarked by aircraft for McGuire Air Force Base, N.J., and arrived on 17 July. An advance party had already set up a training-programme. Superlative co-operation was enjoyed from the American squadron, and the unit's total flying-time during the two weeks was 1625 hours.

Groups of four or five participated in air evacuation flights in three stages. The first stage was the local flights. The aircraft picked up patients at McGuire and

flew them to such fields as Washington, D.C., Roanoke, Va., Boston, Mass., and other points. There, some patients were discharged and new ones taken on board. Our personnel actively handled these patients in flight and learned at first hand the problems and procedures. The patients might include a 19-hour-old baby, a tuberculosis patient, an accident case, or a psychotic patient.

The next stage was the Trunk Line flights. The U.S.A.F. has a policy of getting any sick or injured patient to a point within five hundred miles of his home as soon as possible. The Trunk Line flights carry patients from McGuire Air Force Base to points as distant as San Antonio, Texas. These are long flights, and the bigger aircraft carry a greater number of patients.

During the third stage of training, nineteen of our unit went overseas in DC-6s on a seven-day return trip which took them to observe the organizations in Frankfurt, Germany, and other points in Europe. Some got as far as Naples and Tripoli.

\* \* \*

No. 4016 now feels that it knows a good deal about air evacuation, and it is in a position to pass on the information gained from its experience to other nucleus-groups in centres across Canada. Although only four years old, it is confident that it could be activated with very little notice in time of national emergency.

**FOR THE BOY IN THE FIELD**  
 Every French soldier carries in  
 his knapsack a marshal's baton.  
 (Napoleon).

## No. 1 F.T.T.U. In Greece and Turkey

As Canada's concern with world affairs grows and widens, so more foreign countries are becoming familiar to her airmen. Recently added to the list of places in which R.C.A.F. personnel have carried out tours of duty are the ancient lands of Turkey and Greece.

As part of Canada's contribution to N.A.T.O., two *Sabre* Aircraft Systems Trainers (A.S.T.) were sent to Turkey and Greece, respectively, together with eight N.C.O.'s whose jobs were to set up equipment and to train instructors. The group, which formed No. 1 Field Technical Training Unit, was under the command of W.O.2 C. H. Stevens, since commissioned.

Warrant Officer Stevens arrived in Turkey on 1 October 1954, and proceeded to Eskisehir, a Turkish Air Force base 175 miles from Ankara. Here the A.S.T. was to be installed. A week later he was joined by Flt. Sgt. C. W. Dunford, the aero-engine instructor of the team. Since the A.S.T. had already arrived, the two men were anxious to assemble it without delay and thus make an early start on the training programme. This, however, was not to be.

When a suitable building was finally located, the classroom layout was quickly agreed upon; but, since wood is scarce in Turkey, and since such substitutes as wallboards are unknown, partitions of brick and mortar were slowly and laboriously erected. Further delay caused by the lack of classroom equipment was overcome by improvisation: blackboards were made from A.S.T. crates, brushes from packing-felt.

When the classrooms were finally ready and the trainer was assembled, Stevens and Dunford cast about them for a source of power

to operate it. Since 220-volt 3-phase current was not available, some alternate power had to be found. Their searches revealed, tucked away in a warehouse, a crated Diesel generator which had been stored against future use and then apparently forgotten. They promptly installed it in a nearby building which they rigged up as a powerhouse. Each morning and afternoon, when classes were ready to begin, someone would hand-crank the "field-telephone" and put a call through to the powerhouse. In due course the generator would be started and the current supplied that activated the speed-brakes, flaps, fuel pumps, trim tabs, etc.

To make the A.S.T. more easily understood by the students, the R.C.A.F. instructors, with the assistance of interpreters, scotch-taped appropriate explanations in Turkish on to various parts of the trainer. Where the necessary words

didn't exist, English words were used. All the charts and instrumental diagrams were, of course, in English. Since the interpreters were non-technical men, patience and ingenuity were required to get the training syllabus, lesson plans, and examinations suitably translated.

On 1 December 1954, the remainder of the F.T.T.U. team arrived in Eskisehir by *North Star*, and two weeks later classes were started. Each class consisted of two non-English-speaking Turkish Air Force N.C.O.s and one Turkish Army 3rd Lt. as interpreter. A constant problem was that of trying to retain qualified interpreters. Since they were all conscripts, there was a steady turnover as their periods of military service came to an end.

The lack of technical knowledge or skill of the embryo instructors was a further drawback; and, as the course progressed, it became

No. 1 F.T.T.U. Left to right: Sgt. A. R. Grondin, Flt. Sgt. R. J. Large, Cpl. D. W. Farquhar, Flt. Sgt. J. L. Barrett, Sgt. H. P. Fisher, Sgt. L. W. Elderkin, Flt. Sgt. C. W. Dunford, W.O.2 C. H. Stevens.





His Majesty King Paul of Greece, with two of his officers, receives a demonstration from Cpl. Farquhar.

obvious that the F.T.T.U. team would have to proceed very slowly and repeat the difficult parts many times. A few of the student-instructors had acquired some experience on F-84s, but, for most of them, the systems trainer and the F-86s represented their first contacts with jet aircraft. The result was that the course, which takes two weeks in Canada, in Turkey lasted for two months. Nevertheless, in spite of all difficulties, the F.T.T.U. trained two Turkish instructors in each of seven trades, then supervised those same instructors as they taught their own countrymen. This system proved very effective and it was continued through five courses of technicians and two courses of pilots, during which 310 people were trained. The F.T.T.U. then completed the organization of the Turkish Air Force F-86 Mobile Training Unit and provided contact-training for its Officer Commanding, 1st. Lt. Selahattin Kavustu.

While stationed at Eskisehir, this unique R.C.A.F. unit came in for more than its share of attention from visiting dignitaries. Among the latter were Lt.-Gen. Uchaner, Commander of the Turkish Air Force; Maj.-Gen. Ariburun, Senior Staff Officer of the Turkish Air Force Headquarters; His Excellency Mr. H. Moran, Canadian Ambassador to Turkey; and several senior officers of the U.S.A.F. and the U.S. Army. Periodically, the unit was



The Turkish staff present their Canadian instructors with a Christmas cake.

also visited by the only other member of the R.C.A.F. stationed in that country, Sqn. Ldr. M. W. Dickinson (Liaison Officer), who was later replaced by Sqd. Ldr. M. B. MacMillan (Supply), Flying Officer R. T. Barlow, and Cpl. J. S. Chiviendacz (Supply Technician).

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At Christmas, a day of no significance to members of the Moslem faith, each member of the F.T.T.U. received a personal Christmas card from the commanding general of the First Turkish Air Force, Brig.-Gen. Akoglu. In addition, the staff of the Turkish F-86 M.T.U. presented their Canadian instructors with a large Christmas cake emblazoned with a maple leaf and inscribed "Merry Christmas". A New Year's party, also in their honour, included a six-course meal and an extremely potent and palatable concoction which looked like syrup and tasted like licorice. The Turks drink it "straight" and in large quantities, following it with a small chaser of water to quench their thirst. The Canadians also took it "straight" — but in minute quantities and followed up with an abundance of water to put out the resultant fires.

The eight Canadian airmen lived in private homes centrally located

in Eskisehir. Their meals, however, they cooked and ate in the instructors' room at the air base. Most of the Turkish dishes, which are usually cooked in olive oil, were a little rich for their northern digestive systems. A refrigerator, dishes, and cooking utensils were flown in from Langar, and the space-heater, primarily intended for warming the classroom, served double duty as a stove. At the midday repast the eight R.C.A.F. representatives were joined by fellow-countrymen — "tech. reps." from Canadair, Canadian Aviation Electronics, and General Electric.

During their week-ends they visited such places as Ankara, Istanbul, Bursa, and Izmir. One of the most interesting trips was a boat-ride across the Bosphorous. This three-mile intercontinental jaunt carried them from Haydarpasa Station, in Asia Minor, to Calleta Bridge, in Europe — and all for 20 *kurus* (seven cents). Week-end passes from the Turkish Air Force entitled them to reduced rates on the modern Diesel trains that run between the principal cities in Turkey.

By day, the world-famous bazaar in Istanbul was the chief attraction. Here the Canadians soon became adept in the art of haggling

with the rug and jewellery merchants, much to the satisfaction of both parties. By night, Ankara offered never-failing entertainment—and quite a lot of excitement too. The Turkish taxi-driver, convinced that it pays to spare both his engine and his head-lights as much as he can, turns them off at every possible opportunity; and Ankara, being located on a series of hills, affords infinite scope for such economies. Unseen and unheard, he hurtles happily through the night down hills and around corners, apparently concerning himself not one whit about the mere pedestrian who has no possible means of knowing that he's coming. Until they became aware of this local sport, the members of the F.T.T.U. established several unofficial sprint records.

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On 15 April 1955, No. 1 F.T.T.U., having completed its task in Turkey, was flown to Athens by a U.S.A.F. aircraft. At Eleusis, a Royal Hellenic Air Force jet-base 20 miles north-west of Athens, the trainer was installed in a building previously occupied by an American F-84 school. Although the country was different, the two major problems remained the same: the language barrier and the lack of interpreters. Furthermore, the trainer destined for Greece did not arrive for about five weeks, and for a time there was a shortage of students. The members of the F.T.T.U. found, incidentally, that there were more English-speaking people in Greece than in Turkey, a fact generally attributable to the numbers of R.A.F. personnel stationed in Greece since the end of the Second World War.

At Eleusis the assignment was parallel to the task at Eskisehir. Students, speaking a foreign language and with a limited technical background, were to be instructed in a highly complex subject to the point where they themselves could

give instruction in it. This was to be accompanied by the establishment of a Greek mobile training unit, by the provision of technical assistance at base maintenance level, and by the giving of advice on such matters as stock control and inventory of parts.

When fourteen instructors had been trained, they then began the training of their own personnel, each of them under the watchful eye of a Canadian N.C.O. who tried to ensure that the lectures were carried out according to plan. This was not easy for the N.C.O.s, as it was all — literally — Greek to them. They would monitor the lectures, watching as their former students traced through electrical circuits or hydraulic systems. If everything appeared to be correct, they would not interrupt. If, however, the instructor was hesitant, or had obviously erred, the N.C.O. would call a halt to the lecture and, with the aid of an interpreter, get the matter sorted out. By means of this slow and cautious approach, the Greek instructors received an excellent grounding, and in a comparatively short period of time they had trained a total of 82 pilots and groundcrew.

While based at Eleusis, the airmen lived in Athens and were transported back and forth in a truck. Since most of the tour of duty in Greece was during a period of particularly warm weather, the trips were made under a boiling sun. Jolting along in a truck, exposed to exhaust gases and oil fumes in temperatures as high as 115°F., was a disagreeable experience — and the Greeks, as usual, had a word for it. The word was "Haides" — which means just what it looks like.

Since the F.T.T.U. was small in numbers, the Department of External Affairs extended to its members the privilege of using the diplomatic mailbag for personal mail, but the Canadians found that air

mail, which took from seven to ten days to reach them from home, provided the quickest service. Mail becomes particularly important in a country where English-language newspapers are few and English radio stations are non-existent.

The F.T.T.U. was visited by His Majesty King Paul of Greece; His Excellency Mr. W. L. MacDermot, Canadian Ambassador to Greece; and by many senior officers of the Royal Hellenic Air Force and the U.S.A.F. The Canadian airmen attended receptions at both the Canadian and the British embassies in Athens, and at a party held in their honour by the Commanding Officer of No. 12 Combat Wing, R.H.A.F., before their departure from the country.

The world-famous Acropolis, that towering mass of rock which was the citadel of ancient Athens, impressed them deeply; and among the other sights which they will long remember were the ruins of the temple of Zeus, the Odeion of Herodes Atticus, and the original Olympic Stadium which was completed in the 2nd century A.D. and which seated 50,000 spectators. Another pleasant diversion for off-duty hours was skin-diving in the warm and salty Aegan Sea. Outfitted with diving-masks complete with *schnörkel*, and wearing flippers, the airmen examined underwater rock formations and consorted with denizens of the deep.

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Finally, on 4 July 1955, when all the interested parties were satisfied that the Greek M.T.U. was able to carry on without further assistance, the task of No. 1 F.T.T.U. came to its end. An R.H.A.F. *Dakota*, personally authorized by the Prime Minister of Greece, flew the Canadians to Langar on the first leg of the homeward journey. There they were picked up by an A.T.C. *North Star*, which landed them in Montreal 31 hours after they had left Athens.

### "ROUNDEL" ABBREVIATIONS

Dear Sir:

I have noted that the rank abbreviations used in "The Roundel" do not agree with those laid down in C.A.P. 460. They are, in fact, the abbreviations used during the War — and are the same as the R.A.F.'s.

I suggest that the proper abbreviations should be used. I feel quite confident that people who served with the R.C.A.F. during the War will have no difficulty in recognizing the new terminology.

Sgt. L. G. Scharfe,  
C.J.S. London, England.

(Sgt. Scharfe brings up an interesting subject that was discussed in "The Roundel" in our issues of May, September, and November 1953. As we explained then, it is considered that, while strict adherence to the abbreviations, punctuation, etc., laid down in C.A.P. 460 is essential in official correspondence and orders, it would be inappropriate in a publication that is intended for leisure-hour consumption by a very wide variety of readers. While "Flight Sergeant P. X. Jones" or "L.A.C. Z. O. Smith" should certainly be written as "FS PX Jones" or "LAC ZO Smith" in D.R.O.s, we do not feel that such abbreviation would add anything to the tone or general readability of a magazine such as "The Roundel". Somewhere along the line a more or less arbitrary compromise seems to be necessary, nor are we alone in making such compromises. "Current Affairs", for example, which is no less "official", a publication than our own, adopts a similar policy.—Editor.)

### "MEMOIRS OF A CANADIAN IN THE R.A.F."

Dear Sir:

I am most anxious to secure all those issues of "The Roundel" in which Wing Cdr. Bocking's "Memoirs of a Canadian in the R.A.F." were published. Although I have undoubtedly had them at one time, they have "disappeared" in the course of my shuttling between Halifax, Montreal, Churchill, Ottawa, and St. Jean — which may serve to illustrate one of the hazards of an aircraft mechanic's life!

G. Greenough (R.C.A.F.A.)  
80 Rue de Salaberry,  
St. Jean, P.Q.

(Requests for back copies of Wing Cdr. Bocking's "Memoirs" have so depleted our reserves that we have only been able to provide Mr. Greenough with Parts One, Four, and Eleven of the series. Thus, he still lacks Parts Two, Three, Five, Six, Seven, Eight, Nine, and Ten. Possibly some of our readers can help him.—Editor.)

### ROUND-UP IN N.Z.

Dear Sir:

The following letter recently received at Sea Island is considered something of a curiosity.

As you probably know, the Accounting Branch is often plagued by outstanding vouchers which must be hastened and re-hastened at the cost of considerable time and effort. The voucher referred to in this

instance undoubtedly constitutes a world record for misdirection of mail and is somewhere still outstanding in some unit's records.

It might also be a matter of note that the allegiance of a former clerk accountant continues to transcend such a prolonged area in time and space! Her courtesy in taking the trouble to write and explain this matter is also somewhat unusual — and Sea Island has, needless to say, replied with thanks.

Fit. Lt. C. F. Hagyard,  
S.A.O., Sea Island, B.C.

Dear Sir:

By accident, a small bundle of mail, destined for British Columbia, slipped into a Quebec newspaper's envelope en route to us. Of course, we did not open any of the mail, but we glanced at the addresses to see if any appeared really important.

To my amazement (since I was one of the first W.D. Clerks Accountant in 1942), I recognized an R.C.A.F. voucher. So, knowing that the newspaper dated back to March, I sent the whole bundle via airmail to the Postmaster General Ottawa. However, knowing also that there would certainly have been a question about the whereabouts of your voucher, I thought it best to tell you what I had done. It seems as if I still have contact with the R.C.A.F., even at this distance!

Mrs. G. R. Grigg,  
Napier, New Zealand.

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## glamour at goose



Our photograph shows fashion models and members of the press standing in front of an A.T.C. Dakota before returning to Montreal after a fashion show at R.C.A.F. Station Goose Bay.

Front row (left to right): Flying Officer B. B. Peterson, Miss Florence Gibson (*Elizabeth Arden*), Joan Baxter, (CFRA, Ottawa), Zoe Bieler (*Montreal Star*), Shirley Gillespie (*Ottawa Journal*), Denyse Couture (*Le Droit*), Hilda Meegan (*Montreal Gazette*), Mrs. C. Collins (*Ottawa Citizen*), Shirley Brett (C.B.C.), Mrs. J. Corbeil (*Eaton's model*), Rozanne O'Rourke (*British United Press*), Jilianne Pritchard (*Canadian Press*), Mrs. S. Goltman (*Eaton's model*), Joan Barberis

(*MacLean - Hunter Publications*).  
Back row (on step into the 'plane):

Mrs. Doreen Day and Mrs. Lindsay,  
both of the T. Eaton Co. Ltd.



## THE R.C.A.F. BENEVOLENT FUND

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

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

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

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

MR. EGBERT M. BOYD,  
85 BALSAM AVE., S.W.  
HAMILTON, ONT.  
RCAFA

