The ROUNDEL

Vol. 8, No. 9
NOVEMBER 1956

ROYAL CANADIAN AIR FORCE

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

Vol. 8, No. 9

NOVEMBER 1956

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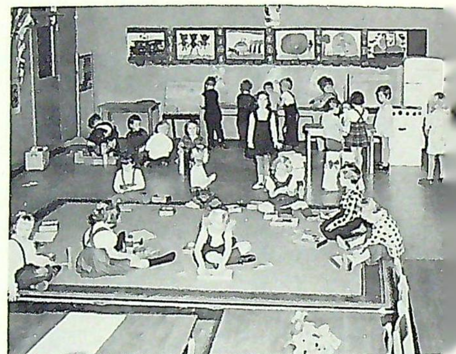

Kindergarten class at the Woodfall Public School, R.C.A.F. Station Rockcliffe. (See page 9.)

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R.C.A.F., Victoria Island,
Ottawa, Ont.

Authorized as Second Class Mail, Post Office Department, Ottawa.

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DICTATION

A Matter of Give and Take

BY SQUADRON LEADER L. J. NEVIN,
No. 14 Group H.Q.

MR. D. A. Wood's article on "Clear Writing" in the December issue of "The Roundel" has given me food for thought, especially since it is stated in the editorial preface that, from a strictly Service viewpoint, the subject of correspondence is adequately covered by C.A.P. 460. The latter publication ("issued to standardize writing in the R.C.A.F. and reduce the volume of paper work, with a view to increasing the administrative and operational efficiency") makes no reference to the giving or taking of dictation.

It is feared that a survey amongst Government employees, both civilian and Service, would show that an alarming number of executives seem to be unaware of either Gregg's or Pitman's contributions to business administration. Many of them labour long and unprofitably, writing in longhand much material which lends itsef admirably to dictation. If one of these pen-and-ink addicts were questioned as to why this outmoded and unsuitable medium of transference of thought to paper is used, the answer would undoubtedly be one of the following:

- I am getting by.
- I think more clearly with a pen in my hand.
- I find it easier to write it out.
- I am too old to start dictating.
- Writing it out is faster in the long run.
- I get frustrated trying to dictate.
- When I try to dictate, my thoughts are not lucid and they fail to flow.

Such people have a defeatist attitude. In all sincerity they say they cannot dictate, that they are unable to co-ordinate their thought processes with their organs of speech; but these same individuals, over a cup of coffee or other tipple, will hold forth, expound, and expatiate indefinitely on almost any topic you care to mention.

Since paper-work is the principal medium for the conduct of official business, it is obvious that we should use every means to employ it to the best advantage. It is unnecessary here to "sell" dictation; it is sufficient to note that, in the business world, "giving" letters in longhand is frowned on as being impractical and unproductive.

It may be of some small assistance to the budding executive if I jot down here a few of the conclusions I have reached during the several years that have elapsed since I began to find myself seriously involved in the "paper war".

I realized quite early in the game that, in order to discharge my duties honestly and efficiently, it was imperative that I graduate from the longhand school and enlist the aid of stenography. I was therefore provided with a steno, who, being blonde and rather striking, contributed little to my mastery of the art of dictation. My second girl was no better. She was erudite, supercilious, and patronizing; and she looked horrified whenever I split an infinitive or committed the slightest grammatical *faux pas*. Needless to say, I was tempted to return to "writing it out", but at the eleventh hour I was lucky enough to get hold of a slightly less literate but infinitely more human steno, and my self-education as a dictator began in earnest.

* * *

It must be appreciated at the outset that dictation merely facilitates the setting-down of one's impressions on paper, and that the final result is dependent on the lucidity of one's thoughts and of their presentation. Thus, it is my contention that anyone who can write a lucid article in longhand should be able, with practice, to do as well or better by dictating it.

Mr. Wood's article, to which reference was made in my first paragraph, does not claim to cover the subject in detail. It therefore occurred to me, after reading it, that it might be worth while to get the stenographer's slant by carrying out a small survey. The survey, though it covered only fifteen girls, definitely points to the fact that stenographers loathe longhand manuscripts. Here, quoted verbatim, are some of their comments:

- You might just as well be hired as a typist instead of a stenographer.
- You lose your shorthand speed for the times when you just *may* require it.
- It's hard on the nerves and bad for the eyes.
- Handwriting generally is not clear.
- Much time is wasted in running back and forth to have indecipherable words interpreted.
- In a stenographic pool nobody wishes to serve one whose handwriting is poor.
- A steno loses interest in the pattern of the letter and is more prone to error.
- Much paper is wasted by incorrect interpretation.
- When you've transcribed the handwritten hieroglyphics, it's only still a draft.
- Some writers admit to difficulty in deciphering their own notes.
- The longhand artist draws the newest recruit or the steno in least demand.
- His material finds its way to the bottom of the steno's basket, as she has hopes of unloading it on someone else or of the writer's getting a sudden transfer.
- The boss scribbles jumbled thoughts and then departs on T. D.
- After the second trip to make queries, you're ashamed to return for further elucidation.

It might be added that one possible reason why the shy stenographer tries to find out from other office-members what the boss meant when he dictated his last effusion, is that he is, literally, a "dictator". She's either afraid of him or she has found by experience that he will not only "come up" with a different interpretation but may even change the whole structure of the letter, and so on *ad absurdum*.

Anyone who is fairly new in the business of giving dictation might do well to consider the following suggestions:

- If you have several letters to dictate, begin with the simple ones. This will warm you up.
- Before calling in the steno, know your subject.
- From time to time check with her as to the speed at which she wishes you to dictate.
- Have all the research and background work completed beforehand.
- In the middle of dictating, don't hold up everything while you go through a file, or examine some memoranda, or hunt up a magnifying glass in order to decipher your own or someone else's hieroglyphics.
- Ensure that the steno is aware of the number of copies required and what attachments (if any) are needed.
- Let her know the order in which you desire the letters typed.

There is no standard method of giving dictation: the method varies in accordance with the individual's tastes and ability. The usual system, however, is to dictate a draft which is typed double-spaced. On this draft the originator makes the necessary changes and corrections and returns it for final typing. This system requires at least two typings, including the handwritten changes.

I myself use a method by which fairly routine correspondence can be accomplished at one typing. Instead of revising the draft visually, I "play it by ear".

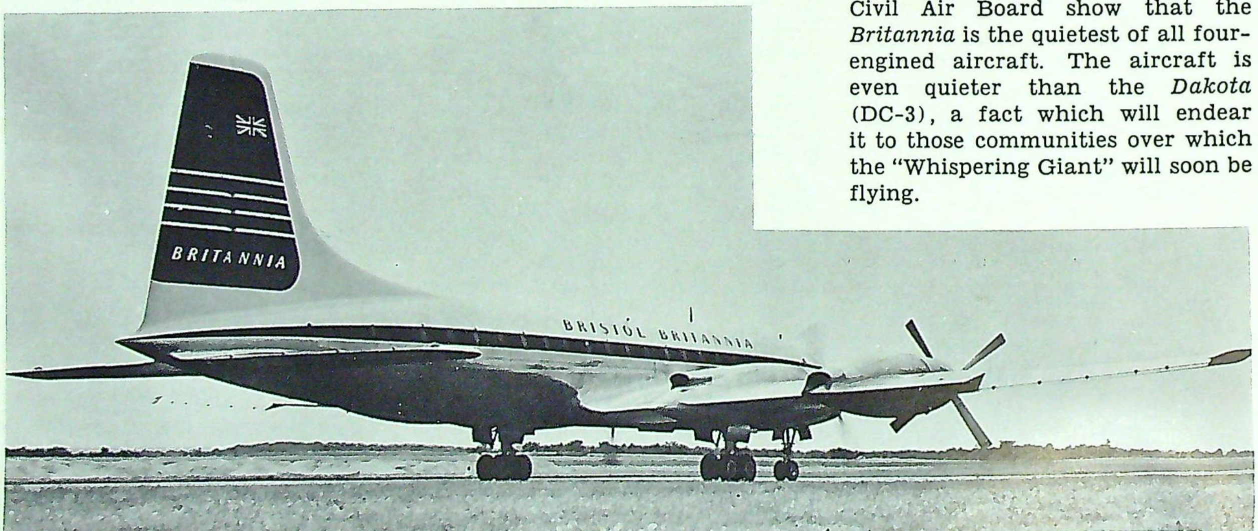
First, I dictate the letter as if I were explaining the problem or subject matter conversationally. If the proper word or phrase avoids me, I immediately use an alternative word or phrase in order to "tie in" the idea and not restrict or dam up the flow of the letter. When I feel that the letter has taken form and has reached its conclusion, I request the steno to read it slowly back to me from her shorthand. During this reading I correct the grammar, punctuate, and in general clean up the epistle. Next I have her read it aloud again (still from her book), and usually that is the finished product.

THE WHISPERING GIANT

The Bristol *Britannia*, nicknamed the "Whispering Giant" by company employees because of its low noise-factor, arrived in Canada on 13 August 1956 for a two-week demonstration tour of Canada and the U.S.A.

The *Britannia*, which has been ordered by Canadian Pacific Air Lines and, in a modified version, for the R.C.A.F., can carry 130 passengers plus several tons of freight up to six thousand miles. The Air Force's maritime reconnaissance version, known as the CL-28 and now being built in Montreal, will be fitted with compound piston engines in lieu of the turbo-props in the commercial aircraft. This type of power plant was chosen because the CL-28 will be used on long patrols at low altitudes, and piston engines are more economical of fuel under such conditions.

The *Britannia*, which is at present the largest existing airliner, develops 16,480 horsepower with its four *Proteus* turbo-props. In spite of its huge engines, however, tests conducted by the Royal Swedish Civil Air Board show that the *Britannia* is the quietest of all four-engined aircraft. The aircraft is even quieter than the *Dakota* (DC-3), a fact which will endear it to those communities over which the "Whispering Giant" will soon be flying.



NO. 432 SQUADRON

PART THREE

BY FLIGHT LIEUTENANT A. P. HEATHCOTE,
Air Historical Branch.

As THE war entered its sixth year, Command uncorked a flurry of punches which, both figuratively and factually, landed on the button of the *Luftwaffe* in the Low Countries. The targets were airfields in that area which were being eliminated in preparation for the airborne assault on Arnhem a fortnight later. The Leasides assisted by despatching 15 *Halifaxes* against a 'drome at Volkel, Holland. It was rendered unserviceable in short order. The remainder of 432's September activity was about half strategical and half tactical, the strategical half beginning with the unit's initial daylight crack at Germany, a raid on Emden which rated with the best of the European campaign.

It was around this time that attacks on synthetic oil sources were stepped up, attacks whose cumulative effect was to force the German war-machine to squeak, clank, and grind to a virtual halt. They were, in fact, so effectual that Germany's ex-minister for armament and war production, Albert Speer, when under examination after the war, was prompted to remark: " . . . The attacks on the synthetic oil industry would have sufficed without the impact of purely military events to render Germany defenceless." Four of the Leasides' strategical operations in September alone were against oil-producers. One of those trips, to Castrop-Rauxel, found them over the Ruhr in daylight for the first time. The valley hadn't changed, and skipper Pilot Officer R. M. Campbell, especially, was ready to admit it. Flak pierced his wind-screen and knocked his oxygen mask completely off his face, but harmed him not at all. Wanne-Eickel, Bottrop, and Sterkrade-Holten housed the other three targets, all being in the Ruhr, all having flakky reputations, and all being bombed by this squadron in daylight.

Flak over Bottrop was intense and sustained. A burst caught *Halifax* "K"-King, seriously wounding the captain, Flt. Lt. J. Woodward. Flying Officer Colin Hay, a navigator who had logged a few minutes' straight-and-level flying, took over the controls. Handicapped by the unserviceability of some instruments, but aided by what he called "superb fixes" by the wireless operator, Flying Officer D. McLennan, Hay found the Woodbridge emergency 'drome. It was originally planned that Woodward would take over here and land; but, because of his serious wounds, this proved impossible. Considering the skipper's condition, a bail-out was also out of the question. Someone other than the pilot had to land the aircraft, so Hay stayed where he was and pointed for that long Woodbridge runway. Coached by

L. to r.: Warrant Officer A. Branch, Flt. Lt. D. W. Johnson, Pilot Officer D. P. Frost.

his gravely wounded but still-conscious captain, and assisted in throttle and pitch settings (and in every other way possible) by the flight engineer, Sgt. W. Bentley (R.A.F.), he felt his way to the runway, eased the *"Hally"* on surprisingly smoothly, became airborne again, and finally settled down with a thump. The bomber collapsed its undercarriage, skidded to a stop, and caught fire; but the crew got clear with their wounded captain without further difficulty. It was a rare example of grit and crew discipline all around. Flt. Lt. Woodward died the next day, but at least with the knowledge that his crew and aircraft had made it home. For a plucky performance which had few parallels in the Second World War, Colin Hay received No. 432 Squadron's second Distinguished Service Order. Bill Bentley, subsequently commissioned, garnered a D.F.C.

On the tactical side in September, the Leasides lent a hand to groundforces investing the channel ports — Le Havre (twice), Boulogne, Calais (twice), and Cap Gris Nez. Discounting their first attempt on Le Havre, which was washed out by the master bomber, their 85-sortie effort in this series was a one-hundred per cent success. The Cap Gris Nez operation was their last on a target in France.

Two liberated P.O.W.s. Wing Cdr. F. C. Carling-Kelly (left) and Wing Cdr. J. G. Stephenson.

Flying Officer C. Hay (left) being congratulated on his D.S.O. by Flt. Sgt. G. Duffy.

As September merged into October, Wing Cdr. A. D. R. Lowe, D.F.C., now tour-expired, was posted, whereupon Wing Cdr. MacDonald reassumed the helm. This was a period of great change in squadron personnel, the intensity of summer operations having produced an unusually fast turnover of crews. Several teams had completed whirlwind first tours in sixteen weeks or less. The sole crew to go missing in September was lost during a mid-month night-operation on Kiel. It constituted the unit's only crew loss in nearly 400 sorties.

For six months the German homeland had been having it comparatively easy in a bombing way. But a calm is often followed by a storm, and the explosive-incendiary tempest that broke over the Reich and continued throughout the fall and winter of 1944 overshadowed in weight and fury anything yet seen by German eyes. The heavy-bombers crews were back at the game they knew best — strategical warfare. Only ten of 432's remaining operations were what could be called non-strategical.

During the next nine weeks the brunt of the Leaside attack was borne by the Ruhr. More than half the unit's effort was expended on old established "name" targets in the valley — Dortmund, Duisburg (three times), Essen, Bochum (twice), Oberhausen, Duesseldorf, and Gelsenkirchen. The addition to the squadron log of Wanne-

Eickel, Castrop-Rauxel, and Homberg (smaller and less-known centres, but specially significant in view of Command's existing predilection for oil-producers) made the ratio of Ruhr to non-Ruhr targets over the period read 2:1.

One of the small targets for which the squadron had already acquired a healthy respect was Wanne-Eickel, whose intense flak had damaged eight of fifteen Leaside aircraft during a raid in September. On the morning of 12 October, the black bursts were again weaving a devilish pattern over the town, and one hit *Halifax* "J"-Jig a second or two after its bombs were released. The bomb-aimer, Flying Officer F. G. Todd, a 34-mission veteran, was instantly killed. The flight engineer, Sgt. E. W. Knight (R.A.F.), was seriously wounded, but showed his mettle in insisting on performing his usual duties in spite of his acutely painful condition. A fuel tank was pierced and one engine was put completely out of action. Another engine was kept going largely by the constant mothering of Sgt. Knight, who was now more determined than ever to urge his beloved *Bristols* to perform with a maximum of efficiency coupled with economy. When the aircraft crashed in trees a half-mile from Woodbridge emergency 'drome, the sergeant received further injuries, along with his pilot, Flying Officer H. Britton. For his inspiring display of courage, fortitude, and devotion to duty, Ernie Knight was decorated with the Conspicuous Galantry Medal, the only such award won by personnel of No. 432 Squadron.

Coincident with Command's return to a sustained offensive in the Ruhr was the return, after a prolonged absence, of the "thousand-bomber raid". Five times during October and November, Command unleashed approximately that number of aircraft on Nazi Germany, and five times the Leasides assisted without loss. The "maximum-effort" series began on 14 October with a record-smashing double-header played on the home grounds of Duisburg. It took 1958 heavy bombers just over sixteen hours (64 minutes of actual bombing) to deliver a twin blow which was undoubtedly the heaviest in the history of aerial warfare up to that time. In that period a total of 9,200 tons of high explosive and incendiary bombs fell on the city which had once been the largest port on a European inland waterway. To Command's awesome array of airborne destroyers No. 432 Squadron contributed sixteen aircraft in the morning and a like number at night. Twelve of its crews did double duty.

After Duisburg came Essen, then, outside the Ruhr, Cologne, then Duesseldorf. Also during the two-month period, the Leasides joined smaller raids on five non-Ruhr targets — Wilhelmshaven, Cologne, Julich, Münster, and Neuss. The Julich operation was the first instance of Bomber Command support of an American ground force, in this case the 9th Army. The Leasides and their brother squadrons left the once-thriving town a charred skeleton, a military nonentity. Strangely enough, it was on the lesser raids that the unit lost its period-total of three crews. Twelve of the missing personnel became prisoners of war.

After the first week of December, the weather, for eleven days, was all bad. This suited perfectly the plans of Gerd von Rundstedt, who, on the 16th, began his Ardennes offensive. On that account especially, and by way of providing indirect support to the Allied armies generally, several of Command's assaults during the remainder of 1944 and in the early days of 1945 were at once strategical and tactical. Centres in western Germany particularly were being bombed both because of their industrial capacity and their situation on the supply route to the western front. Chief among those which became 432's targets were Duisburg, Cologne, Ludwigshaven, Hanover, and Hanau. Smaller targets were Opladen, Troisdorf, and an airfield at Duesseldorf. From each of the Duisburg and Hanover operations two Leaside crews failed to return, but in the former case three members were safe, and, in the latter, twelve became prisoners of war.

One of the crews missing on Hanover was captained by Wing Cdr. J. G. Stephenson, temporarily attached to this squadron. When their kite was shot from under them by a fighter, all went through a routine bail-out procedure except Stephenson, whose exit was somewhat more complicated. As he left via the pilot's escape hatch, his 'chute fouled somewhere on the aircraft, and he found himself flapping about in the slipstream and being buffeted against the fuselage. Luck was with him, however: the silk tore free. Down he floated with his ripped parachute. He landed heavily, fracturing his knee-cap With such an injury he had no chance to evade, and he was soon captured, as was his entire crew. The wireless operator, Flying Officer E. B. Pickthorne, made a very commendable attempt to reach the Allied lines, considering that he was hobbling along on one leg. (His other leg had stopped a shell fragment and the ligaments had been torn.) Racked with extreme pain he struggled along an autobahn to Neinburg, there to grab a north-bound train. Before going any appreciable distance, the train stopped, so he continued on foot to Bremen, hobbling along for roughly fifty miles. There he stowed away in another train, but had to get off when it was halted by an air raid. The next night he continued his train-hopping by boarding a

tank-laden freight. At this point he was captured, after evading for a week under the most difficult circumstances.

The Troisdorf mission, although considered by almost every crew on it as just another trip, was all too eventful for one crew of this squadron. Their kite was hit by anti-aircraft fire from an unexpected source — ten miles south of Liége over the western fringe of "the Bulge". The bomb-aimer was wounded, and, apparently misinterpreting his skipper's order, bailed out. The navigator, Flying Officer E. R. Hancox, was seriously wounded in the legs, one of which bled so badly that a tourniquet had to be applied. In spite of excruciating pain and a pronounced weakness brought on by loss of blood, Flying Officer Hancox, between fainting spells, kept navigating and giving his captain courses accurate enough to get them to the emergency 'drome at Woodbridge. The skipper also had a man-sized chore to do. Both outboard engines were damaged to the point of uselessness. Great chunks were torn out of the port mainplane's leading edge, and holes were punched across the entire spread of the wing surface, including the port fuel tanks. But the team of Ed Hancox and Frank Baxter was determined to get "T"-Tare back to England, and that they did, in spite of everything. For a display of skill with which was combined a maximum of courage, this navigator and his skipper were decorated with D.F.C.s.

* * *

Unco-operative weather limited Leaside operations to only four attacks in the period from 7 to 31 January. Their objectives were Saarbrüken, Grevenbroich, Magdeburg, and Stuttgart, and their losses were nil. On 28 January they learned that they had "lost" their C.O. for the second time. Wing Cdr. John MacDonad, D.F.C., who had come back to them the first time, was now screened, having finished his second operational tour. Succeeding "J.K." was Sqn. Ldr. S. H. Minhinnick, formerly of No. 408 (Goose) Squadron.

Three gunners get together.

With better co-operation from the weather, the operational activity of the Canadian Group, and of this squadron, showed a marked increase in February, the Leasides' number of targets visited (14) being exactly twice that of January. New (and sometimes unfamiliar-soundin) places like Mainz (twice), Bonn, and Chemnitz, all of city status, and Osterfeld, Goch, Bohlen, Wesel, Monheim, Worms, and Kamen, towns which had not previously been subjected to large-scale raids, commanded their attention. They also visited Essen and Wanne-Eikel (twice), two targets with which they were only too familiar.

February, though a busy month for the Leasides, was not a lucky one. Losses — six crews — equalled the previous peak reached in January 1944, when six of the unit's nine missions had been directed against fanatically-defended Berlin. Fifty per cent of the missing personnel were, however, alive in prison camps. Three losses were sustained on the Worms operation alone. This town offered another example of a production centre which needed one, and only one, major raid to be put out of action. To how many such attacks had the Leasides contributed!

Late in February, No. 432 Squadron underwent its sixth change in command. Sqn. Ldr. Minhinnick, screened and about to be repatriated, was replaced by Wing Cdr. K. A. France, who was to lead the unit until its dissolution.

In their final eight weeks of operations the Leasides bombed 23 objectives, thirteen being key targets against which Bomber Command had shown nothing but the illest of intentions for as long as three years in some cases. The more important of these old die-hards were, chronologically, Mannheim, Cologne, Hamburg (three times), Essen, Dortmund, Wuppertal, Hagen, Leipzig, and Kiel. A sign of the times was the fact that 18 of the Leasides' last 27 operations were

flown in daylight. On certain of the above-named targets, daylight raids had been, a few months before, deemed tactically unsound because of defenses and/or distances involved. Strongly-defended Leipzig, for instance, was only 37 miles north-west of Chemnitz, one of the Leasides' most distant night-targets. The Dortmund raid, on 12 March, was Command's biggest single effort of the war, day or night. On that occasion, 1,107 aircraft were despatched. The delegation to Essen was only slightly smaller.

The squadron lost two crews in its last 378 sorties, one in a crash in England after the Chemnitz operation on 5 March, the other on the Hagen trip ten nights later. The navigator, wireless operator, and bomb-aimer of the latter crew were safe in England before the end of April. Flying Officer A. T. Hinchliffe, though technically an escaper, spent his last days of "evasion" rounding up two German generals, one major, and some 300 *Wehrmacht* troopers. It all began when he was being driven to a p.o.w. camp shortly after his apprehension. He never reached the camp, thanks to a driver who had, not wisely but too well, mixed his petrol with schnapps. Injured in the inevitable smash-up, Hinchliffe was taken to hospital at Langenburg, there to remain until the Americans moved in. But the Yanks were in a hurry, and the bomb-aimer was told by an American major to take over the town until the military government officials arrived. Hinchliffe promptly set himself up in the burgomaster's office, and, assisted by an unknown Scottish private, became a virtual dictator for three days. His first acts of oppression were to assemble the local garrison, 300 strong, confiscate their arms, and impose a curfew on the village. It was on the last day of his reign that he collared the generals and the major, whom he unceremoniously incarcerated in the burgomaster's office. He was just wondering about their further disposition when another American column appeared and relieved him. So ended the shortest dictatorship in all history. One can imagine the burghers of Langenburg clicking their heels, saluting, and shouting, "Heil Hinchliffe!"

* * *

Tactically, the squadron supported the last major airborne operation carried out by the Western Allies. "Operation Plunder", the crossing of the Rhine, was preceded by some highly beneficial tactical work on the part of Bomber Command and the Leasides. Enemy troop concentrations and supplies in the Ruhr-bordering towns of Dorsten and Gladbeck were blasted in daylight under near-perfect weather conditions on 23 and 24 March. *En route* to Münster on the morning of the 25th, crews saw ample proof of the operation's success — hundreds of gliders dotting the fields for several miles along the Rhine's bank.

The unit's final act of retribution against the *Luftwaffe* occurred during a raid on Harburg-Rhenania on 4 April. Inserted in the intelligence narrative of Flying Officer R. F. Ritchie and crew was the following terse report: "At position 5236 N., 0705 E., 2325 hrs., 4000 feet, enemy aircraft came in from starboard astern. Both rear and mid-upper gunners opened fire... Enemy aircraft blew up and pieces flew off in all directions. Claim: 1 enemy aircraft destroyed..." The marksmen were Flt. Sgts. J. B. Brooks and W. N. Billard. The Leasides may not have fully avenged their losses attributable to the *Luftwaffe* (24 or more missing crews), but they did draw last blood.

The last two completed actions of a squadron whose battleground was largely the Ruhr, western Germany, and the very heart of the Reich, were fought in a tactical arena isolated both geographically and militarily from the main struggle. Hold-out bases on the islands of Heligoland and Wangerooge were its targets and both were as thoroughly mauled as any could be by mere high explosives. When Flying Officer N. E. Breeze and crew touch down at 1948 hrs. on 25 April, the contribution of No. 432 Squadron to the Allied air effort in the Second World War was virtually complete.

From 26 April through 7 May the squadron trained with a fervour that might have indicated that a war was just beginning instead of ending. Everything in the bomber crew's book, including the fundamentals, was given a brush-up. In other words, despite imminent victory, the Leasides were keeping themselves operationally sharp for any eventuality.

VE-Day came and went. As in so many other squadrons, the hubbub of victory gradually gave way to serious reflection and adjustment to the fact that there would be no more early-morning calls, no more briefings, no more butterflies in the stomach, no more fighters, no more flak. Uppermost in everyone's mind was the question of the squadron's immediate and future disposition. Somewhat confused and restless, crews awaited further developments. If they were expecting something sensational, it didn't come. Instead came disappointment, with the announcement that the Leasides would not be making the hoped-for homeward hop over the Atlantic.

Thereafter the squadron broke up very quickly. Just as it had set a Group record for fast achievement of operational readiness, in similar manner it disbanded when the shooting war was over. Only one week after Germany's surrender, No. 432 Squadron was, theoretically, no longer in existence. Although officially disbanded on 15 May, for nearly three weeks thereafter its

skeleton staff was engaged in ferrying aircraft to maintenance units. So, for the Leasides, instead of a glamour-tinged jump over the big water, the flying of their once-proud "*Hallybags*" to the bombers' bone-yard was the final fling.

* * *

To summarize the unit's operational output, during the period from 23 May 1943 to 25 April 1945 it participated in 208 bombing attacks (44 in the Ruhr), 30 sea-mining missions, and 7 sea searches, involving a total of 3,130 sorties, of which 2,787, or slightly more than 89%, were considered successful. The Leasides' chief bombing-target was Berlin, to which they administered no less than eleven times. Next in lime came Hamburg, their objective eight times, and Cologne (six). Their favourite gardening-waters, bearing the code-name "Jellyfish", were situated in the Brest area, which they mined fourteen times. Other well-cultivated vegetable-patches were in the seas off the Frisian Islands and Den Helder, each visited on five occasions. Complete figures on bomb and mine tonnages are not available, but an idea of 432's total payload may be gleaned from a figure relating to the period from 1 January 1944 to 25 April 1945, or roughly two-thirds of the unit's operational span. During that time it delivered 7,605 tons of high explosive alone. From this it can be safely deduced that the total figure (high explosive, incendiaries, and mines) exceeded 10,000 tons.

Operational casualties totalled 443 (excluding three officers and two N.C.O.s who parachuted safely into Allied territory). Of this number, 326 were R.C.A.F., 108 were R.A.F., 4 were U.S.A.A.F., 4 were R.A.A.F., and one was R.N.Z.A.F. Personnel listed as killed or presumed dead numbered 282. An additional 118 were captured, 30 evaded, 5 escaped from captivity and thereafter evaded, and 8 were non-R.C.A.F. personnel on whom no information was available. Accidents which occurred during non-operational flying claimed the lives of 36 aircrew and 2 groundcrew personnel. In addition, one officer died of natural causes and one N.C.O. was killed through misadventure on the ground.

L.A.C. R. Day, helped by L.A.C. C. Fortin, chalks up Katy's ninth trip.

While flying on operations, 64 crews failed to return safely to England. Seventy-one aircraft were lost, 62 over continental Europe, 6 as the result of crashes in England, and 3 in the North Sea. On the credit side, Leaside gunners destroyed 8 enemy aircraft, and probably destroyed one and damaged 7 more.

The Leasides collected 144 decorations and several other honours. Among these were 2 D.S.O.s, 1 C.G.M., one Bar to the D.F.C., 119 D.F.C.s, 20 D.F.M.s, 1 Croix de Guerre, and an undetermined number of Mentions in Despatches.

* * *

No. 432 Squadron, after more than a decade of oblivion, has been reborn in different garb, in a different rôle, in a different operational habitat. It has traded pistons for jets, offense for defence, troposphere for stratosphere. Notwithstanding these changes, the heritage and background that mean so much to a fighting unit have been retained. The new squadron can look to the future with the knowledge that its proud predecessor has endowed it with a tradition based on the attributes of courage, craft, and capability. Meanwhile, how many of the old Leasides (several of whom still serve in the R.C.A.F.) will be looking on with undiminished interest through the years, keeping tabs on their old outfit and occasionally reminiscing aloud, still not without a touch of pride, "I was once with 432 . . ."

End

EDUCATING THE SERVICE CHILD

BY FLYING OFFICER S. G. FRENCH

(Flying Officer French, a member of the R.C.A.F. Auxiliary who has written several articles for "The Roundel" during the past two years, recently completed his fourth period of summer employment in the R.C.A.F. He is now an assistant professor at the University of Rochester, N.Y., where he lectures in philosophy.—Editor.)

INTRODUCTION

THE greatest minds of all ages have recognized education as the most important of human activities: its function is to mould the plastic minds of the young — and, not infrequently, the less plastic minds of adults. It may be used as an instrument to develop character in individuals or to shape a national culture and ideology. It may be misused, at is was by the Spartans and by Hitler (to choose only two of the many examples possible), to produce single-purposed mechanical soldiers; and today there is an increasing number of people who are prepared to defend the position that education's most important function is to provide training for "citizenship".

It follows from what has been said that education's aims and methods have varied considerably from nation to nation and from century to century; and it need not surprise us to learn that, towards the end of the eighteenth century in Nova Scotia, a secondary-school teacher was licensed on the strength of his being an Anglican. In 1820, an elementary-school teacher in Upper Canada was given a job solely because he was a British subject. Some of the school trustees at this time were not able, according to records in the Archives, to write. Around 1825, provincial governments became aware of these local shortcomings and appointed authorities to examine and license teachers.

It was during the third quarter of the nineteenth century that universal elementary education was achieved under the direction of competent provincial authorities. In this period another major change occurred: class teaching was substituted for the mere hearing of recitations of individual assignments. Normal schools were built to train teachers in the new classroom techniques. All teachers worked under supervision — though, admittedly, of varying quality.

By 1875, women teachers had become as numerous as men, and twice as numerous by 1900. The three Rs, the only subjects taught in 1850, had been supplemented at the turn of the century by geography, grammar, history, composition, literature, and other subjects.

Most readers, if they do not know from experience, can probably imagine some of the changes of the last fifty years. The number of normal schools and colleges of education (training secondary-school teachers) has increased. Teachers, supervisors, and students have expanded to a considerable size. The scope of the various curricula has widened, the information to be imparted has become vastly more complex, and teaching-methods are necessarily subject to constant change.

R.C.A.F. Station Clinton.

PROVISION FOR SERVICE CHILDREN

General

The Department of National Defence provides educational facilities for the children of personnel in all three armed services and in the Defence Research Board. The programme is supervised from Ottawa by the Director of Education, who is appointed by the Minister of National Defence. The Director coordinates the programme to ensure that D.N.D. schools operate within provincial jurisdiction. The holder of this position is also the permanent Secretary of the Dependents' Education Committee. It is this Committee, composed of one representative from each Service plus one from D.R.B., which interprets and administers the Privy Council Order regulating dependents' education.

Service children outside their new school at Metz, France.

The R.C.A.F.

Although at present there are 44 schools in Canada for R.C.A.F. dependents, the first one did not appear until 1946. This was a joint Army and Air Force school at Camp Borden, and it was run by the Army. The first strictly Air Force school was opened at Trenton in 1947. Schools at Fort Nelson, Sydney, Centralia, and Holberg, are the terminal points of a school system which includes all parts of Canada. There is even a dependents' school (tri-Service) at Churchill.

This far-flung school system does not follow one standard curriculum. Under the terms of the British North America Act, it cannot; for the Act gives complete and autonomous control of education to the provinces. Each provincial government exercises complete authority in educational matters within the territory under jurisdiction. R.C.A.F. parents sometimes become very dissatisfied with this arrangement, demanding to know why their children must be subjected to curricular changes whenever they themselves are posted to a different province. However, no adverse effect has been noticed in the progress of our Service children through the elementary grades. The only difficulty occurs at matriculation level, that is to say, in grades twelve and thirteen.

R.C.A.F. SCHOOLS

Canada

Educational facilities are available to any child who has not passed his or her nineteenth birthday at the commencement of the school year. This age limit could presumably be extended should the necessity arise, but at present the Minister's obligation is to provide education for those between the ages of six and nineteen. For persons between these ages the grades taught include those from kindergarten to the equivalent of Ontario's grade thirteen.

Married personnel of the R.C.A.F. who live in public quarters at a station where no civilian educational facilities are available may apply for the establishment of a school. In these circumstances, and when a minimum of ten school-age children require educational facilities, an approach is made to the Department of Education of the province in which the station is located. This is done in order that provincial help may be enlisted in organizing and defraying the costs of the school. The schools are built by stages and may range from a six-room, one-wing building to the complete eighteen-room, two-story structure.

All teaching is done by a civilian staff. The procurement of this staff, its supervision, and all other administrative arrangements, vary according to the practices of the province concerned.

Usually, when the formation of a school district is constituted under the laws of the province, the Commanding Officer must appoint a school board, or, as it is more generally called in the Air Force, a "dependents' school committee". This committee is established under the terms of the School Act of the province, and must have on it one registered Official Trustee. At R.C.A.F. stations the Official Trustee is generally the Education Officer. The committee customarily consists of several officers, N.C.O.s, and (on many stations) one wife who represents the mothers' interests. The presence on the committee of an Official Trustee entitles it to provincial grants and to regular professional inspection of the school. It also permits the teachers to count their time as professional experience, a prerequisite for advanced certification.

Although, as we shall see below, Service schools are basically the same as the other schools in the same province, there are several

The Air Marshal Robert Leckie School, Goose Bay.

facts worth noting. The first is that, whereas most civilian schools are provided with such desirable adjuncts as equipment for teaching domestic science, shop-work, etc., the majority of the Service schools lack them. This deficiency is usually met by making use of the stations' hobby shops, gymnasiums, swimming-pools, and any other facilities that may be appropriate. In this connection it may be mentioned that plans for a new school at Camp Borden are now being considered by Treasury Board. This will be the first Service high school of standard design to be built anywhere in Canada, and it is expected that it will be completed in time for the commencement of the 1958 school term. Such high schools, eventually to be built wherever it is not economical to purchase secondary education or where civilian facilities are not available, will be lacking in none of the advantages at present missing from most Service schools and will be available for use by primary and secondary students alike.

Another point of interest to parents is the "streaming system" which is employed in the large R.C.A.F. schools situated in Ontario and the prairie provinces. This system works best when there is more than a certain number of pupils in a class of any one grade, but it is also employed in smaller schools when there are children of different grades in the same class-room. The students are, by one means or another, classified as to whether they are slow, average, or fast learners. Each group has to cover the same amount of work; but the fast learners are given an enriched programme over and above that required by the curriculum, so that their progress through school will not exceed their social maturity. The slower learners, on the other hand, receive more concentrated and patient instruction in the stipulated course of studies. They spend more time at "phonetics", by means of which they are taught to read with greater fluency and comprehension. The drill in phonetics is carried out in the form of a game, because it has been discovered that physical activity often stimulates mental alertness. Also extensively employed are those C.B.C. broadcasts which have been designed especially to develop phonetic ability.

Sometimes, when such a procedure is feasible and is considered to be desirable, a Service school is administered by a nearby civilian authority. By "civilian authority" is meant a duly constituted local school board. For example, the School Board of Saskatoon runs the school at R.C.A.F. Station Saskatoon. Consequently, there is a Service representative on this Board.

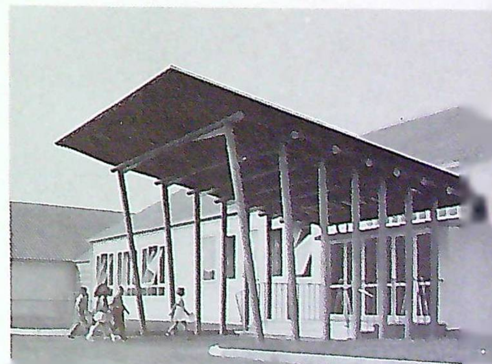
There is a third and final method whereby Service dependents may be educated. If suitable educational facilities do not exist in the form of schools provided by the Minister, and if civilian schools are available, arrangements are made with the civilian authorities. In such a situation, where no grants are paid in lieu of school taxes to the local municipality, payment of non-resident school fees is necessary for each Service child who is to be educated. The fees are paid, in every case, by Command Headquarters through the Dependents' Education Committee.

As mentioned before, it is (of necessity) the policy of the Dependents' Education Committee to see that all R.C.A.F. schools are operated along the same lines as the civilian schools in the province concerned. The responsibility for each school has been decentralized to the Service school committees, while each school uses the provincial curriculum under the surveillance of provincial school inspectors. Teachers' contracts are signed between them and the chairman of the particular school committee under the same terms that apply to all other teachers in the province.

R.C.A.F. schools are not open to R.C.A.F. dependents alone. They are also available, without charge, to the children of civilians employed by the Department of National Defence. Furthermore, the offspring of members of a foreign armed service and of personnel employed by another Government department—so long as they are residing at a station on which a school has been established—are similarly eligible for free education. In a few cases, civilian school authorities in a nearly community have requested permission to send to the Service school children whose parents have no connection whatsoever with the Government. When such a situation as this arises, tuition fees are required which are equivalent to those charged by other schools in the community.

The textbooks and library books used in Service schools are all obtained either from civilian or provincial sources by the chairman of the Station School Committee. The funds used to pay for books are released by Defence Headquarters

Zweibrücken, Germany.



upon the submission of a requisition. All other school supplies, such as erasers, maps, etc., are obtained by direct requisition from the Department of Public Printing and Stationery.

There is a new plan, now under consideration, to provide for and maintain the health standards of the school children. Under this plan, the R.C.A.F. medical personnel would carry out periodic examinations and retain public health records of each Service child. This plan is already in effect at such "isolated" stations as Goose Bay. Meanwhile, students at other Service schools receive no little benefit from the preventive health measures taken at all R.C.A.F. stations by their medical officers. A case in point was the issue of Salk vaccine in 1955. R.C.A.F. dependents were amongst the first children in Canada to receive it.

At present there are more than 4115 children of Active Force personnel and of civilian employees of the D.N.D. attending approximately 255 different civilian schools throughout Canada. When public transportation to and from school is not available, either of two courses is adopted. Defence Headquarters may authorize payment of all costs in excess of three dollars per child per month, or Service transportation may be used on the authority of the Command Headquarters concerned. Occasionally, when neither public nor Service transportation is available, transportation may be hired by calling for bids from commercial firms.

Overseas

It was only two years ago that the first R.C.A.F. schools were built overseas. With the advent of the 1957 school term, it is expected that more than 2,000 students will be attending the five schools at Metz, Gros Tenquin, Marville, Zweibrücken, and Baden-Soellingen. In addition to these, there are also R.C.A.F. children at the school in Trier, Germany, where there is a U.S. base to which three Canadian teachers will be attached shortly. There are also R.C.A.F. personnel at S.H.A.P.E. and Fontainbleau, where there exist what are called "International Schools". At both of the latter locations there are Canadian teachers who supplement the international curriculum with a few strictly Canadian subjects. The children of R.C.A.F. personnel in Great Britain all attend regular civilian educational institutions.

The teachers (more than 200 of them) for these Army and Air Force schools in Europe are employed under a contract negotiated between the D.N.D., the school board in Canada currently employing the teacher, and the teacher concerned. Their salaries are paid by their respective Canadian school boards, but the school boards are, in turn, reimbursed by the D.N.D. This method of payment is advantageous to the teachers: it ensures that their seniority and superannuation benefits will continue to accumulate.

The overseas curriculum is taught both in French and English. It is based on the curricula of the provincial departments of education througout Canada. Grades eleven, twelve, and thirteen, however, are exactly the same as those of Ontario, in order to enable high-school students to obtain junior and senior matriculation. All the students receive instruction in conversational French for half an hour every day. Religious instruction is given in accordance with the practices in the public and separate schools of Ontario. Matriculation certificates are issued by Ontario after successful completion of the departmental examinations.

The medical care, referred to earlier as being still under consideration in Canada, has already been put into effect for the children in the European schools.

The construction and ownership of the schools varies in France and in Germany. The Canadian Government pays the German government ten per cent per annum of the total cost of school construction in that country. In France, the schools were built by private enterprise and then leased to the Canadian government.

All Service schools in Europe are supervised by a Superintendent of Education whose headquarters are at Metz, and every Canadian teacher is on loan for a period of two years. Needless to say, these positions are eagerly sought after by members of the Canadian teaching profession.

Some Interesting Figures

The R.C.A.F.'s 44 schools in Canada have 430 teachers and principals employed in 398 classrooms for 12,004 pupils. The operating cost of these schools, for the school year 1955-56, was approximately $1,458,000, which included the sum of $240,940 covering payments of non-resident fees to civilian school boards at locations where R.C.A.F. facilities were not provided. Grants from Provincial Departments of Education reimbursed the schools during the same period in the amount of $259,330. The cost of approximately $120 per Service pupil per year compares very favourably with similar civilian schools where the cost ranges from $144 in Quebec and the Maritimes to $265 in the elementary and secondary schools of Ontario, with some as high as $300 in British Columbia.

CONCLUSION

As the reader appreciates, it has not been the purpose of this article to discuss the actual curricula taught in Service schools. It has attempted only to explain the means by which those curricula are made available, and to offer some evi-

A classroom at Woodfall Public School, R.C.A.F. Station Rockcliffe.

dence that the R.C.A.F. child is given good schools, good equipment, and — most important of all—good teachers. We can rest confident that no Canadian child is likely to want for instruction simply because its father happens to be in the Air Force.

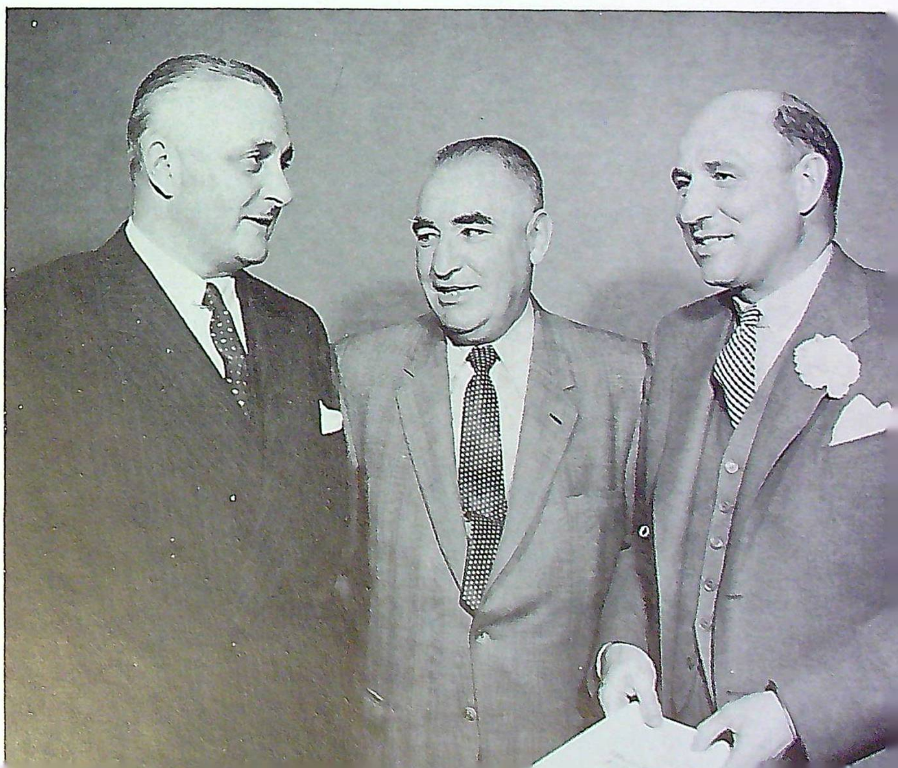
BENEVOLENT FUND HEADS

Since the inside of our back cover is devoted each month to a notice concerning the R.C.A.F. Benevolent Fund, our readers may be interested by the accompanying photograph of the three men who head the organization this year.

Mr. Bernard Alexandor, Q.C., re-elected this year as president at the 13th annual election of officers, served during the war as a legal officer, being released as a Wing Commander.

Air Commodore D. E. MacKell, C.B.E., manager of the Fund and a former well-known athlete (*Ottawa Senators* and *Ottawa Rough Riders*), retired from the Air Force after the war as Deputy Air Member for Personnel.

Mr. J. P. Jamieson, M.B.E., Q.C., elected as chairman of the board of directors, is a prominent corporation lawyer and a former president of the Dominion Drama Festival. Like Mr. Alexandor, he was an R.C.A.F. legal officer during the war and held the rank of Wing Commander at the time of his release.



Left to right: Mr. Alexandor, Air Cdre. MacKell, Mr. Jamieson.

BOMBER COMMAND

40 YEARS AGO

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

(Squadron Leader Emmott, whose hobby is the exploration of military history's byways, here does for the R.A.F.'s Bomber Command what he did in June 1955 for Coastal Command. A navigator with No. 6 Group of Bomber Command during the war, he is now serving at A.F.H.Q. in the Directorate of Instrument and Electrical Engineering. He writes: "Most of the information in this article was gathered from Mr. R. H. Mulock, a Canadian who joined the Royal Navy in January 1915 as a sub-lieutenant and who rose to the rank of captain in command of operations and maintenance of the R.N.A.S. division of the Dover Patrol."—Editor.)

IT GOES without saying that the ancestor of Coastal Command was the Royal Naval Air Service, whose flying-boats and float-planes first extended sea power into the skies. Even to sailors, however, it may come as a surprise to find that the ancestor of the Bomber Command of the Second World War was also the R.N.A.S. The first "strategic" bombing mission in British history was made by a naval aircraft, when a Sopwith destroyed a German Zeppelin in its shed at Düsseldorf on 8 October 1914.

The aircraft that did the trick was based in Belgium, at Antwerp. From the earliest days of the First World War, a number of naval squadrons based along the Belgian coast specialized in carrying out bomber operations against Germany, and after the R.N.A.S. and the Royal Flying Corps were amalgamated in April 1918 to form the Royal Air Force, they continued their efforts.

Indeed, when the Independent Air Force — the first purely strategic air force — came into existence in June 1918, it was built around the nucleus of naval airmen who were then the most experienced bombing aircrew in the Allied Services.

* * *

When the First World War began, the Navy and the Army had little or no idea as to how aircraft could be used in war. Nevertheless, since each of them possessed a few aeroplanes, they began to cast about for ways in which to employ them in conjunction with standard Navy and Army equipment. A fantastic series of experiments ensued. Before describing some of them, however, it seems desirable to devote a few words to the aircraft themselves.

The Morane monoplane, lacking fin, stabilizer, and elevators, was controlled by a balanced rudder, balanced stabilizer, and warping wings — all of which made it as sensitive as a race-horse. The Blériot had high swivelling wheels, so that cross-wind landings and take-offs, though possible, were apt to be amusing. The Voisin was equipped with a four-wheel undercarriage; and the Farman's elevators were located in front of the pilot's seat. The "Box-Kite" (a term applied to several different aircraft, usually Caudrons or Voisins), with its little open seat about three feet forward of the wings, left the pilot with the feeling of being very much alone in the sky.

At first, the single-seaters had no armament. Pilots began by carrying revolvers, which they could not reload because the unstable aircraft needed one hand on the controls all the time. The first specialized airborne armament equipment was a wooden block with a hole in it into which the pilot could stick the revolver-muzzle to break the pistol open and thus reload it with one hand. Two-seaters, which were armed with Lee-Enfield rifles complete with bayonets (bayonets, being part of a rifle, were always issued with them), were fitted with another type of specialized equipment — rowlocks, fastened to the sides and rear of cockpits so that the observer could rest his rifle in them. One of the naval technicians at Dunkirk was a warrant officer named Scarfe, who rose to the occasion by designing the famous "Scarfe ring" (a rotatable ring with

Morane biplane.

D.H. 4.

D.H. 9A.

a Lewis-gun mounted on it), which was the ancestor of the power-operated turret. The primary anti-Zeppelin weapon was the rifle-grenade, fired from the observer's trusty rifle or dropped on the Zep by hand. Guns often froze at altitude, but this was corrected by running them "dry" or wangling anti-freezing oil, intended for torpedoes, from a nearby dockyard.

The ingenuity of the naval engineers was also demonstrated by the fitting of aircraft with rifle-grenades attached to long pieces of piano-wire with which to troll for airships in the clouds.* Skyrockets, mounted on the struts of the attacking aircraft, were used against kite-balloons. It is interesting to note that, although they were the ancestors of today's rockets, they were by no means brand-new: a rocket-battery fought at the Battle of Leipzig in 1813, and later at Waterloo.

* * *

The naval air station at Dunkirk was originally established to support a naval brigade which was fighting in Flanders, and also to serve as an outpost of the defences of London. At first, the duties of the squadrons based there were limited to carrying out reconnaissance patrols and to attacking Zeppelins on their way to or from the bombing of London, and in attempting to destroy them in their sheds. This development, of course, put the Navy in the strategic bombing business

The first bombs were tin cans wound with rope and filled with gasoline or kerosene. Before long, however, the technicians began to fasten fins on to 18-pounder artillery shells for use against submarines. Originally they were carried loose in the cockpit, where they had a tendency to become tangled up with the occupants' feet, but in 1915 a bomb-dropping gear was devised. It consisted of tying the bombs together in pairs with a small rope and hanging them over the fuselage in front of the pilot, one on each side. Over the target, the rope was cut with a jack-knife. This development was quickly followed by fastening the bombs in racks under the fuselage and releasing them from quick-release hooks by wires that led to the pilot's cockpit.

As the war went on, 10-pound, 20-pound, 50-pound, 112-pound, and 550-pound bombs were produced. By 1918, the original "dam-busters" were attempting to put the Zeebrugge-Bruges Canal out of action by dropping 550-pound bombs between the lock gates and relying on water compression to burst them. 550-pounders proving to be not heavy enough, an 1100-pound bomb was devised. This successfully closed the canal.

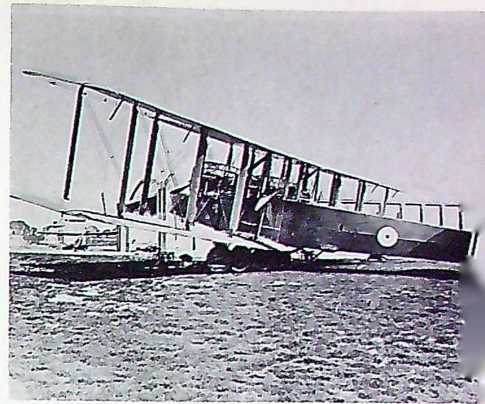
The first bomb-sights were the pilot's "seamen's eyes". Later on, the Wimperis vector bomb-sight appeared, and by the end of the war a course-setting bomb-sight was in use which was very similar to the Mk. IX C.S.B.S. that was still in service in 1944. With light aircraft, dive-bombing was carried out: the bombs were usually released at low altitudes, and this compensated for the other inaccuracies of bombs and bomb-sights.

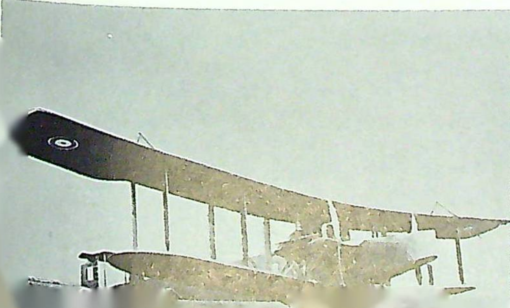
Instruments were as crude as bomb-sights. In 1915, aircraft were equipped with an airspeed indicator, an engine-oil pulsometer indicator, and an engine R.P.M. meter. Later aircraft were given horizontal cross-levels to indicate bank, and then a compass. Altimeters and compasses, first worn like wrist-watches, did not form part of the "flying-panel" until a year or so after the war started.

Crew comfort was, of course, non-existent. All aircraft had open cockpits, and crews would be half-frozen on their return from a long raid (it was four or five hours to and from a target such as Ghent). The "boiler-suit" was gradually developed and became standard for all crews.

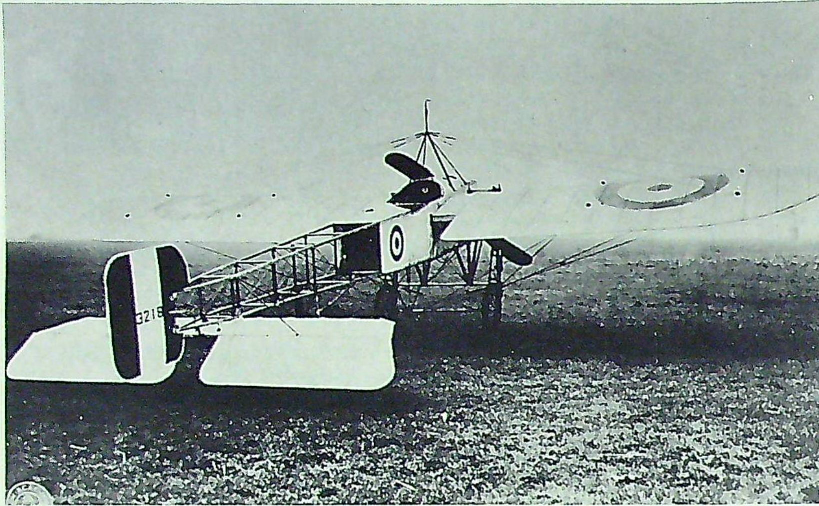
Even the simple business of eating presented a difficult problem on aircraft that had no trim-tabs. Drinking was finally solved, however, by a brilliant officer named Wing Commander Spencer-Grey. He devised a rubber tube with a baby's nipple attached to a thermos flask. The standard liquids carried were contained in three thermos

*Zeppelins often took refuge in the clouds, navigating from gondolas lowered on cables.


Handley Page (4-engined).

Handley Page (2-engined).


Caudron.



Blériot.

flasks: one for hot tea if you were cold, one for ice water if you felt drowsy, and one for pilot's choice (often beer).

Navigation was done by the pilot, who depended on Admiralty Charts and Ordnance Maps. Cloud was avoided, except where one of the clumsy two-seaters was being chased by a fighter. No parachutes were carried, and, if a tractor aircraft caught fire, the only recourse was to sideslip away from the flames to the ground.

The first mass bombing raid in history was made early in 1915, when seventeen to twenty aircraft (of which no three were of the same type) bombed a German concentration in a forest. A Blériot, a "box-kite", a Maurice Farman, some Shorts, a Sopwith, and several French Air Force machines made the raid. Only a few had bombs; the rest dropped rifle-grenades or bricks. All returned safely.

* * *

The German anti-aircraft organization along the Belgian coast became so good that any precision day-bombing was impossible. This led to the formation of night-bombing squadrons, controlled for landing and take-off by Verey pistols and Aldis lamps from a "band-stand" (the forerunner of the control tower).

As the war went on, the twin-engined night-bombing squadrons (Handley Page) would, on ordinary nights, make two trips and sometimes three. Problems of reloading and refuelling arose. Power pumps replaced hand-fuelling; bombs were brought from the dumps on small trolleys running on narrow-gauge tracks that led beneath the aircraft, then jacked up and fastened to the bomb-racks. Dependent on the target, aircraft would carry one 1200-lb. bomb, two 550-lb. or the equivalent in 112-lb. bombs.

Apparently the Germans appreciated the efforts of the R.N.A.S. They retaliated by sitting over the Naval station with their bombers and often attacking the aerodromes after the squadron had left, thus forcing the returning aircraft to use emergency fields or to land on the beaches. The diversion fields were all manned and equipped, however, and business went on as usual. Operations were carried out on any night when they were possible, and they became known, generically, as "the shuttle". The main targets were the enemy's submarine bases.

Day-bombing squadrons operated with single-engined aircraft carrying a crew of two: pilot and gunner. If heavy opposition was expected, escort was provided by fighter squadrons.

How effective was the bombing? One answer can be obtained from the German reaction to it. The enemy covered the Belgian coast with excellent searchlights, anti-aircraft guns, and fighter squadrons, and continually bombed the Dunkirk area where most of the R.N.A.S. squadrons were based. At various times, they made a triple attack on this area: by air (with bombs), by sea (with gun-fire and torpedoes from hit-and-run destroyers), and by land (with 18" shells from guns behind the lines).

The bombing operations — performed not only by the Royal Navy, but also by the Royal Flying Corps — showed enough promise to lead to the establishment of a strategic force. The Independent Air Force, formed to carry out this task, came into existence in June 1918.

* * *

Its establishment was due, in part, to official recognition of the requirement for strategic bombing, but also to the fact that the means was at last available to make it effective. By 1918, the Handley-Page Company (which was to produce the *Halifaxes* and *Hampdens* of the Second World War) was making the V-1500. This enormous aircraft was fully capable of carrying a respectable bomb-load to Berlin.

The V-1500 had a wing-span of 132 feet, which was indeed large for a biplane (a *Lancaster's* wing-span was only 107 feet), and its four Rolls-Royce *Eagle* engines pushed its 16 tons through the air at nearly 100 m.p.h. It was too big to operate from French airfields. A squadron

of 150 men could maintain only four machines — which is not surprising when one reflects that the big bird-cages required tightening up after every landing.

Their crews included two pilots, a flight engineer, and three gunners. In addition, a specialized navigator was carried. The navigator was given no special training, since it was considered that his naval training in surface navigation, plus a marine sextant, would get him anywhere he wanted to go, provided he flew only in V.F.R. weather. The gunners — front, rear, and midship — all used Lewis guns.

The Independent Air Force (under the command of General Trenchard) had two Divisions, Northern and Southern.

The Northern was based in England, and the Southern in France. The Northern Division was alloted V-1500 Handley-Page bombers, only three of which had been built. One was used for experimental work, and the other two were armed and were based at Bircham Newton (Norfolk), their main purpose being to bomb the inland factories of Germany—always, however, with side-glances at Berlin. The organization set up to operate them was much the same as it would be today. Weather forecasts were available every four hours; and refuelling bases, all connected to a control room in London by telephone, were established at Martlesham Heath (England), Autigny-Latour (France), and in Northern Italy. Lord Tiverton (the Intelligence Officer) even made arrangements through the Embassy at Rome for refuelling in Austria after an attack on Berlin, thus allowing the bomb-load to be doubled by eliminating the necessity of carrying gas for the return trip.

The Southern Division (mainly with twin-engined aircraft) did actually operate against the Ruhr, under much the same conditions of searchlights and flak (or, as it was then known, "Archie") that Bomber Command had to face a generation later.

The Northern Division, a few weeks before the Armistice, was all poised to pay a visit to Berlin, when its commander (Mulock) was called to London. On his arrival, he was astounded to find himself placed under open arrest. The explanation given him later was that, since Germany was about to surrender, no chances were being taken that a man of Mulock's proved aggressiveness might muddy the international waters by leading a raid on Berlin on his own responsibility! The big bombers were therefore never able to repay the Germans for the raids on London. That task was reserved for the Bomber Command of another war.

* * *

Often today one hears amazement expressed at the gigantic strides taken in military aviation during the Second World War. Those strides, which took us from the somewhat haphazard dropping of high explosive to the accurate delivery of fission bombs, were admittedly remarkable. But was such progress, in actual fact, any more remarkable than the progress made during the world war that preceded it? Between 1914 and 1918:

- The weight of aircraft increased from 1,000 lbs. to 32,000 lbs.
- The horsepower of their engines rose from 80 to 420.
- Airborne armament changed from pistols and rifles to Lewis and Vickers guns and small cannon.

Smallest and largest bombs of the First World War.

- Hand-dropped rifle-grenades were replaced by 1200-lb. bombs.
- The Aldis lamp gave way to wireless telegraphy.
- Two small internal units of the Navy and Army became a third Service.

Indeed, by the end of the war, the only aspect of military aviation that remained unchanged was the airman's mascot — whether it consisted of a girl's stocking or a brick. The flying services had gone a long way from the place they occupied when, in January 1915, an officer asked a Navy pilot: "Why don't you get a rifle and do a man's job instead of wasting your time boring holes in the sky?"

> The true value of a human being is determined primarily by the measure and the sense in which he has attained liberation from the self. (*Einstein.*)

HINTS for HERALDS

BY FLIGHT LIEUTENANT J. MOFFAT,
R.C.A.F. Station Cold Lake.

THIS morning I saw on the notice-board an announcement that a fifteen-dollar prize is being offered for the best suggestion for a Unit Badge. I don't expect to see a great rush of entries, because it isn't in most minds to conceive designs for badges. I know it isn't in mine.

But among the entries submitted I bet there'll be the usual run-of-the-mill bolts of lightning, eagles being shot through the heart with arrows, big boots kicking rear ends, and torches giving the hot-foot to rampant lions. The mottos will be equally mundane . . . "We Strike at Noon", "We Never Falter", "We Never Fall", "We are Sober", "You Bend'm, We'll Mend'm", "Numquam Illegitimis Carborundum", and various other trite sayings in divers languages.

The Motto is the most intriguing thing about a badge. I know this from bitter experience. I have designed some hundred odd badges, none of which have been accepted; and that makes me something of an expert. It may have been that my mottos have all been too easy to decipher. For instance, take "We Strike at Noon". I thought that one up about two years ago, and it was rejected because (according to the critics) "it was too barbaric . . . it isn't cricket to hit the enemy when he's eating." Not long after, however, while looking over some successful badges, I spotted the motto "Carborundum Est Mangé". Puzzled, I asked the author the meaning of this quaint phrase. He rose to his full height. "It means", he stated, "We Strike at Noon!" So apparently you have to make it tough to make it cricket; and I strongly advise the amateur herald to keep his mottos muddy, distorted, and devoid of any connection with the art-work.

In fact, his safest plan might be to dig up an old book on Sanskrit and take the first line of chapter one. As only a few people know either the language or its characters, he can call his own interpretation — as long as he always remembers what it is supposed to mean in English. Once, I almost got by with "RAB KCANS S'EOJ", which I tried to palm off as Graeco-Arabic. I said that a loose translation would be "I'm Hopping Mad". Unfortunately, my sketch of the badge happened to be placed on view beside a mirror, and someone soon noticed that its motto read "JOE'S SNACK BAR" in reverse.

I saw a badge the other day with nothing on it but a streak of lightning. "Now, that's a corker!" I thought. "I wonder what that could mean?" After much cogitation, I was forced to the conclusion that it must be the badge of the local electrician of the station's C. E. platoon. But no, it proved to be that of a fighter squadron.

Because I myself belong to an electronics outfit, I have tried to design badges with electronic themes. I've experimented with electrons going around in atomic orbits, electron tubes (lit, unlit, smashed, and bent), sparks, wiggly lines, and electrocuted bodies. I've even impregnated the badge with blood (my own, of course). But they were all rejected because they were too obvious. Then it was that I hit upon what I thought was the winning formula.

After working hard on a new badge, I took my finished masterpiece in to the boss and said:

"Sir, how do you like this one?"

He pondered awhile, studying it with a practised eye.

"H'm," he grunted, "looks like you might have something here. What made you think of the Taj Mahal?"

I cleared my throat. This was going to be easy.

"Well, sir," I said, "I looked about for something that couldn't possibly be connected in any way, shape, or form, with electronics. I decided upon the rug in the C.O.'s office."

"Ingenious," said the boss.

"Rugs," I went on, "naturally suggested magic carpets. Magic carpets meant the Far East, and the Far East meant India and the Taj Mahal."

"Not bad," he agreed. "Not at all bad. Of course, it won't take long for someone to trace it to a C.O.'s rug, but as long as he doesn't realize it's *our* C.O. and so get the electronics connection—"

"I thought of that, sir," I replied, swelling with pride. "But if you look closely, you'll see that I've hidden the TV antenna behind that third spire, where no one's likely to spot it."

He peered at my drawing through a magnifying glass.

"Ye gods !" he exclaimed. "So you have!" His expression chilled, and he handed the paper back to me, brusquely. "Take it away. I can't even consider it. Anyone can tell it's electronics right at the first try!"

Now, don't get me wrong: I think badges do a lot of good for morale. They should be carved on plaques and hung up in every Mess. They should be worn by all ranks, both male and female, on wind-breakers, swimming suits, T-shirts, snuggies, and step-ins.

As for me, though, after that last experience, I leave 'em alone!

RATCON

Air Traffic Control's Latest Aid

(Those who read Flt. Lt. D. C. Clair's article on G.C.A. in our October issue will be interested by this brief description of the latest refinements in the art of bringing aircraft down to a safe landing.—Editor.)

RADAR Air Traffic Control (RATCON) the latest answer to the problem of air traffic congestion, has made its appearance on the Canadian scene.

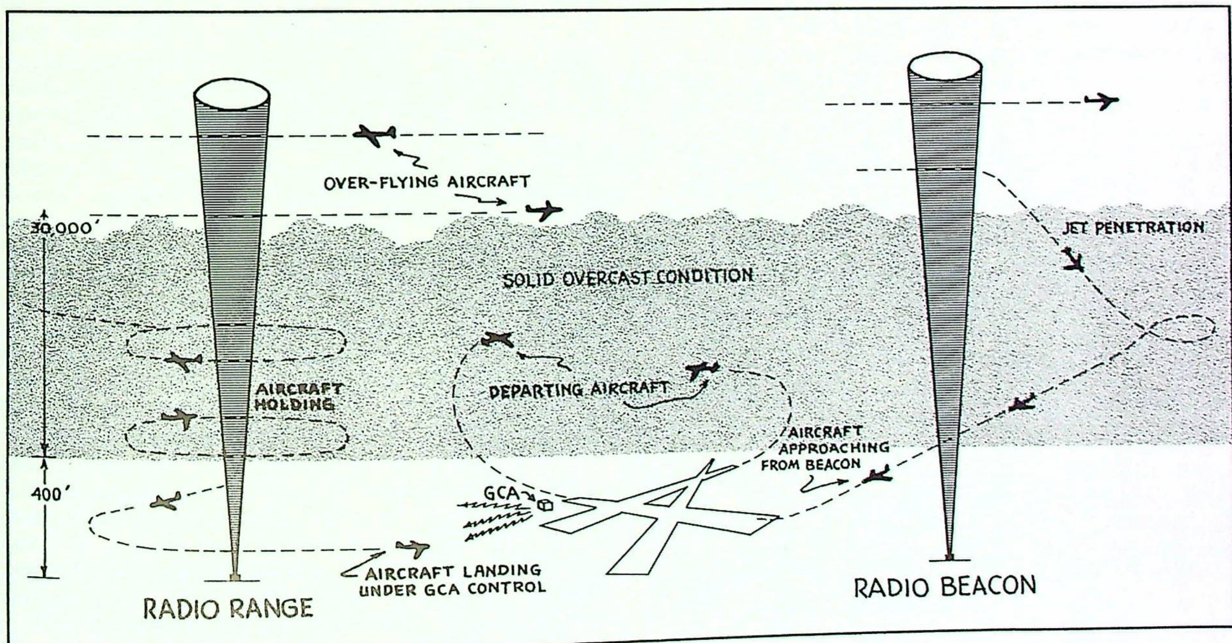
A RATCON site, the only one so far in Canada, has been established at R.C.A.F. Station Goose Bay as a joint R.C.A.F./U.S.A.F. operation. Equipped to handle simultaneously almost any number of aircraft (jet, turboprop, and piston-engined), RATCON came into operation because the existing facilities at Goose Bay were inadequate for intensive military operations. This deficiency was brought forcibly to attention in June 1954, during operation "Full House", a U.S.A.F. exercise which brought large numbers of B-47s and their accompanying tankers into the area, saturating it and overstraining the existing traffic control facilities. During the frequent periods of heavy military traffic it was found necessary to suspend services to commercial carriers. Since more civilian aircraft land at Goose Bay than at any other military aerodrome in Canada, a considerable number were inconvenienced.

As a result of this shortage of facilities, representatives from the R.C.A.F. and the U.S.A.F. got together to discuss ways and means of improving air navigation aids and services, particularly in the Goose Bay area. An agreement was reached whereby the U.S.A.F. would provide sufficient radar and communications equipment to establish a RATCON, while the R.C.A.F. would erect a suitable building to house it and would also furnish light, heat, and power, and construct the necessary road. Since Goose Bay is a Canadian base, the R.C.A.F. was to be in operational control of the unit.

As a result of this arrangement, R.C.A.F. Station Goose Bay now has a facility which is able to expedite a greatly increased volume of traffic with the minimum of delay. Using radar separation rather than conventional separation, unnecessary holding or rerouting should be eliminated.

* * *

Without interruption, the RATCON can pick up and identify an aircraft, vector it to the station, then hand it over to G.C.A. Furthermore, since this can be done



R.C.A.F. and U.S.A.F. personnel work as one unit.

with several aircraft at the same time, it is only during periods of peak activity that stacking is necessary. Even then, the maximum number of aircraft is handled with the minimum of delay. As many as 50 aircraft can be handled with the aircraft holding in two stacks, one stack over a range station, and the other over a radio beacon. By use of a 500-foot separation rather than the conventional 1,000-foot, the capacity of the stacks can be doubled, and, with G.C.A. working three aircraft at a time, landings can be accomplished at three-minute intervals.

At present a "hot line" connects the RATCON building to the nearby G.C.A. location and is used when the approach controller is ready to hand the aircraft over to the final controller. In the near future, G.C.A. operations will be moved into the RATCON building, thereby providing a more highly co-ordinated service to inbound aircraft. If at any time an emergency is declared, the supervisory controller, who normally monitors proceedings, will give the distressed aircraft an immediate let-down, vectoring all aircraft at lower levels out of the area until the aircraft in distress has passed their level.

In pre-RATCON days the lack of radio facilities in the Labrador area, with resulting errors in E.T.A.s (Estimated Times of Arrival), meant that the first aircraft to reach Goose was not necessarily the first one down, since the tower had difficulty in knowing the exact position of aircraft at lower levels. It was imperative that incoming traffic report over one of the two radio facilities before let-downs were commenced or outgoing traffic was allowed to depart. With RATCON, when aircraft appear on the screen, their E.T.A.s are worked out, and necessary data is entered on a flight data-strip which gives the controllers precise information quickly. The controllers know when incoming traffic will arrive at the aerodrome, regardless of their flight-planned E.T.A.s, and the first one to reach Goose will be the first one down. It is, of course, of particular benefit to jet aircraft, with their high fuel consumption, that they should be able to carry out an immediate penetration let-down and G.C.A.

Since all traffic in the area is under constant surveillance, departing aircraft can normally leave at any time, and, by means of predetermined headings, they will be vectored around any incoming traffic. Should an incoming aircraft miss its approach and make an overshoot in the vicinity of the departing aircraft, the appearance of two blips on the radarscope will allow the controller to have two aircraft climbing away at the same time in perfect safety.

The 100-mile control area around the station is so efficiently covered by RATCON's all-seeing radar eyes and its telecommunication voice that approval of flight plans and issuance of clearances has been greatly speeded up. Since all pertinent traffic around Goose is under constant surveillance, there is no problem about fitting departing aircraft into the prevailing traffic. Added facilities will be available at some later date, when the Department of Transport establishes a regular A.T.C. (Air Traffic Control) and a Goose Oceanic Control Area in conjunction with the RATCON.

* * *

This marvel of the electronic age, which operates twenty-four hours a day, seven days a week, is manned by fifteen R.C.A.F. and fifteen U.S.A.F. personnel under the command of Sqn. Ldr. J. C. Terrill. Situated beside the longest runway in Canada (11,000 feet), the one-storey RATCON building is of cement construction. New and modern in every respect, it contains a bright and cheerful coffee-room for those who spend their working hours sitting in darkness and peering at weirdly glowing scopes.

Side by side at the radar consoles, R.C.A.F. and U.S.A.F. personnel work as one unit. On a typical operation an incoming pilot may be vectored to the station in the Scotch-Irish accent of the Ottawa Valley and talked down the glide-path in a friendly Texas drawl.

R.C.A.F. Association

THE BATTLE OF BRITAIN

On Sunday, 16 September, Wings of the Association across Canada joined in commemorating the anniversary of the Battle of Britain.

This year, twenty-two Wings of the Association took part in services to commemorate this historic day. Church services were attended, parades were held, and wreaths were laid at cenotaphs. The reports from the different Wings are encouraging, and we feel that we are gaining ground. It is hoped that next year an even better effort may be put forth.

NATIONAL PRESIDENT ACTIVE

Air Vice-Marshal F. G. Wait, C.B.E., has been very active visiting Wings in different parts of the country. Late in the summer, accompanied by Mrs. Wait, he visited Saint John (N.B.), Fredericton, Moncton, Chatham, and Quebec City.

In September, accompanied by his Executive Assistant, Flt. Lt. M. E. Ferguson, he attended a meeting of the Quebec Wings which was held at La Tuque; and, at the time of writing, he has just left on a tour of the Wings in the prairie provinces. The tour will include visits to the Lakehead, Winnipeg, Regina, Saskatoon, Edmonton, Lethbridge, and Calgary. On 20 October he will attend the annual Meeting of the Ontario Provincial Air Cadet Committee, in Toronto, where he will present the Association Trophy to No. 155 (Sault Ste. Marie) Squadron.

Air Vice-Marshal Wait has been highly pleased with the splendid reception he has received from all the Wings he has visited.

R.C.A.F. ASSOCIATION AWARD

This year's winner of the R.C.A.F. Association trophy is No. 155 (Sault Ste. Marie) Squadron of the Royal Canadian Air Cadets. This marks the fourth year of competition for the trophy. Previous winners were: No. 398 (Trinity College School) Sqn. (1955), No. 266 (Kimberley) Sqn. (1954), No. 22 (Powell River) Sqn. (1953).

The trophy is awarded annually to the most proficient Air Cadet squadron in Canada. The adjudication takes into account all factors of squadron operations, and also the value of the squadron to the community. The activities of the civilian Sponsoring Committee have a bearing on the outcome.

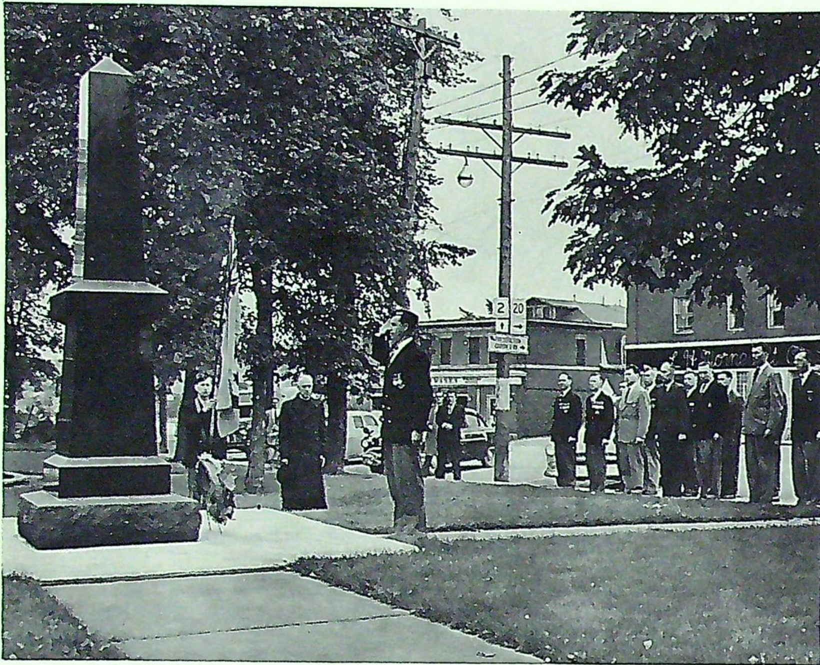
The R.C.A.F. Association Trophy.

WING NEWS

No. 312 (La Tuque) Wing

No. 312 Wing was host to members of other Quebec Wings at an inter-Wing meeting in La Tuque on the week-end of 29 September. Lloyd Fulton, president of the Quebec Group, reports that the get-together was very successful, both in its business sessions and its social activities. The highlights of the gathering were the formation of an Air Cadet squadron in La Tuque, under the guidance of the La Tuque Wing, and the announcement that

No. 250 (Saint John) Wing. P. F. Connell, president, leads Wing at Battle of Britain parade.



No. 251 (Madawaska) Wing, Edmundston. President R. Morin places wreath on Edmundston's cenotaph. To left of photograph: Vice-president A. Daigle and Rev. Father Louis Gagnon, Wing Chaplain.

a new Wing of the Association was being formed at Three Rivers. Such meetings iron out small difficulties and assure harmonious operation within the group.

No. 438 (Algonquin) Wing

Recently the secretary of the Association visited this newly formed Wing on the occasion of a Saturday-night social evening. The Pembroke Wing is less than a year old. It was most encouraging to find that it had already, through the individual efforts of the members, converted a portion of the second floor of a down-town building into a very attractive club. The ladies have just formed an Auxiliary, and this should be of assistance to the Wing. An Air Cadet Committee is making preparatory arrangements for the establishment of an Air Cadet squadron in the near future. The executive and all members of the Wing are to be congratulated on their progress.

Commended by the C.A.S.

The Chief of the Air Staff has sent a personal letter of commendation to Wing Cdr. H. W. Saunders, of R.C.A.F. Station Macdonald, for his courage and presence of mind in freeing the pilot and passenger of a crashed T-33.

Arriving on the scene of the crash, and observing flames spreading rapidly on the starboard side of the cockpit area, Wing Cdr. Saunders directed the crash crew's efforts to control the blaze, thus enabling him to break open the jammed canopy with a fire-axe and remove the dazed pilot and passenger from the aircraft.

TWO REVIEWS

"A Picture History of Flight"*

Reviewed by Wing Commander F. H. Hitchins, Air Historian.

Between the covers of this slim volume are packed hours of fascinating reading and meditation. Combing through the archives of flight, Mr. Taylor has selected, from the thousands upon thousands of drawings and photographs, 648 which tell visually the story of flying from "birdmen" to "spacemen", from mythology to plans for interplanetary flight.

The pictures are arranged chronologically in eight sections dealing with the major phases of aeronautical development. For each of the sections the editor has written a brief introductory essay, and he has also supplied explanatory notes for the photographs; but the illustrations themselves tell the story of the evolution from early experimenters who tried to fly with wings like the birds, through the age of balloons and airships, to gliders, aeroplanes, and the supersonic jets and rockets of the present day.

An introductory section of 30 pictures is devoted to man's early dreams of flying, the centuries of fantasy, theoretical speculation and experiment, which, in the closing years of the 18th century produced one answer to the challenge, the balloon, and by the end of the 19th century brought man to the threshold of a new age of flight. The years 1903 to 1914 — a decade of prolific experimentation in many lands and the birth of an aircraft industry — are well covered with almost 190 illustrations. The two decades from 1919 to 1939, an era of great flights and progress in aircraft design, also receive thorough documentation, constituting approximately one-third of the whole book. The Great War of 1914-1919 and the Second World War of 1939-1945 are dealt with more briefly, the former being depicted in 55 photographs and the latter in 68. For the ten years after 1945, a "new pioneer age", there are 94 representative illustrations.

The problem of selection from such a wealth of material must have been a Herculean task. Some may regret the omission of particular incidents or photographs (such as the flights of Costes and Lebrix, and a picture of the R.100), or question the relative importance allotted to others (the *Stirling* is given more space than the *Lancaster*), but on the whole Mr. Taylor has handled his most difficut task with skill and judgment.

The book opens with a dream—man's dream of conquering the air; and with another dream it closes—man's dream of conquering space. The first challenge has been met; preparations are under way to take up the new. When the aeroplane became a weapon of war in 1914-1918, Orville Wright is said to have remarked: "What a dream it was! What a nightmare it has become!" Will history repeat itself?

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*John W. R. Taylor: "A Picture History of Flight". Hulton Press, London, Eng., 1955; 192 pages, 648 illustrations, index. 25 shillings. Distributed in Canada by Clarke, Irwin & Co. Ltd., 103 St. Clair Ave. W., Toronto 7, Ont.

"Across the High Frontier"*

Reviewed by Squadron Leader O. B. Philp, D.F.C., Chief Test Pilot, Central Experimental & Proving Establishment.

On 14 October 1947, the Bell X-I rocket-propelled aircraft was dropped from a B-29 mother-ship at 20,000 feet at an indicated airspeed of 250 m.p.h. As the X-I dropped, the pilot, Major Charles E. Yeager, U.S.A.F., turned on the power for his ninth powered flight in this aircraft and climbed to level flight at 40,000 feet. The pilot's report of the flight was that "acceleration was rapid and speed increased to .98 Mach. At this speed, the needle of the Machmeter fluctuated momentarily, then passed off the scale. While the usual light buffet and instability characteristics were encountered in the .88-.90 Mach range and elevator effectiveness was very greatly decreased at .94 Mach, stability about all three axes was excellent as speed increased, and elevator effectiveness was regained above .97 Mach. In short, the control and stability of the aircraft were completely normal as 1.0 Mach was attained and passed."

This report by Major "Chuck" Yeager climaxed the research, dreams, and efforts of a group of people in the United States who had set themselves to fly an aircraft successfully at a speed faster than that of sound. It is also the climax of William R. Lundgren's book.

"Across the High Frontier" has a secondary title, "The Story of a Test Pilot—Major Charles E. Yeager, U.S.A.F." This reviewer therefore

expected the book to begin with a background of Major Yeager's life. Contrary to his expectations, however, the Prologue describes the geographical location and facilities of the Flight Test Section of the United States Air Force, Air Research and Development Command, Edwards Air Force Base, California, where the climax of the story takes place. This description includes the local terrain, weather, hangars, pilots' offices, and lounges. A typical working day at the Base is described, and finally we are given a short introduction to Major Yeager and his family.

In Part One, the author goes back to 1943 and recounts some of the difficulties pilots encountered during high-speed flight in Republic P-47 *Thunderbolts* and North American P-51 *Mustangs* — difficulties such as buffeting, vibration, freezing of controls, and shock lines "rising like heat-waves from a radiator". It is pointed out that testing-facilities were inadequate at that time and that little was learned about these new flight characteristics either in the air or on the ground. Few men considered that Mach 1 would ever be reached by a piloted aircraft, and this problem was therefore thought to be purely an aerodynamic exercise for scientists and engineers. That same year, however, saw the development of the jet engine with its greater power potential; and plans were under way to build an experimental aircraft to "at least explore the transonic range". The Bell Aircraft Co. accepted a commitment to design and build this experimental aircraft, which was to be known as the Bell X-I.

The reader is finally introduced to Major Yeager in 1947, when he is employed as a test pilot in the Flight Test Division of the U.S.A.F.'s Air Materiel Command at Wright Patterson Air Force Base. Several chapters are then allotted to explaining how Yeager was selected as pilot for the X-I, which are of little interest other than as background. A highlight of these chapters is a briefing by the Bell engineering and design staff on the X-I's features and flight characteristics.

In Part Two the story of Chuck Yeager's life unfolds, beginning with his childhood days on a farm and taking us through his schooldays to his enlistment (because "all he wanted to do was learn to fly") in 1941. His training days are then described from the time he joined the Service, until he was presented with his wings and met the girl who was later to become his wife. We follow him through squadron training, his posting overseas to England, and his operational experiences and victories, until he was finally shot down in France and escaped with three others into Spain and back to Britain.

Part Three (which, to this reader at least, is by far the most interesting) starts off with a description of the Bell X-I attached to its B-29 mother-ship on a ferry trip from Buffalo to Edwards Air Force Base in California. This Part starts off slowly, with an obvious padding of small-talk between Yeager and the test team. Eventually, though, the author arouses our interest again by explaining how they were indoctrinated and trained for the part they were to play in the testing of the X-I. The history and conception of the aircraft is expanded upon, and we learn of the troubles that were encountered by the engineering and design staff of both engine and airframe. Some of the problems associated with the building of the aircraft, and the near-disasters which occurred, both during the ground trials and the early air tests, make the reader realize the tremendous efforts and fortitude which are demanded of all the people engaged in pioneering such an aircraft.

The author continues with descriptions of the various systems and components of the X-I. They are written in a language which, though understandable and interesting to engineers and pilots, will probably mean little to the layman. The story builds up from the ground training of Yeager and his test team to their first flight in the X-I. The climax is finally reached when 1.0 Mach is "attained and passed." This success is followed by an anticlimax in the form of a powered take-off of the X-I from a runway.

As the story ends, a new experimental aircraft, the Bell X-IA is discussed, and the Epilogue of the book is a description of the new aircraft, its purpose, and of Yeager's training in its systems, etc., in preparation for future flights. The book is brought to a close with the celebration by Yeager, his wife and friends, of the first successful flight in this new aircraft to a speed of 2.0 Mach.

"Across the High Frontier" is enjoyable as a story. It is not only the "story of a Test Pilot" but is also the story of an aircraft which undoubtedly made history and must be considered one of the great aviation successes of our time. The book was obviously written in such a manner as to have a broad appeal, and therefore the somewhat overdone descriptions and build-ups in various sections must be accepted.

Major Yeager's life and experiences are made to sound adventurous and romantic rather than— as in all probability they have been — just extremely interesting. Generally speaking, however, the author has caught and described the particular atmosphere associated with airfields, aircraft, and flying people, extremely well, although his practice of jumping from the present to the past and *vice versa* is disconcerting and causes the story to be somewhat disjointed. The technical aspects of the book are generally correct, and, as applied to the aircraft in

the story, can be visualized quite readily by the reader. Although "Across the High Frontier" is disappointing in some parts, other parts of it make fascinating reading.

*"Across the High Frontier", by William R. Lundgren. Published by William Morrow & Co. Inc., N. Y. $3.75.

The Suggestion Box * * *

The Chief of the Air Staff has written letters of thanks to the undermentioned airmen for original suggestions which have been officially adopted by the R.C.A.F.

Sgt. E. A. Buck, of R.C.A.F. Station Moose Jaw, designed a special type of rear-view mirror to aid the operators of aircraft-towing tractors in coupling up the towing-bar to the front of the tractor.

Flt. Sgt. A. E. Bourque, of R.C.A.F. Station Greenwood, devised a new method of installing fuel level transmitters in *Sabre* aircraft. His method, which obviates the necessity of removing the leading edges of the wings, effects a considerable economy in the man-hours required for this operation.

L.A.C. R. J. Gregory, of R.C.A.F. Station Comox, invented a tool for opening the fasteners on the radome and radar nose cowling of CF-100 and *Sabre* aircraft. Use of this tool prevents damage to the fasteners.

Air Commodore Walter A. Orr, 45, commander of the Fifth Air Division here, will take over as commandant of the R.C.A.F. Staff College at Toronto.

He will be replaced here by Air Commodore Arthur D. Ross, 49, presently an air member of the Canadian joint staff in London, England, R.C.A.F. Headquarters. Cremation followed. *(From a Vancouver paper.)*

"Follows", we presume.—Editor.

I.C.A.O. and the R.C.A.F.

(In October 1951 we published a long article which set forth in detail the history, functions, and methods of the International Civil Aviation Organization. The past five years, though they have made the inevitable contribution to its history, have left its functions and methods substantially unchanged. The present short article is concerned merely with giving our readers some idea of the close relationship that exists between I.C.A.O. and the R.C.A.F.—Editor.)

As its name implies, the International Civil Aviation Organization is primarily concerned with civilian flying, but, in the eleven years of I.C.A.O.'s existence, the R.C.A.F. has found that it has a constant and increasing interest in the affairs of the organization.

Canada, one of the original signatories to the convention, has been elected continuously to the Council of I.C.A.O. since the latter's inception in 1945. The organization, which includes 67 member nations, regards Canada as a "Category One" country — that is, as "a state of chief importance in air transport", largely on account of its geographic significance.

With international recognition in the field of aviation came certain responsibilities and commitments. One of the more important of these responsibilities — the provision of search and rescue facilities off the east and west coasts — was delegated by the Canadian government to the R.C.A.F. On the east coast the Gander-Oceanic area, which I.C.A.O. has designated as a Canadian responsibility, extends roughly half-way across the Atlantic; and on the west coast the furthest point of the Vancouver Flight Information Region is a thousand miles out to sea. In both these areas the Air Force keeps men and machines on 24-hour stand-by.

Coming into being first as a provisional organization then, on 4 April 1947, as a permanent U.N. agency, I.C.A.O. is designed to foster and to guide international civil aviation. Since, however, both civil and military aircraft use the same air and the same facilities, it was very obviously necessary that both types of traffic must conform to certain rules and regulations. In ten years I.C.A.O. has developed international "codes of the skies" which virtually all nations accept as their "standards" and on which they base the framing of their own aviation laws and practices. Because of these codes, and the resulting standardization, it is possible for a Canadian pilot, flying an American aircraft, to land at a French aerodrome equipped with British landing aids controlled by a Dutchman, without encountering any more difficulty than if he were landing at one of his own ports.

At least two procedures in the R.C.A.F., namely meteorological procedures and the method of filing flight plans, have been changed to conform with I.C.A.O. standards. For the R.C.A.F., these internationally accepted procedures and practices are of particular benefit to aircrews of the Overseas Ferry Unit and of Air Transport and Maritime Air Commands, whose work takes them to many countries. A further benefit shared by military and civilian fliers alike are the I.C.A.O.-sponsored ocean-station vessels and radio facilities, particularly those in the North Atlantic region.

* * *

There are times when changes introduced by I.C.A.O. (or by any other agency, for that matter) are not too well received by some of those engaged in commercial or military aviation. A fairly recent and well known example is the I.C.A.O. phonetic alphabet, wherein the traditional *Able, Baker,* etc., was replaced with such unlikely words as *Alfa, Bravo.* This immediately met with a wall of opposition from various people who expressed the opinion that once again the non-productive segment of the aviation industry was deliberately attempting to hamper flying personnel!

In point of fact, the new alphabet was introduced because non-English-speaking aircrew, particularly those who spoke Spanish, found difficulty in pronouncing the old. Since it would be impractical to have more than one alphabet, I.C.A.O. realized that it was necessary to devise a new alphabet which could be used satisfactorily by persons of all nationalities. Contrary to uninformed opinion, the new words were not picked out of a hat. Many thousands of tests were carried out, both in the air and on the ground, and with people from more than thirty countries, in order to ascertain the errors that are likely to arise in the use of various alphabets under the conditions of noise and disturbance which often attend actual radio-telephone reception. These investigations definitely established the fact that the new alphabet was better than the old, no matter what the nationality of the speaker or listener. It was adopted by the R.C.A.F. and by N.A.T.O., Canadian, British, and American military and civilian agencies early this year.

* * *

To make the work of I.C.A.O. bet-

The Council of I.C.A.O.

ter known and understood, specialists from the organization occasionally deliver lectures to R.C.A.F. units throughout the country, and I.C.A.O. extends a standing invitation to any member of the R.C.A.F. who would like to visit its headquarters in Montreal. When the opportunity presents itself, representatives of I.CA.O. assist certain of the R.C.A.F.'s training programmes (notably that for flying control operators) by providing both lecturers and movies.

R.C.A.F. personnel are at all times included in the Canadian delegations to I.C.A.O. meetings, divisional meetings, regional air navigation meetings, and conferences. I.C.A.O. meetings are, at the present time, the only gatherings at which R.C.A.F. officers can confer with their Russian counterparts.

Some of the beneficial results of these meetings are evidenced by the numerous publications produced by I.C.A.O. upon every phase of civil air operations. In this important work Air Force representatives have played their part by giving their expert opinions on such widely diversified subjects as standards of vision for aircrew, pressure-pattern flying in the North Atlantic, helicopter marshalling-signals, G.C.A. procedures, and search and rescue operations. A search and rescue manual, written by and for the R.C.A.F., came to the attention of the Brazilian delegate to I.C.A.O. at the time when Brazil was reorganizing its own search and rescue facilities. The Brazilians were so impressed by the R.C.A.F. manual that it patterned its S.A.R. programme on the Canadian system.

Group Capt. C. G. W. Chapman, D.S.O., C.O. of Station Greenwood, receives pennant from Major Borges, Brazilian delegate to I.C.A.O., in token of Brazil's appreciation of the R.C.A.F.'s work in search and rescue.

Since that time R.C.A.F. officers have assisted in producing a search and rescue manual for the use of all I.C.A.O. member nations.

The R.C.A.F.'s relationship with I.C.A.O. is essentially a reciprocal affair. Air Force personnel receive valuable experience and a broadened outlook from their collaboration with civil aviation experts from around the world; I.C.A.O., on the other hand, benefits from the R.C.A.F.'s accumulated knowledge in various important fields of aviation.

* * *

Several ex-Air Force officers hold positions at I.C.A.O. One of the top posts in the organization, that of Assistant Secretary General and Director, Air Nagivation Bureau, is at present occupied by Air Vice-Marshal A. Ferrier, C.B., M.C.

In 1947, Group Captain H. M. Kennedy, A.F.C., was appointed Liaison Officer at I.C.A.O. Headquarters to attend all technical and Council sessions and to keep the R.C.A.F. advised of any subjects of discussion which may concern the Service. He was succeeded by Wing Cdr. W. P. Pleasance, D.F.C., who in turn was replaced by Wing Cdr. J. Woolfenden. In 1953, when the Air Force was at the height of its rapid expansion and all available senior officers were needed elsewhere, Air Force interests at I.C.A.O. became the responsibility of the Director of Air Staff Services, who appointed several officers to travel back and forth between A.F.H.Q. and I.C.A.O. on liaison visits. In December 1955, when it was once more possible, for a time at least, to spare a senior officer on a permanent basis, Group Captain Kennedy (now retired) returned to the position he had pioneered.

THE NEW PHONETIC ALPHABET

Alfa	November
Bravo	Oscar
Charlie	Papa
Delta	Quebec
Echo	Romeo
Foxtrot	Sierra
Golf	Tango
Hotel	Uniform
India	Victor
Juliett	Whiskey
Kilo	X-Ray
Lima	Yankee
Mike	Zulu

Views expressed in "The Roundel" upon controversial subjects are the views of the writers expressing them. They do not necessarily reflect the official opinions of the Royal Canadian Air Force.

Victor Charlie 10,000

IF AN aircraft is entitled to a measure of fame because of celebrated people it has carried, the number of countries it has visited, or the distances it has travelled, then No. 412 squadron's C-5 is well established as a famous aeroplane.

Since this aircraft was assigned the task of transporting V.I.P.s, its passenger list reads like an international "Who's Who". Its stewards have served meals and made up bunks for more eminent people than a waiter or chambermaid in Ottawa's Chateau Laurier or New York's Waldorf Astoria. Through the years, prime ministers and presidents, parliamentarians and princesses, have travelled on it, and, on four occasions, the C-5 has proudly flown the Royal Standard.

Not only is the C-5 the only one of its kind in the R.C.A.F., but it is also a unique aircraft in itself, having an enlarged DC-4 fuselage, a DC-6 undercarriage, and four Pratt & Whitney engines. This hybrid flying-machine, appreciably quieter than the time-tested *North Star* (and somewhat faster: 30 knots at 18,000 feet), came into service in July 1950 to fill the need for a pressurized V.I.P. aircraft.

Although the largest aircraft in the Service, it carries only 27 passengers in a style suitable for official guests of Canada. Meals are prepared on board to suit the wishes and tastes of distinguished passengers. To guard against the possibility of spilling soup on some august lap, the steward receives reports of impending turbulence *en route* and plans his meal-hours accordingly. Since the C-5 generally flies at approximately 18,000 feet, however, turbulence is cut to a minimum and the likelihood of such unhappy accidents is negligible.

The rear lounge.

In its five and a half years of service, the C-5 has logged some 3,000 hours of globe-trotting flight. Its three major trips have been: an extensive tour of South America with Mr. C. D. Howe in 1953, a 24,000-mile trip around the world with Mr. St. Laurent in 1954, and Mr. Pearson's three-continent, twelve-country visit in 1955. On flights within North America, the C-5 normally carries a seven-man crew, but for extended trips, where maintenance may become a problem, a crew of as many as sixteen is carried. The latter precaution has already paid off. During Mr. Pearson's trip to India, when an engine failure occurred at Kuala Lumpur in Malaya, the aircraft maintenance team on board the C-5 promptly fitted a new engine, flown from the R.C.A.F. base at Langar, England, and the C-5 was able to rejoin Mr. Pearson in India in time for his scheduled departure. Another engine failure and subsequent engine change occurred in Korea during a visit by Mr. Brooke Claxton, the then Minister of National Defence, to the Canadian troops. The C-5 has never, however, been involved in an accident.

Only the most highly qualified personnel, both aircrew and groundcrew, are selected for service on the C-5. Pilots must have spent a period of at least two years in a transport squadron, operating on trans-continental and trans-oceanic routes, and they must have logged a minimum of 3,000 hours (including 1,000 hours on four-engined aircraft) in order to become eligible for duties as First Officer on the C-5. To qualify as a V.I.P. captain, the candidate must come up to the standards set by the squadron, and receive a recommendation from the Commanding Officer. The C-5's navigators and radio officers have correspondingly high standards, which include an annual pass-mark of 85% on theoretical and practical work. No crew is selected exclusively for the C-5, all "V.I.P. personnel" being eligible; but, with such high qualifications required, the number of available crews is naturally limited, and, at the time of writing, only three captains and four first officers are permitted to fly the aircraft. Names of eligible crew members are kept on a roster and the crew is selected on a rotational basis for each flight.

The crew which flew Mr. St. Laurent on his globe-circling tour of eleven countries in 1954 totalled 25,000 hours of flying experience. At least two of the C-5's stewards, Sgt. J. O. Mignault with 2,200 hours, and Sgt. J. Roy with 3,000 hours, have more flying time than many aircrew members. Occasionally one or two of the crew belong to other Services than the R.C.A.F. A U.S.A.F. exchange pilot with No. 412 Squadron may sometimes go on a trip; and, on the journey to Moscow, a Russian navigator and radio officer joined the aircraft at Berlin to guide the aircraft through the Iron Curtain.

The crew of the C-5 strive to make each trip one of flawless performance, and a bulging file of complimentary letters from former passengers bears testimony to the success of their endeavours. None the less, there *have* been times

when this enviable record has been threatened for a few anxious moments. Such was the case during the Duke of Edinburgh's Canadian tour, when the hydraulic system failed on the approach to Vancouver airport. While the captain pressed on, the first officer and engineer took turns at madly wobbling the hand-pump to lower the undercarriage and flaps — and even after landing they continued their activities in order to keep the steerable nose-wheel operating. As the aircraft rolled to a stop they breathed a sigh of relief, confident that their royal passenger hadn't noticed anything out of the ordinary. They looked up to see the Duke smiling. "Nicely rowed, chaps!" he said. That is probably one of the most cherished compliments in the squadron's records.

The C-5 has a "ramp-time" to make at each destination, since there are often guards of honour and dignitaries on the ramp, waiting to greet the aircraft's passengers. This ramp-time is almost invariably made on schedule by the crew, with the able assistance of control-tower operators who, when they hear the call-sign "Victor Charlie 10,000" (in Canada) or "Canadian Air Force 10,000" (at foreign airports), help considerably by giving the C-5 landing priority. If the weather is "duff" and aircraft are holding, the C-5 is inserted in the stack so that it will be at the ramp on time. When the C-5 approaches a destination ahead of schedule, it circles the area, using up time until it can land exactly on E.T.A. There have been occasions, of course, when unforecast headwinds or storms have caused the C-5 to arrive late, but on the average the aircraft has a record for punctuality that would do credit to any airline.

The crews of the C-5 undergo experiences generally not encountered by other flying personnel in the R.C.A.F. Wandering as they do to far-off lands where yellow fever and malaria are prevalent, they get more than their normal share of needles. When they start off on a trip in winter, they carry both summer and winter uniforms in preparation for the warm climate of the tropics. On one trip the crew changed uniforms three times as they came down from the frozen north into more temperate zones. Special passports, good for a particular trip, are issued to them by the Department of External Affairs.

Although the C-5 has no regular commitments, each of its trips being a special case, the most frequent run is from Ottawa to London, and Ottawa to Paris, for N.A.T.O. and other conferences. In 1953, when the then foreign secretary, Sir Anthony Eden, went to Boston for an operation, he was flown by the C-5 at the request of Sir Winston Churchill. Commenting on the fact that the aircraft had been sent all the way from Canada to pick him up, Mr. St. Laurent expressed the high esteem in which the C-5 is held when he said: "Why not? There isn't another 'plane in the world like ours."

The Ballad of C.A.P. 460

BY D. F. HARRIS

(The Triumph of the Chairborne, although any but the most superficial examination of the Service structure quite fails to justify the use of the phrase, will nevertheless always be a favourite subject for poets of the picaresque school. Among the best samples of their work that has recently come our way is the following ballad. Its author, Mr. D. F. Harris, is the civilian instructor in Effective Service Writing at Pre-Flight School, Centralia. As all our R.C.A.F. readers know, C.A.P. 460 is the "Manual of Service Writing".—Editor.)

(To be sung to the tune of Gilbert and Sullivan's "Ruler of the Queen's Navee".)

When I was a lad, I wished to fly;
So I went to see the Air Force and I told them why.
I managed both the Link and decompression test —
But my grammar and my spelling were by far the best.

I parsed so well, they rewarded me
By making me a Wheel of the First Degree:
I spelled so well, they rewarded me
By making me a wheel of the First Degree.

I answered the psychiatrist with such finesse
That they sent me as a pupil out to P.F.S.
I passed in mathematics and I passed in physics too,
But my skill with semi-colons was what pulled me through.

I sprinkled semi-colons so strategic'ly
That now I am a Wheel of the First Degree:
I scattered semi-colons so strategic'ly
That now I am a Wheel of the First Degree.

I "proceeded" to a squadron (of course, I couldn't "go")
And I learned to get my "presentlys" and "prior tos" just so.
The C.Ad.O. came up to me: "A word unto the wise . . .
Young man, you don't 'inform' me, you always must 'advise'."

I followed his advice so very faithfully
That now I am a Wheel of the First Degree;
I "actioned" his suggestion so faithfully
That now I am a Wheel of the First Degree.

At writing memoranda I made such a name
That Assistant Adjutant I soon became,
And succeeded, by the phrasing of my D.R.O.s,
In organizing chaos, as the saying goes.

I built upon that chaos so carefully
That now I am a Wheel of the First Degree;
I fostered that confusion so carefully
That now I am a Wheel of the First Degree.

As Station Adjutant I did so well
That a highly polished desk to my lot soon fell;
I worded my directives in a most impressive way,
And no one ever spotted I had nothing much to say.

I paragraphed and minuted so skilfully
That now I am a Wheel of the First Degree;
I minuted and referenced so skilfully
That now I am a Wheel of the First Degree.

When even Command had had about enough
They promoted be to Ottawa to do my stuff.
I came through ev'ry tempest on the parliament'ry seas
By "expediting" memos "for your action, please."

I weathered ev'ry storm so triumphantly
That now I am a Wheel of the First Degree;
I sailed around the storms so triumphantly
That now I am a Wheel of the First Degree.

Now, Flight Cadets all with stars in your eyes,
To the top of the tree if you want to rise,
Remember, when you're contemplating supersonic flight,
That promotion can be surer if you merely sit and write.

Stick close to the *MANUAL,* as closely as can be,
And you all may finish up by being Wheels like me;
Stick close to the *BOOK,* as closely as can be,
And you all may finish up by being Wheels like me.

PADRE AT GOOSE

R.C.A.F. Station Goose Bay, officially classified as an isolated base and regarded as a northern outpost by those who serve there, is, according to one of its recent inhabitants, a southern community.

Flt. Lt. J. C. Philippe, O.M.I., the former Roman Catholic padre at Goose, had, except for one brief period, never lived so far south in Canada. That one exception occurred when, after spending 18 years as a missionary in the arctic, he joined the R.C.A.F. and was sent to Officers' School at London.

Born in France, and educated there and in Indo-China, Father Philippe came to Canada in 1935 as a missionary to the Eskimos. He learned to speak English and various Eskimo languages, as well as how to survive in the bleak and barren North. At first with an Eskimo guide, then later on his own, Father Philippe set out by canoe in summer and by dog team in winter to cover his 40,000-square-mile parish. A visit to four or five families in his widespread congregation would often entail a trip of at least two months' duration.

Learning the Eskimo way of life was a slow and uncomfortable process, and, on occasion, a precarious one. More than once Father Philippe crashed through the ice while crossing frozen lakes, ran out of food while waiting for blizzards to abate, and capsized his canoe in turbulent northern rivers. He hunted seal and caribou with the Eskimo, made and repaired fish nets, and learnt how to navigate over the trackless wastes where landmarks were almost non-existent. Gradually however, this priest from a well-to-do family in France adjusted himself to primitive life in the Canadian arctic.

Flt. Lt. J. C. Philippe.

In the spring of 1953, after consultations in which Church and Air Force officials took part, Father Philippe became an Air Force Padre and was posted to Goose Bay. There, in addition to the normal duties of a padre he acted as interpretor when Eskimos were in the station hospital or at the Air Movements Unit on their way to or from the north.

He believes that R.C.A.F. personnel are fortunate to be posted to such an interesting part of the country, and he listens with amusement when people speak of the "isolation" of a station such as Goose. For his own part, he would have liked to remain there indefinitely, but after 21 years of northern life, the Air Force has now transferred him to the truly Deep South — Station North Bay.

. . . and friend.

MAXIMS FOR STATESMEN

In these unsettled times the behaviour of all those in positions of authority might well be based on the axioms pronounced by Abraham Lincoln nearly 100 years ago:

- You cannot bring about prosperity by discouraging thrift.
- You cannot strengthen the weak by weakening the strong.
- You cannot help the poor by destroying the rich.
- You cannot establish sound security on borrowed money.
- You cannot keep out of trouble by spending more than you earn.
- You cannot build character and courage by taking away man's initiative and independence.
- You cannot help men permanently by doing for them what they could do for themselves.

(From a letter to "The Times Weekly Review": U.K.)

THE R.C.A.F. BENEVOLENT FUND

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

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

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

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