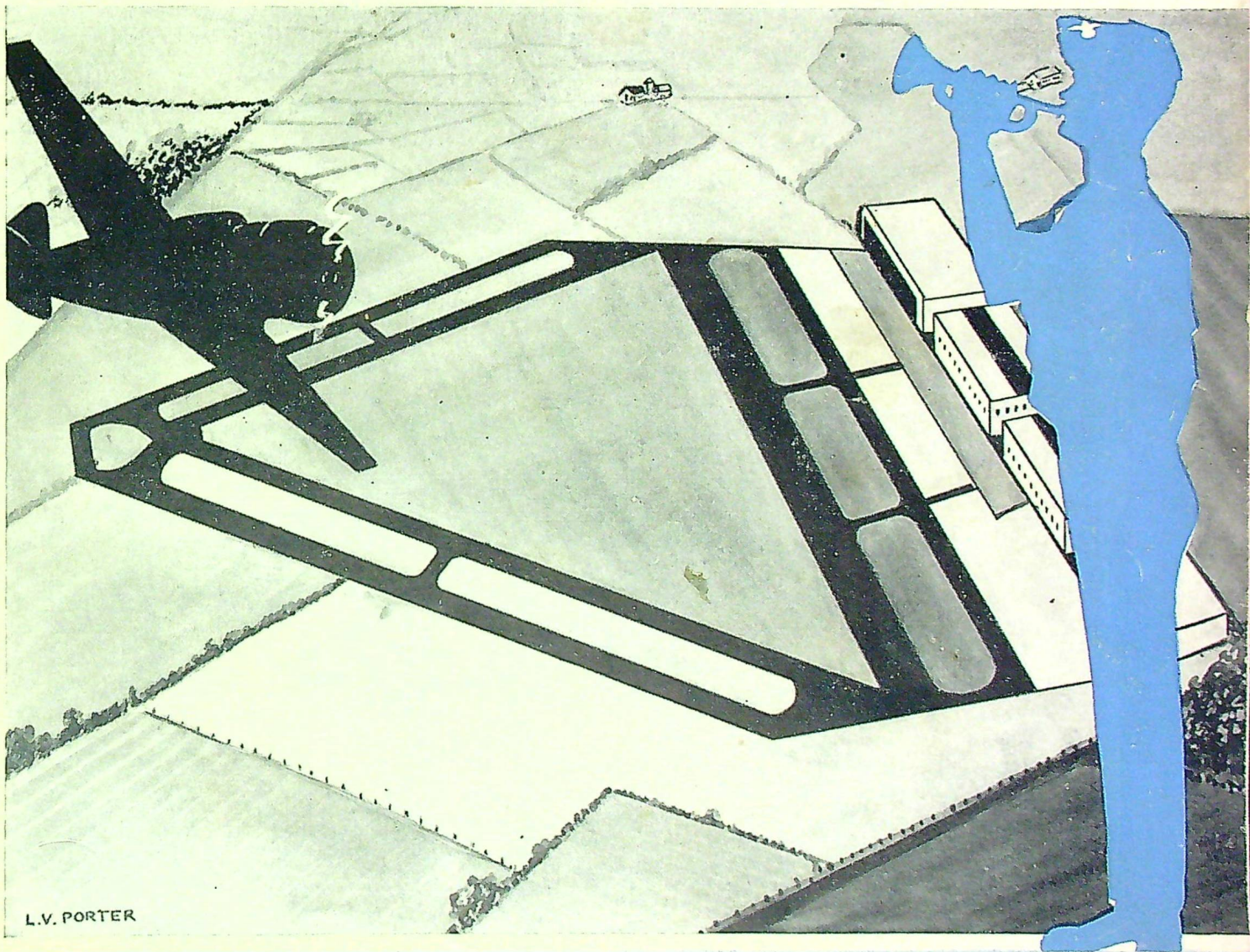


The **CROWNDDEL**

VOL. I, No. 10
AUGUST 1949



L.V. PORTER

ROYAL CANADIAN AIR FORCE



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

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SHATTERPROOF—on Leave

Sir:

I am alone on an island, roughing it.

Like Robinson Caruso, I am monarch of all I survey. There are, however, two minor differences between Caruso's and my respective situations:

- (a) my disciplined approach to the whole thing, and
- (b) the proximity of a small licensed hotel on the mainland.

You need therefore have no fears that Shatterproof will end by barricading himself in and shooting it out with the Mounted Police.

The island belongs to Sgt. Highball, of the Officers' Mess. He approached me a while back and asked me if I liked living in the woods. His question surprised me—firstly, because Sgt. Highball is a rather fierce sort of man and in no sense one of my closer friends, and secondly, because I thought that everyone knew me to be descended from a long line of outdoor men.

I reminded Sgt. Highball of my distinguished ancestor, Bearpaw Shatterproof (known to the Indians as 'Sitting Duck'), who is reputed to have whistled 'God Save the King' quite unconcernedly while the Iroquois removed his skin with sharpened clam shells. Since he had been deprived of his tongue earlier in the proceedings, he was forced to whistle on one note only—a matter which did not unduly disturb his artistic conscience, as the Iroquois were essentially an unmusical people. My ancestor's skin was subsequently much prized by tom-tom players, not merely for its resonant tone, but also for the oriental dancing girls with which it was lavishly tattooed.

All this I related to Sgt. Highball. He listened with interest.

"Splendid!" he exclaimed when I'd finished. "Shatterproof, you're just the man!"

He then went on to explain that Mrs. Highball, who was summering with the two little Highballs in their cottage on a lake about fifty miles from the Station, had received an urgent call to visit her sick mother. Unfortunately, they had taken the cat and her four kittens up to the cottage, as well as a bull terrier puppy, a canary, and young Butcher Highball's two pet rats. The problem had now arisen as to who was going to feed this

menagerie during the family's absence. The lake was situated in very wild country, and the only other habitation was a small hotel—or rather, a fishing-camp—not quite a mile from the island on which the cottage stood. Would I consider taking a week's leave and keeping an eye on the animals while Mrs. Highball was away? The lake, Sgt. Highball added, was teeming with fish, there was a row-boat for my use, the pantry was well stocked, and I could always drop over to the hotel when I wanted a quiet pint or a little human companionship.

Needless to say, his last words set the pioneer blood pounding in my veins. I seemed to hear Bearpaw Shatterproof whistling to me encouragingly out of the past. I gave Sgt. Highball my hand.

"Highball," I said, "I'll do it!"

* * *

As I have already written, I am monarch of all I survey. But there is truth in the old saying, "uneasy lies the head that wears a crown" . . .

It is now 2015 hours on my sixth day here, and I am exhausted. I await only the coming of darkness. Then I shall get into the boat and row as fast as I can to the hotel, where I have been sleeping since my first night on the island. It was, I felt, the safest course. We Shatterproofs have never shrunk from danger, but it is our discretion that has kept us alive and in the forefront of public life.

As you have no doubt gathered by this time, my vacation has not been an unqualified success. There have, indeed, been occasions upon which Bearpaw Shatterproof's session with the Blackfeet (when they dispossessed him of his knee-caps with a red-hot tomahawk) struck me as a fairly restful way of putting in an afternoon . . . But I will not dwell on such thoughts. My ordeal is nearly over. Tomorrow night I shall be back among my friends on the Station. So low has my morale sunk, however, that I am almost afraid I may even enjoy seeing WO1 Gallstone.

That, I know, is a strong statement, and it may be that you have begun to shake your head



dubiously. "Shatterproof," perhaps you are saying to yourself, "is bushed without knowing it. The old pioneer has been in too long." Lest you entertain any such false ideas, let me tell you something of my recent experiences.

Mrs. Highball and the two children met me at the hotel on my arrival. Mrs. Highball is a large lady who shares her husband's somewhat fierce exterior. The bus was waiting to take them away, so our conversation was brief and dealt exclusively with the care and maintenance of the animals.

The bull terrier puppy, it appeared, was not really a puppy any longer, though they still referred to it as such. It was named Giles, because its habits closely resembled those of a fifteenth century nobleman of the same name whose conception of gracious living prompted him to open people up with a two-handed sword and sit ruminating among their entrails. Giles was to be fed one pound of raw meat (obtainable from the hotel) every evening at exactly 1800 hours. This diet, Mrs. Highball assured me, kept his spirits up. Giles must also be kept away from the kittens. She herself had found that a hearty kick in the ribs was the best means of accomplishing this end.

Fury, the cat, was part Persian. She required two meals daily—the first at 0700 hours sharp. Her fur must be carefully combed at least twice

a day, and all burrs removed. Fury must not be allowed near the rats or the canary.

The canary's cage had to be scoured every morning with soap and water, then rinsed with disinfectant. In addition, it was essential that the bird itself (whose name was Gravy, because it had been silent as the grave ever since they'd had it) be watched for lice.

The rats' cage required the same care—"only be careful of bites—they're apt to be poisonous." Their names, though original, did not endear them to me. Young Butcher had read somewhere that rats carried the plague, so he had christened his pets Bub (short for 'bubonic') and Blacky (for 'Black Death').

Having thus outlined my duties, Mrs. Highball and her children climbed into the bus and were borne from sight—but not before young Butcher, fighting a rearguard action with his sling shot through one of the windows, had directed a well-aimed pellet at the seat of my trousers.

I rowed over to the island.

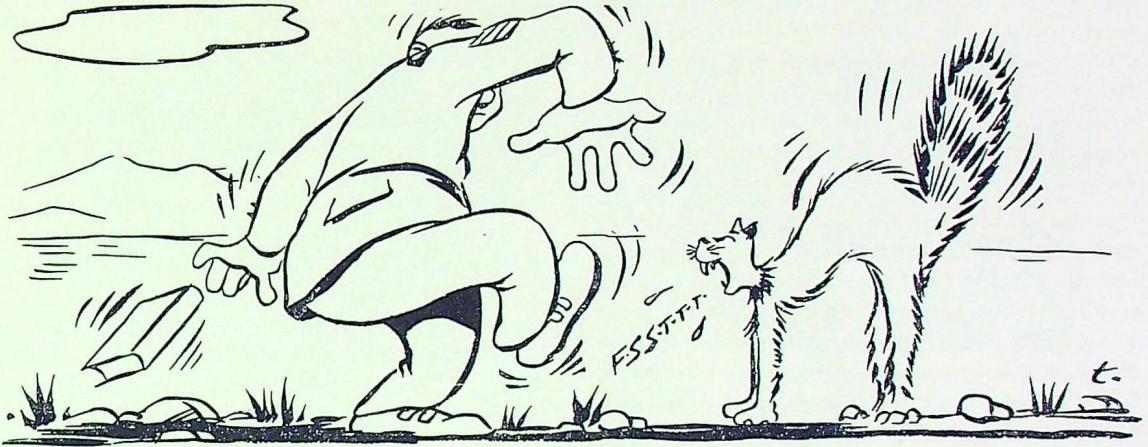
I had scarcely set foot on the dock when something leaped from the bushes and knocked me into the water. It was Giles. In a single gulp he devoured the pound of raw meat, brown paper and all, which I had dropped, and rushed off into the woods. The whole attack was carried out in a horrible silence. I slopped on up to the cottage.



The Roundel

There Fury awaited me, surrounded by her brood and hissing like a cobra. She looked, I thought, rather more like a lynx than a Persian cat, and the prospect of combing her fur entirely failed to fascinate me. She replied to my "Nice pussy!" by flashing past me and out through the door, raking the skin from the back of my hand as she went. Bub and Blacky, whom I presently located by the

death battles with Giles while conscientiously attempting to defend the kittens—of whom he has has, none the less, disembowelled three. My single attempt to de-burr Fury is something I prefer to forget. Bub escaped while I was disinfecting the cage on my second day here, thus making it necessary for me to sleep at the hotel. As for Gravy, though he is not actively hostile, he is



wicked gleam of red eyes from a dark corner, bared their teeth when they saw me and started gnawing at the heavy wire of their cage in an endeavour to get at my throat. Even Gravy, huddled up silently on his perch, somehow gave me the impression of a vulture waiting for a desert traveller to die . . .

Since then, Sir, I have worked for more than twelve hours a day, feeding, scouring, and fighting. I have used up three bottles of iodine (of which I discovered a suspiciously large supply) and all the available bandage. I have had several life and

drooping more than ever. This I attribute not only to the weight of his lice (which multiply much more rapidly than I can remove them) but also to his disappointment that I have lasted so long. I—

Excuse me a moment. I hear a noise outside . . .

I was too late. It was Giles—and the last of the kittens. Worse still, as I came away I saw Fury carrying Bub off in the direction of the woodshed.

Though it is not yet dark, I am off to the mainland.



NORTHERN SKYTRAILS

PART X

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

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

WORLD WAR II

The North-West Staging Route

IN AUGUST 1940 a permanent Joint Board of Defence was formed by Ottawa and Washington to co-ordinate the plans of the United States and Canada. One of the first tasks with which the Joint Board was charged was the investigation of the situation concerning transport and communications across Canada's north-west from the United States.

Apart from a Canadian civilian company's rather small-scale operations between Edmonton and Whitehorse, and the equally small American service between Juneau and Fairbanks, transport was at that time possible only by two methods. The first was by steamship from the west coast of Canada and the United States direct to the ports on the Alaskan mainland; and the second was by steamship up the so-called inner passage from Vancouver to Skagway, thence by narrow gauge railway to Whitehorse, and from there by river-steamer down the Lewes and the Yukon Rivers, through Dawson City to Alaska. Both these routes were susceptible of possible attack by submarine, and furthermore, the Whitehorse-Dawson route was not open except during the five summer months.

The Joint Board therefore recommended that the Department of Transport's plans for building an airway between Edmonton and Whitehorse be carried out forthwith. The Canadian government decided that construction of the airway should be part of its contribution to the defence of the western hemisphere, and announced that it would undertake the whole expense of the project.

On February 3, 1941, contractors were given orders to begin construction of airfields at Fort Nelson and Watson Lake, the only two sites on the projected route where there were no airfields of any kind. At Grande Prairie, Fort St. John, and Whitehorse there were already usable airfields in

operation which needed only to be extended and improved—a task that presented no great difficulties, since all three places were served either by road or railway. At Watson Lake and Fort Nelson the picture was very different. Fort Nelson lies 180 airmiles north-north-west of Fort St. John, across some of the most rugged country in the Canadian north-west. Northwards from Fort St. John there existed about 60 miles of road, passable in winter or dry weather, and a further twenty miles of tractor trail; but beyond that the only means of transport was by dog team along the surfaces of frozen rivers. The alternative was to send supplies by an extremely circuitous route, in which everything would have to be carried by rail to Waterways, and thence by steamship down the Athabasca, Slave and McKenzie Rivers to Fort Simpson. Transhipped into barges at Fort Simpson, the material could be floated up the Liard and Ft. Nelson Rivers to Ft. Nelson itself. The late departure of ice on Great Slave Lake meant that this latter route would not be usable until July, and it was unlikely that more than two trips could be made in any one year. However, the urgency of the situation convinced the engineers they must use both routes.

On February 9, 1941, a trail-breaker and tractor train left the end of steel on the western section of the North Alberta Railroad at Dawson Creek and struck north to battle its way to Fort Nelson. Expert trail-blazers rode ahead, first on horses and later with dog team and sled, to mark the trail for the heavy bulldozers which followed. They picked a route which has now become part of the Alaska Highway. Behind this huge train travelled another train of sleighs and trucks carrying about 600 tons of freight and supplies. This material was taken as far as the Sikanni River crossing, and cached there to be taken on to Nelson later. Everything proceeded smoothly until the engineers ran into the earliest break-up on record in that region.

This caught everyone off guard. There were about



Control tower, Fort Nelson

400 tons of freight sitting at the Sikanni River, which could not now be moved over the muskeg. But the problem was surmounted. Seaplanes, landing on the Sikanni, picked up the more urgently needed of the light freight and flew it to Fort Nelson. Other items, which were bulkier but equally urgent, were floated down the Sikanni to the Fort Nelson River and so to the airport site. The rest of the supplies were left at the river crossing to be picked up after the freeze-up.

In the meantime preliminary work on the airport site was pushed ahead and the runways were being laid out. A complete saw-mill was flown in and put into operation. Asphalt was freighted in along the water route via Waterways and Fort Simpson, and, in short, despite all difficulties, a usable runway was put in commission on September 1st, 1941, when it was promptly taken advantage of not only by Canadian aircraft but also by American military machines on their way to Alaska.

The difficulties in the construction of a base at Watson Lake were equally severe, but nevertheless

an adequate runway was ready for use on September 2, 1941.

In the meantime, the work of extension and improvement on the fields at Grande Paririe, Fort St. John, and Whitehorse had been proceeding without particular incident; and the result of these combined efforts was that by the beginning of September a complete airway, adequate for use in favourable weather, had been completed and was actually in operation.

The whole picture changed completely one Sunday morning in December 1941. The attack on Pearl Harbour, and the swiftness with which the Japanese endeavoured to take advantage of the surprise they had achieved, brought a desperate threat to the security of the western coast of this entire hemisphere. It was now that the wisdom and foresight of the men who had been responsible for pushing ahead with the North-West Staging Route became apparent. On December 9, 1941, the Department of Transport was able to announce that radio range facilities on the North-West Staging Route were now completed. This meant

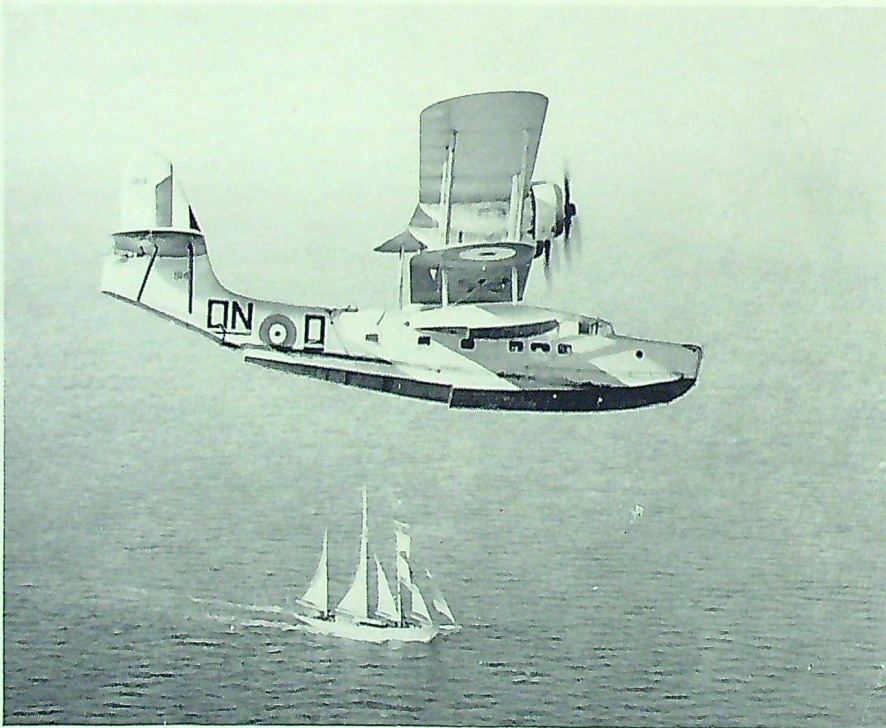
The Roundel

that weather would have little effect on the flow of traffic to and from Alaska. In the critical months of 1942, when the Japanese were threatening to extend their control to include the entire Aleutian chain and even the inner passage between Vancouver and the Alaskan panhandle, the North-West Staging Route remained as a virtually unassailable artery, sheltered behind the tremendous barrier of the mountains, and removed from attacks even by long-range aircraft.

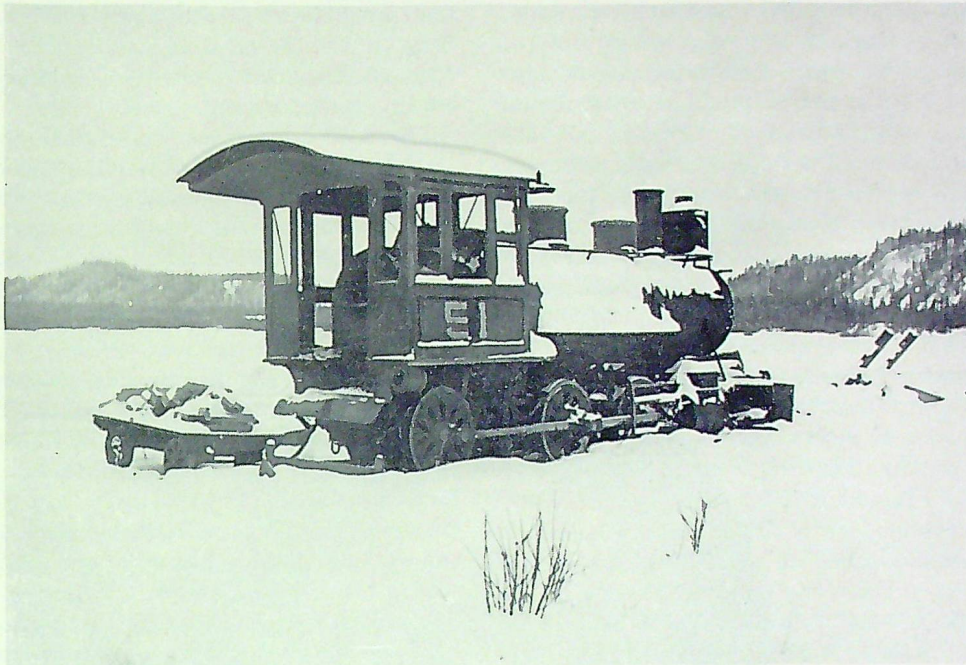
It had, however, been originally designed for moderate-sized civilian operation, and not for the tremendous flow of military air traffic (ranging from the smallest single-engine fighters to the biggest bombers and transports ever built) which had to be taken over it from the beginning of 1942 onwards. In view of this fact, the United States government was anxious to make considerable extensions to existing facilities at each of the fields. Canada, who had already been participating in a

war for more than two years and operating the largest aircrew training scheme in history, was not able to provide the manpower required for the job. The United States therefore freely undertook to do all the construction work required. Work went ahead on that basis, but with the important proviso that all *permanent* work carried out on the airfields should be regarded as an expense for which Canada would assume full responsibility. At the same time as it was extending the facilities along the North-West Staging Route, the United States government built the Alaska Highway and embarked upon construction of the famous Canol pipeline.

The immense programme undertaken by the United States on the three major north-west defence projects was pushed ahead with fantastic speed during 1942. The Alaska Highway, or rather the pioneer road on which the present Highway is based, was built in 7 months during



Coastal Reconnaissance Stranraer



Locomotive used in 1898, Whitehorse

the summer of that year. The runways at the main air bases of Grande Prairie, Fort St. John, Fort Nelson, Watson Lake, and Whitehorse were extended and paved with concrete. The intermediate fields at lonely spots like Smith River, Aishihik, and Snag, were constructed in between the main bases to provide a maximum safety of operations. The back of all this construction work was broken by the end of 1943. Meanwhile, the smashing defeat of the Japanese navy in the Battle of Midway and the eventual expulsion of Japanese troops from the Aleutian chain largely removed the dangers against which the north-west defence projects had been designed to insure.

In September 1942 the RCAF took over operation of the Staging Route. Previously, traffic control had been exercised by the Department of Transport, and the change to RCAF control was undertaken because the Route had become predominantly a military affair. At the end of 1943, the RCAF organized an airways traffic control centre in Edmonton, where a duty controller was

established to maintain a complete check on the movements of all aircraft over more than 1,500 miles of the airway from the 49th parallel to the Alaskan boundary.

In June 1944, the RCAF's North-West Air Command was formed to take over complete operation of the Route. Many of its senior officers were men with long experience in northern flying. The Air Officer Commanding, Air Vice-Marshal T. A. Lawrence, C.B., had carried out surveys for the RCAF in the Eastern Arctic in 1927-28, and both the Chief Staff Officer and the Senior Air Staff Officer were veteran bush pilots. In addition, many of the pilots engaged in flying RCAF aircraft over the route had long civilian experience in bush flying.

North-West Air Command also operated a Communications Flight, equipped with smaller aircraft, whose duties included flying freight and passengers to any point in the north-west between the 49th parallel and the Arctic Ocean. Their activities were by no means confined exclusively

to RCAF operations. On innumerable occasions they assisted various other departments of the Canadian government in conducting urgent business throughout northern Alberta, northern British Columbia, the Yukon Territories, and the Mackenzie valley. The Flight normally flew more than 100,000 miles a month over many thousands of square miles of territory. During 1944, it flew roughly 1,000,000 miles over the north-west.

In order to maintain the Air Force bases in the north, it was necessary to establish a large-scale trucking operation over the Alaska Highway between Dawson Creek and Snag. This freight trucking unit carried between 300 and 400 tons of food a month, as well as other supplies, to stations along the route. The freight carried during 1944 totalled to $5\frac{1}{4}$ million lbs.

The development of the Staging Route by joint Canadian-American effort is an achievement worthy of pride. It accomplished three great objectives. It made possible the safe delivery of aircraft to Russia; it served as a springboard for the final offensive against Japan; and it provided a vital link in trans-polar air routes. This last feature has great significance for the future.

North Atlantic Ferry Routes

After the passage of the Lend Lease Act in March 1941, the Americans began to deliver aircraft to Dorval airport for ferrying to Britain. This operation was carried out by the RAF Ferry Command, supplemented by RCAF personnel and civilian pilots. The route was from Dorval to Gander in Newfoundland, thence to Prestwick in Scotland.

The 2,100 mile non-stop route from Gander directly across the Atlantic to Prestwick was considered by the Americans to have serious shortcomings. It was thought that a great circle route farther to the north, via Labrador, Greenland, and Iceland, would afford better weather and make possible the ferrying of fighter type aircraft.

The advantages of being able to ferry short-range planes to England were manifest. Pressure on shipping would be relieved. The planes would no longer be liable to loss by submarine action, and

there would be no need to disassemble and crate them at the factories and reassemble them in England. They could be delivered and be in combat in a matter of days.

The RAF already controlled the airfields in Iceland. There were good terminal facilities at Prestwick and, as an alternate to Prestwick, Stornoway in the Hebrides. Canada was planning for a base in Labrador. The great problem was Greenland.

The Danish-American Agreement of April 1941 for the common defence of Greenland and the North American continent made it possible for the United States to begin to build air bases in Greenland. Surveys of the Greenland area were ordered at once by the Army Air Forces. No site for an airfield could be found on the east coast, but the survey parties found two good sites elsewhere on the island. The first was at Narsarsuak, near the southern tip of the island, the second was at Sondrestromfjord on the north-west coast.

In July the United States sent its first troops to Greenland and Iceland, and the Canadians discovered an excellent site for an airfield in Labrador at Goose Bay. With appropriate fields in north-eastern United States, the elements of the route were in hand.

Work on a landing field at Narsarsuak was begun in early July. In September, the Greenland and Iceland base commands were established. Construction began at Sondrestromfjord; the Canadians started work at Goose Bay; and the U.S. Army Air Forces ordered weather and communication detachments to points in Labrador, Baffin Island, and Greenland. The stations in Labrador and Baffin Island, three in number and known as the 'Crystal Stations', were admirably situated for the observation of arctic weather movements that swept over the route. Crystal I was at Fort Chimo, Crystal II was at the upper end of Frobisher Bay, and Crystal III was just off the north-east coast of Baffin Island. The other Air Force detachments were sent to Narsarsuak, Sondrestromfjord, and another base near Angmagssalik in north-eastern Greenland.

The route was known as the 'Bolero Ferry Route', and the first Bolero flight, consisting of

eighteen B-17's, took off from Presque Isle for Goose Bay on June 23, 1942, and all arrived safely. They left Goose Bay for Narsarsuak three days later, but this time only half arrived at the destination. Of the remaining nine, six returned to Goose Bay and three made forced landings at various points on the Greenland coast. No one was injured and the crews were soon rescued. This mishap, which was attributed to the inexperience of the crews, poor forecasting, and inadequate communications, underlined the fact that the route was not yet ready for use.

These difficulties were not easily overcome. In mid-July, six P-38's and two B-17's were forced down on the Greenland ice-cap after losing their bearings during a flight from Sondrestromfjord to Reykjavik. No blame could be attached to route operations in the matter and, as in the earlier crashes, there was neither loss of life nor serious injury.

Notwithstanding the misfortunes which befell the first movement, the route soon settled down to efficient operation. With experience and additional equipment, the weather and communications services improved markedly; adequate base facilities became the rule; and the tactical crews, with a longer period of training, began to give a better account of themselves. The old confusion was gone. Experienced Command control officers briefed and dispatched the Bolero planes; Command pilots, navigators and radio operators flew in the lead bombers; and safe delivery over the route of Eighth Air Force planes became a routine matter.

The Aleutian Campaign

In June 1942, a Japanese Task Force came into the Aleutian area and operated north and south of the Aleutian chain, almost as far in as the mainland. They eventually struck at Dutch Harbour with carrier aircraft and did a great deal of damage. They were counter-attacked by American fighters and B-26's from Umnak Island, which lies about 75 miles west of Dutch Harbour. The total operation lasted three days, at the end of which time the Japanese Task Force withdrew and established permanent bases on Kiska and Attu. Kiska became

their main operational base, while Attu was used more as a reinforcement and staging point for ships from the main Japanese Islands. The Japanese endeavoured to build landing strips on both of their islands. Neither of them, however, was completed at the time they were taken over by the American Forces. Float fighters, which were evidently brought by ship to Attu, were assembled there and flown to Kiska. Very few of them actually got to Kiska, as P-38's on strafing runs from Amchitka and Adak finished most of them off as soon as they were assembled. One force of about 20 Mitsubitsi bombers came over Attu from Paramushiro. They were intercepted by P-38's and only about 4 got back.

In June 1942 the Commanding General, U.S. Pacific Coast, asked Western Air Command for aerial support. A wing was formed and dispatched immediately under the command of Wing Commander Gordon McGregor. It included one Bolingbroke Squadron under Sq. Ldr. C. A. Willis and one P-40 Squadron under Squadron Leader A. D. Nesbitt, D.F.C. They were dispatched to Yakutat; but by the time they got there it was evident that there would be no action in that area for a long time. They were therefore sent on to Anchorage, only to find that the whole situation was stabilized. Thus, there was no combat activity for many months, until the Americans had completed a line of bases running right on down the islands to Kiska.

There was one incident in 1942 that is perhaps worthy of note. A flight of P-40's was based for a few months on Umnak Island, whence it proceeded to Adak, which was at that time the last jumping-off point for Kiska. They made one strike at Kiska, during which Flight Lieutenant K. A. Boomer shot down a Japanese Zero. It was during the movement of the flight from Anchorage to Umnak that a group of seven aircraft, led by Wing Cdr. McGregor, was caught in bad weather and sea fog near Unimak Island. Five of the seven crashed into the shore mountains.

In January 1943, Wing Cdr. R. E. Morrow, D.F.C., recently returned from England, relieved Wing Cdr. McGregor.

About that time it was decided to withdraw the

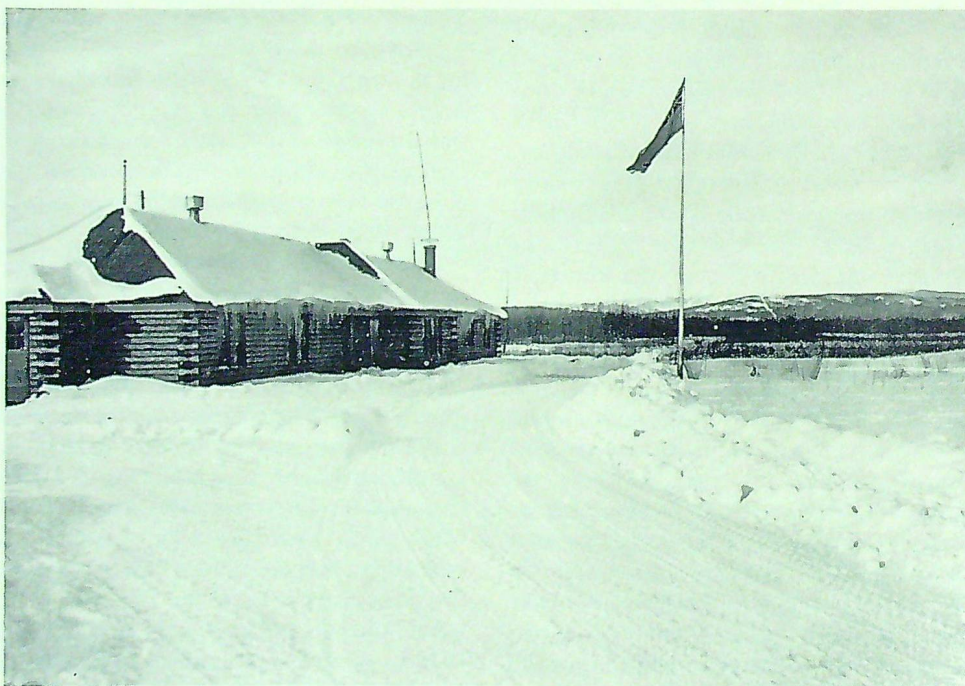
Bolinbroke, as it was absolutely impossible to try to operate British aircraft so far away from Canadian or British supply sources. Finally, another P-40 squadron was brought up to replace them, and the two squadrons were enlarged to the point where it was possible to establish an additional flight. One squadron was based on Kodiak Island, one on Umnak Island, and the extra flight at Amchitka. The main headquarters were retained at Anchorage.

After the attacks on Dutch Harbour, the Americans began to push westward from Umnak, and construction troops moved into island after island, building air strips. The RCAF was right on their heels, and usually the aircraft followed within 48 hours after the first troops went in. The pattern of operations were armed reconnaissance of the islands, airstrip construction, then full occupation.

Wing Cdr. Morrow has written an account of his experiences during the Aleutian campaign, a few extracts from which are given below.

“The Aleutian islands are all of volcanic origin, and about four of them are active volcanoes. Some of the smaller islands are just barren peaks sticking out of the sea, while others have sloping shelves at sea level varying in size up to that at Umnak, where there is a shelf about 30 miles long by 10 miles wide. An important feature of this island is that it is composed wholly of volcanic ash, which is excellent for construction purposes. To make roads or runways, the ash is just dumped down and rolled flat, when it presents a dry finished surface closely resembling asphalt. The ash can be found anywhere. It is necessary only to cut off about 6 inches of topsoil with bulldozers and there it is, many feet deep and absolutely unadulterated.

“A good point about Umnak is that when either the Pacific or the Bering Sea side is closed in, the other is open. With fields on both sides, you can nearly always get in somewhere. There is plenty of game on the island. Caribou, fox, and rabbit abound. The fishing is good, too. The natives live on it pretty well, and every year there is a very



RCAF Detachment, Snag

heavy salmon run up the streams. Seal are plentiful, and the Pribilof Islands (about 100 miles north of the chain) are said to be the world's greatest sealing grounds. The rare sea otter is also found here, though in smaller numbers than at Amchitka, where I could almost have walked ashore on their heads from a dinghy. Incidentally, the U.S. were really tough about hunting, which was probably a GOOD THING. The troops tried very hard to get hunting privileges, but the answer was a flat 'NO'—unless they complied with peace-time rules which required \$100 for a license and a guide at \$25 a day. There wasn't much *official* hunting!

"Fierce little storms prevail along the length of the islands. The worst locality for them is Adak. Sometimes three or four times a day, small, fast-moving fronts come across. They appear to move from west to east, skirting the north of the Pacific 'high' that lies off Southern Alaska most of the year.

"Amchitka Island is about 20 miles long and 1 mile wide. The Japs used float Zeros to strafe and bomb when we moved in, but nothing very serious happened. We operated from a 2,000 ft. strip that backed on a hill. The runway was formed by damming off a sea bay with a dike and dumping a strip of gravel in where the bay had been. On higher ground a bigger field was built of metal for B-25's, etc. It wasn't in use long before the Japs packed up. We lived here in rude huts, on 'C' rations, and we were generally pretty miserable. It was cold, rainy and windy all year round.

"We did dive bombing and strafing runs from here to Kiska, and the 38's went to Attu. There really was quite a lot of flak, since the area to be covered was so small. The Japs claimed a lot of kills in their reports, but there weren't many aeroplanes lost. Some days there would be perhaps 200 sorties made, yet the losses averaged only about one aeroplane in a week or ten days.

"It was off Amchitka, in May, that I made my historic leap and swim home, so I can tell you all about the water there. It's COLD! I lasted 45 minutes in a dinghy, but I was practically unconscious when the Yanks picked me out of the surf. A B-25 crew were dead in an hour a week before that after ditching. I don't think that at

any time of the year a man would last in the Bering more than 1½ hours without an exposure suit of some kind. The temperature of my impromptu bath was about 34°.

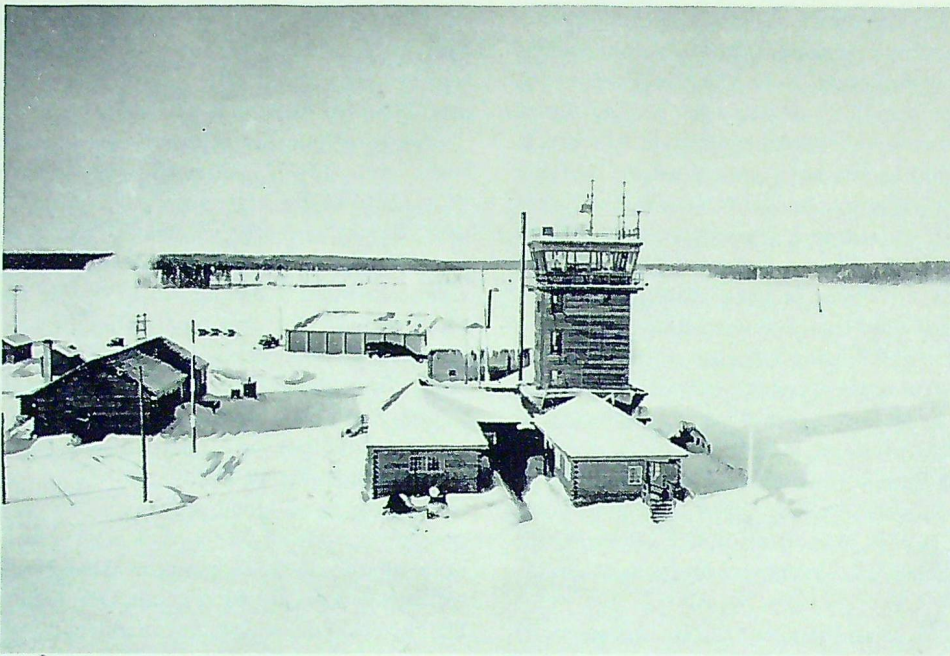
"Aleutian weather offers no extremes of heat or cold, but it is almost always unpleasant, characterized by extremely high winds, fog and rain. Sometimes fog will clamp in an island for many days without any break. On the subject of wind velocities, I can quote 115 mph plus. I say 'plus' because the anemometer blew off at the 115 mark—and that was at sea level. We had to do more than picket the aeroplanes. Sometimes we put the wheels in a ditch. The Alaskan civilian boys had another stunt. They tied a piece of 2 x 4 on the wing to spoil lift.

"The general wood shortage is worth special note. When there just aren't any trees, life gets quite complicated. To mention merely one of many inconveniences, we found that animals chewed up all our wiring—which, lacking wood, we had to lay on the ground.

"On all islands routine defensive patrols were maintained. The U.S. Navy handled most of the anti-ship reconnaissance. A few B-24 raids were made to the Northern Jap Islands, but they were sporadic and didn't accomplish much.

"We ourselves were concerned mainly with Kiska and Attu—the usual routine: weather trips, dive bombing, low-level strafing, etc. Doubtless it didn't keep Hirohito awake at nights worrying, but it must have made life very unpleasant for his faithful boys on the receiving end.

"The Attu operation was carried out by a task force consisting of battle wagons, destroyers, carriers, landing craft and transports. The Army ran in air support from Adak and Kiska as well. Apart from the local operation (which I won't describe, as I was not there) the only show of real interest occurred on the one day the Japs tried a bomber attack on the ships. The Army was running a continuous patrol of P-38's, flying a Catalina on long-range reconnaissance for early raid warning. The Catalina's radar picked up a force proceeding from Paramushiro, and it relayed the information by radio to the P-38's under a Colonel Watt, one of the nicest chaps up there.



Control tower, Watson Lake

Attu was overcast, so Watt went on top, but unfortunately lost most of his flight in the climb up. I think there were 20 Japs, and they were intercepted without any ground control by four P-38's. Most of the Japs were shot down, but Watt failed to return. He was last heard on the radio well on his way to Japan with one engine on fire.

"Air transport was our big headache. We had no transport aircraft and had to rely on the U.S. Army. Air Vice-Marshal Stevenson did his level best and sent up aircraft when we were desperate, but, owing to unavoidable circumstances, it was often too little and too late. Certainly any RCAF force should have its own transport to use, abuse, and control."

A Note on the Battle of the Atlantic

Although the battle of the Atlantic was not fought entirely in arctic waters, a good proportion of it was; and stations such as Gander and Goose

Bay definitely come within the boundary of the sub-arctic.

It was from such stations that the war against the submarines was waged by means of RCAF bomber reconnaissance aircraft. These at first consisted of Bolingbrokes and Digbies, but were later exchanged for Hudsons, Venturas, Liberators, and Cansos.

The highlight in the convoy escort and arctic submarine war was the introduction of the Very Long-Range Liberator. Until this type of four-engined, long-distance aircraft was available, the range of our operational aircraft restricted the extent of our anti-submarine efforts. With its advent, Canada's Home War Establishment was no longer confined to its own front yard. Shepherding a convoy to mid-Atlantic, passing responsibility over to an aircraft from Britain, and then flying on to a British base was not an uncommon occurrence.

(In our next issue, Flt. Lt. Wood begins his account of the post-war history of the RCAF in the north.—Editor).

The Great Eagle-Albatross Controversy

by WING CDR. F. H. HITCHINS, Air Historian



TIME WAS, SAY THE OLDSTERS, when a simple statement in a Service Mess about the bird that appears on RCAF buttons and badges was sure to start an argument that would last far into the night.

This once-burning issue about the bird's true identity has all but flickered out, and (it is hoped) new members of the Force are correctly "indoctrinated" that the bird is an eagle. Mention that to a veteran wearing First World War ribbons, however, and you run a risk of becoming involved. If he flew in the Old Royal Naval Air Service (and three of our four Chiefs of the Air Staff did), a gleam will come into his eye and he will begin convincing you. By the third round you will find yourself tactfully agreeing that it isn't an eagle at all, but—as any clot can plainly see—an albatross.

Actually the controversy was settled—officially—long before it even began, and, for the benefit of those who have endured, or have yet to face, the argument, here are the facts.

It all started in the summer of 1914 when the Board of Admiralty took it upon itself, in defiance of Cabinet orders issued two years earlier, to rename the Naval Wing of the Royal Flying Corps as the Royal Naval Air Service, and issued regulations for the organization, rank titles and uniform of the Service. These regulations of 23 June, 1914, clearly stated that officers of the RNAS would wear an eagle on the left sleeve above the rank lace. An eagle was also substituted for the anchor on buttons, cap badges, and other insignia. According to tradition, the Lords Commissioners of the Admiralty adopted the eagle design (outstretched wings with head inclined to the right) from a brooch which the wife of a naval officer had purchased in Paris. So, from the very moment it was hatched, the bird was an *eagle*.

But, as many will tell you, regulations are meant to be printed, not heeded. It may be that the outbreak of war a few weeks later caused the details

of the regulations to be overlooked or forgotten—or read in true Nelson fashion with telescope to the blind eye. Or maybe the Navy fliers decided that the eagle, a land bird, had no place in a naval service. At any rate, before long the members of the RNAS considered as high treason any suggestion that their bird was other than a proper sea-going albatross.

Then, in 1918, the RFC and RNAS were merged into the Royal Air Force, and the new Air Force took over the RNAS rank insignia—and the bird. Quite naturally, ex-RNAS members carried with them into the RAF their unswerving loyalty to the albatross, although there is nothing to show that the RAF ever regarded it—officially—as anything but an eagle.

When the CAF was formed in Canada in 1920 it carefully sidestepped the issue by adopting a uniform with army rank badges and insignia that contained wings but no bird. When the RCAF emerged in 1924, however, it adopted the RAF style uniform with all its appurtenances, including the bird. The first dress regulations issued for the RCAF in 1925 leave no doubt that the feathered creature was still officially, as it had been since 1914, an *eagle*.

Many of the RCAF's early personnel were veterans who had flown with the RNAS and, true to the traditions of the "Silent Service," they eloquently and persuasively spread the myth that the bird worn by the RCAF was really an albatross. The argument smouldered for years, mostly in the messes, although occasionally someone actually sat down to write a memo about it.

When the Second World War came along, the controversy flared up again. Thousands of wartime recruits were told that the bird they wore on their shoulders and brass buttons was an albatross. Thousands more were told that it was an eagle. To others it was simply a bird, although one officer irreverently suggested it was a pregnant duck. Of course, no one bothered to consult the regulations.

The controversy should have been settled, once and for all, in January 1943. Ever since 1924 the RCAF had been using as its "official" badge the badge of the RAF, modified by the addition of a scroll bearing the words "Royal Canadian Air Force." After 18 years of use it was, somewhat belatedly, discovered that this RCAF badge had never been officially approved or sanctioned. The Chester Herald, who had been appointed Inspector of RCAF Badges, accordingly prepared a proper design, improving upon the 1924 version, and in January 1943 this general badge of the RCAF was approved by H. M. the King. The Chester Herald's description of the badge

clearly and specifically refers to the bird in the design as "an eagle volant affronté, the head lowered and to the sinister." In short, it was still an eagle and always had been—although the albatross was a very nice bird, too. Nevertheless, rumblings of the controversy were still heard until the end of the war.

Today, former members of the RNAS are so few in the RCAF that there is little they can do about it except mutter in their beer. But even so, if the subject should ever come up and there's an old veteran about, be careful. He may be an ex-RNAS type, and if he is, it's still an albatross to him.



ANGELS are Flying Insects

(Reprinted by courtesy of "Electronics")

MYSTERIOUS SHORT-DURATION radar reflections called angels or blips, observable most frequently below heights of 3,000 feet, have been explained by scientists of Bell Telephone Laboratories. The cause: flying insects.

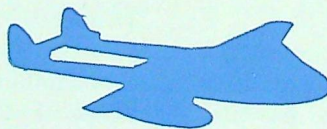
The tests and observations resulting in this conclusion were sponsored jointly by Bell Laboratories and the Naval Electronics Laboratory and were conducted at Gila Bend, Arizona.

In their attempts to synthesize the strange patterns on the radar scopes, the scientists exploded a small charge of nitro-starch in the air 500 feet above the radar antennas. They flew a plane low over the radar and looked for reflections from the exhaust gases. They built bonfires, up-wind, so that the hot combustion gases and steam clouds formed by pouring water on heated rocks

billowed into the beam. In all these experiments, the phenomenon was never observable.

Later, working at night, they threw out a strong searchlight beam, and stationed observers at different levels of a 200-foot tower. While the observers counted insects, the radar operators counted the appearance of angels on their scopes. For example, in one fifteen-minute period, twenty were counted, fifteen of which coincided with the sighting of an insect.

Insects fit most of the descriptions which have been applied to the mysterious reflections on radar scopes. They are small, they move at a speed comparable to wind velocity, sometimes with and sometimes against the wind, they are present both day and night, and there are more of them in warm weather than in cold.



Have You Seen these Posters?



RCAF Poster No. 66: Think

RCAF Poster No. 67: Use the Right Tool

RCAF Poster No. 68: For a Spitfire or a Splinter

RCAF Poster No. 69: The Key to Careful Workmanship

ORDER WHAT YOU WANT FROM YOUR SUPPLY SECTION



RCAF ASSOCIATION



AIR FORCE DAY

AT THE TIME OF WRITING, Air Force Day has just passed. A number of Wings participated in the event.

No. 702 (Lethbridge) Wing held a special meeting on June 8th for the purpose of discussing and arranging their programme for Air Force Day. At this meeting they were addressed by the Air Officer Commanding Northwest Air Command, Air Vice Marshal H. L. Campbell, C.B.E., and Air Vice Marshal G. R. Howsam, C.B., M.C., President of the Alberta Group.

No. 403 (City of Sarnia) Wing held its Charter Night on June 10th, and Air Vice Marshal J. A. Sully, C.B., A.F.C., the Dominion Chairman of the Association, was the principal speaker.

No. 404 (Kitchener-Waterloo) Wing sent delegates to the Air Force Day ceremonies at Centralia.

No. 700 (City of Edmonton) Wing had several concession rights at the Northwest Air Command Air Force Day, and, from a recent report, ended up on the right side of the ledger despite a heavy thunderstorm in the afternoon. This Wing, incidentally, is also planning to hold a carnival for a full week in September to put itself on a sound financial basis.

No. 401 Air Force Club of Kirkland Lake Wing announces the loss of its active and hard-working secretary, Mr. Fern Audet, who has left Kirkland Lake for other fields. Mr Audet has been relieved by Mr. Stan Johnson. The Dominion Headquarters sends best wishes to Mr. Audet and thanks him for his active support in the past.

No. 402 (Sudbury District) Wing has announced plans to sponsor the activities of Labour Day celebrations in Sudbury, September 4th and 5th. It has secured the local park for Labour Day and will be importing a baseball team from the United States. It also hopes to be able to arrange the attendance of an RCAF band. Proceeds will go towards the securing of permanent Wing quarters.

Insignia and Dress

Occasional enquiries have been received as to whether any thought has been given to the adoption of distinguishing insignia or dress for members of the Association. Dominion Headquarters seriously considered such an innovation, but is doubtful as to the general reaction of Association members. Whether a beret, a blazer, an arm band or an embroidered crest to be worn on a jacket is the answer, we are not certain. We would welcome any suggestions from Groups, Wings, or Members at large who have any ideas on the subject. The greater the variety of ideas, the more opportunity of arriving at a decision.

Air Cadets

No. 406 (North Bay and District) Wing will be host to the visiting British Air Training Corps Cadets in August, and is arranging for their entertainment while in that city. It is understood that a similar invitation is being extended by the Air Cadet League to No. 501 (Lakehead) Wing, Port Arthur, but at the time of writing arrangements have not been completed.

New Wings

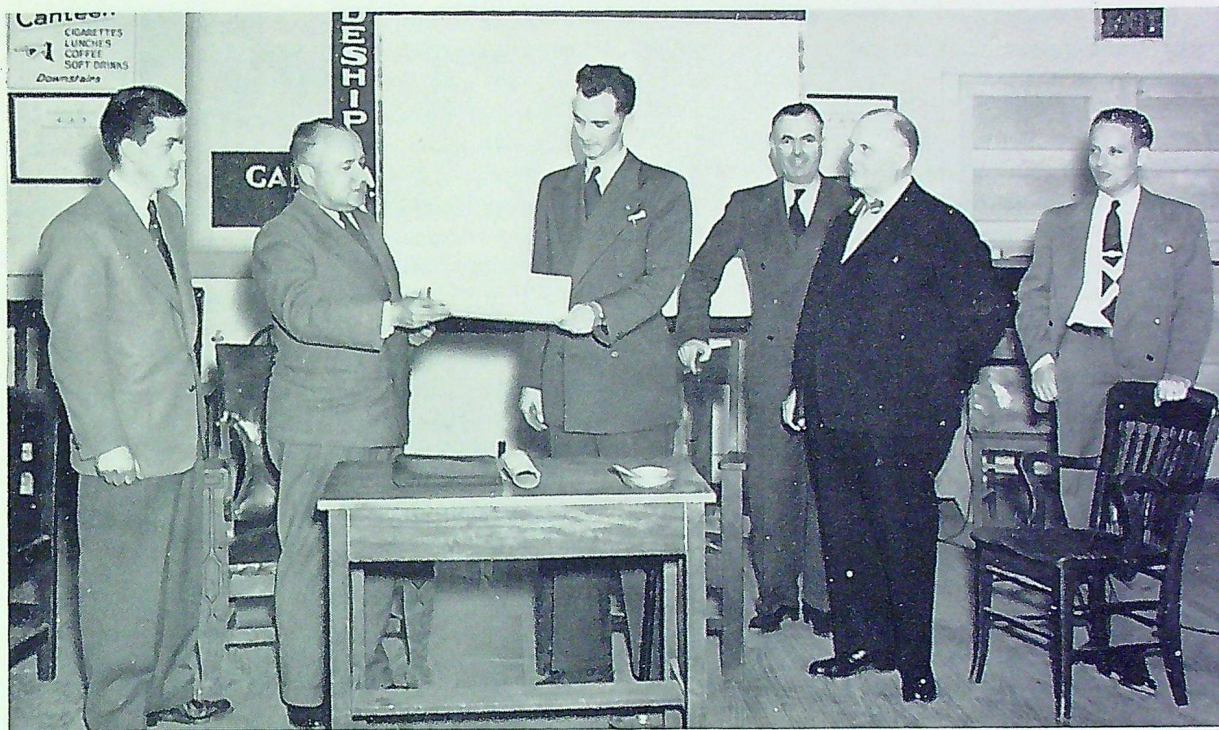
The following new wings of the Association have been formed and, by the time this issue appears, will be chartered.

London Air Force Association

Although the London Wing only recently joined the National Association, it has been in existence since the late fall of 1945. During 1946, this Wing, which was fortunate enough to secure suitable club rooms, had close to 400 members. The decision of the London Air Force Association to join the national organization is indeed gratifying, and heartiest congratulations are extended to its executive and members.

No. 251 (Madawaska) Wing, Edmundston, N.B.

On the 7th June, 1949, a group of ex-RCAF personnel met in the Legion Memorial Hall, Edmundston, N.B., together with their guests (who



(Left to right) Mr. Barry Dean, Group Capt. J. Cyril Malone, Mr. Jack Park, Mr. Ken Mayhew, Mayor C. G. Langrill, Mr. Chris Vokes

included representatives of several civic organizations), for the purpose of holding an organization meeting.

There was a short informal address by Dr. J. B. Gaudreau, Deputy Mayor of Edmundston, followed by an outline of the Association's organization, given by the chairman, Mr. W. K. Scott.

Mr. Charles Swanton, President of Saint John Wing, gave a brief description of the activities and aspirations of his own Wing, and also outlined some interesting points regarding the Association.

Mr. W. H. Birchard, Chairman of the local Air Cadet Sponsoring Committee, gave a short talk regarding Air Cadet activities, following which Flt. Lt. M. Shanks, O.C. No 313 (Edmundston) Squadron, RCAF, introduced the guest speaker, Air Commodore F. G. Wait, C.B.E., Group Commander, Maritime Group, RCAF. Air Commodore Wait gave a very informative and in-

spiring talk on the activities of the Royal Canadian Air Force and the Association.

An election of officers was then held, and Mr. W. K. Scott was unanimously elected as president of the Wing.

Montreal Air Force Veterans' Association

The Montreal Air Force Veterans' Association has decided to sponsor a Wing of the Association from among its own members. This Association is a Branch of the Canadian Legion and is noted for its activity on Air Force projects. Its application for Charter has been received and it has been allocated Wing No. 301.

No. 407 (Grey-Wellington Border.)

This Wing, with Headquarters at Mount Forest, Ontario, is unique in that it is a rural rather than an urban Wing. Much credit for its initial organization goes to Mr. Stephen Jones and Mr. Burrit B. Brooks of Mount Forest.

No. 603 (City of Yorkton) Wing Gets Charter

Group Captain J. Cyril Malone, Provisional President of the Saskatchewan Group, presented the Charter for No 603 Wing to Mr. Jack Park, President, at an impressive ceremony in the Yorkton Legion Hall on 13th May. Mayor C. G. Langrill welcomed Group Captain Malone to Yorkton and congratulated the Yorkton men on instituting a Wing of the Association there. Other speakers included Dr. M. C. Novak, Past President of the Yorkton Flying Club and a member of the Aviation Section of the Yorkton Board of Trade, Mr. Lawrence Ball, Secretary of the Yorkton Branch of the Canadian Legion, and Mr. Ken Mayhew. Also present were General A. Ross, Past President of the Canadian Legion, Lt. Col. F. Steele, Commanding Officer 53rd H.A.A. Regiment (Yorkton Reserve Unit), and Mr. Nick Bretherton, President of the Yorkton Branch of the Canadian Legion.

Prior to the ceremony, an informal dinner was held in the Yorkton Hotel, presided over by Mr. Park. A reception followed the meeting in the officers' mess at the Armoury.

No. 603 (City of Yorkton) Wing was formed on the initiative of Mr. Jack Park (now President), Mr. Chris. Vokes (now Secretary-Treasurer) and Mr. Austin Ingram, owner of Yorkton Flying Services and an ex-civilian pilot at RCAF Navigation Schools. These three flew to Regina in Mr. Ingram's Super Cruiser to attend the meeting addressed there by our Dominion President on February 2nd. Returning to Yorkton, the trio proceeded to organize, and on March 4th, at a meeting in the Council Chambers, No. 603 Wing was formed. Elected to the executive of the Wing were:

President J. N. Park
1st Vice President W. B. Dean
Sect.-Treasurer C. L. Vokes
Additional Members T. Kozachenko
D. J. Cook

How to Form a Wing

Dominion Headquarters of the RCAF Association is anxious to organize new Wings wherever possible. We are extremely grateful to many of you who have offered to form Wings. The staff of the Dominion Headquarters is extremely small, how-

ever, and it will take some time to go through all the applications that have been submitted to ascertain who our key men are.

Meanwhile, we have prepared an organization kit which gives all the information and procedure that should be required. Should any of you feel that you can take on such a job, please communicate with Dominion Headquarters, 424 Metcalfe St., Ottawa, Ont. The kit has been used successfully in a number of instances and we feel sure it will work elsewhere. Do not be discouraged if there are only a few members of the Association in your community. There are probably many more ex-Air Force personnel who only need to be asked. This fact has been amply demonstrated at Kitchener, Saint John, N.B., Mount Forest, and Edmunston—in fact, wherever a Wing has been formed. To help you, Dominion Headquarters will provide you with a list of paid-up members in your community should you care to accept this invitation.

Christmas Cards

Dominion Headquarters are at present negotiating for a supply of Christmas Cards which will be made available at an attractive price to our Wings and members at large. We would appreciate it if you would give us an indication as to your reactions to this proposal, and what your requirements will be.

No. 801 (VICTORIA) WING

Dear Sir:

Here are a few highlights of the recent activities of No. 801 (Victoria) Wing of the RCAF Association.

Our Anniversary Dinner, held this Spring in true Air Force style, turned out to be a huge success. An excellent speech was given by Air Commodore Bell-Irving, who came over from Vancouver to join in the festivities.

During the afternoon an RCAF aircraft and three or four planes from the local flying club flew over the city. A dinner was then held, followed by Air Commodore Bell-Irving's speech on the formation of the RCAF. The evening's conviviality was preceded by a thirty-minute floor show by Jerry Gosling, which also was very successful.

A few weeks later, a Klondike Night was held for the purpose of swelling our coffers. Some very fine prizes were donated to our committee by the merchants of Victoria.

Albert Meek,

Secretary, No. 801 Wing

The ROYAL CANADIAN AIR CADETS



by ARTHUR MACDONALD, Director of Publicity, Air Cadet League of Canada

Air Cadets "Get Acquainted"

BY THE TIME THIS ARTICLE is in print, the Air Cadet summer programme will be in full swing. Once again, international exchange visits highlight the schedule for the vacation months, but flying training, summer camps and the International Drill Competition will also demand their share of interest.

As we write, final details of the 1949 exchanges are being buttoned up. Plans for entertaining the British and U.S. cadets in Canada have been worked out, and we also have a fairly clear idea of what is in store for the travelling Canadian parties.

The 25 cadets who fly the Atlantic will arrive in London August 4, and will move immediately to their base at Uxbridge. They will then spend about a week in Scotland as guests of the Air Training Corps and the Royal Air Force before returning to London for a few days of sightseeing and official receptions. The return flight—via RCAF North Star—is scheduled for August 24. In the meantime, the 26 boys on the American exchange will visit Texas and spend a week in California before starting up the west coast on the return trip to Canada. Visits to Hollywood, San Francisco, Los Angeles and other famous centres will make this a memorable experience.

Britain's visiting Air Training Corps cadets will see Ontario's renowned vacation spots as guests of the Ontario Provincial Committee. A boat trip on Lake Muskoka and a day at Niagara Falls are expected to highlight this phase of the journey. Later on, the cadets will move to Montreal for the usual round of sightseeing and shopping—plus an enjoyable day with Mr. and Mrs. C. Douglas

Taylor in the Laurentians. The American lads will be divided into two parties, one to tour the West Coast and the other to tour the Maritimes and Newfoundland. Both parties will join the Canadian cadets at Edmonton on August 13 for a final gala get-together before departing for home.

Now entering its third year, the Air Cadet "get acquainted" scheme is widely accepted as one of the most positive steps yet taken to promote understanding and goodwill among young people.

Peace River "Flying Circus"

One of the features of postwar aviation which seems to have regained much of its old-time vigour is the community air show. In Canada most of these are sponsored by the flying clubs, although the local Air Cadets usually participate by acting as parking attendants, putting on precision drill displays, etc.

In Peace River, Alberta, however, a new twist was added recently when four Air Cadet squadrons got together and sponsored an air show of their own. The squadrons— from Peace River, Fairview, Sexsmith and Dawson Creek—received generous assistance from North West Air Command. The Edmonton airmen not only arranged air and ground displays, but also displayed the para-rescue technique which already has saved the lives of several stranded fliers.

Some 3,000 visitors turned out to witness the two-day affair. The thrill-packed afternoons, although marred by rain which covered the area for several days, pleased excited spectators who flocked from the countryside to see aerobating Harvards and parachutists in precision displays.



Inspection of Girls' Auxiliary No. 147 Squadron. Inspecting party (left to right): Miss J. MacConnell; Flt. Lt. W. R. Oatway, D.F.C.; P/O W. Newton; Wing Cdr. J. D. Somerville, D.S.O., D.F.C. (partly hidden); Flt. Lt. J. A. Stephens.

The show began with an exhibition of model aircraft-flying by enthusiasts from Edmonton.

F/O D. C. McBurney and his helicopter from NWAC performed various stunts for the pleased patrons, finally delivering from three-foot altitude a personal greeting from Air Vice-Marshal H. L. Campbell, C.B.E., Air Officer Commanding North West Air Command, to H. A. Brick, chairman of the Peace River Air Cadet committee.

Sgt. L. Poulson and Cpl. R. W. S. Trent, members of the RCAF para-rescue unit, thrilled the spectators by bailing out of a Norseman at 1500 feet in full dress and emergency equipment.

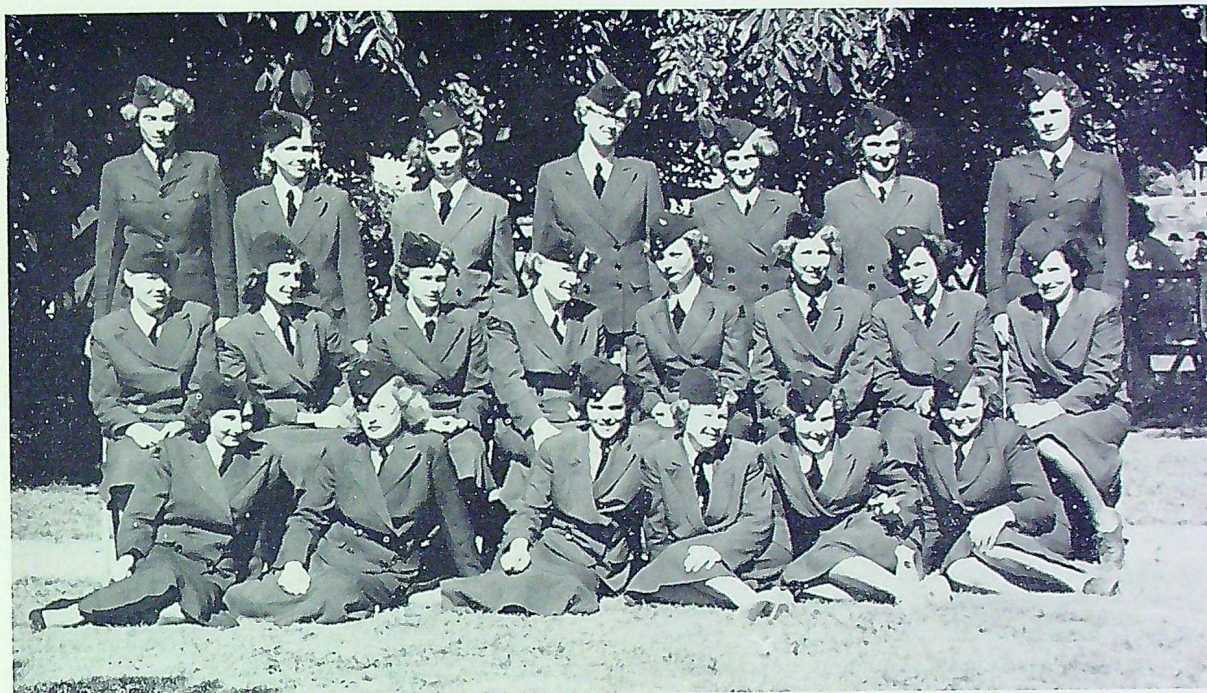
Nearly one hundred air-minded visitors experienced what was for most their first aeroplane

ride, as light commercial planes kept up a steady "airlift" of passenger hops around the field.

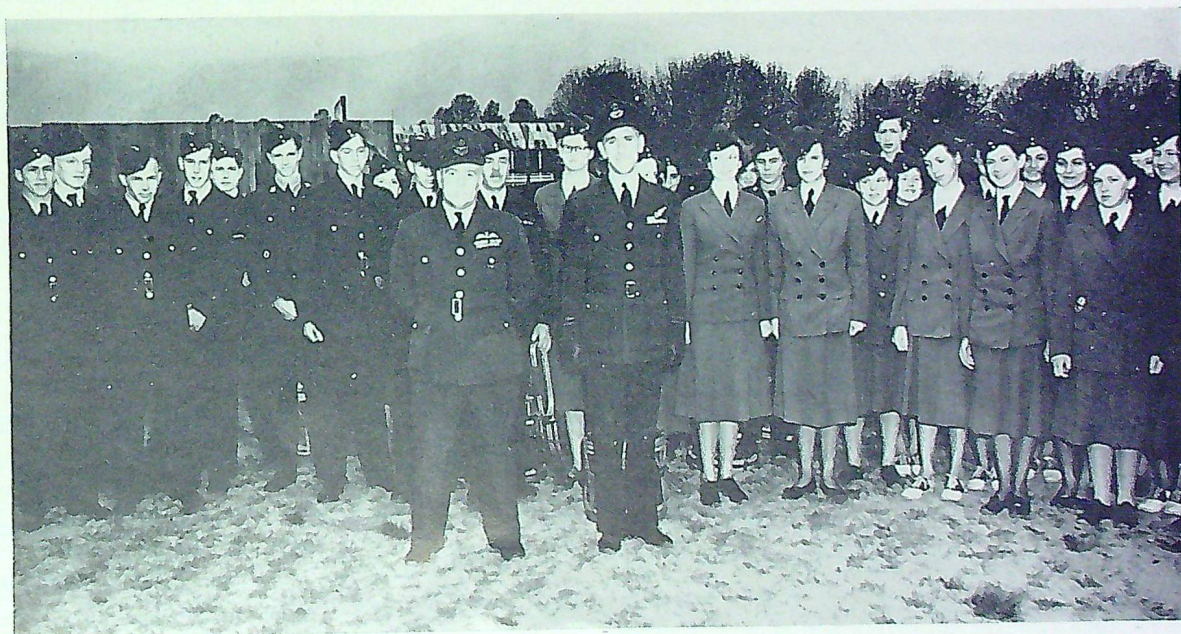
Official highlight of the meet was reached on the second day when Air Vice-Marshal Campbell flew to Peace River to conduct the Annual Inspection of the four squadrons, numbering 120 cadets.

Air Cadettes of No. 147 (Chilliwack) Squadron

From Chilliwack, B.C., comes a refreshing report on an interesting experiment. The officers of No. 147 (Chilliwack) Squadron, with the assistance of several former W.D.'s, have launched a Girls' Auxiliary to the squadron—and with excellent results.



19 of the 35 members of Girls' Auxiliary, No. 147 Sqn. Miss J. MacConnell, O.C., is on extreme left of rear rank.



Wing Cdr. Somerville and Flt. Lt. Oatway after annual inspection of No. 147 Sqn.

While this is not a completely new departure (the idea has met with some success in several school squadrons), the Chilliwack officials are to be congratulated on the progress they have made against great difficulties. Girl Air Cadets—or Air Cadettes—are not officially recognized and the sponsoring group must therefore carry on with very little assistance from official sources.

One of the more obvious advantages of a Girls' Auxiliary is the healthy competition provided for the boys. According to our Chilliwack informant, the girls are co-operative on parade and anxious to learn as much as possible about aviation. This, of course, helps to keep the boys on their toes—and does wonders for dress and deportment.

The girls, incidentally, hold their meetings and are dismissed before the cadets arrive at the training headquarters. A number of successful dances, parents' nights, etc., have been staged, however, and these have resulted in a noticeable increase in parade attendance and community interest. The girls study most subjects taught to the cadets, but hairdressing has been included in the syllabus and plans are under way to teach hobby-crafts and First Aid next year.

The three ex-RCAF W.D.'s who have made this programme possible are Miss J. MacConnell, Mrs. E. L. Anderson, and Mrs. J. Jones. They have, of course, received full co-operation from

the Squadron officers—Flt. Lt. W. R. Oatway, D.F.C., and F/O W. Bruce, as well as from the civilian chairman, Mr. G. M. McAlpine. Between them, this team seems to be doing a wonderful job for the young people of Chilliwack.

No. 11 (Lethbridge) Squadron

A member of No. 11 (Lethbridge) Squadron has informed us that May 30th, 1949, was an epic date in the Squadron's history.

At the luncheon which followed the Squadron's annual inspection, Mr. E. R. McFarland, President of the Lethbridge Flying Club, announced to the parents and cadets of the Squadron that his club will give one hour's free flying to each cadet bringing in a new recruit to the Squadron. In addition, he stated that there would be no limit to the number of hours a cadet may earn in this manner. Each new cadet was also to be given a half-hour familiarization flight in the Club's Fleet Canucks. The magnitude of this offer was realized by the cadets when they learned that the Club charges ten dollars per hour for dual instruction.

Mr. McFarland, who is also a director of the Alberta Group RCAF Association, is an ardent supporter of aviation, and expressed the view that the Air Cadet movement is one of the greatest builders of good citizenship in the community.

No More Spins

From "Aviation Week" we learn that, as from August 15th, spin tests will no longer be required of student pilots by the U.S. Civil Air Board. The article goes on to say:—

"The new ruling provides for instruction of the student pilot in recovery from power-on and power-off stalls entered from all normal attitudes.

"The subject of spin tests for private pilot licenses has been the subject of controversy for the last two years or more. Advocates of eliminating

the tests contend that many middle-aged business men who might otherwise become pilots are discouraged by this test. It is reported by CAB accident analysts that the only stall fatalities are those in which pilot was so close to ground that recovery was impossible even if he knew how to recover. Spin test has been compared to teaching a student automobile driver how to run his car into a skid on a wet pavement."

Needless to say, RCAF pilots will continue to receive spinning instruction.

So You're Going North?

by

SQN. LDR. D. GOODERHAM, O.B.E.

THEY TELL ME that darkest Africa was originally so named because of the complete ignorance concerning it which then prevailed throughout the civilized world. Nowadays, being an enlightened people, we learn all about it in our schools; and our ignorance seems to have been deftly switched to encompass all matters relating to the Canadian Arctic.

"This," our Upper Brass has said, "is a lamentable state of affairs." "You," one of them continued, pointing an ink-stained finger at the missing button on my parka, "are to provide Enlightenment, that those who are posted or who may be posted into the North may read and take comfort. Gen them up so that they neither take fear at anything nor overlook those things that may make their sojourn therein more pleasing."

Before I begin, however, let me forestall the character who is about to say "Phooey! Just a lot of propaganda!" The fact is, in the letter requiring me to produce this screed the following phrase appears: "those fortunate enough to be offered a northern experience." My immediate reactions to that would, I feel, have met with the approval of Sgt. Shatterproof himself. Since I understand that most of the upper Brass can read, I cannot say just what I thought; but I can at least assure you that what I write below will in no way be coloured by any attempt to improve the picture.

* * *

Now, it may be a cruel blow to some, but the fact remains that any similarity between life in the North and life on a Service Unit in the North is purely coincidental. The true sourdoughs of the North unquestionably consider us a bunch of sissies—which troubles us not at all. Our more or less comfortable mode of living enables us to do a better job of work. And there's still enough rough stuff left to throw out a challenge to anyone with a mind to prove himself.

Your first question will naturally be: how will I find life on a northern Air Force Unit? It's an old saying that life is what you make it, and nowhere

is that statement more true than in the North. If you come here with the idea that maybe it won't be too bad and that it might even be interesting, you'll probably find it just that, and possibly even better. If, on the other hand, you come up firmly convinced that you won't like it, you will in all probability have a grim time for at least a part of your tour. That's the mental attitude angle, of which more later. Meanwhile I propose dealing with a few of the physical conditions you will encounter, and which you as an individual cannot do anything to change either for better or for worse.

Firstly, there's our old friend the weather. If your ideas of the North are the same as mine were, the very word "NORTH" carries with it the word "COLD." It is a matter of record that the temperature in Canada's North *does* go pretty low. The North West Staging Route certainly has some fairly cold spots along it—notably Snag. The Beetle sites, however, though further north, do not experience such cold weather. Here at Kittigazuit, the farthest north of them all, the lack of low temperatures has even been rather embarrassing. Our friends in Edmonton and Winnipeg, having expended a good deal of sympathy on us, seemed to be quite hurt on learning that during a goodly portion of the past winter our temperatures were well above their own. Our lowest temperature here was 52° below, shortly before Christmas. After that it did not drop under 40° below. The other Beetles, Cambridge Bay and Sawmill Bay, have been somewhat colder than Kitty. The wind, it must be admitted, is sometimes very cold. There have, indeed, been occasions when it has approached the fridity it frequently attains at the corner of Portage and Main. The North can be really tough! Fortunately, unlike you effete types down south, we do something about it when it gets really cold. We even go to the ridiculous extreme of covering our ears.

Those of you who do not work outside will want to know whether the buildings on northern Units will keep you warm. Well, the buildings range all

the way from the steam-heated transient quarters in Fort Nelson (guaranteed to parboil anybody overnight) to the gelid atmosphere which prevails in our washroom at Kitty. The North West Passage, as they call it, is definitely no place for the faint of heart. A surprising number of the buildings fail to attain these interesting extremes, however, and the occupants have to struggle through as best they can with temperatures of 68°. Incidentally, these dull, uninteresting temperatures are attained without benefit of blubber lamps. Being fresh out of blubber lamps, the Air Force has had to resort to steam heat or oil-burning stoves. It is understood that this deplorable state of affairs arose through a slight variance of opinion as to whether blubber lamps fall within the jurisdiction of CE or Supply.

Supply have put over another fast one on poor old CE in the matter of washing in the Arctic. As is well known to one and all, the accepted northern technique calls for sewing oneself into the red flannels and applying whale oil to the face. Some sluggard in Supply neglected to lay on the whale oil, so CE has had to produce water systems, boilers, showers, wash-basins, and washing machines—no doubt at great trouble and no mean expense.

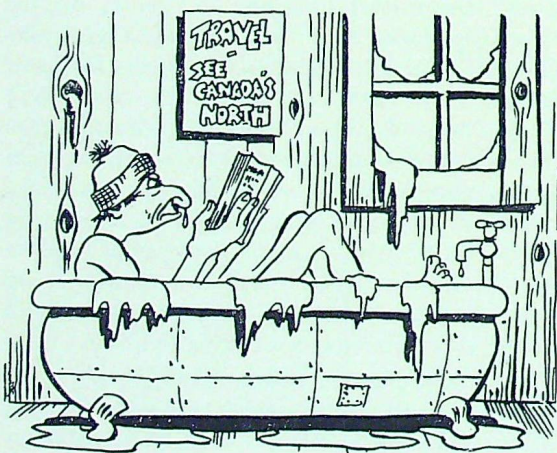
Accommodation in general can best be described as satisfactory for the single man and, as almost everywhere in Canada, inadequate for the family man. On the Route, married quarters are

to be had at Fort St. John, Fort Nelson, and Whitehorse; and they are being constructed at the other Route Units and at Beetle Units. There will be no empty quarters awaiting your selection any more than there are at southern Stations. Your wait will probably be about the same.

The matter of light is something that may or may not bother you. Indoors there is no problem: to the best of my knowledge all Air Force Units in the North have the same electrical facilities that you will find in the rest of Canada. Outdoors, the case is different. At Kitty we did not see the sun from December 4th to January 15th. All of us were surprised, though, to find that even on December 21st we had about five hours of good light plus two more of twilight. For a short period in the summer we see the sun twenty-four hours a day. Oddly enough, the long days appear to cause more distress than the short, which none of us minded too much. When it's constantly daylight one doesn't get to bed and tempers are apt to get on edge.

It is difficult to write on the food question without sounding like a recruiting officer. However, honesty requires me to state flatly that the food on the northern Unit is probably superior to that on the average southern Unit. On the Beetle Units it is superior to them all. This is not just chance. It results from a combination of an expanded ration scale and top-flight cooks.

Having touched briefly on some of the good points of the northern Units, I will proceed directly to one of the bad. In the minds of most of us here, it is THE bad point. I refer to separation from one's family. This will not affect everyone. As I stated earlier, most northern Units now have married quarters and are due to get more. Other Units (notably Beetle) at present have none. But if you aren't lucky enough to get married quarters (and with few exceptions you'll find none off the Station), and you have a wife and maybe kiddies, what then? No one has yet said anything to me that has made me personally feel any happier about the situation, so I have no intention of trying to convince you that you will like it either. Fortunately, the tour is relatively short. Beetle tours are now set at six months for all air-





men—subject, of course, to emergencies. Tours on the North West Staging Route are of one year's duration for single or separated men, and two years if married accommodation is available.

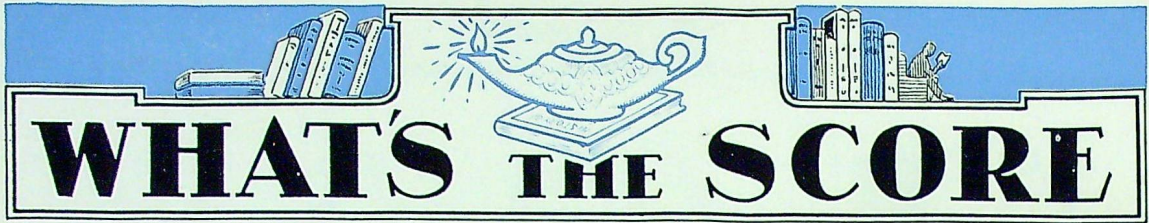
During your time 'in', you will have fairly good mail service both ways, usually once a week on Beetle Units, and more than once a week on the Staging Route. On Beetle, we supplement this with radio messages for urgent occasions or when aircraft cannot get in. Those northern Units at which aircraft cannot land during the freeze-up and break-up periods, receive mail and supplies by air drop. The odd bottle of beer gets broken in the process, but there is usually enough for the Saturday night party.

This brings us around to the life *within* the camp. For you really are *in* camp: generally speaking, there's nothing outside it. During the summer, of course, there is hunting and fishing that many people would gladly pay much money to get. But don't look off the camp for entertainment and interest. Even the more remote Units, such as Beetle, have movies, books, hobbycraft tools, radios, pianos, records, sports equipment, darkrooms, photographic equipment and so forth. Whether you avail yourself of them and keep alert and interested in your fellow men, or whether

you lay on your sack and bind, is up to you. The North seems to have a way of proving a man. The standards here on which a man is judged are harsh. You are rated by what you *are* and *do*, not by what you look like and say.

To wind up, here are a few concrete suggestions that may help to make your stay 'in' more pleasant for you and easier on your family if you have to leave them behind. Take with you your camera, rifle, or whatever hobby-kits you normally use down south. If you play any musical instrument smaller than a harp, take it along too. Leave your correct mailing address with your family. And be sure to clean up any accounts problems before you go. Find out exactly where you stand and insure that arrangements are made for adequate funds to be forwarded to your family. All personnel on Beetle Units have recently been granted the privilege of having their pay put directly into a bank account. It isn't at all a bad idea, whether you are married or single. It may save you a lot of worry and a lot of signals.

A final thought. It is not altogether impossible that you will return from the North alive and healthy. If your sanity has suffered a slight decline, you will no doubt immediately be recommended for a posting to AFHQ. Good luck to you.



WHAT'S THE SCORE



The following questionnaire is based on information contained in the RCAF Silver Jubilee "Logbook" which was prepared by the Air Historical Section.

A score of 16 or more is above average. Answers to this quizz appear on page 48.

1. Peak strength of the RCAF was approximately:
 - (a) 85,000
 - (b) 160,000
 - (c) 215,000 ✓
 - (d) 330,000
2. The prefix "Royal" to the Canadian Air Force was approved by the King in:
 - (a) November 1918
 - (b) August 1921
 - (c) February 1923 ✓
 - (d) April 1924 ✓
3. Victoria Cross Winner, Flt. Lieut. D. E. Hornell, was on:
 - (a) Coastal Command operations ✓
 - (b) Bomber Command operations
 - (c) Fighter Command operations
 - (d) Balloon Command operations
4. The RCAF was made an independent service directly responsible to the Minister of National Defence in:
 - (a) 1924 ✓
 - (b) 1932
 - (c) 1936
 - (d) 1938
5. Prior to this date (question 4), the Senior Air Officer had been responsible to the:
 - (a) Chief of the General Staff
 - (b) Department of Transport ✓
 - (c) Chief Electoral Officer
 - (d) Chief of Air Staff (RAF)
6. The first aeroplane flight in Canada was made in the:
 - (a) Kitty Hawk ✓
 - (b) Spirit of St. Louis
 - (c) Bonanza King
 - (d) Silver Dart
7. Organization created to control aeronautics in Canada after the First World War was the:
 - (a) Air Council
 - (b) Air Force Advisory Committee
 - (c) Air Board ✓
 - (d) Inter-Provincial Air Transport Commission
8. The first Canadian to win the VC in the First World War was:
 - (a) Bishop ✓
 - (b) Barker
 - (c) McLeod
 - (d) Flt. Sgt. York
9. Number of air crew turned out by the BCATP was approximately:
 - (a) 56,000
 - (b) 83,000
 - (c) 121,000 ✓
 - (d) 132,000 ✓
10. The country making the largest overall contribution to the BCATP was:
 - (a) Great Britain
 - (b) Canada ✓
 - (c) Norway
 - (d) Australia
11. First RCAF Squadron to arrive overseas in Second World War was:
 - (a) No. 119 City of Hamilton Squadron
 - (b) No. 111 City of Vancouver Squadron
 - (c) No. 110 City of Toronto Squadron ✓
 - (d) No 121 City of Quebec Squadron
12. In 1930 considerable interest was caused by the visit of the R 100 to Canada. The R 100 was:
 - (a) A German Zeppelin
 - (b) An Italian balloon
 - (c) A British airship ✓
 - (d) An American blimp

13. The first flying field turned over to the Canadian Air Force was:

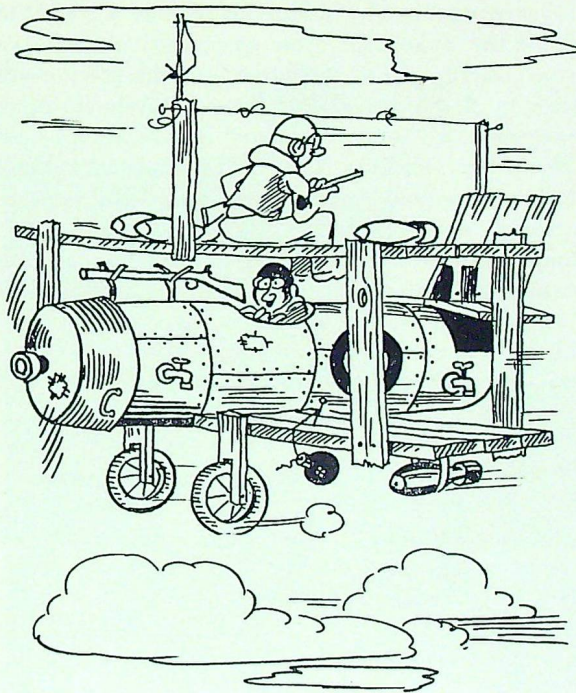
- (a) St. Hubert
- (b) High River
- (c) Camp Borden ✓
- (d) Kittigazuit

14. The original name given to the RCAF (Women's Division) was:

- (a) Canadian Women's Auxiliary Air Force
- (b) Women of the RCAF
- (c) Royal Canadian Air Force Women ✓
- (d) Canadian Women's Air Force

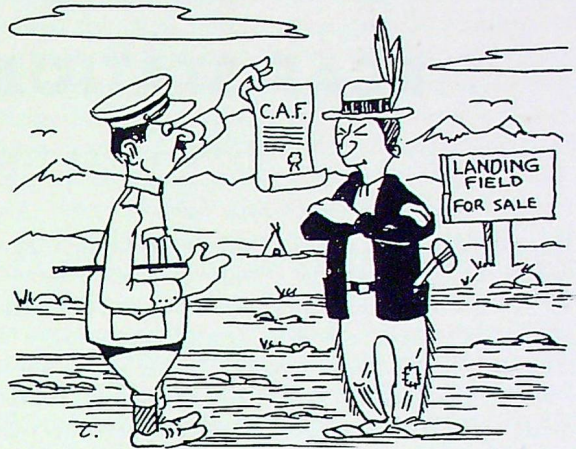
15. The first bomber used on operations by No. 6 (Canadian) Bomber Group was the:

- (a) Lancaster
- (b) Wapiti
- (c) Wellington ✓
- (d) Hampden



16. The RCAF began celebrating "Air Force Day" in:

- (a) 1924
- (b) 1938
- (c) 1942
- (d) 1947 ✓



17. The RCAF heavy bomber force for the Pacific campaign was to have been called the:

- (a) Bengal Group ✓
- (b) Tiger Force
- (c) Panther Armada
- (d) Wilcat Corps

18. The RCAF officially went off active service in:

- (a) 1945
- (b) 1946 ✓
- (c) 1947
- (d) 1948

19. Provisional President of the RCAF Association formed in 1948 is:

- (a) Air Marshal R. Leckie, C.B., D.S.O., D.S.C., D.F.C.
- (b) Air Marshal W. A. Curtis, C.B., C.B.E., D.S.C.
- (c) Air Marshal W. A. Bishop, V.C., D.S.O., M.C., D.F.C.
- (d) Air Chief Marshal L. S. Breadner, C.B., D.S.C. ✓

20. The largest force used by No. 6 Group on a single raid numbered a little under:

- (a) 100 bombers
- (b) 200 bombers ✓
- (c) 300 bombers
- (d) 400 bombers

★

(The foregoing questionnaire was submitted by F/O W. M. Lee.)

★

The Roundel Visits

RCAF STATION, WHITEHORSE

by FLT. LT. T. J. MACKINNON, D.F.C.

SITUATED ON A NATURAL AIRPORT SITE high on a bench overlooking the "hub of the Yukon," RCAF Station Whitehorse is a study in contrasts. Here, each day, modern aircraft wing in to a landing only a stone's throw from stern-wheel river steamers which still travel the storied routes made famous by the rhymes of Robert W. Service a half century ago.

Almost 1,000 air miles northwest of Edmonton, and within 400 miles of the arctic circle, Whitehorse is one of the most vital links in a chain of aerodromes which reach from Edmonton northward to the Alaskan border. As northern terminal of Air Transport Command's scheduled flights, and as mother station for four smaller detachments along the Northwest Staging Route, it is always a busy place. In summer it plays host to photographic detachments engaged in extensive aerial survey operations. Whitehorse crews are always on call for search and rescue and mercy missions; and all year round, to its 250 airmen, officers, and their families, Whitehorse is a home of which they are intensely proud.

The development of continuous flying in Whitehorse began in 1927, when the late Andy Cruikshanks operated a charter service based there, but it was not until 1940 that the Joint Defence Board decided to open the Northwest Staging Route. Then the aerodrome was reconditioned, and it assumed its proper place as one of the crossroads of world travel. Prior to the opening of Whitehorse aerodrome, the normal access to that area was by means of a narrow-gauge railway which climbs through the mountains from Skagway in Alaska, and by river-steamer along the Yukon, which is only open for 5 months a year. During the war the Alaska Highway, which cuts through the centre of the air base, was added as a complementary means of transportation. The

RCAF moved into Whitehorse in 1943 and today controls the Station.

Wing Commander J. M. Sutherland, of Guelph, Ont., a graduate in law from Osgoode Hall in Toronto, and a wartime Coastal Command pilot, commands the Station. A comparative newcomer to the Yukon, Wing Cdr. Sutherland moved to Whitehorse in June, 1949, to succeed Wing Cdr. G. A. Folkins, A.F.C., of Calgary. Wing Cdr. Folkins had been station commander for more than 2 years, during which time he became a leader of life in the Yukon. On other comparatively isolated stations, the life of the town and the station are usually closely interwoven, and Whitehorse is no exception. To show the esteem in which they held Wing Cdr. Folkins, the townspeople presented him with a gold watch, chain and knife, all encrusted with solid gold nuggets. The new Commanding Officer is adapting himself to the life easily, and has already settled down as a part of the Whitehorse community. As Wing Cdr. Sutherland puts it, "When you take over a Station where morale is as high as Whitehorse, how can you miss?"

From a flying point of view the primary purpose of the Station is to provide facilities for transient aircraft, operation of the radio range and flying control tower, and to act as a centre for search and rescue operations. Flt. Lieut. C. C. W. Margerison, D.F.C., of Langley Prairie, B.C., has a triple job connected with flying on the Station. He is OC the Communications Flight, OC the Air Traffic Handling Unit, and Station Intelligence Officer. A schoolteacher in B.C. for 6 years before the war, he flew on operations in high level Mosquito bombers. With him in the Communications Flight are Flt. Lieut. W. H. Durnin, A.F.C., of Winnipeg and Flt. Lieut. W. H. Muncy of Victoria, B.C.

The aircraft based at Whitehorse are used

mainly for Search and Rescue operations, although they also make regular flights to the four detachments—Watson Lake, with its Winter Experimental Establishment, Teslin, Aishihik, and Snag (reputed to be the coldest spot in Canada). For dual-purpose, year-round landings, a Dakota is fitted with ski-wheels and a Norseman is equipped with floats in the summer and operated out of Aishihik.

Mercy flights occur with great regularity in the North, and Whitehorse has its share. Sometimes they come in pairs, as when Flt. Lieut. Margerison's men completed two missions in one day a few months ago. They flew a doctor and nurse to Teslin to tend a sick baby, and on their return were called out again to bring another sick child to hospital in Whitehorse.

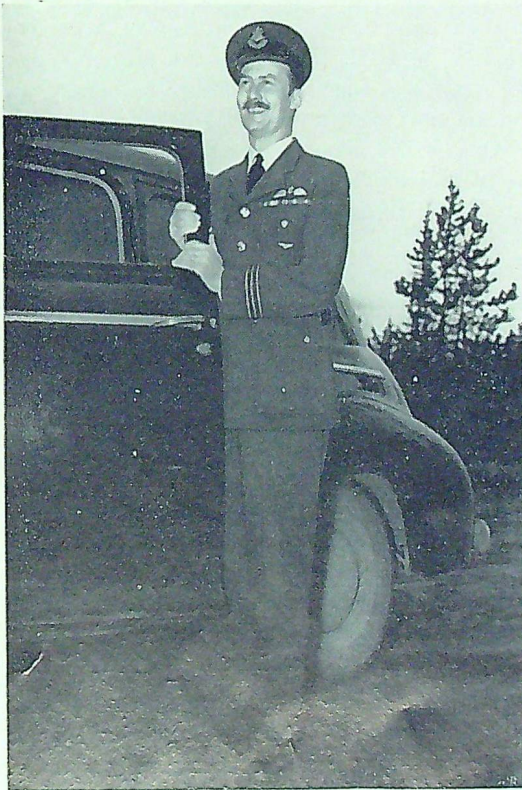
The ski-wheel Dakota participated in the much

publicized "Operation Fort Ross" last February when the Air Force evacuated a number of seriously-ill Eskimos. During this operation, one aircraft unfortunately crashed on landing at Fort Ross. The Whitehorse crew, including Flt. Lieut. Muncy and F/O S. Skinner, D.F.C., then evacuated the RCAF personnel aboard the downed aircraft, and later returned with servicing equipment.

F/O Skinner of White Rock, B.C., now OC the detachment at Aishihik, had an interesting, but rather shaky experience in the Norseman in March of this year when he flew an RCMP constable into a lonely cabin where a demented trapper was taking pot shots at anyone within rifle range. Fortunately he didn't shoot at Skinner or the policeman and they were able to take him out where he was committed to an institution. As Flt. Lieut. Margerison says, "It's all in a day's work" . . .

A Former British Columbia Provincial policeman and veteran aero-engineering technician, Sgt. E. J. Quinn, of Vancouver, is in charge of the ground servicing crews for the Station. Flt Lieut. Margerison speaks highly of his crew chief, and says, "There's absolutely nothing he can't do with an aircraft engine." Quinn, who has been a senior NCO in the Air Force since 1939, has a crew of 13 experienced technicians working for him, together with facilities for doing complete aircraft overhauls at a moment's notice.

One of the important parts of the Search and Rescue scheme at Whitehorse is its para-rescue squad, a four-man unit fully trained in bush work and parachute dropping. LAC S. Hopkins, one of its members, is a veteran of 22 jumps. Like the other members, Hopkins is a graduate of the para-rescue course which was given by the Air Force near Jasper, Alta., in 1947. A native of the Peace River district, he helps train airmen from various sections on the Station in bush lore and rescue technique. The squad operates its own course, taking parties of airmen into isolated areas for a week at a time, where the men are taught proper methods of using emergency equipment, and are given practical training in building paratepees, parachute lean-to's and bush shelters. In April this year, in conditions of deep snow, a party of



Wing Cdr. J. M. Sutherland

10 airmen spent a week in the open with the para-rescue squad. Both the instructors and trainees were satisfied that the trip was a complete success. Eventual plans call for all men on the Station to take one of the week-long sojourns in the wilderness.

One of LAC Hopkin's 22 jumps was in the winter of 1947, when he put on a demonstration jump during the Whitehorse carnival. The wind was high at the time of the jump, and it was blowing snow. It also blew LAC Hopkins off his original target, and he ended up on the roof of the Whitehorse railway station. His jumping partner fared only slightly better. He landed in an Indian graveyard on the outskirts of town.

A part-time veteran at Whitehorse, Sqn. Ldr. L. A. Hall of Montreal, commands 414 Squadron's aerial photographic detachment operating from the station. This is Sqn. Ldr. Hall's third season at Whitehorse, and this year his three Dakota aircraft are slated to cover 75,000 square miles of the Yukon and Northwest Territories. The 38 men who make up the detachment personnel follow the snowline north by air, and, weather permitting, each day fly long hours in their work to further the mapping of Canada. During the photographic season weather furnishes the main worry, for this is a country where sunset meets sunrise and where there is no darkness in summertime.

RCAF married personnel live in the town of Whitehorse, 2 miles from the station, and in 85 temporary and emergency apartments, formerly



The Town of Whitehorse



The "Yukoner"

occupied by wartime employees of the Standard Oil Company in an area which is now known as Upper Whitehorse. By fall of this year, however, families will move into the first of 41 new permanent houses now under construction. According to Flt. Lieut. L. S. Nevin, the Station's construction and engineering officer, the houses will be the most modern north of Edmonton.

One of the main problems that arose in the construction of the houses was the fact that the ground is frozen for 8 months of the year. To counteract this, Flt. Lieut. Nevin built wood fires, and, aided by the deflection of heat from steel plates, was able to do some of the excavating at temperatures as low as 30° below zero.

The housing project is situated across the Alaska Highway from the Station and is approximately a quarter of a mile from any heavy traffic. The landscaping is natural and the houses are being built in crescents surrounded by tall jack pines. The resulting effect is that of a toy village. Some of the houses in the early stages of construction are located on the bank of a small lake, named by the engineering contractors "Lough Nevin," after the works officer.

Flt. Lieut. Nevin, a pre-war professional boxer, is an enthusiastic northerner, and, with 4½ years of Yukon time behind him, definitely belongs to the sourdough category. He is extremely proud of the fact that both of his children were born in the Yukon, and now considers it his home. One of his



The "Klondike" being launched

assistants has proved the fact that there really is a "call of the north." He is Cpl. N. Sherrin of Windsor, Ont. Sherrin served with Flt. Lieut. Nevin before retiring from the Service in 1946. He returned to Ontario, but came back to Whitehorse in 1948, and in January 1949 rejoined the Air Force and took over as clerk of works at Whitehorse. As he puts it, "I consider Whitehorse and the Yukon my home, and with my wife and baby I'm quite happy to stay here."

Because of the expense of flying laundry from Whitehorse to Edmonton, the RCAF have built a modern laundry on the Station. Construction of a dry cleaning plant is also under way, and with it an addition to the present laundry. Both these projects will be completed this autumn. Sgt. A. H. J. Dean of Winnipeg, the first laundryman to enlist in the Air Force during the war, is in charge of the plant which gives an emergency 8-hour service, but normally delivers the laundered goods in 48 hours. During the war Sgt. Dean opened the laundry at Gander, Newfoundland, and today two of his wartime assistants are back with him in Whitehorse. They are LAC C. O. MacKeen of Canning, N.S., and LAC S. H. Boulter of O'Leary, P.E.I. Both had a fling at civilian life and rejoined together in January of this year.

One of the most impressive things about Whitehorse is the high morale of the Station personnel. They are a happy people, and if a public opinion pollster were to query the airmen,

officers, and their families, he would find that 100 per cent of them would like to remain in Whitehorse for the remainder of their Service careers.

There are many factors which lead to a happy station, and they are very evident at Whitehorse. Unlike most of the southern stations, Whitehorse has no real housing problem, and furthermore it boasts a first-class organization for off-duty hours. This tends to produce the sort of camaraderie which is the normal result of long association with good friends.

The recreational programme is tops in any man's air force. In wintertime the life of the whole town revolves around the sports hangar on the Station. It houses a rink with an ice circuit as wide and seven feet longer than Maple Leaf Gardens, and with accommodation for 1000 spectators. The same hangar also contains a basketball court, a boxing ring, and two badminton courts. Flight Lieutenant J. W. McQueen, the Station Adjutant, points with pride to the record of the Air Force hockey team that last year won the league championship and the Whitehorse Inn Trophy, presented annually by the largest of the local hostleries. Two of the team members, Sergeant R. H. King, goal tender, and Sergeant A. C. Gilpin, flashy forward, won berths on the RCAF Flyers of 1948 and travelled with the club to win the Olympic and World's hockey championships. Last winter the Whitehorse team made an exhibition tour of Alaska and returned undefeated.



Waiting for the Sched. to arrive



The old Royal Mail Coach. Riders (left to right): LAC W. Hryniw, LAC J. Richardson, ACI Gerald Wright

It then joined forces with other league clubs to send a representative team to Nanaimo, B.C., to participate in the Canadian intermediate play-downs.

Other winter activities include the Roundel Ski Club, presided over by Flight Sergeant A. G. Horton of the Service Police. The club has a ski jump and several well-developed ski runs not more than a mile and a half from the station. Other clubs include a camera club, a miniature rifle club, and an amateur radio group that has contacted stations as far away as New Guinea. The Station is equipped with a fine library and with a snack bar which operates each evening. Movies are shown regularly in the Station theatre, and there is a steady run of parties in the airmen's canteen and lounge and the NCO's and officers' lounges.

For the outdoor huntin', shootin' and fishin' enthusiast, Whitehorse is a paradise. Within easy range of the Station is the finest rod and gun country in the world. Special trips are arranged after duty and on sports afternoons, and the results are displayed on the tables of the messes and the homes with great regularity.

Two hobby shops are in continuous operation, one on the base, the other in the married quarters area of Upper Whitehorse; but perhaps the best hobby, and certainly the most productive, is displayed in a greenhouse in the centre of the Station. Douglas McCrea of Edmonton, the civilian station plumber, is an avid horticulturist, and in his greenhouse he produces flowers never before grown in the Yukon. The greenhouse is alive with roses, dahlias, daffodils, carnations, and Easter lilies. At Christmas and New Year, Mr. McCrea is deluged with requests for his corsages, all of which he donates to the men for their wives and girl friends. He also produces lettuce, parsley, mushrooms and cucumbers, and last year, from 60 tomato plants, he produced 450 pounds of tomatoes, some of them 1½ pounds in weight. This year he has put in 250 plants, so tomatoes should consequently be plentiful at Whitehorse. In keeping with the historical implications of the district, Mr. McCrea claims that his fertilizer, which comes from the old RCMP barracks, dates back to the days of Dangerous Dan McGrew.

The historical background of the country undeniably has an influence on the lives of the people, for Whitehorse was, and still is, the metropolis of the Yukon.

From the time the aircraft begins its approach over Lake Labarge, where Sam McGee was poetically cremated, one soon observes that the fabulous days of '98 are not easily forgotten. On



Station Chapel

Whitehorse Station itself, just a few steps from the administration building, is a Royal Mail coach which travelled in pioneer days from Whitehorse to Dawson City. The bell of the Station chapel was taken from the first train to make the tortuous trip from Skagway, through White Pass, to Whitehorse, and the stained glass windows were removed from the church at beautiful Lake Bennett, not far from Dead Horse Gulch.

In the town itself one can see the cabin of Sam McGee and the old log church built in the early days of the Klondike; and, near the Station, a

sleigh that was the winter counterpart of the Royal Mail coach to Dawson City. Behind the Station, stern-wheel river steamers, immaculately equipped, load passengers for a trip down the Yukon to Alaska, while on the banks two historic boats of yesterday, the "Bonanza King" and the "Yukoner," sit sadly contemplating days long gone.

To the men and women who regard Whitehorse as home, we say "May your station always remain as happy as it is today. You have made it that way and there is little doubt that you will continue to thrive in your 'magnetic north'."



DIS TING WOT'S CALL RAJIO

By SQN. LDR. R. R. INGRAMS, D.F.C., A.F.C.

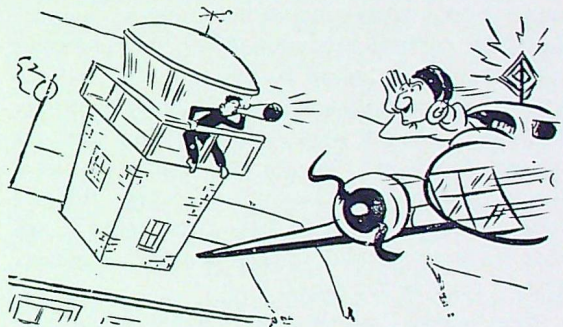
(The following gentle rebuke to the electronic world was written some years ago, when the poet was engaged in flying the old Digbies out of Gander. It was dedicated to Wing Cdr. R. B. Hoodspith, who was at that time the Station Signals Officer. Recently unearthed by the Archaeological Section of Records, it is published here for the first time.—Editor.)

I was peelon on Digby in Nombor Ten Squad,
We fly all de time w'en it's fine;
But sometime de wedder's no good w'en she's bad—
But wit' rajio, it's make never min'.

We've de Bennix an' Gipee, R one an' R two;
Dey tell us dis jonk is de bes';
An' a bonch of doze aerial to pick up de noise,
Stuck on fus'lage like hairs on de ches'!

We contac' de tower as we get near de field
To ax 'im which runway we use.
W'en we get no reply, we know somet'ing she's wrong—
Dey're asleep—or we blow out a fuse.

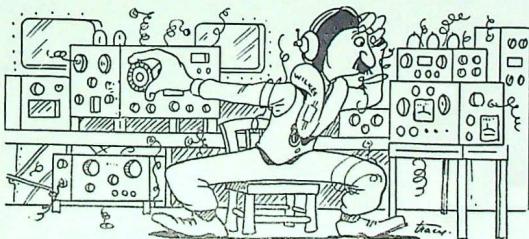
We ax 'im de ceiling, de wedder, de wind,
An' also, ow 'ard does she blow?
'E's fin' out dis stuff, den 'e's speak in de mike,
"I'm sorry—you're five kay cee low!"



Now, we've bin troo dis business with tower before—
We change notting—jus' let it go by.
We ax im again if 'e's not change 'is min'—
'E say "Yes,—you are now a bit 'igh!"

W'en we lan' on de groun', SSO want to know
Jus' how was de rajio today?
We tell 'im "She's fine, she's no trouble at all;
Spoke to tower from 'alf-mile away!"

W'en dey fill up our plane wit' dis rajio junk
So full she's don' get in de sky,
Dey'll design a new t'ing, wit' some gas and a wing—
An' make us a rajio dat's fly!



★

ANOXIA

★

by LT. COL. WENDELL P. HARRIS, M.C. (USAF) Chief, Medical Safety Branch

(Reprinted by courtesy of "Flying Safety")

QUESTIONS HAVE ARISEN many times recently about anoxia and its effect on fighter pilots at high altitude. What is often thought to be the cause of some unexplained fatal accident is not based upon known facts but supposition.

The Medical Safety Branch of Headquarters USAF must base its anoxia fatality statistics on the facts and figures provided by the people in the field. Many local accident investigating boards, through no fault of their own, are unable to furnish the facts concerning the rôle of anoxia. This is particularly true in cases of fighter pilot fatalities.

In a recent survey of fatal accidents in jet airplanes, an attempt was made to determine the number caused by anoxia and the number in which anoxia could be considered to have been a contributing factor. This survey revealed that in four types of fighter aircraft involved in 882 major aircraft accidents, 145 were fatal accidents. Only four of these were definitely proved to be the result of anoxia.

Some people have said that they believe that because of poor oxygen indoctrination some pilots are assuming careless attitudes. Along this line some pilots have been heard to say that they did not know that there was any limit of human endurance relative to oxygen need so long as they used the oxygen mask, and that the only limit was that of the mechanics of the aircraft. Of course, this is a false assumption. Others have been heard to say that failures in the oxygen demand regulator system may be the cause.

The following account of a jet fighter accident in which anoxia was probably a contributing cause illustrates the necessity for a better understanding of our oxygen needs and limitations.

A flight leader and his wingman took off on an IFR flight plan, 500 on top. They climbed their F-80's on course to 33,000 feet. After approximately 30 minutes of flight, the wingman called the flight leader and told him that he (the flight leader) was flying inverted. The flight leader checked his instruments and found that he was in normal

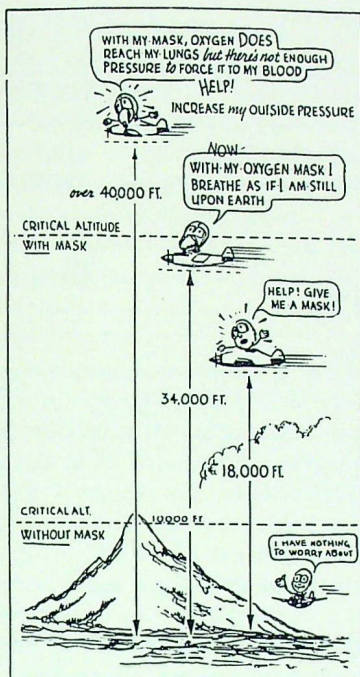
flight, looked again and saw the wingman in perfect formation, and instructed him to check his oxygen. The flight leader received no acknowledgement from the wingman.

A few seconds later the wingman called to say that he was pulling up. The flight leader then saw his wingman's left wingtip light go by his canopy very close. A terrific jolt from the wash caused the flight leader to go into a spin to the left. He recovered from the spin after about six turns and was in the clear at approximately 9000 feet. He then started to turn to the left, calling his wingman three times in about 20 seconds without acknowledgement. Then the flight leader saw an explosion below him.

Although it cannot be proved, medical officers still believe that many unexplained accidents are due partly to anoxia. Therefore, the following facts and figures are recapitulated.

In acclimatized individuals, mild exercise carried out at a given high altitude may have no greater effect upon the pulse rate than it has at sea level, but in nonacclimatized individuals mild exercise at the same altitudes produces the identical symptoms as does strenuous exercise at low altitudes. Fliers ordinarily do not become acclimatized because they do not live at high altitudes for a sufficient time for such adjustments to take place. Since physical training accomplishes somewhat similar adjustments in the circulatory system as occurs during acclimatization, fliers who engage regularly in some form of physical exercise will better accommodate themselves to high altitudes than will those who lead sedentary lives.

Breathing air at 19,000 to 20,000 feet is equivalent to beathing 100% oxygen at 44,000 feet, and these are the highest tolerable altitudes for exposures lasting longer than a few minutes. Length of exposure is a very important consideration. Most pilots can tolerate an altitude of 18,000 feet for a half hour without using oxygen, but even though they may be conscious they will be in a befogged state and will almost certainly collapse.



It is possible to remain conscious for a few minutes at 25,000 feet, but at such an altitude collapse occurs more rapidly. At 25,000 feet death soon follows loss of consciousness. Consciousness may be lost within a minute at 30,000 feet. According to Eighth Air Force reports, death may occur after only five minutes of unconsciousness at 25,000 feet.

If the oxygen in the arterial blood is lowered from 95% to 85% (if it happens slowly), it may not affect the ability of a flier to do his job. He may himself be unaware of any change until he starts working. For example, if he starts operating a flexible machine gun, he will experience shortness of breath. This range of anoxia extending to as low as 85% arterial saturation can be tolerated for considerable periods, but results of psychological tests show that the carrying out of complicated operations comparable to instrument flying is impaired.

Frequent errors in judgment may be made. Navigational problems may become increasingly difficult to solve, jeopardizing the mission or even the lives of the entire crew. The lowering of oxygen in the arterial blood to 85% will have very

serious effects at night because of the effect upon night vision. Even the slightest degree of anoxia greatly reduces ability to see at night, and it is for this reason that all fliers are required to use oxygen at any altitude from the ground up on all combat and tactical missions at night. When the arterial saturation of oxygen decreases to about 60%, coordination is lost and there is only a brief transitory period between useful consciousness and total collapse.

Recovery from anoxia is rapid when sufficient oxygen is supplied. An individual on the threshold of unconsciousness may regain his full faculties within 15 seconds when an abundance of oxygen is furnished him.

Some time ago a B-17 landed at an airfield with one of the crew dead from anoxia. Before taking off, the pilot had carefully instructed his crew of four—a copilot, crew chief, sergeant and private—in the use of the demand-type oxygen system. The private was seated in the radio compartment while the sergeant climbed into the ball turret to test its operation.

The total flight time was approximately 45 minutes, of which not more than 15 were spent above 20,000 feet and less than 30 seconds at the maximum altitude of 28,000 feet. When the sergeant crawled out of the turret at 10,000 feet on the homeward descent, he found the private lying dead on the floor. His mask had been disconnected from the regulator hose which he had hung carefully by its clamp on the seat ahead of him. His own portable unit stood in the rack beside his seat, unused. For some reason, he had decided to leave his station, neglected to switch over to the portable unit and collapsed.

Accidents such as this can be avoided only if everyone, from the individual crew member up to the unit commanding officer, realizes that oxygen equipment is all that stands between a man and death at high altitudes. If oxygen equipment is used properly, high-altitude operations are no more hazardous than low-level operations, but the equipment is only as efficient as the man who uses it.

★ TRANSONIC TEETHINGS ★

by GROUP CAPTAIN C. H. COTTON

IN THESE DAYS of high-speed aircraft, many of us are keenly interested in the aerodynamic problems connected with high-speed flying. Frequently it is much more simple to analyse these problems if we can think of them in terms of simple analogies. Such analogies, although they may not be mathematically correct, are justified because they enable us to appreciate the problems without knowing the mathematics and theory behind them.

The Speed of Sound

To explain the aerodynamic problems of high-speed flying, it is necessary to cover the entire speed range from subsonic, through the transonic region, into the supersonic.

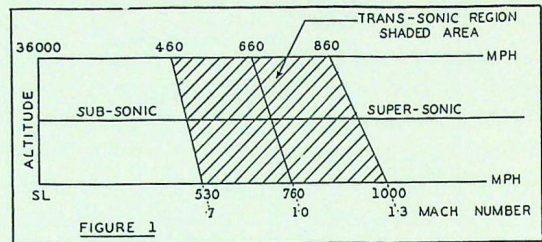
We all know that the speed of sound has something to do with high-speed flying, yet we wonder why. Like light and radio waves, sound waves travel at a constant speed provided that the temperature of the air is constant. Sound waves are nothing more than pressure waves which are vibrating at an audible frequency. We are actually interested in pressure travel, so that instead of saying "the speed of sound," it would be more appropriate to say "the speed of pressure propagation."

Speed Regions

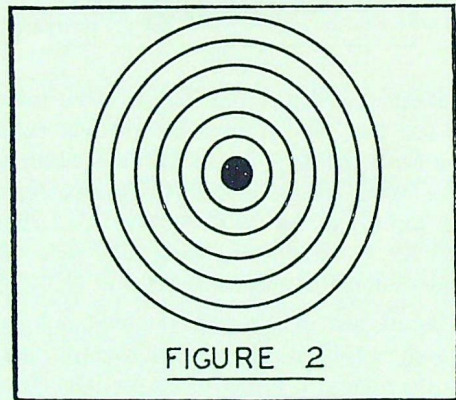
Because the speed of sound, or speed of pressure propagation, is proportioned to the square root of the temperature, it also varies with altitude; and because we are concerned with the ratio of the aircraft speed to the speed of sound, it is necessary to specify the altitude, as well as the speed, to establish this ratio. To simplify matters it is customary to express the ratio by using the phrase "Mach number." A Mach number of 1.0 is equivalent to the speed of sound regardless of the altitude. Fig. 1 shows the relationship between aircraft speed, altitude, and Mach number.

Pressure Propagation

Pressure propagation might be compared with the effect of dropping a pebble into water, as



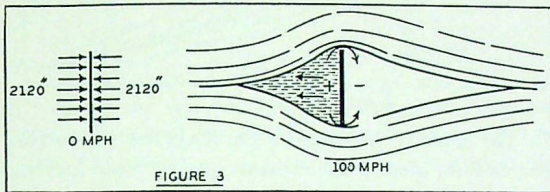
shown in Fig. 2. Concentric pressure rings travel out radially in all directions. In air, a pressure disturbance causes concentric pressure rings or spheres to radiate in all directions at the speed of sound. Theoretically, the effect of a pressure disturbance is felt simultaneously on all points of an imaginary sphere at a radius of 760 miles from the disturbance in exactly one hour.



Let us now see how this pressure propagation affects the aerodynamic loads on a surface. Consider, for instance, a flat plate, one square foot in area (Fig. 3). If this plate is at rest in still air, atmospheric pressure bears on all sides. In other words, for each square foot, there is 14.7 x 144, or 2120 lbs, acting on one side of the plate, and 2120 lbs on the opposite side. If we assume that this plate is moved sideways at 100 mph, there is an increase in pressure on the forward face, and a reduction in pressure on the aft face.

If the medium were a solid instead of air, then

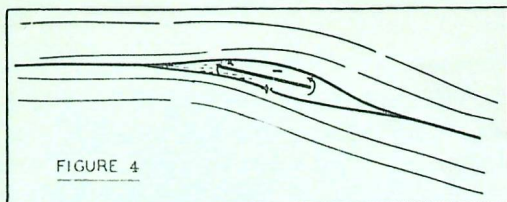
an infinite pressure would be built up on the forward face and a complete vacuum on the aft face. Air is more fluid and elastic, however. The pressure disturbances on the forward face race around all edges of the plate at the speed of pressure propagation, say 760 mph, and attempt to equalize the pressure on both sides. The pressure propagation also acts forward into the line of flight and warns the air ahead to make way for the



disturbance which is to follow. In other words, it is nature's way of streamlining itself. The attempt to equalize pressure is not completely successful, however, and it may be shown by experiment that at 100 mph the plate offers a resistance of roughly 25 lbs.

Assume now that the plate is travelling 200 mph. Things are happening much faster, yet the speed of pressure propagation is still limited to 760 mph. It is therefore not so effective in equalizing the pressure and warning the air ahead. Instead of effecting twice the resistance that the plate had at 100 mph, the resistance now has gone up to eight times that at 100 mph.

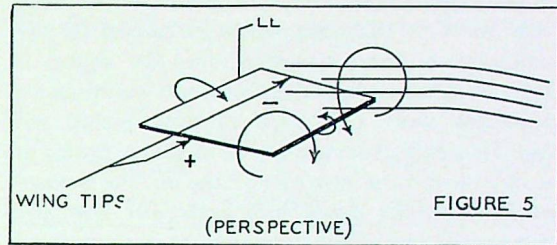
If we consider the plate as a wing (Fig. 4), much the same thing happens. There is a positive build-up of pressure on the bottom surface and a reduction in pressure on the top surface. Again an attempt is made to equalize the difference in pressure and the rate is limited by the speed of pressure propagation. The oncoming air is also



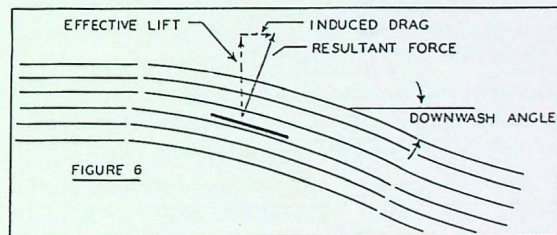
warned by the forward pressure propagation to make way for the wing which is to follow.

Downwash

If we look more closely, we note that pressure equalization is taking place not only around the leading and trailing edges (Fig. 5), but also around the wing tips. These pressure "end-runs" cause an upflow of air at the wing tip, and a down-flow



towards the wing root. As already explained, the air ahead is being warned by the forward pressure travel. The same warning tells the air ahead that it is going to be deflected downwards, and it consequently starts on its downward journey before reaching the wing. The downward process is continued until the wing has passed, and is termed "downwash." Because the air has started down before it reaches the wing, the effect is similar to that of a wing travelling uphill, and the resultant force is tilted back to an amount equal to this up-hill gradient. The resultant force therefore has



not only a vertical component but also a horizontal component (Fig. 6) which is known as the "induced drag." Downwash must be considered when we adjust an aircraft's tail for stability, because the surfaces of the tail are acting within the down-flowing air.

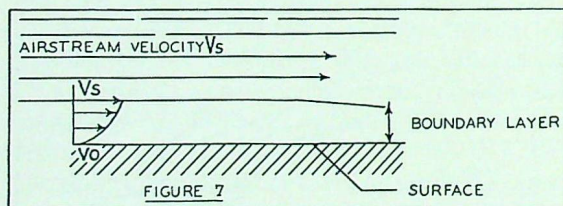
Downwash is influenced by aspect ratio. If the effective span-to-chord ratio is increased, the downwash (and consequently the induced drag) decreases. For this reason, sail planes and gliders have very large spans.

Drag

There are three types of drag in subsonic flow. First there is the *friction* occasioned by the viscosity of the air. This is dissipated as heat. Then there is the drag which is caused by the turbulence of the air passing over the object. If air could pass over the surface and maintain its streamline flow, this type of drag would not exist. However, because of the shape or profile of the object and the viscosity of the air, the streamline flow breaks down into turbulent flow and causes resistance. This type of resistance is termed *profile drag*, and the effect is found in the wake behind the object. The third type of resistance is *induced drag*, which is due to the wing tip flow as explained in the previous paragraphs.

Aerofoil Development

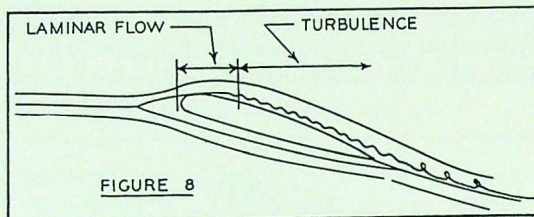
A considerable amount of research has been conducted in an effort to reduce the profile drag of surfaces. It was found that, owing to the viscosity of air and the surface roughness, the film of air in immediate contact with the wing surface was actually stopped. Within a very thin layer next to



the surface, the speed of the air ranged from zero at the surface to the speed of the stream at about $\frac{1}{4}$ " to $\frac{1}{2}$ " out from the surface. This layer is called the boundary layer and is illustrated in Fig. 7.

The boundary layer has a very pronounced effect upon the drag of a wing. It was found that

the layer began as a laminar flow, and, because of the disturbances along the surface, lost energy and became turbulent (Fig. 8). In addition, it was found that the longer this turbulent flow could be delayed, the lower would be the resistance.



As the speeds required became faster, greater efforts were poured into research to develop lower drag wings by keeping the flow laminar as long as possible. Several methods were devised, the most simple of which was to make the surface extremely smooth. Another was either to suck the turbulent air off by suction slots or to add energy to the laminar flow by pressure slots. The fourth method was the development of laminar flow wings.

In the 1930's the 230 series of aerofoils was developed. In these the maximum thickness of the section occurred at 30% of the chord, and the turbulence was delayed to 15% of the chord. In 1940 the series 4 laminar flow wing section was developed. This section delayed the turbulence to 40% of the chord. Later, in 1944, the series 6 aerofoils were developed which delayed the turbulent flow up to about 60% of the chord. Series 6 sections were used on the King Cobra, Invader, and Shooting Star aircraft. The distinguishing feature of the two last mentioned laminar flow aerofoils was that the maximum thickness of the wing section occurred further back, and delayed the point of maximum suction as far as possible along the wing chord. This characteristic occurs at normal working angles only.

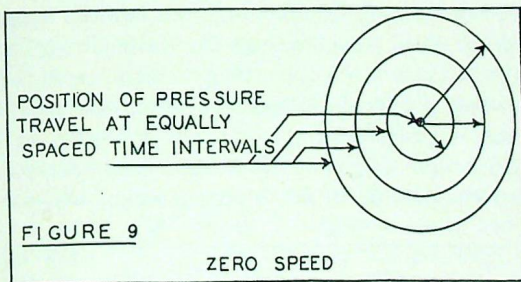
Sonic Flow

So far we have dealt only with subsonic speeds. Let us turn to the flat plate aerofoil (Fig. 3) and assume that it is moving at the speed of sound—i.e. approximately 760 mph. Then, because the

aerofoil is travelling as fast as the pressure propagation speed, the pressure build-up on the front cannot run ahead and warn the oncoming air to make way for the plate that is following. Neither can the pressure move around the edges to relieve the partial vacuum behind the plate. Consequently, almost the entire 2000 lbs of the atmospheric pressure strikes the plate dead-on, as though the plate had hit a solid wall. This piling up of pressure is the shock-wave we often hear about, and it acts as a dam.

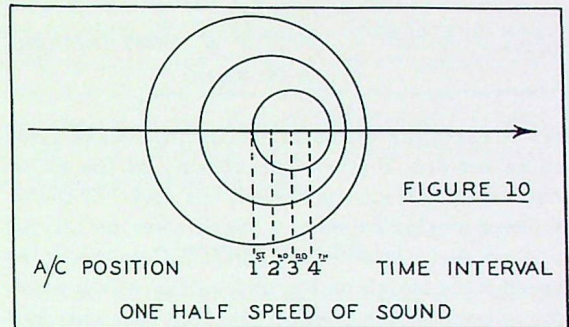
Shock Waves

What is the nature of these shock waves? Instead of looking at a wing as an aerofoil, let us stand back and consider it as a point in space. If the point emits pressure, and the space medium is air at standard sea level conditions, then the pressure travels radially in all directions at a speed of 760 mph. Although the pressure propagated is continuous, the easiest way to analyse its action is to trace the pressure that is given off at equally spaced time intervals. Hence, in Fig. 9 we represent by concentric circles the pressure which originates at equal intervals from a stationary point in still air. If the time interval is 20 minutes, then the radius of the outer circle which has been expanding for one hour is 760 miles. The pressure effect is not only dispersed in all directions, but also decreases with distance from the source.



If the point radiates pressure as a result of its movement through air, such as an aircraft or a wing, then the circles become eccentric due to its motion in the air. This is shown in Fig. 10. If the point or aircraft is moving at the speed of sound,

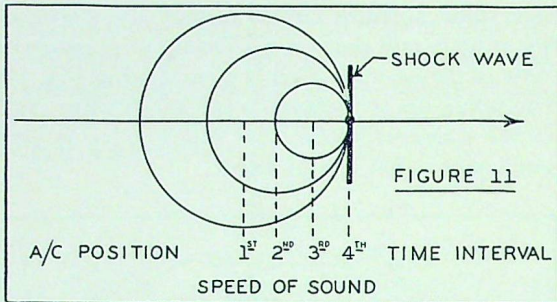
then these pressure circles cannot get ahead of the aircraft and there is a build-up of pressure in front of the aircraft. This is illustrated in Fig. 11. The piling up of pressure is the shock wave, and at the speed of sound, the shock wave is perpendicular to the line of flight.



When the speed of the aircraft exceeds the speed of sound, these pressure circles lag behind the aircraft, as shown in Fig. 12. Here we see that the piling up of pressure is being relieved, and the shock wave at the circle intersections flares rearward. This rearward angle is known as the Mach angle, and decreases with speed. The piling up of pressure increments can best be seen by constructing more pressure circles, as in Fig. 13.

It is not necessary for the aircraft itself to be travelling at the speed of sound to develop shock waves. In order that the air may travel around a curved surface such as a wing or fuselage, the local velocity of the air must increase. At a Mach number of 0.7, therefore, we may find that the local velocity of the air passing over the curved top surface of the wing may have reached a Mach number of 1.0. As a result, a shock wave forms at this point. A thin wing with gradual contour changes avoids sudden increase in velocity, so that at no point on the wing surface will the air reach the speed of sound until the aircraft has reached a Mach number of .75 or .85.

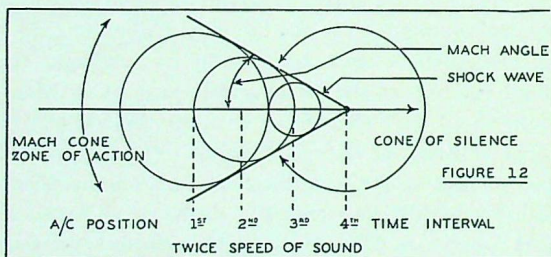
To follow through the evolution of the shock wave on a wing, we must refer to Fig. 14 which portrays a Mach number of 0.7. The local velocity of the air at the maximum thickness of the wing may have reached the speed of sound, and a shock



wave therefore forms at this point. As the speed increases still further, the velocity of the air on the lower surface may reach the speed of sound. Consequently, we have a shock wave on the top and on the bottom of the aerofoil. Continuing the speed increase, these top and bottom shock waves move back to the trailing edge and flare out. At a Mach number of 1.0, the shock wave begins to form ahead of the leading edge. When the Mach number of 1.2 is reached, the leading edge shock wave attaches itself to the leading edge. From there on, only the Mach angle of the shock wave changes.

Mach Cones

If we look at the diagram in Fig. 12 from a three-dimensional viewpoint, we see that the shock waves form the boundary of a Mach cone. On the

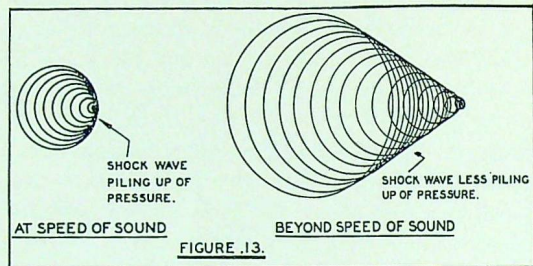


outside of the Mach cone the velocity is supersonic, and on the inside subsonic. All action is restricted to the inside of the Mach cone. The outside is a zone of silence.

Aspect Ratio

If a finite wing is considered (Fig. 15), the cross-section of the Mach cone elongates by virtue of

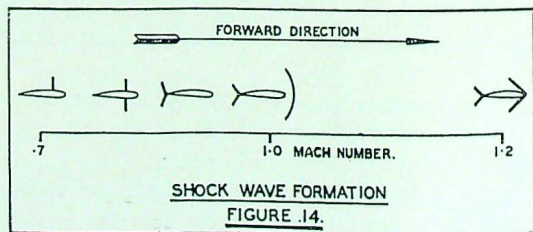
the span. The pressure equalization around the wing tips is confined to that area within the wing tip Mach cones, the apex of which is at the leading edge of the wing tips. These are shown as dotted areas in Fig. 15. The aspect ratio affects only that portion of the wing crossed by the wing tip Mach cones. As the wing tip cones flare out downstream, the tip effect merges and there is a wing tip equalization effect similar to that in the subsonic. It may therefore be concluded that induced drag and downwash exist in the supersonic case also, though their magnitude is not the same as in the subsonic case. It is also apparent that because the



induced drag effect is limited to that area within the wing tip Mach cones, the span can be reduced to lower the profile drag of the wing.

Transonic Drag

It has been mentioned that the resistance at subsonic speeds is a composite quantity of friction due to viscosity, profile drag, and induced drag. As the speed passes through the transonic region, the shock wave creates a steep pressure rise in the boundary layer and causes separation. The profile drag is replaced by that due to separation and shock wave drag. The shock wave causes a rapid deterioration in lift and a corresponding increase



in drag. The increase in drag starts at a Mach number of about 0.7, when the shock waves just begin to appear locally on the surface, continuing until a Mach number of 1.0. After this point, the lift and drag begin to become independent of the profile and dependent upon the angle of attack, so that the drag in the supersonic region is composed of resistance due to viscosity, induced drag, and shock wave drag. Fig. 16 indicates the increase in the drag co-efficient with speed. It should be realized that this curve indicates only the change in the drag co-efficient. The actual drag increases with speed because the resistance per unit area is also proportional to the square of the velocity.

Supersonic Aerofoils

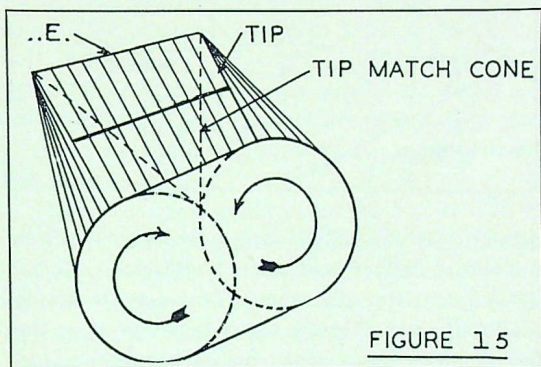
The laminar flow aerofoil sections, such as the series 6 which was developed to give the ultimate in subsonic speeds, has proved excellent up to the Mach number of 1.2, not because of the laminar flow qualities, but because speeds in the sonic region require the aerofoils to be thin with sharp entrant edges and laminar flow. The series 6 was found to be usable up to a Mach number of about 1.2. Beyond that, the lift and drag depend upon angle only, and the double wedge and circular arc aerofoils give much better results. These latter aerofoils are illustrated in Fig. 17.

Transonic Aircraft

To sum up, an aircraft suitable for a speed of 1000 mph will have to have an aspect ratio of about 1.5, with a sweepback of about 52° . The nose of the fuselage will require an extended point to warn the air ahead of the oncoming aircraft and to make the bow shock wave clear the wing (Fig. 19). As speeds are increased still further, the deflection of this shock wave becomes greater and the advantage of sweepback disappears. The inverse taper shown will possibly be added to solve the perplexing problems of premature tip stall at low speeds.

Stability and Control

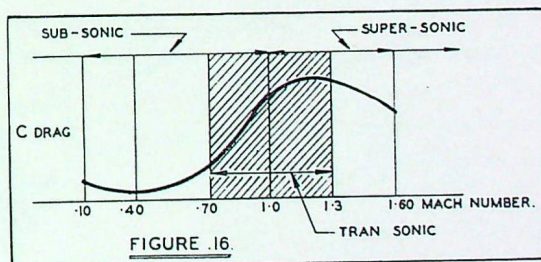
As the Mach number increases above the critical for the wing, the shock waves forming on the top and bottom surfaces reduce the lift on the wing. Downwash is associated with lift, and consequently decreases also. These changes bring about an increase in the static longitudinal stability, and alter the trim. Frequently the change in trim is

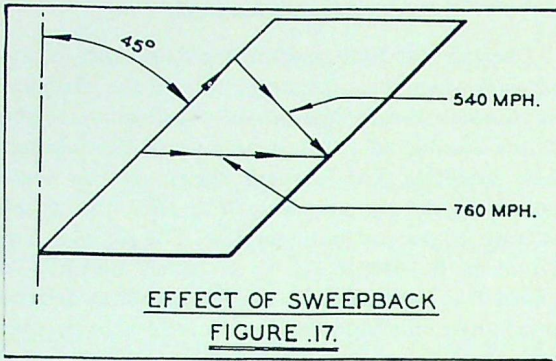


Sweepback

If an aircraft is travelling at 760 mph (approximately the speed of sound) and the wings are swept back 45° , the chord component of the speed (Fig. 16) is only 540 mph. It is this chord component that determines when the shock waves form. By increasing the sweepback to 65° , the chord component will not reach the speed of sound until a Mach number of 1.4 has been reached. A second benefit from sweepback is to escape the bow wave given off from the nose of the aircraft.

As the speed increases well beyond the speed of sound, the chord component of the velocity approaches the speed of sound, and the Mach angle of the bow wave decreases so that the benefits of sweepback gradually diminish. The trend, therefore, will probably be towards unswept wings at supersonic speeds.





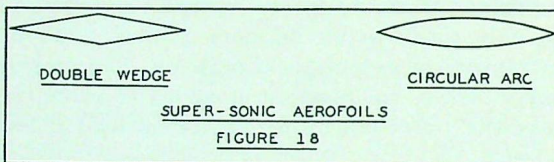
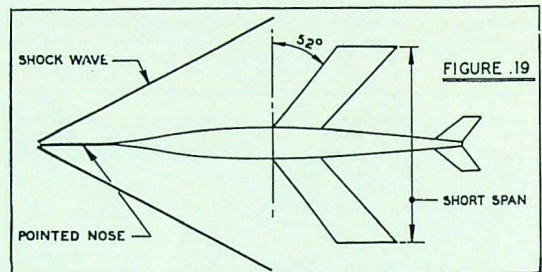
of turbulence peel off the wing because of separation of the flow on the surface. These may batter the tailplane to destruction.

The varying force on the top and bottom surfaces of the wings, the result of shock waves, places tremendous stresses upon the wing surfaces. All these disturbances vary with the particular design of the aircraft, and as yet are unpredictable within the transonic region.

There is also another effect which should be mentioned. Because of the variation in speed of sound with altitude, trouble has developed on an

such as to promote a diving tendency, which, because of the increase in stability, cannot be overcome by the use of normal elevator control.

Stability in a dive is also greatly affected at high subsonic speeds. Consider a present day fighter diving at a speed at which a shock wave has just commenced to form on the top surface of the wing. If the pilot pulls back on the stick in an attempt to pull out of the dive, the shock wave



aircraft travelling at 445 mph at 36,000 feet. These difficulties disappeared when the aircraft reached 3,000 feet at the same speed. This may be attributed to the fact that the speed of sound at 36,000 feet is much lower than that at sea level. Consequently, the shock waves that formed at the higher altitude disappeared at the lower altitudes.

increases. Since the shock wave causes a rapid deterioration in lift, the amount of air pushed downward by the wing (which produces lift) decreases. Therefore, the downwash also decreases. The effective angle of the tail may be so changed that a greater upload on the tail results and counteracts what the pilot is attempting to accomplish. The aircraft either becomes very stable, or continues to dive faster and more steeply, and finally comes out on its back.

These shock waves so disturb the airflow that the wake flares out into a wide angle, and chunks

Conclusion

The foregoing somewhat crude explanation of what happens in the transonic region might not entirely meet with the approval of exacting aerodynamicists. It is the writer's hope, however, that the information which has been given may help some of his readers to a better appreciation of the factors involved in the aerodynamics of high-speed flying.



Robert Smith-Barry

(The following excerpts from an article by Mr. C. G. Gray are reprinted here by courtesy of "The Aeroplane." Most younger generation pilots probably have never heard of "Smith-B.;" nevertheless, they are indebted to him for pioneering the method by which they were taught to fly. Although the Gosport Intercom. Tube, which could be serviced with adhesive tape, may have seen better days, and the flying instructor's "patter" has suffered many revisions, Robert Smith-Barry's Gosport System lives on.—Editor)

ROBERT SMITH-BARRY, of Gillits, Natal, who died after an operation, at Durban, at the age of 63, demands an historic review, for he may rightly be described as the man who taught the world to fly.

He was a descendant of Erasmus Smith, the tutor of King Charles II. I think that "Smith-B.," as he was always called, inherited the ancestral genius for teaching, and with it he combined the gift of leadership. As a 2nd Lieut. in the R.F.C. Reserve he had a crash in a B.E. 2C in France about August 25, 1914, and thereafter walked with a stick, but he became one of our most brilliant pilots.

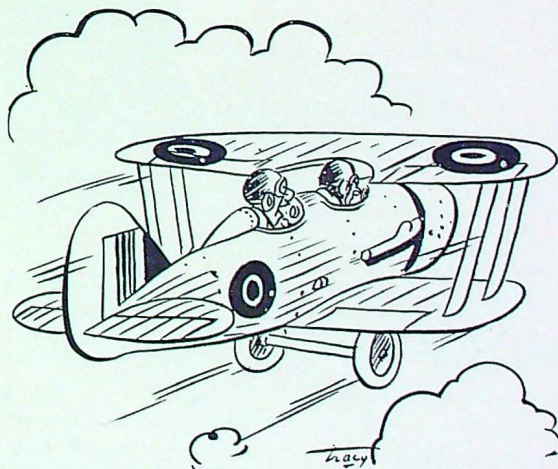
His great opportunity came late in 1917, when he persuaded the higher authorities that, by his system of teaching, a pupil could learn to fly in a few weeks better than he could in months by the old system, which killed a high proportion of the men it taught. He was allowed to set up the School of Special Flying at Gosport, with a staff of instructors whom he picked himself. His aircraft were 504K Avros with Monosoupape Gnome engines.

The result was that for years afterwards the Gosport system, with its "patter" (that was the standardized series of instructions given by instructor to pupil down the speaking-tube) and the Mono-Gnome were used by every country which aspired to have an Air Force; except Germany, France and the U.S.A. Gosport pilots went all over the World teaching Service people to fly. To become a "passed Gosport" pilot was the highest ambition of every instructor. The only higher qualification was to be an instructor at Gosport. And when, after 1918, the Central Flying School was again brought into being, its function was to instruct instructors how to instruct instructors under Smith-B's Gosport System. The "patter"

was modified later, as better and brighter aircraft came into use. But intrinsically the system was, and still is, Smith-B's.

Gosport was a wonderful place under him. Somehow his system, which scared strangers stiff, never seemed to kill anybody. I cannot recall a fatal accident at Gosport, though there must have been some. To land anywhere other than on the tarmac in front of one's own shed was the worst of bad form. A dirty aeroplane was a crime. Legend had it that Smith-B. took up every machine himself after overhaul, and if there was speck of oil on his field-boots when he landed, the flight-sergeant was put under arrest.

"Shooting up" other aerodromes within the range of an Avro was recognized training. And any station-commander who took the offender's number and complained was, metaphorically, shot down in flames by Smith-B. for having the presumption to criticize the invariably safe pilotage of the officers from the School of Special Flying. Yes, the flying was somewhat special.



Just quoting from memory, I recall that Gosport produced such outstanding pilots as Filippi (who was one of the foundation staff), Roderic Hill (Air Chief Marshal Sir Roderic), F. P. Scott (who taught Chile how to fly), Gilchrist (who commanded the famous 56 Squadron at the Armistice), Duncan Davis (of Brooklands and Shoreham, still as good a pilot as we have), J. N. D. Heenan (of Heenan and Froude, and the "Planet"), Keith Jopp (famous in A.T.A.), Stammers, Cloete (now important in S. Africa), Louis Strange (who deserves a history to himself), Norman Brearley (who airlined West Australia), Deighton Manning, and hundreds more, who spread the light of Gosport around the World, and trained Lord-Trenchard's Air Force of 1919-1930 to be the finest air service ever known.

After the War Robert Smith-Barry went to the U.S.A. and made a fortune out of Wall Street. He was a genius as a mathematician, as well as an erudite classical scholar, and a connoisseur of pictures.

In the 1939-45 War he joined the R.A.F. as a Flt. Lt. (I think) and ferried for a bit. Then he

landed a Blenheim on an impossible field, when an engine quit on him. After that he sent in a scheme to start a Super-Gosport in Canada, and pressed it so hard that to get rid of him the High-ups sent him to India, where, as usual, he was too efficient.

When he left the R.A.F. there were rumours that he had gone to live in Kashmir and had become a hermit or a Yogi. Later, we heard that he had shaved his beard, married again and gone to South Africa, where we wished him every happiness and a long and useful life, for, remember, he was only 63 when he died.

He was one of the very few men I have known at whose fantastic performances and eccentricities one could laugh heartily, while at the same time holding him in the highest respect for his great abilities and the thorough soundness of his ideas and ideals. The Smith was utterly English, solid and practical, the Barry was the wildest and most brilliant of wild Irishmen. And together they made a wholly fascinating and lovable person. Not only did he do great work, but he was a great man.



TRACERS

It has been suggested that space in "The Roundel" be reserved each month for the use of readers who wish to locate old Service friends. This seems to us like a good idea. So if you want to get in touch with anyone of whom you have lost sight in the shuffle of events, just drop a line to:—

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



WEAPONS WISDOM



(Reprinted by courtesy of "Air Clues")

It is a truism to speak of being wise after the event. At the same time, wisdom is born of experience, and the Royal Air Force after its experience in World War II has come to realize that armament is "the most important aspect of the fighting aircraft." That is why there is today a new approach to weapons training, the emphasis being on realism and accuracy.

TO THOSE CONCERNED with the present policy of armament training, the shape of things to come has made itself evident; but it is clear that many others in the Royal Air Force who are not in daily contact with armament affairs should understand and appreciate its implications also.

In the past there was a tendency to regard armament as an undesirable accessory to the aircraft, and its use, or practice in its employment was relegated to those set periods which Higher Authority ruled to be compulsory—usually a month each year at an armament practice camp. For the rest of the time, bomb-carriers, guns, and sights were removed from the aircraft for storage in the squadron armoury. This outlook necessarily underwent a fundamental change in the recent war with the vindication of armament as the most important aspect of the fighting aircraft.

Arms and the man

Not only is this new appreciation being retained, but also it is being cultivated by the steps at present in implementation at the Empire Air Armament School. Never again will the days return when pilot and aircrew consider their armament knowledge and responsibilities merely as onerous extras, not to be taken too seriously. In its place is the realization that armament is pre-eminent in importance, for it is the *raison d'être* of the military aircraft.

Lord Trenchard, when leader of the Royal Air Force, said: "Without armament there is no need for an Air Force." The significance of this admonition was lost on the pilots of the period between the two World Wars; but today the truth is acknowledged: the new conception of the meaning of armament is foremost in the thoughts of all at E.A.A.S., and one might thankfully say that at last Lord Trenchard can see that his words have struck home—truly the "new look" has arrived in the Royal Air Force.

Infliction of damage

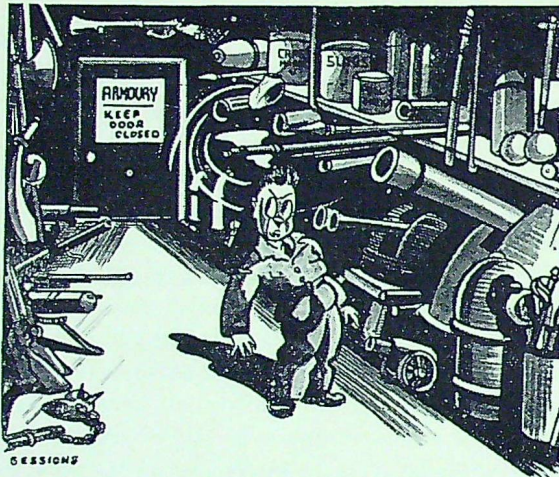
To put across to the Service what armament must mean to those who fly, it must first be agreed that the armed aircraft is a weapon capable of doing a certain amount of damage. The type and extent of this damage will depend on the kind of armament load carried—be it bomb-type, or a projectile propelled from some form of gun; that is, the damage is basically dependent on the lethal nature of the weapon used. To a large extent, however, the damage inflicted will depend also on how the weapon is used. The unskilled workman can "botch" his job by the misuse of his tools; in the same way weapon users can spoil the effect by misuse of their weapons: a misuse that has very serious results, for it is costly to the country, and in war, with resources strained to the limit, wasted effort cannot be tolerated. Nevertheless, misuse of weapons cannot be laid at the door of aircrew alone, who, in many instances, have no control over the selection of the weapon or the target; their task being merely to execute the attack previously planned at "higher level."



... weapons cannot be laid at the door of aircrew alone ...

The right course

It is imperative, then, that staff officers at higher levels of control in the Royal Air Force be aware of the capacity of a weapon to inflict damage, of the correct method by which it is to be used, and of the capabilities of the operational squadrons. It is for the purpose of instilling such an awareness that there exists at the Empire Air Armament School a series of weapons courses, the senior of which is held at R.A.F. Station, Manby, the junior

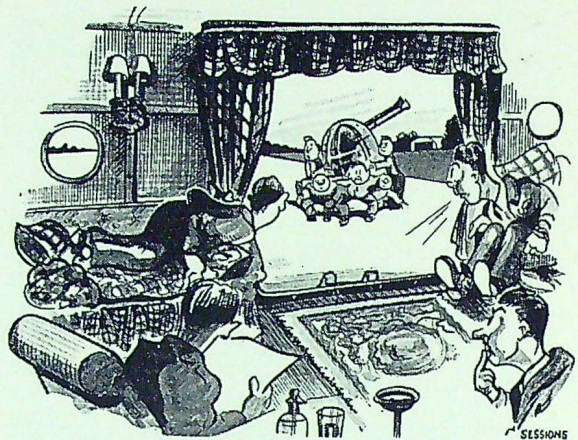


... receives an intimate introduction to his tools . . .

complement being at R.A.F. Station, Leconfield. (Official details of these courses are contained in A.M.O. A854/48).

—for the “juniors”

First let us learn something of the junior weapons course which henceforth will be one every pilot must complete after he has finished his cadet training, thereby ensuring that at an early stage in his career the future weapons user receives an intimate introduction to his tools. The course lasts for three months and the knowledge acquired concerns the best use of weapons in the air; and this implies a considerable amount of flying, not only as pilot, but also as bomb-aimer, gunner, and radar operator. All types of current weapons feature in the instructional syllabus, and besides



... regard armament as an undesirable accessory to the aircraft . . .

stressing the correct method of weapons usage the lectures indicate the possible faults and errors which the weapon user can so easily commit. The keen fliers will say: “Ah, not a bad course—I’ll have a basinful of this.” Yet it must be realized that this course is merely an *introduction* to weapons; that in the following years the graduate must strive continually to improve his understanding of weapons and his ability to use them correctly, so to become an accurate hitter of targets.

—for the “seniors”

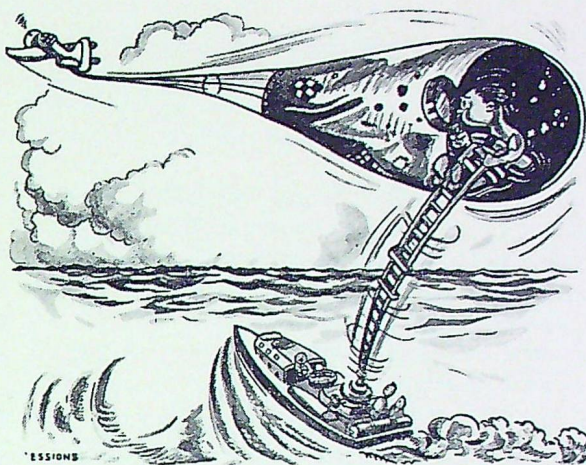
As for the senior weapons course, this is designed to introduce the already “weaponized” pilot to that sphere of knowledge which forms the background of the staff officer. The course is longer, taking six months, the students being drawn from graduates of the junior course, after they have completed a period of squadron flying and have, as a general rule, attained the rank of flight lieutenant.

It is not pre-supposed in the syllabus that the student knows all there is to know about every weapon and its use; rather the supposition is that there exists the need to perform further air exercises with all types of weapons, and, consequently, a great deal of flying is done in fighter, rocket, and bomber aircraft. Again the vital necessity of attaining accuracy is stressed, and exercises are

done to show the effect of good and bad aiming. Part of the curriculum is the detailed study of targets, an analysis of which reveals their vulnerability to the various types of weapons, and in consequence what is the best weapon to employ. From this it is but a simple step to ascertain the quantity of units required to inflict a certain degree of damage. Carried a stage further, by making allowances for the aiming ability of the attacking force, for the number of casualties likely to occur before the attack, and for other reasons for failure to attack, it is possible to determine the number of aircraft which should be despatched to the target. As the staff officer is directly concerned with training, particularly in peacetime, it is essential for him to possess a knowledge of the assessment and analysis of training results, and these topics are discussed during the course.

As a reminder, it should be said that qualification on the senior weapons course entitles the graduate to the symbol "W" in the Air Force List.

So we see that our staff officers now have the means of selecting the correct weapons to attack any given target, and that the weapons team—



. . . the detailed study of targets . . .

that is, the planners, staff officers, training officers, groundcrew, and aircrew—participates as a whole in the air operation, the success of which ultimately hangs on how correctly the weapons have been used by the pilot and crew.

COURTEOUS AIRCRAFT

Quoting the AIL Fortnightly Bulletin, of India, "Canadian Aviation" tells of an unusual aircraft designed by a mythical Professor Wren.

When the aircraft nears the stall, the bell on a cockpit telephone rings. When the pilot answers he hears:

"The manufacturer does not recommend that this aircraft be flown at such low speed. It is recommended that forward pressure be exerted on the control column and the rudder be held in a neutral position.

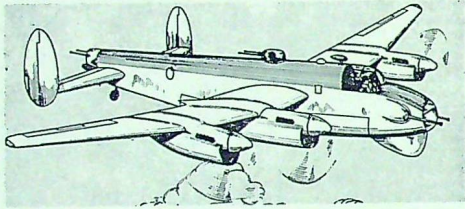
If the pilot complies, another phone call thanks him for his co-operation. If not, an automatic catch is released and a gramophone with parachute is released which follows the airplane to the ground playing the Funeral March in F sharp minor.

BRITAIN'S NEW LONG-RANGE BOMBER

(Condensed from an article in "Aviation Week")

BRITAIN'S LATEST very long-range bombing-reconnaissance plane, A. V. Roe's Shackleton, has made its first flight. Designed to cruise about 6,000 miles at better than 200 mph., it was built for over-water patrol duty.

None of Britain's World War II patrol planes could range halfway across the Atlantic, cruise about there for a prolonged period, and return to base. The Shackleton will emphasize long endurance combined with greater bombing power and improved defensive armament to be used against submarine attack.



Developed from Avro's Lincoln, present RAF standard bomber, the Shackleton will have a much roomier fuselage, 12 inches wider throughout most of its length. This will mean a great deal in comfort for the crew on long missions, and a long, large-capacity bomb bay.

Its resemblance to the Avro Lincoln is marked—but it will be much more sturdily powered, with four Rolls-Royce Griffon 57 engines (liquid-cooled 12-cylinder Vee-type), each developing 2450 hp. at takeoff, in place of the Lincoln's Merlin 68 or 85 engines, which produced only 1635 hp.

The Griffon 57 incorporates a two-speed, single-stage super-charger, and indirect propeller drive through a double-pinion gear-box—the rear pinion of which drives the inner shaft of the contra-rotating propeller system, the front pinion driving the outer shaft. The Shackleton, therefore, will be the first four-engined British plane to fly with contra-rotating propellers (Rotol).

By comparison with the Lincoln's 82,000 lb. gross weight, the Shackleton should be able to lift 94,000 lb., plus—this having been the original design weight figure quoted a year ago. The 120-ft. wingspan of the Lincoln will probably be upped to

about 130 ft., and the extra lifting capacity will be used to carry more bombload and the extra fuel for the Shackleton's longer range. Otherwise, the wing is the traditional Avro-bomber structure.

A number of significant changes distinguishes the Shackleton from the Lincoln:

The H2S anti-submarine search-radar radome, which was always carried amidships in the Lincoln, and whose upper portion always obstructed passage up and down the length of the cabin, has been moved forward to the nose of the Shackleton. In addition to clearing the cabin, this change allows the radar operator to shift readily to the bomb-aiming position in the extreme nose of the plane, and act as forward-gunner.

Forward guns have been increased from .50 calibre to twin 20-mm. cannon (probably Hispano) and are mounted in nose barbettes permitting greater training movement. This is an important improvement in the plane's ability to defend itself against a surface vessel's guns.

Other armament will mainly resemble that on the Lincoln: a dorsal turret (Bristol Type B-17) mounting two 20-mm. Hispano Mk. 4 or Mk. 5 cannon, and a tail turret (Boulton-Paul Type D) electrically-operated, with radar sighting.

Another identifying difference of the Shackleton: the inboard engine nacelles project aft past the trailing edge of the wing, which is unlike the Lancaster and Lincoln.

Speed of the Shackleton probably won't exceed the Lincoln, which does 315 mph. maximum, 215 mph. long range cruising.

Answers to "What's the Score?"

- | | | | |
|---------|---------|---------|---------|
| 1: (c) | 2: (c) | 3: (a) | 4: (d) |
| 5: (a) | 6: (d) | 7: (c) | 8: (a) |
| 9: (d) | 10: (b) | 11: (c) | 12: (c) |
| 13: (c) | 14: (a) | 15: (c) | 16: (d) |
| 17: (b) | 18: (c) | 19: (d) | 20: (c) |

The Editors of all RCAF Station Papers, whether large or small, are asked to help Sgt. Shatterproof quench his insatiable thirst for knowledge. Please have one copy of every issue of your Paper sent to:

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