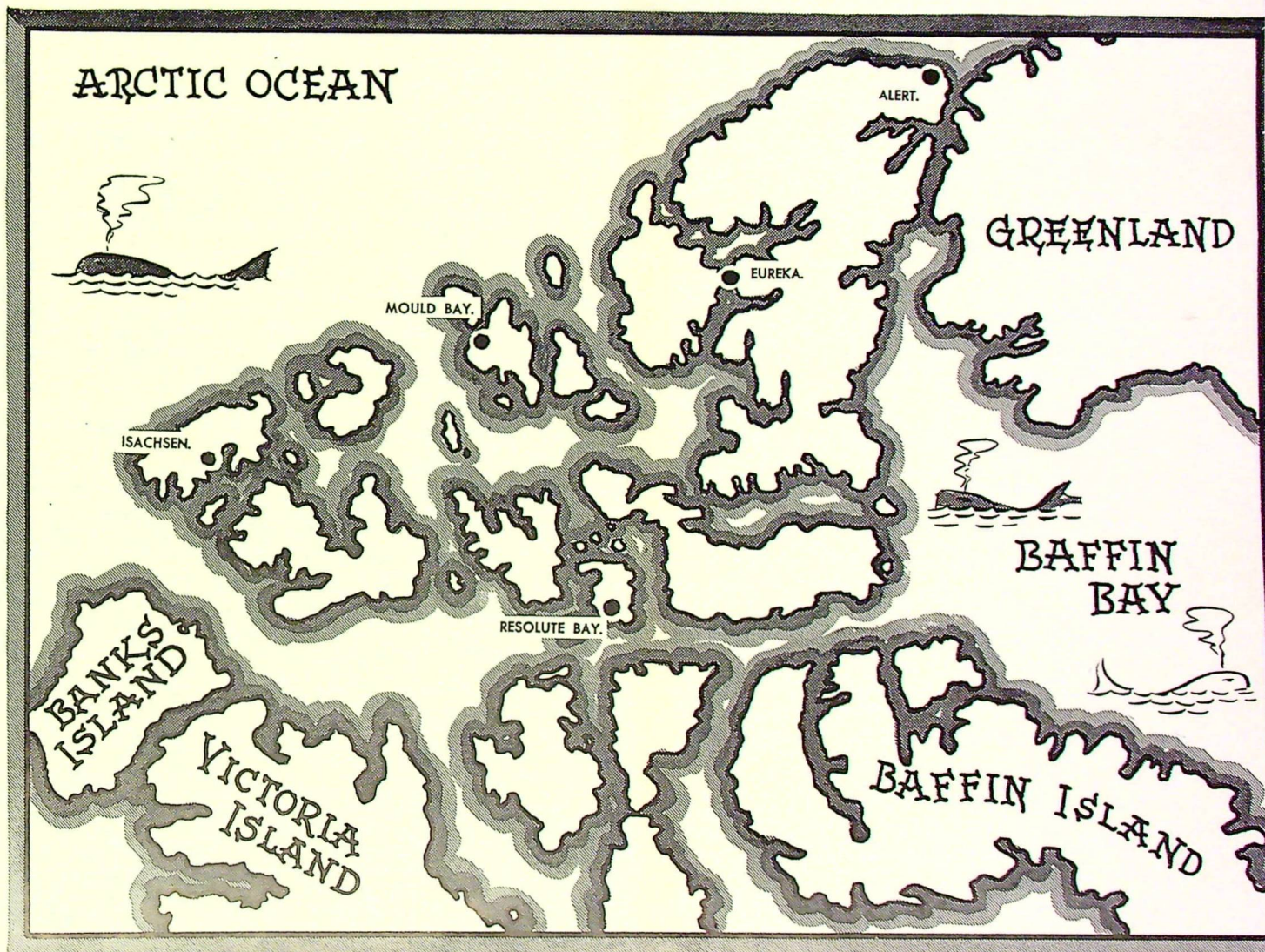


# The ROUNDDEL

Vol. 7, No. 8  
SEPTEMBER 1955



ROYAL CANADIAN AIR FORCE



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Royal Canadian Air Force

Vol. 7, No. 8

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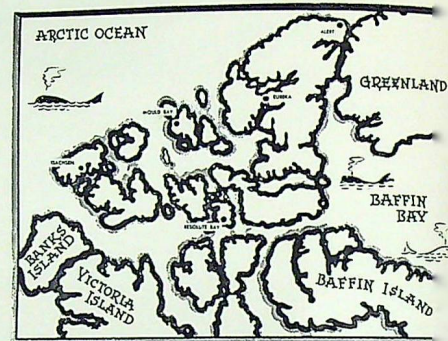
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This Month's Cover



Ten years ago the places noted on our cover-map were no more than mere names, without any significance except to geographers. No human beings lived there; only a handful of arctic explorers had ever even set eyes on them. Today, as told in our article "Spring Re-Supply", they are regular points of call in the routine flights of Air Transport Command.

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

# A Letter from the C.N.S.

14 September, 1955.

Dear Air Marshal:

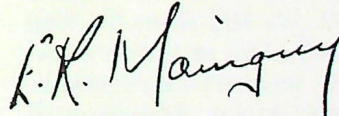
This year of our Lord, 1955, is one of memorable anniversaries for us of the Royal Canadian Navy and our brothers in arms in the Royal Canadian Air Force.

This 15th anniversary of the Battle of Britain, with its memories of the courage and gallantry which broke the spirit of Hitler's Luftwaffe, falls only a few months after the 10th anniversary of the Battle of the Atlantic.

It was in this latter battle that, for five and one-half years, Air Force and Navy fought side by side to rid the North Atlantic of the U-boat scourge. The comradeship and co-operation born in those trying years has continued.

I extend on this occasion the congratulations of the Royal Canadian Navy, and best wishes to you, your staff and the Royal Canadian Air Force as a whole.

Yours sincerely,



(E. R. Mainguy)  
Vice Admiral, RCN  
Chief of the Naval Staff

Air Marshal C. R. Slemon, CB, CBE, CD,  
Chief of the Air Staff,  
O T T A W A

# Memoirs of a Canadian in the R.A.F.

## PART SEVEN

By Wing Commander A. L. Bocking, D.F.C.

*(In May 1939, the reader will remember, No. 33 Squadron was moved back to Helwan, near Cairo, upon conclusion of the Palestine campaign. In this instalment of his story, Wing Cdr. Bocking brings us to the outbreak of the Second World War.—EDITOR.)*

THE advancing summer of 1939 brought a new sense of urgency to the Royal Air Force squadrons of the Middle East.

The change in tempo was accepted somewhat reluctantly by the older officers who had spent many years in the unhurried atmosphere of this ancient land of Egypt. Gone were the leisurely afternoons beside the swimming-pool at the Gezira Sporting Club, the "gimlets" at the Turf Club, and the long evenings of good conversation at Tommy's Bar. No. 33 Squadron's activities epitomized the preparations being made all over the world against inevitably approaching war.

Our *Gladiators* appeared in new war-paint. One bottom main-plane was painted white and the other black, in order to distinguish them from the Italian CR-42s, which were very similar in appearance. (The German did not seem to concern us greatly at this period. We had spent too long glaring over the backyard fence at Italian Cyrenaica.) For the first time, numbers were issued to officers: mine was RAF 37079. Identification discs, or "dog tags", were issued — two of them. ("One's left on your bleedin' body, Sir, one goes to the 'igher-ups".) The preparation of last wills and testaments became compulsory.

This latter business caused some amusement among the pilots. On pooling their assets, they found they could raise eight pounds seven shillings and fourpence, three packages of Players, two half-empty tins of Woodbines, and a "Dear John"

letter from a girl in Blackpool saying she was going to marry a sailor.

\* \* \*

Now that the squadron had settled in at Helwan, it was necessary for my wife and me to go house-hunting.

House-hunting in an Egyptian village is not as difficult as it might seem, as there are only a few houses in any way suitable for habitation by a European. The landlords of those not already occupied are, without exception, first-class rogues. When you finally settle on the least unsanitary one (both house and landlord), you offer one half of what you are prepared to pay. This is encountered by a holding up of hands and a calling upon Allah to behold this infidel who wishes to deprive fourteen children, all true believers, of their very food and shelter. Such play-acting, however, fools no one; it is merely a preamble to a demand for twice as much money as the landlord expects to receive. After numerous cups of thick sweet Turkish coffee and the passage of several hours of the most satisfying arguments and mutual recrimination, you meet in the middle — as you knew you would right from the beginning. If it has been a worthy argument, and you have upheld your end in a satisfactory fashion, then the landlord becomes your very good friend, and will even find servants for you, some of whom may possibly be honest.

The only features of interest I can recall about our Helwan house are the very fine date trees that stood in the yard. One morning I noticed that the yard was a scene of some activity, with strange Arabs skinning smartly up and down the trees. The landlord, bossing the operation from a cool spot in the shade of the house, explained that date trees came in pairs, male and female, and that nature was being given some assistance in the business of propagating little bundles of dates. I thought this most interesting and went inside to explain it all to my wife. Her only comment was: "Whatever will they think of next?"

As Ismail had returned to visit his family in Ismailia, we had perforce to find another head "boy", and we somehow wound up with one Mohammed. We were never too sure how we won him: one morning he simply appeared in our kitchen. I thought my wife had hired him and she in turn thought I was responsible, and it was several days before we found out that neither of us had hired him, by which time it was too late, for Mohammed had already become one of the family. He was a little old Arab of great dignity, and the fact that he was very nearly blind was inconvenient only when it came to serving soup. He found it impossible to see when we or our guests had finished, and he used to slip in from the kitchen, take the soup-plates from under our very noses, and, holding them at eye-level, peer intently into them. It was a most disconcerting procedure, but we were quite unable to change it. Soup was finally removed from the menu after we were served clear *consommé* well garnished with very small red ants that Mohammed had failed to see.

Mohammed (soon shortened to "Moe") had worked for many years for a retired Indian Army major, unmarried, and obviously possessed of some very queer habits, particularly as regards the consumption of vast quantities of "wheesky". The old gentleman had died fairly recently and had left Moe a little money. Moe therefore kept his memory forever green, and soon we knew all the likes and dislikes of this now defunct soldier of the Great White Raj. Every statement of Moe's commenced or ended on the note that "the Major

liked" or "the Major disliked" this or that. We were soon heartily sick of the Major. There was, however, one statement attributed to him with which we were in hearty agreement. When my wife would send Moe on a simple errand, she would explain what was required several times in as elementary language as possible and then end up with the admonishment, "Now don't forget!" Moe would give her a hurt look and with great dignity would reply: "Major say Mohammed has memory like sieve."

Old Man Moe was really quite a capitalist, and why he worked for the miserable stipend we could afford to pay him, I never knew. With the money that the Major had left him he had purchased several gharries (horse-drawn carriages which were still more generally used in Egypt than taxis). Poor old Moe!— he had his troubles with the lads of No. 33 Squadron. Like all good fighter pilots, they didn't like to be driven by anyone else. After mess parties, out would go the protesting gharry-drivers, and, with much cracking of the long whips, off would go the gharries at a speed just a fraction under their limiting Mach number. Moe became the owner of the very first U-drive gharry company in Egypt.

\* \* \*

The backbone of the Middle East Air Force was still the old-time squadrons — No. 47 with its *Vincents* at Khartoum, No. 33 with its *Gladiators* and No. 45 with its *Wellesleys* at Helwan, No. 14 (*Wellesley*) at Amman, No. 216 (*Bombay* transports) and No. 208 (Army co-op. *Lysanders*) at Heliopolis, and Nos. 55, 30, and 84 (all Mk. 1 *Blenheims*) in Iraq. No. 80 Squadron and its *Gladiators*, more recent arrivals, were at Ismailia. Thus, we were not heavy on fighters, a situation that was not to be remedied for many long months and was to be particularly hard on *Blenheim* crews.

The month of June brought a move that I had been fearing for some time. I was posted to the instructional staff of No. 4 Flying Training School at Abu Suweir, at that time the only F.T.S. outside England. Abu Suweir was situated in the desert about 10 miles west of Ismailia. Here was a



Old Man Moe

station with no redeeming features — hot, pest-ridden, and with the highest incidence of malaria in the Middle East. Even the Egyptian Railway sprayed its coaches and passengers as their train pulled out of the malodorous sun-baked station and travelled along the putrid stretch of water which bore the unbelievable name of “Sweetwater Canal”.

The threat of war had increased, and the intake of pupils at the Flying Training Schools reflected the urgency of the times by more than doubling itself. Instruction went on from early dawn until late at night.

About to leave Helwan, I was feeling very low about going just when it looked as if things might get really interesting. I was standing around the bar, bemoaning my fate, when “Boly” (Flt. Lt. Bolingbroke, D.F.C.) came in, full of news. His flight had just been detached to the Western Desert for frontier patrol duty out of Mersa Matruh. If the balloon went up, he’d be sitting there right over the wire waiting for it. Feeling even more sorry for myself at his news, I didn’t

pay much attention when I heard someone ask Boly what he’d done with his “car”. I knew that the C.O. had made some pointed suggestions about burying it far out in the desert. I knew too that Boly had, in fact, tried to give it away to Achmed, a rather shifty manservant whom no one liked, only to be met with a sly grin and a vehement “La abadin, Effendi!” (“No, never, Sir!”). That Boly had managed to get rid of it was obvious, however; and, despite the prodding from the others, I could see he was reluctant to say what sucker he had foisted it on. Then I caught a couple of side-glances in my direction. With a dawning realization, I challenged him point-blank: “Boly, you didn’t — ?” “Well, old boy,” he answered, in a hurt tone, “I just mentioned casually to your wife that I was going to drive it out into the desert and leave it, and she thought that was a frightful thing to do to the faithful old jalopy, so I just naturally gave it to her.” With that he made a quick escape.

Jerry Harrison, a Canadian pilot officer (Fort Qu’appelle, Sask.) who had recently joined my flight, came home with me that evening, and there in the driveway was the car. Jerry walked slowly and carefully around it, and then said in a slightly awed tone, “What a hunk of tin!” So “Hunka Tin” it was christened, and “Hunka Tin” it remained until it fell apart many months later.

It was an Austin 4-door open touring car, circa 1927. Its body, originally black, was streaked with rust and scoured and pitted by battles with many a *khamseen* (sandstorm). The foot-throttle had long since been broken off and lost, and only the hand-throttle remained. This, though, was not really a disadvantage, because at full throttle Hunka Tin jogged along at a nice 30-35 m.p.h. and the driver could hang his bare legs over the side in the cooling slip-stream. Most of the leather seat-buttons had long since popped off, and its occupants were constantly subjected to intimate assaults by springs and horsehair.

All these things were, of course, to be expected in a car that had reached a venerable age under extremely rough conditions. Any lesser make of car would have given up the ghost ages ago. But it was none of these drawbacks that had caused

people to shun Hunka Tin like the plague. No, her Shameful Secret was that she wouldn't start without being pushed! Nor was her infirmity apparent only when the battery was low, or the engine flooded, or on any of the other occasions when cars may have to be pushed, but all the time, hot or cold, uphill or downhill. Nothing else but a push would induce Hunka Tin to start. Even though every sign and portent might be right, you could crank until you were blue in the face, and not one kick would the engine give. But just lean a shoulder to the rear and give a gentle shove . . . and, with mighty bangs from her open exhaust, she'd be under way. This trouble was never cured; and until her last day Hunka Tin never started without a push. You couldn't even fool her by letting her run downhill: it just didn't work!

To complete her portrait, I should add that she ran on as fine a set of tireless tubes as anyone ever saw. It wasn't a question of where the tread was worn and the cords showed through, but rather when the cords were worn and the tube showed through. Tire-irons and a patching-kit were as important in getting from point A to point B as were gasoline and oil, both of which she swallowed with equal gusto.

The day on which my wife and I left Helwan for Ismailia dawned bright and clear. (So, for that matter, did all the other 364 days of the year.) All our worldly goods had been piled in the back seat of Hunka Tin. Suitcases, tennis-rackets, brass coffee-tables, and *chattis* (earthenware water-bottles) were festooned from every possible place. My wife sat high in the front, balancing on a broken spring and waving tearful farewells from under a large cork sun-helmet. Mohammed and three of his U-drive gharries were standing by, the drivers with their long Arab night-gowns tucked up to their waists, waiting to give Hunka Tin the necessary push to get us going. With one last look at the bulging tires I jumped aboard and yelled "O.K.—roll 'er!" Willing hands shoved us off, and, to the accompaniment of loud Arab chants, we reached the speed needed for Hunka Tin to burst into life. Down the road we went with a banging and backfiring from our open exhaust. The gharries driven by squadron pilots and with

horses at full gallop, raced alongside. Loud cheers came from the local population, who loved any kind of a show, and the yapping of the pariah-dogs added to the din. It was the biggest excitement to hit Helwan-les-Bains since they'd found Moses in the bulrushes not a mile from our starting-point.

One hour and twenty miles later we stopped for a drink in Cairo. We didn't dare stop Hunka Tin, and all the time we were in the Long Bar of Shepherd's Hotel it remained banging and shaking at the curb out front. Quite a crowd had gathered by the time we returned. This crowd did not press too close to Hunka Tin, as an ominous trickle of steam was coming from the radiator cap and deep rumbles rolled up from under the hood. I was unable to stop and give an interview to several newspaper reporters and a gentleman from "The Times" who wanted to know if we were trying to win a bet of some kind. I thought it necessary to get moving and circulate a little air around the engine before the whole thing blew up and covered Shepherd's verandah with pieces of hot metal, household goods, and innocent bystanders. A few minutes of fast running (35 m.p.h.), and the red line on the radiator thermometer again showed a thin band of white at the very top.

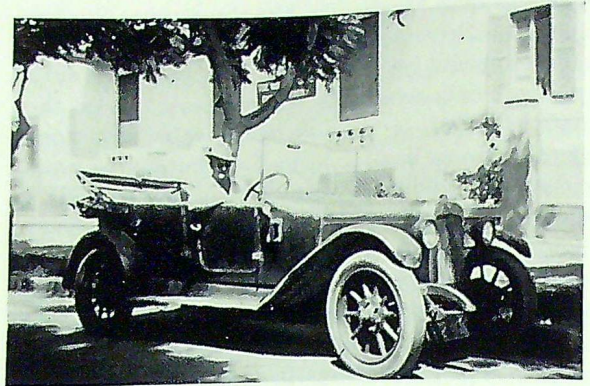
All through the afternoon we headed east, along the thin strip of vegetation that follows the Sweetwater Canal from the Nile across the eastern desert to the Suez Canal.

Along about 4 o'clock we pulled into a native village and stopped at the ubiquitous Shell gasoline pump. The temperature was in the high 90s, and all our water was either gone or too hot and unpalatable to drink. So, risking disease and pestilence, we called over the "gazooza man". He is a character, present in every village, who carries a cool sweet non-alcoholic drink in a sheepskin on his back and hands it out in little glasses for a piastre or less. He is always surrounded by a mass of buzzing flies and looks most unsanitary, but the drink is cool and pleasant, and we survived.

Quickly surrounded as we were by a howling mob of filthy children crying for baksheesh, we were glad to escape back to the mud building that passed for a garage. There, to our horror, we

discovered that Hunka Tin had been shut down. I explained in very bad Arabic that we'd need a push. Willing hands quickly gathered around and I was hopeful that we would soon be on our way. The engine, however, was very hot, and even after a push of some twenty yards Hunka Tin was still reluctant to go. It was at this point that Cyclops came on the scene, a rather repulsive, one-eyed, crapulent individual, who waved the others back with a rapid flow of Arabic none of which I could follow. As he came over towards the car, my wife ostentatiously picked up the tire-iron from the floor and said *sotto voce*: "I don't like the look of this monster." I agreed; but he touched his forehead and greeted me with the salutation of the country "*Salaam aleikum, Effendi*", and I answered with equal courtesy "*Aleikum salaam.*" We had a little palaver in basic Arabic, which brought out the two facts that he was the local big wheel by virtue of his head-knocking ability, and that until he got fifty piastres (about \$2.50) the whole village would be too weak to push.

I hated to have to give in to this dark-skinned gangster and walked over to have a conference with my wife. It was then that I noticed that the original unsuccessful push had placed Hunka Tin almost at the top of a long but shallow incline. I told my wife to slip behind the wheel, put the car into high gear, and, when the engine kicked over, shove the hand-throttle all the way down and keep going. The now muttering and hostile crowd stood about 25 yards back from the car, and when I started to push Hunka Tin they moved forward slowly. As she felt the incline beneath her, the car began to roll faster ... the engine caught ... once ... then twice ... and finally, with a rattle and roar, we were off, with me clinging for dear life to the spare tire. Rude remarks and loud shouts of rage arose from the now pursuing crowd, balked of its baksheesh. I climbed on to the pile of luggage at the back and yelled back some of the choicer Arabic phrases I had picked up, ending with a monumental yell of "*Salaam aleikum!*" While neither rude nor ribald, the words mean "Peace on you!", and they summed up my feelings pretty well ...



The author at the wheel of Hunka Tin in Ismailia.

Without further adventure we arrived in Ismailia, tired but triumphant, and moved into a furnished apartment which we had rented by mail. As we carried our cases upstairs, we heard a loud bang. Hunka Tin's left rear tire had blown out. A few moments later, a despairing hiss told us that the right rear had followed suit. Poor old Hunka Tin, conscious of a job well done, was determined not to go further that day.

My tour of duty as O.C. the front-gun and tow-target flight at No. 4 F.T.S. was notable for little outside the routine of hard work. Flying commenced at 5.30 a.m., which meant that I had to leave home not later than half past four. This posed the problem of rounding up enough sleepy-eyed Arabs, on their way to work, to push Hunka Tin. It became even harder as the word got around and the natives began to shun our area at that time of the morning.

The only amusing incident of this rather dull period was when my wife decided that Hunka Tin deserved some seat-covers. Actually the profusion of horsehair made this decision almost mandatory. So one day, when I had left the car at home, the big operation started. Hunka Tin, of course, just stood at the curb, and the cutting and sewing of the bright chintz with the large red flowers, and the gala bedecking of the seats, soon brought out a large crowd of interested natives. I was told later that, when the last stitch was stitched and Hunka Tin stood there in all her glory, more than



a hundred onlookers cheered and shouted. My wife, exalted by her handiwork, then decided to give the car a new coat of black paint. Never having painted anything before, she knew nothing about thinning the paint or even of stirring it; so, as the sun got hotter and the paint got thicker and the flies and bluebottles swarmed, the car got lumpier and lumpier. By the time I reached home, my wife and the car were both in a pretty sad state. It only needed my amazed look at the car and my sarcastic comment, "How nice! You've stuccoed it!", to bring tears of frustration and anger to her eyes — and only by quick manoeuvring did I avoid the wet lumpy paint-brush that sailed in my direction as I beat a hasty retreat to the accompaniment of the natives' delighted cheers.

\* \* \*

The end of August finally brought the certainty of war. I was miserable as I envisioned things starting while I was languishing at an F.T.S. I was pulling every string possible to get back to an operational squadron, but life was getting pretty hectic in H.Q. and the problems of one Flight Lieutenant didn't receive much attention.

On September 1st, a move that had been long discussed got under way. No. 4 F.T.S. was to move — lock, stock, and half-trained pupils — to Habbaniya in Iraq, several hundred miles across some of the worst flying-country in the world. This move was necessary in order to place the F.T.S. beyond the range of the Italian S-79 three-engined bombers, based on the Dodecanese Islands in the Mediterranean. That it was a wise move was evident later, when Abu Suweir did in fact get heavily bombed.

The first air movement of the training school was to be made by a large gaggle of pupils from the junior term, none of whom had been outside the airfield circuit, and very few of whom had even an elementary knowledge of formation flying. They were to fly the school's *Hart* trainers and *Audaxes* and I was to lead the formation in a *Fairey Gordon*. We had a carefully worked-out plan of how to get these fledgelings into the air and all heading in the same direction. The plan was of necessity rigid; there was no room for operational

flexibility. Any change in the carefully briefed procedure could cause chaos among this group of embryonic airmen. Such was the situation when I took off ahead of the widely spaced group of fifteen training aircraft that thundered off the desert in my wake. Every eye was fixed on my *Gordon* as we set course for Amman in Transjordan, our first refuelling-stop. There could be no turning back. Soon all my charges were safely in the air and the small armada was crossing the Suez Canal and heading across the Sinai Desert toward Palestine, the valley of the Dead Sea, and Amman.

As we approached the Transjordanian hills, the hot thermal currents caught our slow biplanes and slammed them 500 feet up, then dropped them a sickening thousand. My loose formation was becoming even more widespread. Then what I feared most, happened. An *Audax*, far out on the left, peeled off and started down for the rugged hills. Its propeller windmilled slowly for a moment, then stopped. Notwithstanding the strict orders to the contrary, a *Hart* trainer, flown by a pupil with large bumps of curiosity and idiocy, or with aspirations to be a hero, followed the stricken aircraft down toward the rugged peaks. We didn't see the climax of this incident. We pressed on to Amman, where No. 14 Squadron took up the search for the missing aircraft. Our landing at Amman took toll of another *Audax*, which ground-looped and became a write-off.

We took off from Amman, now thirteen strong, in the blazing heat of the early afternoon. We followed the oil-pipeline, over the big pumping-stations of H4, H3, H2, across the desert to Rutba Wells. The landing area beside the fort at Rutba was rolling desert, and the sand blown up by the landing and taxiing aircraft hung thick in the air, making each landing progressively more difficult. Twelve aircraft were safely on the ground when disaster struck again. The pilot of the thirteenth aircraft, an *Audax*, possibly confused by the thick pall of sand and the unfamiliar airfield, and tired after a long and arduous flight, came in too slowly on the final approach, spun in, and burst into flames. Both he and his fellow-pupil passenger were killed.



It was now but a short flight to our final destination, and the route was clearly defined by a broad camel and caravan trade route that led to Baghdad, passing Habbaniya en route. I put the senior pupil in charge of the remaining eleven aircraft, and my two airmen and myself remained at Rutba Wells to make the necessary arrangements for the removal and proper care of the victims.

It was the morning of September 3rd, 1939, when I landed at Habbaniya. There, in the Iraq Levies' mess, I heard the Prime Minister announce over the B.B.C. that we were now at war with Germany.

*(To be continued)*

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## FLIES

*(Before Wing Cdr. Bocking's "Memoirs" come to an end, it may be appropriate to publish the following verses which we have received from Flt. Lt. L. J. Anderson, of the Directorate of Air Intelligence at A.F.H.Q. A pilot in the R.A.F. from 1938 to 1946, he received his first air gunnery instruction from Wing Cdr. Bocking at Abu Suweir, in Egypt. The verses, which were written by Cpl. D. R. Campbell of the R.A.F., made their first appearance in a Middle East R.A.F. newspaper some time in 1941.—EDITOR.)*

The original creation and the pow'rs of irritation  
Of the common or infuriating fly,  
Are things which neither church nor zoological research  
Can possibly attempt to justify.  
Not the nicest of the features of these horrid little creatures  
Is the way they get a fellow when he's down,  
And with maddening persistence choose the points of least resistance  
On which to run around and play the clown.  
The Middle East variety, the bane of our society,  
Which settles in the Delta of the Nile,  
Cannot irritate the Sphinx, and (so everybody thinks)  
This accounts for his impermeable smile.  
They're prolific in their habits as a colony of rabbits  
And there's nothing in this world that they respect,  
From a king upon a throne to a dog without a bone,  
And there's nothing in between that they neglect.  
With motives dark and sinister, they'll settle on a Minister  
Or mar romantic evenings in the glade;  
They can ruin the impression of a dignified expression  
Or the steadiness of airmen on parade.  
I can say without compunction that there isn't any function  
To be quoted to the credit of the fly.  
Some people have a bias that such things are sent to try us —  
But can anyone explain the reason why?

# THE PARTY LINE

## FLIGHT SAFETY IN THE R.C.A.F.

By Group Captain R. C. Davis, O.B.E., Director of Flight Safety

### INTRODUCTION

**S**AFETY is everyone's business. We learn about it very early in life and we have to practise it continuously in order to survive. If we don't — well, car accidents alone claim 3,000 lives each year in Canada and injure another 60,000 people as well. And let us remember always that the vast majority of accidents of all kinds — on the streets, in the home, at work, or in the bush — are caused by unsafe practices among people who fail to give sufficient priority to safety.

In the Air Force, as elsewhere, flight safety is everyone's business. It is, of course, of the utmost importance to aircrew; and the part played by maintenance staffs and flying control staffs is well known and appreciated. But how are the rest of us concerned with flight safety? Let's look at the question from the broader view.

- The M.E. driver who drives on the tarmac with extra precaution prevents collision with taxiing aircraft.
- The supply technician who issues exactly what is called for helps the maintenance man to install the correct part in an aircraft.
- The clerk who passes important special inspection messages *promptly* to the appropriate units may save an aircraft.
- The medical officer who watches the day-to-day health of the aircrew forestalls accidents resulting from undue stress or fatigue.
- The personnel staff officer who ensures that only qualified officers are posted to supervisory flying positions helps to maintain our safety standards.
- Now that certain foods are recognized as definitely undesirable for high-altitude flying, the cook and dietician also play their part. A cockpit at 50,000 feet is no place for a bloated stomach.

These are only a few examples to show that the great majority of our serving personnel play no small part in their contribution to flight safety.

### ACCIDENT PREVENTION

#### Flight Safety and Responsibility

Now that we have every one in the act, let us determine, first, what safety is, and second, who is responsible for flight safety.

Safety may be defined as freedom from accident; and an accident is an undesignated, sudden, and unexpected event. It interrupts the smooth fulfilment of a carefully planned operation. Thus, it is a mark of inefficiency. There are few aircraft accidents which, if traced to basic causes, cannot be attributed to inefficiency.

Our approach to flight safety, then, must be through the medium of efficient operations; and efficiency can be obtained only by the use of good operating practices, which in turn must include the highest possible consistent level of safety.

Responsibility for efficiency in the Air Force — and hence for flight safety — rests with the operational commander and the supervisors in the executive chain of command. They have the authority to eliminate those conditions which eventually lead to aircraft accidents.

#### Flight Safety Activities

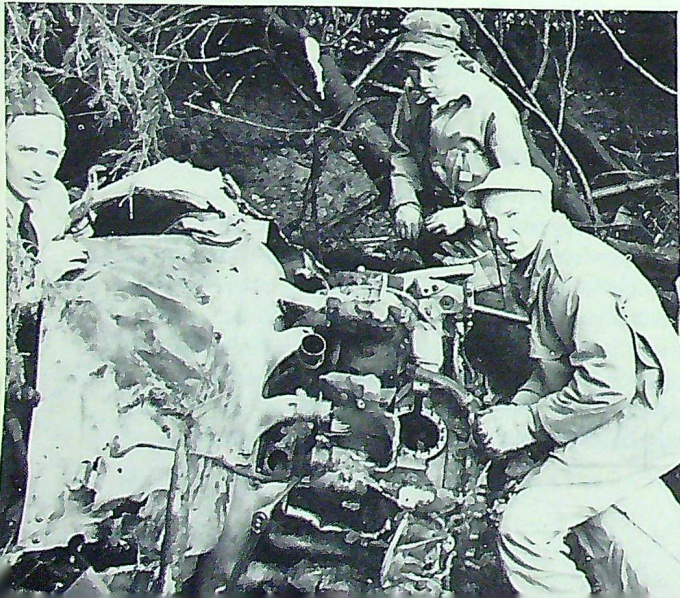
Let us now examine what is being done about flight safety in the Air Force. At Air Force Headquarters, the Director of Flight Safety is responsible to the C.A.S. for, among other things, developing and recommending policies, procedures, and standards governing the flight safety programme, and for providing suitable educational material with the single objective of preventing aircraft accidents. Members of the Directorate of

Flight Safety work very closely with many other staffs to ensure that safety is considered always as an aid to efficient operations and is given proper priority in the planning stages.

#### **Educational Publications**

Safety educational material is collected, developed, and published by the Directorate for distribution throughout the Air Force. "Flight Comment", a magazine published every second month, contains timely authoritative articles directing attention to hazardous conditions and recommending safe practices and procedures. Contributors include officers at units, groups, and commands; the Institute of Aviation Medicine; specialists at A.F.H.Q.; and, in fact, anyone who has useful flight safety information to impart. Lessons learned from various accidents are also presented. This type of information is published, additionally, in the A.I. Briefs, bulletins which are suitable for posting in crew and operations rooms. The Flight Safety Memo, containing safety suggestions, is published in poster form. Other documents produced by the Directorate (primarily for supervisory staffs) are the quarterly and annual accident reports and the summary of accidents by types of aircraft. While these can hardly be considered light reading, they contain hard cold facts on past experience which serve as a useful guide to supervisors when planning their safety programme.

*Detective work under difficulties.*



#### **Safety Liaison and Other Activities**

In addition to R.C.A.F. resources, a great deal of safety information is obtained from other agencies, particularly the U.S.A.F., the R.A.F., the U.S. Navy, and the Flight Safety Foundation. Various publications are exchanged and liaison visits are made to the other safety agencies.

Other activities of the Directorate of Flight Safety include the development of a syllabus of training for flight safety officers, and the provision of instructors for the latter's course and of lecturers for joint Services accident prevention courses, quality control courses, and flying personnel medical officers' courses. While, in the past, the Directorate has frequently found it necessary to criticize the design of certain aircraft for the lack of adequate safety features, provision has now been made for its representation in the mock-up committee on new aircraft. This is considered most important. A flight instrument hidden behind the control column, an oxygen contents gauge tucked away in the bottom of the cockpit, seats with inadequate crash protection, a cockpit canopy which requires the strength of an uninjured weight-lifter to open it in the event of a crash — these are only a few of the many examples of unsafe design experienced in the past.

#### **Command Flight Safety Programme**

At Command and Group level, the yearly flight safety programme is normally incorporated in a document outlining what the A.O.C. expects of his stations in the way of positive and aggressive measures to prevent aircraft accidents. Monthly meetings of the station Flight Safety Committee, consisting of the C.O. and his senior staff, as well as monthly meetings of air and ground crew to be held under the C.O.'s personal supervision, may be called for in the programme. A Command flight safety subject for each month of the year may be specified. Lectures to be given by the various specialists (such as the meteorologist, the medical officer, and the maintenance officer) may be indicated. The objective of the programme is a continuous and well organized campaign by the

station commander and his staff to educate and emphasize safety in planning, supervision, and execution of operations.

### Flight Safety Officers

The job of the Flight Safety Officer is to assist commanders at all levels in their responsibility for the prevention of aircraft accidents. He is an experienced pilot with appropriate qualifications who has attended a flight safety course conducted by Training Command at Trenton and at the Institute of Aviation Medicine. The five-week course covers subjects on accident prevention, accident investigation, engineering, instructional technique, aviation psychology, physiology, and personal flying equipment. Practical features of the course include a safety survey of a unit and experience in the decompression chamber.

On returning to their units, graduates are employed as advisors and co-ordinators for the commander of their particular organization on all matters concerning flight safety. With the benefit of their specialist training, flight safety officers can more readily foresee or detect hazardous conditions or unsafe acts which sooner or later lead to accidents. It must be emphasized here that the flight safety officer is not *responsible* for accident prevention: that is a priority duty of the operational commander. If, however, he is employed solely on safety matters and is given a reasonable opportunity, the flight safety officer can be of immeasurable value to the commander in keeping a low accident record in his organization.

### Near-Miss Reporting

One new feature of flight safety activities is the use of near-miss reports.

Who hasn't heard, in after-duty gatherings of air crew, stories about some flying experience which nearly ended in an accident. What happened and how the difficulty was overcome is told in great detail. With due allowance made for the activities of the bar steward and the lateness of the evening, many such stories nevertheless contain important lessons in flight safety. Air crew are now encouraged to write down their story — anony-



*Examining wreckage during snowstorm in the woods of New Brunswick.*

mously if they wish — and leave it with the unit flight safety officer to disseminate to all interested parties.

### CAUSES OF ACCIDENTS

It would be ridiculous to expect that completely accident-free operation could be achieved in an Air Force. Our business is primarily transportation, i.e. the carrying of armament, munitions, cargo, and people. Of all activities, transportation has the darkest accident record. Even the crudest form of transport, the ox and cart, can develop into a first-class shambles when the otherwise docile animal is attacked by a gaggle of heel-flies. With ever-increasing speed in transportation, the exposure to accident increases as does the severity of the consequences. The highest speed in transportation is found in military aviation, and hence also the highest exposure to risk and to human error. It is the combination of risk and human error that produces accidents.

With very few exceptions, all accidents are basically caused by human error. They may be errors in design, in fabrication and assembly of the

aircraft; they may be errors in the servicing and maintenance of the equipment; or they may be errors in the planning, training, supervision, or execution of operations. As the performance of aircraft is increased, the degree of error which may result in an accident is greatly reduced. For example, a spare bolt left during assembly in the fuselage of a pre-war aircraft would at worst rattle around harmlessly. Yet the crews of some of our present-day fighters have lost their lives and their aircraft through no greater an error — an error caused by a mechanic who was less than meticulous in his work. If one considers the large number of people who contribute to the fulfilment of a modern flying mission, from the designer of the aeroplane to the young men who fly in it, it will be appreciated that some accidents must always be expected.

### Two Sample Accidents

Aircraft accidents occur when safety is compromised. They are all caused by unsafe acts and/or hazardous conditions.

An example of an accident due to unsafe acts is that of a pilot who loaded his aircraft in such a manner that the centre of gravity was not within the prescribed limits. On encountering turbulent flight conditions while on instruments, he lost control of the aircraft. The cause of the ensuing

*Probing for a missing part in quicksand.*



accident might have been attributed to the pilot's neglect in not correctly loading his aircraft; but, as in many cases, a number of events had taken place which led up to it. Investigation revealed that a practice had developed in that particular pilot's unit of distributing fuel in the various gasoline tanks in such a way that the C. of G. was undesirably affected. Sooner or later it was bound to be neglected by some captain when distributing his pay-load. The supervisory authority on the unit had failed to detect and correct an unsafe practice, and the accident can therefore be attributed basically to inadequate supervision. If it had been found that the particular supervisor — the operational commander — did not have the necessary personal qualifications, experience, and training for his position, then those responsible for placing him in the position would necessarily have shared the responsibility for the accident.

Let us now consider the type of accident attributable to hazardous conditions. An example of such a condition existed originally in one of our newer types of aircraft. It had power flight-controls, in which the power was *applied* hydraulically but *initiated* electrically. A junction box contained a number of electrical terminals for the wiring which led to the flight control hydraulics. A very small metal object, such as a washer no larger than the end of a pencil, left in the box in error during construction or maintenance, was found to be sufficient to short two terminals and give a full deflection of one set of controls, thus causing a violent manoeuvre of the aircraft. All that was needed to start the trouble was for a pilot to manoeuvre the aircraft in a manner which would dislodge the object from its resting-place. Recovery from the violent manoeuvre caused by the sudden and unexpected deflection of the flying controls would, under certain conditions, be extremely difficult. Although, admittedly, acts of omission had occurred on the part of the technician who installed the terminal box and also on the part of the inspection services personnel, the unsafe condition existed basically because a group of very sensitive electrical terminals had been designed without any protection against the almost certain eventual occurrence of a simple and under-



*An R.C.N. frogman about to search a river bottom for an aircraft part.*

standable oversight on the part of some technician.

## ACCIDENT INVESTIGATION

### Reports

When an accident occurs it is of course mandatory that all causes be determined in order that measures to prevent its recurrence may be developed and taken. The operational commander is responsible for the reporting and investigation of all aircraft accidents.

Reports take the form of messages which are dispatched immediately to senior authorities, of detailed accident reports, and of the proceedings of boards of inquiry on the more serious occurrences. Where the aircraft is either destroyed or seriously damaged, the Commanding Officer is also required personally to investigate the accident himself and to despatch a preliminary report within 24 hours. At a later date, when his investigation is complete, he is required to report personally to his Air Officer Commanding, in

whose office the whole matter is reviewed — the cause of the accident, the explanation for such deficiencies as were revealed, the measures taken to prevent recurrence, etc.

Accident reports are prepared by the unit commander and the various station specialists, i.e. the engineering, flying control, and medical officers. In the more serious cases, presidents of boards of enquiry are normally appointed by the A.O.C. and selected from stations other than that on which the accident occurred. Where death or injury has been caused, a medical officer is appointed to the board to ensure that all the physiological aspects of the accident are thoroughly examined. In the case of accidents for which the cause is not readily apparent, assistance is obtained from special accident investigators.

### Accident Inspectors

These officers, who are members of the Accident Investigation Branch of the Directorate of Flight Safety, are normally on the scene within 24 hours of an accident. Their task is to conduct a separate investigation which is co-ordinated with that of the local authorities.

Aircrew officers are selected for this work according to the breadth of their flying experience, and their personal and technical qualifications for training and employment as investigators. All are current pilots and the majority have jet time. Inspectors with over 1,000 hours' jet flying, with experience on fighters not yet in operational use, or with a total of more than 5,000 hours' flying, are employed at the present time. Some have practical experience as maintenance technicians, while others have graduated from universities as aeronautical engineers. Working solely on aircraft investigations, they are familiar with all the current relevant difficulties being encountered throughout the Service. With up to five years or more as inspectors, they bring to the scene of an accident the greatest skill in investigation that is available in the country.

An inspector's approach to an accident is that of a professional. The investigation is carefully planned, arrangements are made for assistance

and for preserving the evidence and for obtaining eyewitnesses' accounts. A detailed examination of the wreckage is made, and the condition, position, and attitude of every significant part are carefully recorded. The position, size, and nature of all contacts with the ground, surrounding trees, and obstructions are noted. General and detailed photographs of the scene and wreckage are taken. If any parts are imbedded in the ground, they are excavated; in some cases it has been necessary to dig down 25 feet. Detailed and exhaustive searches are organized and supervised by the inspector for any missing parts. If necessary, many square miles of an area in the vicinity of the wreckage are covered by search parties on foot. (When the surface is covered in deep snow, is heavily forested, or is in a mountainous area, searching becomes difficult and discouraging.) Aerial photography, with special cameras, is sometimes used; and divers and naval frogmen may be called in to search for parts believed to be in water. Experience has proved that the discovery and analysis of an apparently insignificant item has often established the cause of an accident.

When it is impractical or inconvenient minutely to examine engines, accessories, or components, at the scene of the accident, the accident inspector sends the suspected items to government or contractors' laboratories for the running of tests, for strip-down, and for detailed examination by specialists. In like manner, broken parts which are in any way suspect, are removed and sent to the laboratories of either the Dept. of Mines and Technical Surveys or the National Research Council. Here the nature of the forces causing failure are determined and the characteristics and fabrication of the parts compared with the specifications. Oxygen masks or other items of personal equipment are sent to the Institute of Aviation Medicine. Where it is inadvisable to move an intricate and complicated mechanism, a technician from the manufacturer or a staff officer with special knowledge of the item will be sent to assist.

In accidents involving structural failure in the air, a careful plot of the scatter of the wreckage is made. Aerodynamicists from the National Research Council determine the ballistics of the

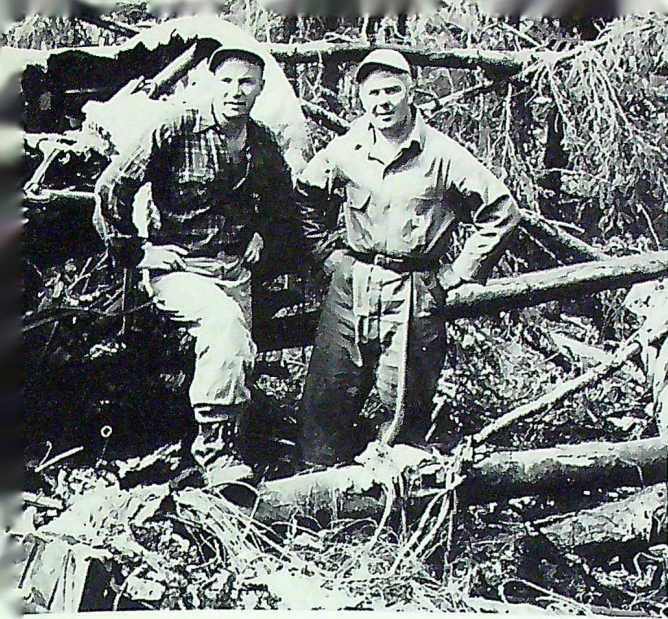
various parts by measurement or by wind-tunnel tests. With the help of appropriate detailed meteorological data, the trajectories of the various parts as they fell through the air, the sequence of break-up, and the position, speed, and direction of the aircraft when the original failure occurred, are all established.

In such, and in other cases, it is frequently necessary to gather and lay out all parts on the ground to conform as closely as possible to their original position in the aircraft. The inspector of accidents will then seek an explanation for significant items of damage. A puncture in the top surface of a wing might be found to be similar in shape to a projection on the top of the fuselage. This might indicate that the wing had folded upwards and struck the top of the fuselage. A dark-coloured smear on the tail plane, when chemically analyzed and found to be rubber similar to the rubber seal on the canopy, would suggest that the canopy had come adrift and struck the tail plane. Signs of pre-impact fire, the nature of broken surfaces, whether they were caused by forces of compression or tension, by uploads or downloads, are but a few of the many clues that will be looked for.

When all the available evidence has been collected and analyzed, the inspector then establishes the sequence of events leading up to the accident. The background history of the air crew, their training, experience, reputation, and briefing are obtained. Similarly, the history, faults, and servicing of the aircraft and engines are established. The inspector may then be able to determine the causes of the accident before he leaves the unit. On the other hand, it may be necessary to wait many months before the technical reports on various parts are received in the Directorate of Flight Safety from various laboratories and before the cause can be definitely ascertained.

#### Accident Statistics

All accident reports prepared at unit level and processed through the appropriate staffs at Groups and Commands, end up in the Accident Investigation Branch at A.F.H.Q. They are analyzed and correlated, and the causes of accidents assessed. A statistical card system is main-



Sqn. Ldr. B. C. Hartman (left) and Wing Cdr. S. F. Cowan on field work.

tained in which a card is provided for each accident. All pertinent factors of an accident are coded and punched on the card, together with a narrative recording. This permits a detailed statistical analysis of all accidents to be prepared at regular intervals. In addition, special analyses on various types of accidents are made. These analyses, together with the statistical analysis, reveal trends upon the basis of which it is possible to make recommendations for the improvement of flight safety measures.

#### Accident Information Bulletin

While it frequently takes many months to assemble all the essential evidence, analyze it, determine all causes, and carry out corrective action, there are many occasions on which enough

details become speedily available to serve as immediate object-lessons in flight safety. Such information is promptly made available to supervisors and to all air crew operating the type of aircraft that was involved in the accident. This is done by means of accident information bulletins issued in message form by the appropriate headquarters. Official information on pertinent details of the accident (which at times varies from that provided by other sources), the probable cause, and recommended preventive measures, are all included in the message. This procedure eliminates the circulation of misleading stories and harmful rumours.

#### CONCLUSION

The R.C.A.F. has a positive and aggressive flight safety programme designed to prevent accidents and to increase operational efficiency. Key figures in the programme are the operational commanders, from the Air Officer Commanding down to the section leader, together with the flight safety officers and supervisory staffs. Furthermore, as the writer has attempted to show, thorough and exhaustive investigations are undertaken as soon as an accident, no matter how slight, occurs. In other words, all possible precautions are being taken to ensure that the air crew and aircraft of the R.C.A.F. enjoy a long life expectancy.

Nevertheless, despite all that has been said and despite all that has been accomplished, we must never forget that no truer message has ever been uttered than that which first appeared on a poster in 1940:

*Eternal Vigilance is the Price of Safety.*

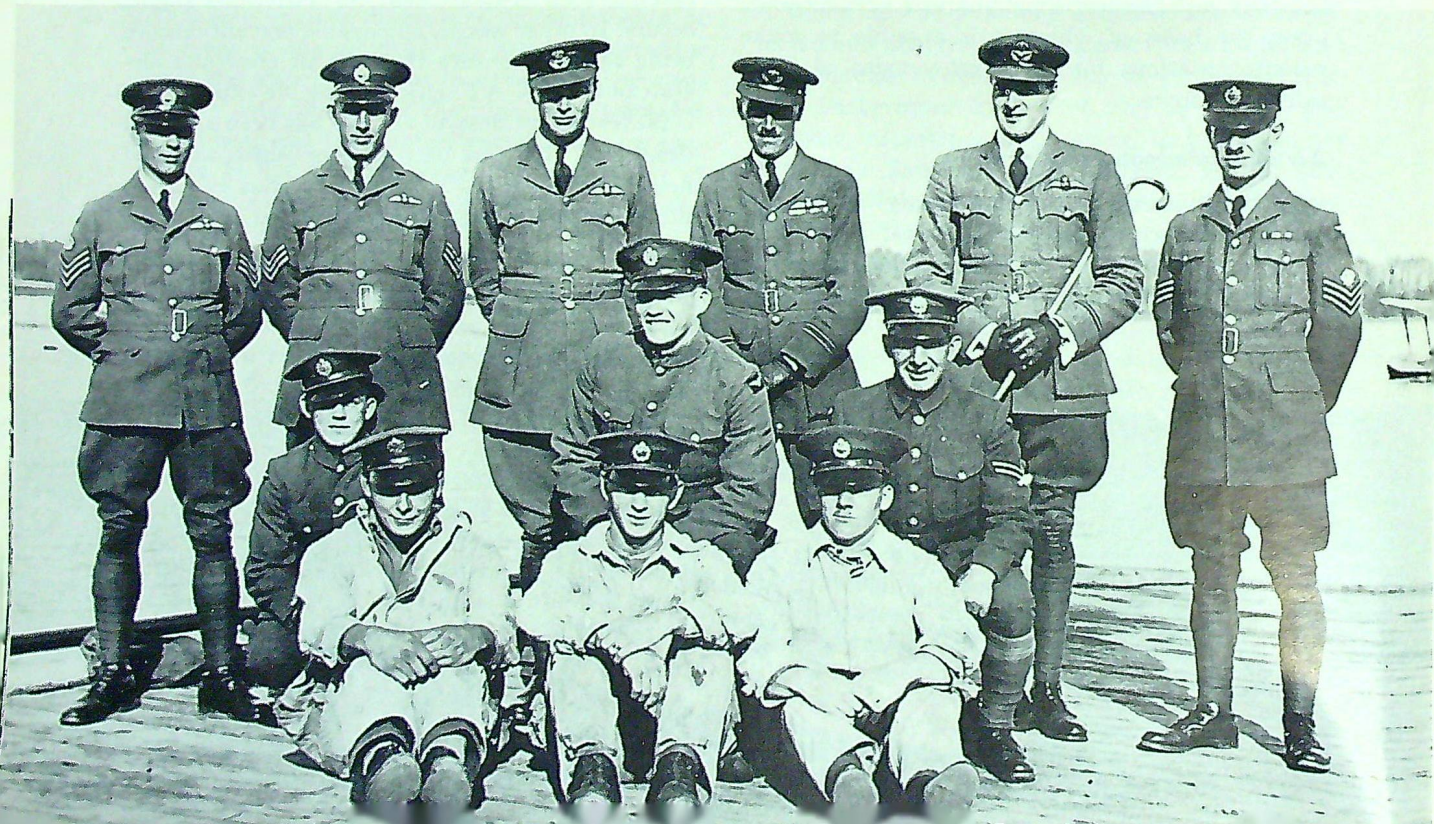
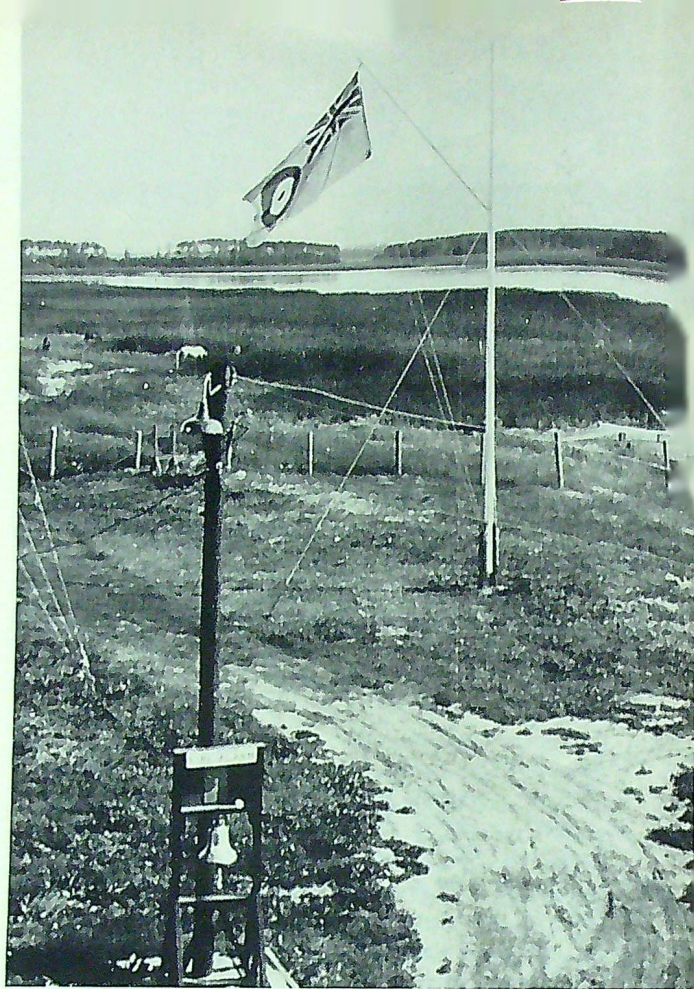
#### THE SERVICE PURPOSE


The R.C.A.F. exists for the sole purpose of providing aircraft for offensive or defensive action. Every task performed in the Air Force must be co-ordinated to achieve that objective. (No. 1 S.S.T.S. précis: R.C.A.F.)

# Pin-Points in the Past

This month's pin-points come from the albums of Wing Cdr. R. I. Thomas, A.F.C., one of the R.C.A.F.'s best-known pilots of the pre-jet years, who has just retired after 28 years' service and who is now the manager of the Canadian Owners and Pilots Association. The photographs show, respectively, the entrance to the base at Ladder Lake, some 90 miles west of Prince Albert, in 1929, and twelve of the twenty-odd men who were stationed there at that time for the purpose of carrying out forest fire patrols.

Standing in the group are, from left to right: Flt. Sgt. B. I. Barton (Sqn. Ldr., retired), Sgt. R. I. Thomas, Flying Officer H. E. R. Carefoot (Group Capt., deceased), Flt. Lt. Mason-Apps (dec.), Flying Officer Grace (released), Flt. Sgt. W. Ramsden (Sqn. Ldr., M.B.E., ret.). Middle row: A.C.1 Thompson, L.A.C. G. Tough (Flt. Lt., ret.), Cpl. J. Elliott (W.O., rel.). Front row: L.A.C. K. Nelson, L.A.C. W. Smith (rel.), L.A.C. H. Shaw.





## SPRING RE-SUPPLY IN THE ARCTIC

By Flight Lieutenant J. D. Harvey, D.F.C.

**E**ACH year the 'planes of Air Transport Command carry out an operation known as Spring Re-Supply, of which the purpose is to deliver the necessities of life to the five joint U.S.-Canadian weather bases scattered among the Arctic Islands. The job must be done while the ice is still strong enough to support the weight of large aircraft and yet late enough in the season to ensure daylight throughout the full 24 hours. About 80,000 lbs. of food, fuel, and equipment are airlifted, and cargoes may include anything from toothpaste to tractors.

This year the flights were made by the C-119s (or "Flying Boxcars") of Nos. 435 Squadron, Edmonton, and 436 Squadron, Lachine. Two aircraft from No. 435 and one from No. 436 left their bases on April 6th loaded with the requisite supplies and with cooks, radio operators, mechanics, and meteorologists from many parts of the States and Canada. Spring, as well as being the time for provisioning, is also face-changing time for the arctic outposts.



*L.A.C. Walls directs a blast of warm air from a Herman Nelson heater towards L.A.C. Rackowski, who is working on the landing-gear of a C-119.*

The aircrew had their job down so fine that turn-around time (the time taken to unload 10,000 lbs. of equipment and to take off for another load) was as low as five minutes. As soon as the aircraft rolled to a stop at the end of the ice runway, the cargo doors would swing open and air and ground crew alike would pitch in to discharge the cargo. Oil barrels, which made up many of the loads, were perhaps the easiest to unload. As soon as the engines stopped, the weather detachment personnel had the ramps in place and the barrels would come rolling out on to the ice. Then, without anyone pausing for a cup of coffee or a smoke, the engines would roar into life and away would go the C-119 to pick up another load at Resolute Bay, the main base of the operation.

Except for occasional brief delays due to weather, the aircraft kept going around the clock, with fresh crews taking over at periodic intervals. At Resolute, weather bureau personnel and airmen, under the direction of Flt. Lt. D. M. McLean of No. 435 Squadron, the operations commander,

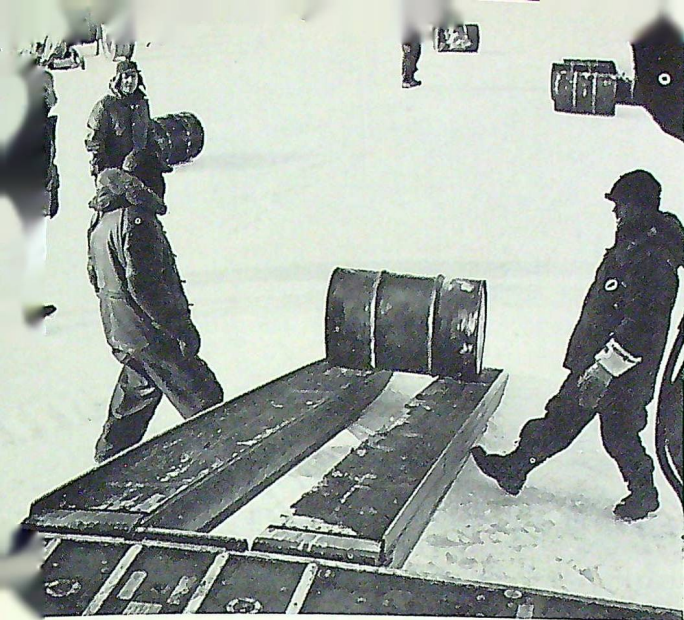
worked continuously to make up, weigh, and load the cargo. Much of the work had to be performed by sheer strength, since many of our more southerly conveniences are not workable in this climate.

The R.C.A.F. split the operation with the U.S.A.F., which worked from Thule in Greenland. The R.C.A.F. supplied Mould Bay on Prince Patrick Island and Isachsen on Ellef Ringnes Island, but it also made flights to Alert, the most northerly station, and to Eureka on Ellesmere Island. Since, however, these latter sites are more accessible from Thule, it was natural that the U.S.A.F. should supply the bulk of the stores.

Along with the supplies went the new faces, to live for a year in complete isolation on the roof of the world. The tiny stations, almost hidden beneath the drifting arctic snow, have four or five small buildings which serve as home until spring rolls around. Since the occasion of spring re-supply offers the only real opportunity for dental treatment at these stations, a dentist was flown in for his yearly visit. With him he brought his complete equipment in portable form; and it was an interesting sight to watch the lines of patients anxiously awaiting his arrival.

*A husky at Isachsen.*





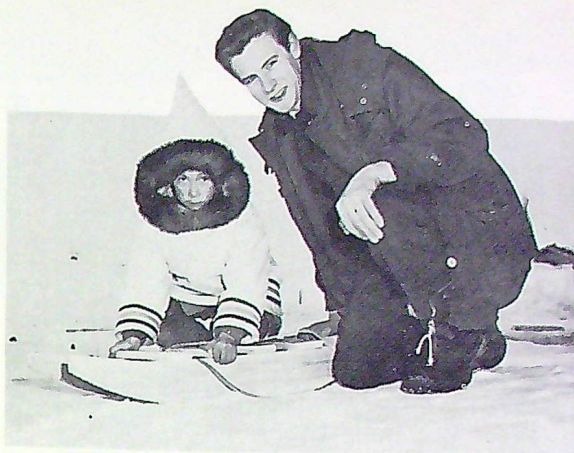
*Unloading barrels of oil at Isachsen.*

Recreation plays a large part in the daily lives of the men who man the stations. The library at Alert contains a notable collection of stories of arctic exploration. Each station also has a set of boxing-gloves — never as yet used, but kept handy in case tempers reach the boiling-point.

At Alert, since white men are not allowed to shoot or trap wild game, and since Eskimos don't live this far north, some twenty-five arctic fox scrounge food from the cook-shack. Pure white, except for their beady black eyes and shiny black noses, they gambol about the slopes near the camp waiting to inspect the garbage. One of the reporters covering the re-supply operation, on seeing a small white head thrust around a corner of a tool-shed, said: "Look at that small husky." The present writer, arctic expert that he is, replied: "Husky! Don't be silly. That's a fox-terrier."

The flight over Ellesmere Island is unfailingly fascinating. The stark cliffs, jutting out of wide river beds, look austere and sterile with their mantles of snow. Glaciers are everywhere. Dull and glinting in the sunlight, they are easily discernible by the huge cakes of ice imbedded in the mouths of the frozen rivers. On our way to Alert, we also passed over a small herd of musk-oxen forlorn and desolate-looking against the pure white background of endless ice.

Landing on the ice strip at Alert, with nothing but the Polar Sea stretching away to the Pole, one



*L.A.C. Al Hutchison, a power-plant operator at Resolute, with his friend Jimmy.*

realizes that one is indeed standing on the roof of the world. When we landed, under a clear blue sky, the temperature was a mild 18° below zero. A few months ago the station personnel had reported winds of 80 miles an hour and an even more surprising chinook wind that raised the temperature 20 in half an hour.

The Eskimos at Resolute Bay proved to be eye-catchers for the southern visitors, and activity was at top pitch in the full days of sunshine which enabled outdoor work to be done on sleds and dog harnesses.

Perhaps the hardest-working personnel, apart from those directly engaged in loading, flying, and unloading the equipment, were the cooks. Hundreds of gallons of coffee, freshly brewed every hour, and copious quantities of tea, disappeared every day. The serving of breakfast at the same time as dinner, to take care of the changing crews, made meal hours seem endless and heightened the air of haste.

When, eventually, after the last barrel and bundle had been delivered, the C-119s climbed into the air to return to Edmonton and Lachine, their crews knew that they had turned in another first-class piece of work. They had flown more than 70,000 miles and carried more than 80,000 pounds of equipment, in little more than a week, over territory that is anything but friendly.

But the weather stations were supplied, and life could continue in the tiny detachments for another year. For another year the daily weather observations would continue to be sent out and play their part in making our world a safer and more comfortable place in which to live.

# Feminine Gen

Thus writes Flying Officer C. F. Page of the girls who lighten the Service load at —

## R.C.A.F. STATION CLARESHOLM

There are still a few of us left at Claresholm who remember that day in February 1952 when the words went around camp: "They're here!" The welcome improvement in the scenery had an immediate effect. No longer did N.C.O.s need to remind airmen to get a hair-cut or shine their shoes. The whole station straightened its shoulders and went about its work with a whistle. Sir Walter Raleighs fell over each other as they began to exercise gentlemanly manners that had almost atrophied from disuse.

Of course, it was a bit disconcerting at first when one barged into the Station Orderly Room and shouted "What's happened to my blanket — uh — good morning, Miss. I put in a moving-claim about a month ago . . ." Still, we soon got accustomed to governing ourselves accordingly, and now our girls are as much a part of Claresholm as the melting chinooks and the snarl of the Harvards.

After a quick glance into a back issue of the Station magazine, we can say that we remember names of the first seven girls who came venturing into the land of stampedes and rodeos. They were Jean Picard, Terry Wiles, "Newfy" Rideout, Barney Forbes, Jean Lizotte, Ruth Hunt, and "Kelly" (yes, just "Kelly"). It was not long before this number swelled to forty, with representatives from every province but P.E.I. Since then there have been approximately 150 airwomen on strength at Claresholm, and at present we have 37 with us.

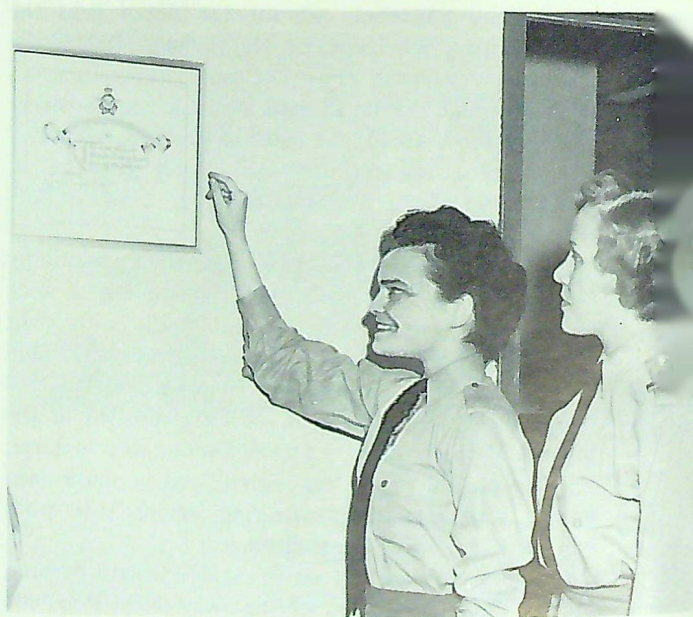
Since the Air Force has followed in the civilian's footsteps with the 8-hour-day and 5-day-week, these girls have plenty of spare time on their

hands. None the less, the death-rate from boredom has taken no appreciable toll.

As well as the usual recreational facilities which exist on most Air Force stations, the airwomen at Claresholm have several special attractions available. Lest we be misunderstood, let us hasten to explain that we are speaking of such things as Waterton Lake Park (60 miles to the south of the Station), Banff, and, of course, the Calgary Stampede. The West Coast, too, is not beyond reach on a long week-end.

One might get the idea from the above that a W.D.'s life at Claresholm is one big happy holiday. That's not quite true, though. In between the nose-powdering and the coffee-breaks, they have still found time to help our S.O.R. win the 14 Group Efficiency Award.

*L.A.W. Marie Harrietha, oldest W.D. member of the Orderly Room staff, shows the 14 Group Efficiency Award to Pilot Officer Joyce Vert, Women Personnel Officer and Ass't. Chief Admin. Officer.*

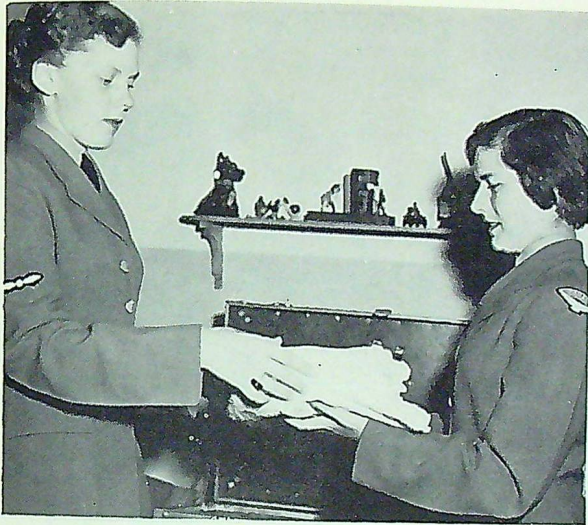




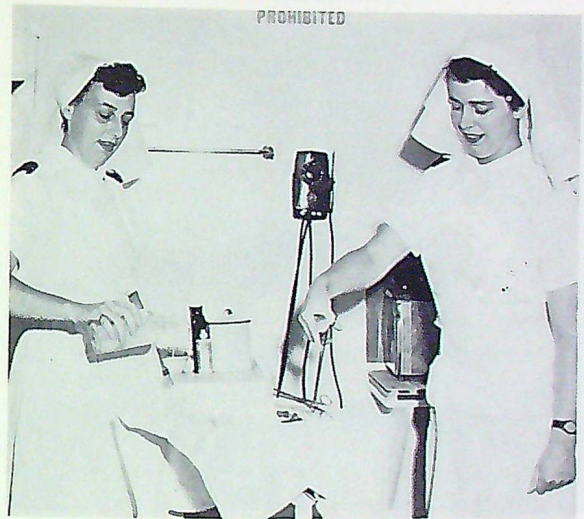
Three married W.D.s go shopping at the Station Groceteria. Left to right: Cpls. Laurie Hodgson, Jean Taylor, and Rita Patry.



Sgt. Finn Rasmussen, of the Danish Air Force, is harnessed by A.W.s Alice Sauter (left) and Shirley Ronaghen.



Two new arrivals move in. L.A.W. Gladys Oliver (left) and A.W. Pauline Guibault.



Flying Officers Muriel Kerr (left) and Alma Law prepare the "tea-wagon" at the Station Hospital.

A.W.s June Schroeder (left) and Gerry Hickey.

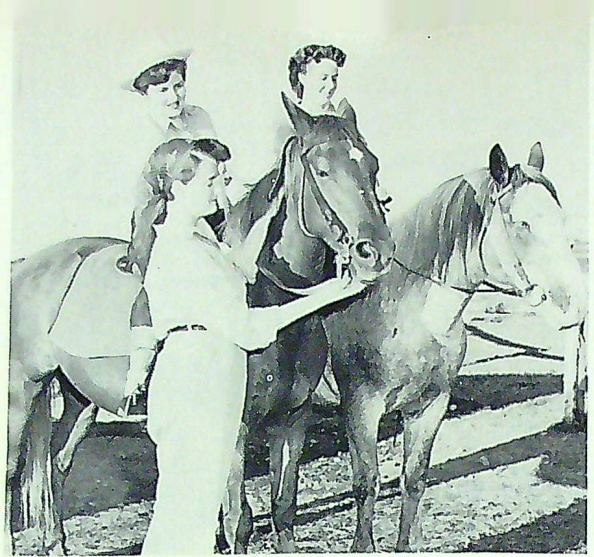


L.A.W. Joan Boyd (left) and A.W. Marlene Ecklin.





*A.W.s Shirley Beyer (left) and Jeanne Croteau prepare for pay-day.*



*Ready for ride in the foothills. Mounted (l. to r.): A.W.s Nadine Larivière, Sheila Priestley. Standing: A.W. June Langton.*



*A break at the new Snack Bar. Left to right: A.W. Irene Hagerman, L.A.W. Ellen Currie, A.W.s Wendy Hother and Sandy Pickell.*



*L.A.W.s Denny Ivens (left) and Pat Burgess tell L.A.W. Bobby Godberson of their thirty days' leave in Alaska.*

*In the Met. Section. A.W.s Cathy Roy (left) and Barbara Nixon.*



*The Station Library. Left to right: A.W. Helen Cantin, Cpl. Ruby Beznoska, L.A.W. Flo Hamilton.*





L.A.W. "Smoky" Paulin (standing) and A.W. Pat Harnden in the Message Centre.



Left to right: L.A.W.s Betty Dominiuk, Claire Brault, and Sunnie Morrison.

## A.F.C. AWARD

The Air Force Cross has been awarded to Flying Officer S. E. Burrows for "extreme courage and devotion to duty" during a jet flying accident in Germany last September, when he was stationed with the R.C.A.F.'s Air Division in Europe.



The accident occurred as a four-plane formation of Sabres was returning to base at Baden-Soellingen. About 20 miles from base a bird struck and shattered the perspex canopy of the aircraft which Flying Officer Burrows was flying. Pieces of the shattered canopy were embedded in his face and left eye. However, he maintained control of the aircraft and gave the international distress call. He tore off his helmet to clear his face and eyes, but was then without radio communication.

The section leader, on realizing the emergency, assigned one of the pilots in the formation to lead the damaged aircraft back to base. Although losing blood, suffering shock and pain, and almost completely blinded, Flying Officer Burrows safely executed a wheels-down landing on the aerodrome, and taxied his aircraft clear of the runway to enable the remainder of the formation to land. He was lifted from his aircraft and taken to the station hospital for emergency treatment.

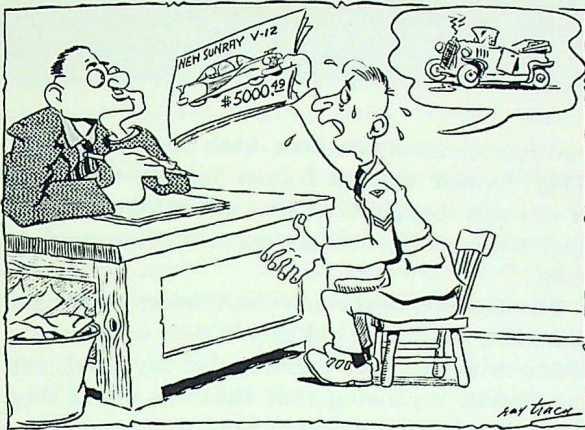
Flying Officer Burrows enlisted in the R.C.A.F. in 1951 at Vancouver. He took pilot training and went to Germany in February 1953. He is now serving at R.C.A.F. Station Rockcliffe.

*Flying Officer S. E. Burrows.*

# WHAT'S THE SCORE?

*(Misconceptions about the purpose and organization of the R.C.A.F. Benevolent Fund are still fairly common, both among serving and former members of the Air Force. Twenty questions and answers will not, of course, suffice to give our readers a detailed picture of the Fund's many activities, but it is hoped that they will at least provide some indication of the part which the Fund plays both in Service and in ex-Service life. Our questionnaire was compiled by Pilot Officer S. G. French in collaboration with Air Cdre. D. E. MacKell, C.B.E. (ret.), and Mr. A. Bell, the Fund's manager and secretary, respectively. Correct answers appear on page 48.—EDITOR.)*

1. The R.C.A.F. Benevolent Fund was established as a non-profit independent Company in:
  - (a) April, 1924.
  - (b) April, 1944.
  - (c) April, 1946.
  - (d) June, 1934.
2. The purpose of the Benevolent Fund is:
  - (a) To give financial assistance to serving and former members of the R.C.A.F., and their dependents, in time of need.
  - (b) To enable serving and former members of the R.C.A.F. to borrow money at a low rate of interest.
  - (c) To solicit and administer money from the public for the development of Canadian air power.
  - (d) To assist only serving personnel and their dependents.
3. The Fund is supported by:
  - (a) Annual grants from the government.
  - (b) Annual public appeals for funds.
  - (c) Monthly deductions from pay.
  - (d) Voluntary contributions from Service institutes and others interested.
4. In order to obtain help, serving personnel and their dependents should apply to:
  - (a) The welfare officer.
  - (b) The station padre.
  - (c) The Benevolent Fund Committee at their unit.
  - (d) The orderly officer.
5. Contributions to the Fund:
  - (a) Can be claimed as charitable donations for Income Tax purposes.
  - (b) Must not exceed 10% of the donor's income.
  - (c) May be rewarded (at the C.O.'s discretion) by exemption from certain station duties.
  - (d) Can be applied against R.C.A.F. Association dues.
6. The Fund does *not* help by:
  - (a) Allowing interest-free loans where applicants' resources are adequate but not immediately available.
  - (b) Making grants where applicants' incomes do not permit repayment.
  - (c) Helping eligible applicants to obtain assistance from government and other agencies.
  - (d) Providing loans for the purchase of houses, businesses, and automobiles.
7. In the case of ex-members of the Service, the Central Claims Committee, in Ottawa, receives reports on the circumstances of each applicant from:
  - (a) The Field Committee.
  - (b) Friends and neighbours.
  - (c) The local police.
  - (d) Credit agencies.
8. When the Central Claims Committee endeavours to reach a decision on applications, it does *not* use as a guiding factor:
  - (a) The racial or national origin of the applicant.
  - (b) Reports from the Dept. of Veterans' Affairs.
  - (c) The question: "Is the applicant worthy and will he benefit by the assistance?"
  - (d) The question: "Is there secondary distress — e.g. a wife and family who may suffer unless help is given?"
9. The Fund may not normally consider requests for assistance from:
  - (a) Applicants who have failed to protect themselves and their families with low-cost insurance.
  - (b) Veterans or their dependents who desire higher education.
  - (c) Those who repeatedly purchase "luxury" items they cannot afford.
  - (d) Applicants who lose their homes and/or effects by fire.



10. The authority of the Central Claims Committee is limited to assistance of \$500.00 to any one applicant. Requests for amounts beyond this figure must be referred to:

- (a) The Fund's Executive Committee.
- (b) The C.A.S.
- (c) The Federal Government.
- (d) The Canadian Welfare Council.

11. From the date of its incorporation until 30 June 1955, the Fund dealt with about 36,000 applications and extended assistance totalling approximately to:

- (a) \$3,900,000.
- (b) \$2,500,000.
- (c) \$1,280,000.
- (d) \$ 425,000

12. Field Committees, which are composed entirely of volunteer workers, do *not*:

- (a) Assist applicants in obtaining the maximum benefit from their entitlements from governmental or private agencies.
- (b) Find employment for unemployed veterans.
- (c) Follow up loans with supervision, guidance, and advice.
- (d) Charge a minimum service charge of 5% of the amount of the loan or grant.

13. The Fund's dealings with individuals are:

- (a) Strictly confidential.
- (b) Kept to a minimum.
- (c) Known to be harsh.
- (d) Published in orders.

14. When the emergency is urgent, the Fund does not waste time wrestling with red tape; it gives help immediately, and the paper work

follows. The Field Committee can provide, on its own authority:

- (a) \$150.00.
- (b) \$300.00.
- (c) \$500.00.
- (d) Only sympathy.

15. Borrowing to consolidate one's debts is:

- (a) Invariably a good idea.
- (b) Seldom a remedy.
- (c) Encouraged by the Fund.
- (d) The least expensive way.

16. Former members of the R.C.A.F. and their dependents may apply to the nearest Benevolent Fund Committee. One cannot expect to obtain this Committee's address from the nearest representative of:

- (a) The Veterans Land Act.
- (b) The Crown Assets Disposal Corporation.
- (c) The Department of Veterans Affairs.
- (d) The R.C.A.F. Association Wings.

17. The capital of the Fund is invested in:

- (a) Second mortgages.
- (b) Mining and oil stocks.
- (c) Government and Provincial guaranteed bonds.
- (d) Municipal debentures.

18. When loans are made to newly released non-pensionable R.C.A.F. personnel they are, by agreement with the applicant:

- (a) Recovered by deduction from his final pay.
- (b) Recovered from the subsequent refund of his pension contributions.
- (c) Recovered by sale of his effects while he is debtors' goal.
- (d) Repaid voluntarily by monthly instalments.

19. On a commercial loan of \$525.00, repaid in 24 regular monthly instalments and carrying the legal maximum interest rate, the borrower would pay up to an additional:

- (a) \$ 27.47.
- (b) \$ 58.23.
- (c) \$110.78.
- (d) \$141.24.

20. The bulk of original capital of the Fund was derived from:

- (a) Proceeds from the Air Force's war-time show, "Blackouts".
- (b) Philanthropic citizens.
- (c) Canteen surplus funds and the R.C.A.F.'s share of prize money from the Second World War.
- (d) Compulsory deductions from dependent's allowances.

# DEDICATED to the CAUSE OF PEACE

By Squadron Leader N. J. Gallagher

FIFTY-FOUR years ago an antique dealer in Strasbourg, Germany, drove his cart up to the Lutheran Church of St. Peter's and stopped there. He climbed down, tied his horse to a metal ring protruding from the brick wall, walked around to the side, and rang the bell of the caretaker's house. The door opened and a voice queried "Ja?"

"I have come for the windows", said the dealer.

Presently the dealer climbed back up on to his seat, cracked his whip, and the horse and cart lumbered away down the cobblestone road carrying several boxes of stained-glass windows. They crossed the Place Kleber and plodded up to the Cathedral Square with its quaint Alsatian-type buildings that ring and offset the majestic Strasbourg Cathedral.

The wagon eventually halted in front of the antique shop which faces the west door of the Cathedral. While his young daughter watched, the dealer carried in the boxes containing the window sections and placed them at the back of the store-room.

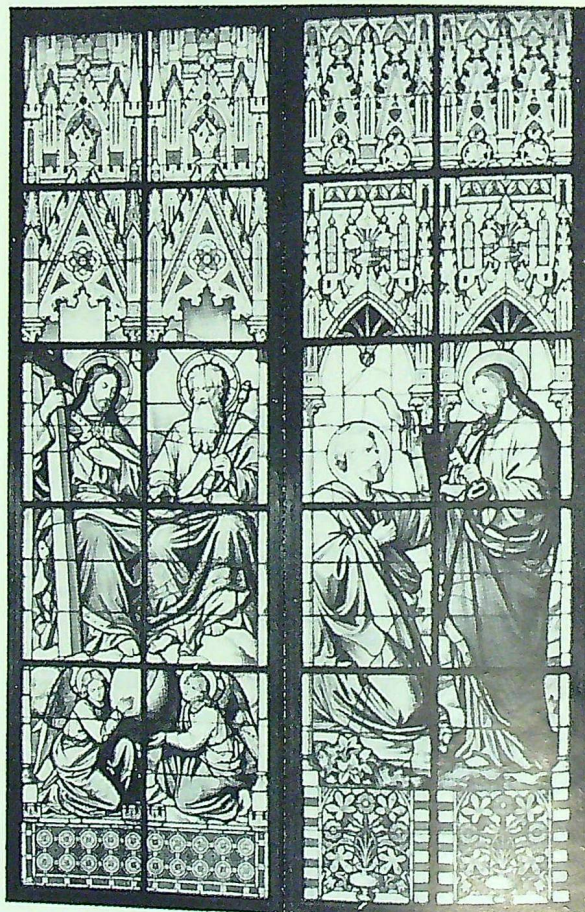
These events took place in 1900, when Strasbourg was in the thirtieth year of its annexation by Bismarck's Germany. Through two world conflicts, a depression, and an occupation, the windows lay unpacked from the crates in which they came. Covered with dust, they were ignored and forgotten . . . almost.

The incident that resurrected them was an accident. My job in Europe was to set up the Roman Catholic Chaplaincy services. In July 1954, I moved to No. 4 Wing to open that base's chapel. It was a splendid church-like structure complete with pews and a stone pulpit, and with a wrought-iron bannistered staircase leading up to it. The communion rail was a slab of polished stone on designed iron, and a fringe of the same metal-work latticed and surrounded the main altar. Near the front there were, on either side,

two fourteen-foot windows, both three feet wide. They formed natural frames for stained glass. It was this thought that sent me out on my hunt and, in due course, brought me to the little antique shop.

The daughter of the now dead dealer served me. She was a stout little old lady of well over sixty, a widow with one son. I told her of my need, and she smiled, explaining that this was not a shop that sold religious articles. Then:

"But just one moment," she added. "I had almost forgotten. We have something at the back of the shop that has been there for many many



years. It is stained glass, but I am afraid it is in a state of poor repair."

Moments later, she was shoving aside small pillars of Carrara marble, lifting oriental lamps carefully to one side, and straining at a large highly polished buffet of chequered inlay. Behind all this I spied some dusty wooden boxes, containing bundles wrapped in old German newspapers yellow with age. The first square unwrapped was a magnificent head of Christ in startling vivid color.

Convinced that this was a find in a million, I rallied my Scotch instincts and tried to look indifferent as I asked the price. Alsations drive a hard bargain, and my heart stood still as the old lady searched my face for the slightest indication that I was anxious to buy.

"Eighty thousand?"

This was roughly two hundred and forty dollars. I nearly kissed her, but long months of dealing with the European had taught me restraint. To have accepted immediately or anxiously would have meant to have taxes, plus "service", tacked on. I met her silence with silence.

"Of course, if you handle the transportation yourself, I could reduce the price to seventy-five thousand."

I reached for my wallet, made a deposit, and promised to be back. Two days later, with the

whole-hearted approval and assistance of all concerned on the Station, the two windows were brought in triumph to the chapel. By a rare coincidence, they were almost a perfect fit for the space available.

\* \* \*

The windows, made in Munich in 1870, were taken to the Roman Catholic Church of St. Pierre le Jeune, Strasbourg. This city (then in Germany but now in France) was to see considerable religious dissention. Claims to churches became disputes between the evenly divided numbers of Roman Catholics and Lutherans. In order to decide on the case of St. Pierre, it was forwarded to the Kaiser in Berlin. His decision came back, awarding the Church to the Lutherans. The windows were immediately removed. This occurred in 1900. It seems strange that it remained for a group of Canadians to bring them back to Germany, where they had been produced, and to install them once more in a Roman Catholic edifice.

Contributions, both large and small, from officers and airmen alike, soon paid for them; and now once more the light shines softly through them where they stand in No. 4 Wing's chapel at Baden-Soellingen, dedicated to the cause of peace.

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## C.J.A.T.C. HOBBYIST

From Cpl. H. H. Siemens, of Canadian Joint Air Training Centre, we have received this interesting photograph of his model of a P-51 Mustang. Built to the exact scale of one of the Station's four Mustangs, it is a control-line model and flies at almost 90 m.p.h. Nearly 600 hours of work went into its construction. It bears the number of the "prototype" from which it was built: OU-9286.



# ROYAL CANADIAN AIR FORCE

# Association



## UNVEILING OF YORK MINSTER MEMORIAL

The Royal Canadian Air Force Association has raised approximately \$9,000.00 toward the cost of the York Minster Memorial which will be unveiled by His Royal Highness the Duke of Edinburgh on Tuesday, 1 November 1955.

Throughout the war years, this hallowed spot in Britain's centuries-old York Minster remained a landmark for air crews going out on and returning from their missions. It is now a shrine set apart to perpetuate the memory of Commonwealth and Allied airmen who lost their lives in the Second World War while operating from bases in North-east England.

Among the thousands commemorated in this Memorial are the names of 5,722 members of the Royal Canadian Air Force who served with Nos. 4, 6 and 7 Groups, Bomber Command; Nos. 16 and 18 Groups, Coastal Command; and the squadrons of Fighter Command throughout this area.

To those Canadian next-of-kin who plan to attend the unveiling, a limited number of seats has been made available in the Minster. Seats may be obtained through the Royal Canadian Air Force Association, 424 Metcalfe Street, Ottawa 4, Ontario.

It is desired that applications be made as soon as possible.

## WING NEWS

### No. 200 (Summerside) Wing

The new quarters of the Summerside Wing were officially opened by Air Commodore Martin Costello, C.B.E., A.O.C. Maritime Command.

Air Commodore Costello congratulated the Wing on its new quarters. He praised the Wing for its work in sponsoring the Summerside Air Cadet Squadron and for the hospitality extended to visiting units of the R.C.A.F. Cyril Hickey, President of the Wing, paid tribute to the work of



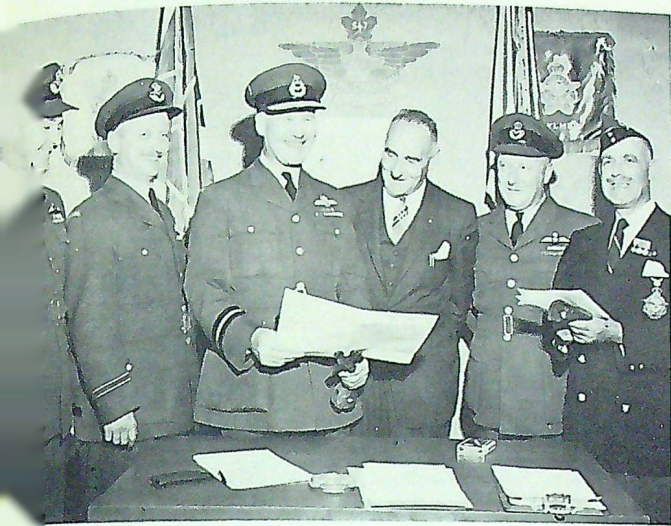
No. 200 Wing. Mr. H. Wedge, Mayor of Summerside, presents Air Cdre. M. Costello with a silver paper knife at opening of new club rooms. Standing beside Air Cdre. Costello are G. M. Mulholland (left) and C. Hickey.

the four past presidents, G. M. Mulholland, Roy Johnson, John Mungall, and Dr. G. Gallant.

Stanley McInnis, President of the Maritime Group, congratulated No. 200 Wing on its splendid new club-rooms and reminded those assembled that Maritime Group was the largest and most active Group in the Association.

### No. 406 (North Bay) Wing

Air Commodore W. W. Brown was the inspecting officer at the annual parade of No. 547 Air Cadet Squadron, North Bay. This squadron is sponsored by No. 406 Wing.



No. 406 Wing. Left to right: Flt. Lt. R. Joy, C.O. No. 547 Squadron, R.C.A.C.; Flt. Lt. A. I. Wolfenden; Air Cdre. W. W. Brown; J. B. Smith; Sqn. Ldr. A. J. Ireland; D. Rumble.



No. 605 Wing. Left to right: Air Vice Marshal K. M. Guthrie presents Charter to President George Pearce.

No. 602 Wing. Left to right: C. Peterson, R. Turner, C. Martin, C. Osborn (sec'y), Grace Tollefson (treas.), W. Laing (vice pres.), C. Jenkin (pres.), P. Ellison (past pres.), B. Boyce (installing officer).



### No. 602 (Saskatoon) Wing

Wing Commander C. M. Black, D.F.C., Commanding Officer, No. 1 Advanced Flying School, R.C.A.F. Station Saskatoon, presided at the installation of No. 602 Wing's executive officers for 1955.

Wing Commander Black stressed the importance of sponsorship of Air Cadet Squadrons and complimented No. 602 Wing and the Association for their help in this worth-while undertaking.

### No. 605 (Lloydminster) Wing

Air Vice-Marshal K. M. Guthrie, C.B., C.B.E., National President of the Association, officially presented the charter to George Pearce, president of No. 605 Wing.

The evening, which took the form of a Charter Dance, was attended by upwards of 200 persons. The R.C.A.F. Tactical Air Command Band provided the music.

This is one of our newly formed Wings, and we congratulate its members on their splendid effort.

### R.C.A.F. RECRUITING

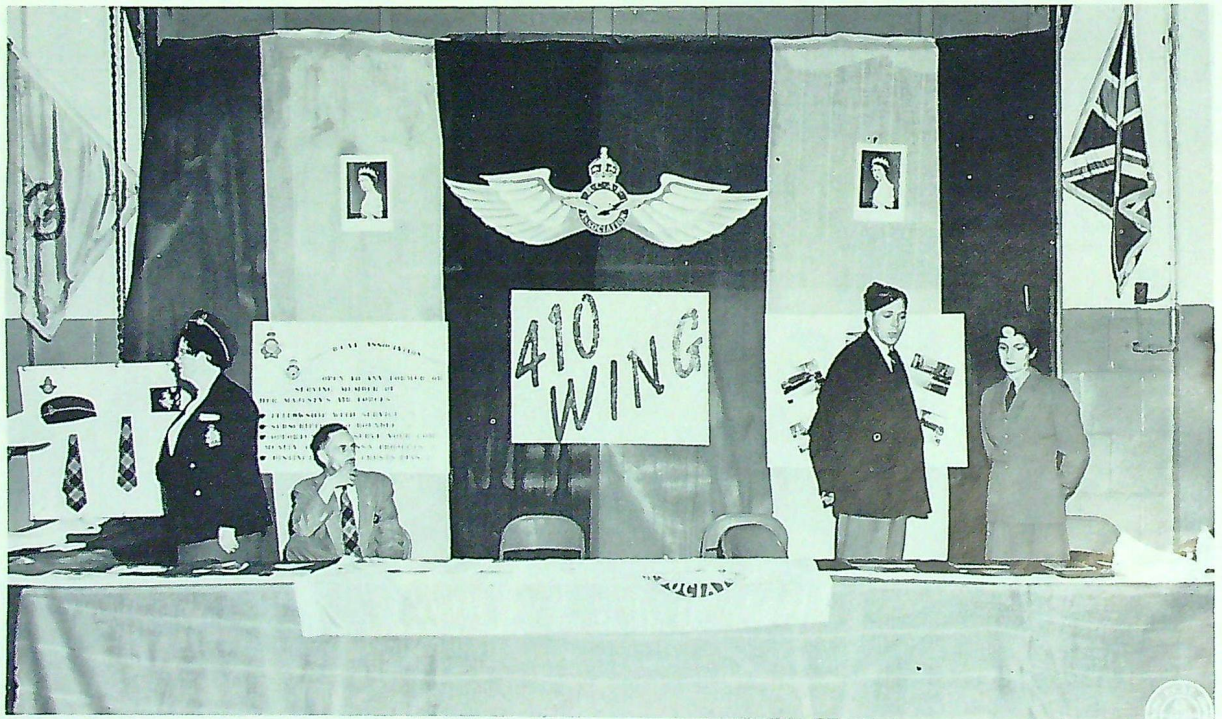
The Association's recruiting for the R.C.A.F. during the months of March, April, May, and June 1955, produced the following contacts and enrolments:

Wing	Contacts	Enrolments
No. 101, Halifax.....	6	1
No. 303, Sherbrooke.....	2	—
No. 309, Drummondville.....	1	1
No. 416, Kingston.....	41	10
No. 501, Port Arthur.....	1	1
No. 602, Saskatoon.....	1	1
No. 605, Lloydminster.....	1	—
No. 703, Red Deer.....	28	11
	<hr/>	<hr/>
	81	25

### AIR FORCE DAY PARTICIPATION

Wings of the Association located adjacent to R.C.A.F. Stations were invited to participate in the Air Force Day activities. In some instances booths were set up and decorated in an endeavour

*Air Force Day display, No. 410 (Ottawa District) Wing. Left to right: Anne Breadner, N. Duncan, J. Newell, and Flt. Cadet Gwyneth French.*





*Air Force Day display, No. 431 (Krakow) Wing, Hamilton.*

to acquaint the public with the work of the Association. At other units, Wings were given the privilege of serving food and soft drinks.

The Association is most appreciative of this opportunity to take part in Air Force Day activities.

#### LIFE MEMBERSHIP DUES

At the National Convention of the Royal Canadian Air Force Association held in Ottawa on May 26th and 27th, 1955, a motion was passed as follows:

"That life membership dues in the Association be increased from twenty-five to fifty dollars, and

that in order to qualify for life membership, an applicant must have had continuous service in the Association for a period of ten years."

This amendment to our Constitution and By-Laws was approved by the Secretary of State, Ottawa, on June 16th, 1955.

We would again remind all members that the Annual Dues of the Association were payable on April 1st. Continued receipt of "The Roundel" will be ensured by prompt payment.

# SMOKING AND VISION

By Dr. Ross A. McFarland, Harvard University.

*(This article is reprinted by courtesy of "Aviation Week". Its author, Dr. McFarland, is also the author of a well-known work on preventive medicine and safety in aviation and industry, "Human Factors in Air Transportation".—EDITOR.)*

SCARCELY anyone has missed the recent publicity given to the possible connection between heavy cigarette-smoking and cancer of the lungs. Most of us have also been exposed to statistics which say that non-smokers tend to live longer than heavy smokers, or that heavy smokers more often develop heart disease.

Whether smoking is the culprit or not, the problems involved are long-range ones, important for the longevity of people in all walks of life. It is less well known that the immediate effects of smoking can be problems to those who fly in aircraft, immediate problems of efficiency and safety.

## Tobacco Smoke

Nicotine and carbon monoxide are the substances of chief concern in the smoke which enters the mouth and respiratory passages. Various irritants are also present which are responsible for the local effects of smoke on the eyes and mucous membranes. Tobacco tars may possibly influence the formation of cancer, but the evidence for this is not clear. The presence of lead and arsenic resulting from insecticides used on the tobacco plant is of unproven importance.

## Nicotine

The tobacco in the average American cigarette is about 2% nicotine. So-called "de-nicotinized" brands containing about 1% have thus eliminated only about one-half of that originally present. When tobacco is burned, only a part of the nicotine is destroyed.

Much of it is volatilized into the smoke. If the smoke is inhaled, almost all of its nicotine is absorbed; if the smoke is not inhaled, about two thirds of the nicotine present is absorbed, through the membranes lining the mouth.

The amounts of nicotine that are taken up by the body from smoking are comparable to the amounts known to have an effect when used in drug form. The general net effect of the drug is to increase the load on the heart.

## Carbon Monoxide

About 1% to 2.5% of the total volume of cigarette smoke is carbon monoxide, while cigar smoke may contain 5% to 8%. The CO content increases with the thickness of the cigar or cigarette, with the moisture and tightness of packing, and with rapid smoking. Carbon monoxide is absorbed only if the smoke is drawn into the lungs; and inhaling one cigarette results in the saturation of 1% to 1.5% of the blood.

If a person smokes 20 to 30 cigarettes per day, he may have on the average of 4% to 8% of his hemoglobin so saturated. This amount of smoking results in a 10% saturation in some people. Some delicate functions, such as night vision, are affected at these levels even though headaches and other symptoms of carbon monoxide poisoning do not usually appear until higher concentrations are reached.

## The "Physiological Ceiling"

Hemoglobin, the pigment in the red blood cells, normally combines with oxygen in the lungs, and



transports it to the tissues. Unfortunately, hemoglobin also takes up carbon monoxide in the same way. In fact, when carbon monoxide and oxygen compete for space in the hemoglobin molecule, carbon monoxide is favored by odds of about 210 to one.

Very small concentrations of CO can therefore inactivate a large amount of hemoglobin as an oxygen carrier. As a result, a state of oxygen deficiency is produced in the body, which has effects like those of high altitude.

Furthermore, the effects of CO and altitude are additive. As a result, a flier at sea level with a 10% saturation of the blood by CO shows the same effect on a sensitive functional test of oxygen deficiency as if he were at an altitude of about 12,000 ft. If he were at 10,000 ft., the combined effect would be equivalent to that of an altitude of 15,000 ft. The "ceiling" is thus lowered by about 5,000 ft.

Furthermore, once carbon monoxide enters the blood, it leaves very slowly. Some 24 hr. after heavy smoking, appreciable amounts are still present in the blood. This may partially account for some of the hangover effects of heavy smoking.

Studies carried out in low-pressure chambers showed that subjects who could tolerate altitudes of 20,000 to 21,000 ft. on days they refrained from smoking were able to reach only 16,000 ft. when they smoked heavily before the tests.

During 1943, the effects of smoking were observed on flight crews engaged in long-range operations between Miami and the Far East. Having experienced much fatigue in these flights, air crews agreed to refrain from smoking on the ground and in the air on several trips. Most of the pilots were convinced that they felt less exhausted and more efficient in performing their duties at the cruising altitudes of 8,000 to 12,000 ft. when they did not smoke.

Another factor involved in smoking may also impair altitude tolerance. Nicotine increases the metabolic rate, or requirement for oxygen, by about 10% to 15%. It has been shown that greater tolerance for altitude accompanies lower metabolic rate. Nicotine also interferes with the action of the autonomic nervous system, the integrity of which is so essential for optimal adaptation to stress.

### Smoking and Night Vision

Smoking has an appreciable influence on the ability to see at low levels of illumination; these effects would be of importance particularly in night flights. In my laboratory, the sensitivity to changes in the brightness of dim lights was measured before and after three cigarettes were smoked in succession. Blood carbon monoxide increased about 1.5% per cigarette, the total uptake being about 4.5%. Sensitivity decreased distinctly after each cigarette; that is, lights had to be brighter to be seen. The total effect on vision from only three cigarettes corresponded to that of an altitude of about 8,000 ft.

### The Airman and Smoking

Not even the tobacco manufacturer claims that the effects of tobacco on the body are beneficial. The question is whether the harmful effects are really serious and great enough to offset the pleasure of smoking. Available evidence indicates that the immediate effects of moderate smoking are probably not harmful to normal adults.

Among airmen, however, the impairment of vision and lowered tolerance to altitude present an occupational hazard. It would seem wise for aviators to avoid the excessive use of tobacco not only to prolong their useful flying careers, but also to maintain a high degree of fitness in flight.

## DISCIPLINE

Discipline is a condition brought about by consistent training whereby a person does the proper thing automatically. Good discipline cannot be produced except by good training. (*No. 1 S.S.T.S. précis: R.C.A.F.*)

# The Effects of Nuclear Explosions

*(Last February, the U.S. Atomic Energy Commission published a report on the effects of high-yield nuclear explosions which did more than any previous official statements to stimulate a realistic approach to the problem of survival in atomic war. Edited for the general interest of our readers by Group Capt. K. C. Maclure, A.F.C., Director of Armament Engineering, here it is.—EDITOR.)*

THE following statement is designed to condense and correlate information, some of which already has been made public and other portions of which have been of a classified nature until now.

Test conditions, which must necessarily form the principal basis of evaluating the effects of nuclear explosions, may differ markedly from those which might be expected if nuclear weapons were used against our population in wartime. It would be difficult to predict the size or kind of bomb an enemy might use against us in event of war, the exact means of its delivery, the height at which it would be exploded, or the number of bombs which might reach a given target. Nevertheless, the facts which follow are the fundamental ones at this time.

## Four Effects of Detonations

A nuclear detonation produces four major characteristics:

- Blast.
- Heat.
- Immediate nuclear radiation.
- Residual radioactivity.

Of these, the first three are essentially instantaneous, while the fourth has a more protracted effect. The phenomena of blast, heat, and nuclear radiation from the detonation of a thermonuclear bomb are of the same nature as those of earlier and smaller atomic bombs. The nature of the phenomena is, in general terms, standardized

whether the bomb be a 20,000-ton (T.N.T. equivalent) atomic weapon or a thermonuclear one of many times that power. The intensity and area of the blast, heat, and nuclear radiation increase in relation to the greater energy yield of the explosion. Information on these effects has been extensively publicized; therefore, the remainder of this report deals principally with effects other than heat and blast.

Residual radioactivity, although in no sense exclusive to high yield thermonuclear detonations, does become a matter of major concern when a large thermonuclear device of the type used in the 1954 tests in the Pacific is exploded. The fallout of radioactivity from such an explosion, may, under certain conditions, settle over wide areas. Therefore, the extent and severity of this radioactive fallout has been a subject of continuing study since the first full-scale thermonuclear tests at the Pacific Proving Grounds on November 1, 1952. The results of these studies and of our evaluation of data obtained from the latest tests in the Pacific in March, 1954, are described in this report.

It should be noted that if we had not conducted the full-scale thermonuclear tests mentioned above, we would have been in ignorance of the extent of the effects of radioactive fallout and, therefore, we would have been much more vulnerable to the dangers from fallout in the event an enemy should resort to radiological warfare against us.



## Blast and Heat Effects

The effects of blast and heat from a nuclear explosion are relatively localized. One A-bomb of the earliest type equivalent to 20,000 tons of T.N.T. (20 kilotons) would produce blast sufficient to destroy or damage severely residences within a radius of more than one mile from the point of burst. Within a radius of about a mile and a half, residences would be so damaged as to be unusable without repairs. A principal hazard to human beings would come from flying and falling debris and from fires due to such causes as broken gas and electric lines or overturned stoves. The area in which injuries to human beings would be caused by blast, therefore, would be about the same as the area of damage to structures.

The United States, as announced previously, has developed fission bombs many times as powerful as the first A-bombs, and hydrogen weapons in the ranges of millions of tons (megatons) of T.N.T. equivalent. For these larger weapons, the blast effects can be calculated approximately by means of a scaling law, namely, the distance at which a given blast intensity is produced varies as the cube roots of the yields of the explosions.

Similarly, the heat and burn effects of nuclear explosions can be estimated from accumulated data. These effects, of course, are influenced by prevailing atmospheric conditions. The time element also is a prime factor. Very large weapons deliver heat over an appreciably greater period of time than smaller weapons. A given quantity of heat from a high-yield weapon, delivered over a longer period of time, will produce somewhat *less* severe burns than the same quantity of heat from a nominal detonation.

## Protection Against Blast and Heat

The hazard from both burn and blast effects in the *outer* affected areas would be reduced greatly by shelter. Clothing or almost any kind of shelter would reduce the danger of direct burns, although there might be some danger of clothing and structures becoming ignited. Also, shelter would materially reduce the hazard of blast injury by affording protection against flying or falling debris.

As is generally known, the shelter afforded by ordinary city buildings would not suffice within the central area surrounding the point of burst of a large nuclear weapon. For this reason, the U.S. Federal Civil Defense Administration recommends evacuation of the central areas of target zones on early warning of approaching attack.

## Radiation Effects

The immediate nuclear radiation, i.e., the neutrons and gamma rays released instantaneously with the explosion of a large weapon on or near the ground, does not present a serious hazard beyond the area where heat and blast are of great concern.

## Fallout Radiation

However, particles with residual radioactivity produced by a detonation (as opposed to the immediate nuclear radiation) may fall out over an area much larger than that affected by blast and heat, and over a longer period of time. All nuclear detonations produce radioactive materials, but the nature and extent of the radioactive fallout depends on the conditions under which the bomb is fired. The main radioactivity of a bomb's fallout decreases very rapidly with time — for the most part, within the first hours after the detonation.

## Fallout From In-The-Air Detonations

In an in-the-air explosion where the fireball does not touch the earth's surface, the radioactivity produced in the bomb condenses only on solid particles from the bomb casing itself and the dust which happens to be in the air. In the absence of material drawn up from the surface, these substances will condense with the vapors from the bomb and air dust to form only the smallest particles. These minute substances may settle to the surface over a very wide area — probably spreading around the world — over a period of days, or even months. But they descend extremely slowly with the result that, by the time they have reached the earth's surface, the major part of their radioactivity has been dissipated harmlessly in the atmosphere, and the residual contamination is widely dispersed.



### Fallout from Surface Detonations

If, however, the weapon is detonated on the surface or close enough so that the fireball touches the surface, then large amounts of material will be drawn up into the bomb cloud. Many of the particles thus formed are heavy enough to descend rapidly while still intensely radioactive. The result is a comparatively localized area of extreme radioactive contamination and a much larger area of some hazard. Instead of wafting down slowly over a vast area, the larger and heavier particles fall rapidly before there has been an opportunity for them to decay harmlessly in the atmosphere and before the winds have had an opportunity to scatter them.

The area of hazard from radioactive fallout from a surface or near-surface explosion of a thermonuclear weapon is much larger than the areas seriously affected by heat and blast. The large radioactive cloud of a thermonuclear explosion rises with great rapidity to the highest levels of the atmosphere and spreads over hundreds of square miles in the first hours. During this time the winds toss the extremely radioactive particles about and the pattern of the radioactive fallout is determined by the size of the particles and by the direction and velocities of the winds, including those up to 80,000 feet and above. The nature of the surface of the earth on which the bomb is fired also must be taken into consideration. Because of these variables, it is impossible to apply a single fallout pattern to all thermonuclear detonations, even test explosions conducted under selected conditions. However, with adequate knowledge of atmospheric conditions, including wind directions and velocities up to high levels, and meteorological reports, the fallout region for any detonation usually can be predicted with considerable accuracy. In general terms, the region of severe fallout contamination from the detonation of a thermonuclear weapon fired on or near the surface can be described as an elongated, cigar-shaped area extending down-wind from the point of burst.

### Fallout Pattern of 1954 Test in the Pacific

The very large thermonuclear device fired at the Bikini Atoll on March 1, 1954, was exploded on a coral island. Coral consists of calcium carbonate, thus the detonation's radioactivity was spread by particles consisting largely of unslaked lime which, during the hours of descent, was slaked by moisture in the atmosphere. These particles ranged between 1/1000th and 1/50th of an inch in diameter and were, on the average, somewhat adhesive. The prevailing winds were westerly, so the bomb cloud moved generally to the east and deposited the radioactive particles in varying amounts over an elliptical or cigar-shaped area. About 160 (statute) miles down-wind from the point of burst the early fallout was observed in the form of fine particles which looked like snow. Fallout began there about eight hours after the detonation and continued for several hours.

The roentgen is the commonly accepted unit of measurement of radiation dosage. A dose of about 25 roentgens of radioactivity received by a person over a brief space of time will produce temporary changes in the blood. A dose of some 100 roentgens received in a short interval may produce nausea and other symptoms of radiation sickness. About 450 roentgens delivered over a day or so might be fatal to approximately half of the persons so exposed. However, because of the body's repair processes, a total radiation dose which would be serious if incurred in a few minutes would produce much less effect if spread over a period of years. These statements may be helpful in understanding the data which follow.

The test explosion, at ground surface, contaminated a cigar-shaped area extending approximately *220 statute miles down-wind and varying in width up to 40 miles*. In addition, there was a contaminated area up-wind and cross-wind extending possibly 20 miles from the point of detonation. Data was collected from 25 points on 5 atolls located from 10 to 330 miles down-wind (generally east) from Bikini Atoll. Due to an unexpected shift in the direction of the prevailing winds in the higher altitudes, the fallout missed the observation rafts that had been placed farther



north previous to the test firing. The estimated contour of the pattern of fallout is, therefore, based only in part on data obtained from actual measurements and partly on extrapolation, i.e., calculations based on known data, including factual information obtained during previous tests of smaller devices.

Data from this test permits *estimates* of casualties which would have been suffered within this contaminated area if it had been populated. These estimates assume:

- that the people in the area would ignore even the most elementary precautions,
- that they would not take shelter but would remain out of doors completely exposed for about 36 hours, and
- that in consequence they would receive the maximum exposure.

Therefore, it will be recognized that the estimates which follow are what might be termed *extreme estimates* since *they assume the worst possible* conditions.

On the basis of our data from this and other tests, it is estimated that, following the test explosion on March 1, 1954, there was sufficient radioactivity in a down-wind belt about 140 miles in length and of varying width up to 20 miles to have seriously threatened the lives of nearly all persons in the area who *did not take protective measures*. During the actual tests, of course, there were no people in this zone. Inside Bikini Atoll, at a point 10 miles down-wind from the explosion, it is estimated that the radiation dosage was about 5,000 roentgens for the first 36-hour period after the fallout. The highest radiation measurement outside Bikini Atoll indicated a dosage of 2,300 roentgens for the same period. This was in the north-western part of the Rongelap Atoll, about 100 miles from the point of detonation. Additional measurements in Rongelap Atoll indicated dosages, for the first 36-hour period, of 2,000 roentgens at 110 miles, 1,000 roentgens at 125 miles, and, farther south, only 150 roentgens at 115 miles from Bikini.

Some distance farther from the point of detonation, at about 160 miles down-wind and along the axis of the ellipse, the amount of radioactivity would have seriously threatened the lives of about

one-half of the persons in the area who *failed to take protective measures*. It is estimated that the radiation dosage at the point was about 500 roentgens for the first 36 hour period.

Near the outer edge of the cigar-shaped area, or approximately 190 miles down-wind, it is estimated that the level of radioactivity would have been sufficient to have seriously threatened the lives of 5 to 10 percent of any persons who might have remained exposed out of doors for the first 36 hours. In this area the radiation dosage is estimated at about 300 roentgens for the first 36-hour period.

Thus, about 7,000 square miles of territory down-wind from the point of burst was so contaminated that survival *might* have depended upon prompt evacuation of the area or upon taking shelter and other protective measures.

At a distance of 220 miles or more down-wind, it is unlikely that any deaths would have occurred from radioactivity even if persons there had remained exposed up to 48 hours and had taken no safety measures.

The estimates cited above do not apply uniformly throughout the contaminated area inasmuch as the intensity of radioactivity within a region of heavy fallout will vary from point to point on account of such factors as air currents, rain, snow, and other atmospheric conditions. Because of this and because most persons, if given sufficient warning, probably would evacuate the area or take shelter and other precautionary measures, the actual percentage of deaths could reasonably be presumed to be considerably *smaller* than these extreme estimates.

#### **Protection Against Fallout**

In an area of heavy fallout the greatest radiological hazard is that of exposure to *external* radiation. Simple precautionary measures can greatly reduce the hazard to life. Exposure can be reduced by taking shelter and by utilizing simple decontamination measures until such times as persons can leave the area. Test data indicate that the radiation level, i.e., the rate of exposure, indoors on the first floor of an ordinary frame house in a fallout area would be about one-half the



level out of doors. Even greater protection would be afforded by a brick or stone house. Taking shelter in the basement of an average residence would reduce the radiation level to about one-tenth that experienced out of doors. Shelter in an old-fashioned cyclone cellar, with a covering of earth three feet thick, would reduce the radiation level to about 1/5000, or down to a level completely safe, in even the most heavily contaminated area.

Radioactive material deposited during fallout may or may not be visible but would be revealed by radiation detection instruments such as Geiger counters.

Care should be taken to avoid the use of solid foods or liquids that may contain fallout particles.

If fallout particles come into contact with the skin, hair or clothing, prompt decontamination precautions will greatly reduce the danger. These include such simple measures as *thorough bathing of exposed parts of the body and a change of clothing.*

#### **Radiostrontium Fallout**

One of the most biologically important radioactive substances found in fallout is strontium-90. It has a long lifetime — nearly 30 years on the average. Radiostrontium has a chemical similarity to calcium and, therefore, when taken into the body it has a tendency to collect in the bones. Radiostrontium can enter the body in two ways — by inhaling or by swallowing. Normally, the amount inhaled would be small compared with the amount one might swallow. Fallout material deposited directly on edible parts of plants may be eaten along with the plants, but washing the plants before they are eaten would remove most of this radioactive material. However, rainfall carrying the radiostrontium down to earth may deposit it in the soil where it can be taken up, in part, by plants and incorporated into plant tissues, later to be eaten by humans or by grazing animals which, in turn, provide food for humans.

Since the start of nuclear tests, careful measurements have been made of the distribution of radiostrontium over the earth's surface, in the

soils, in plants and animal tissues, in the oceans, in rain, in the atmosphere and in all forms in which it might be expected to occur. The results of this study are reassuring. The amount of radiostrontium now present in the soil as a result of all nuclear explosions to date would have to be increased many thousand times before any effect on humans would be noticeable.

#### **Radioiodine Fallout**

Among the shorter-lived fission products involved in the study of internal radiation, the most biologically important is radioiodine-131 with an average life of only 11.5 days. Even though this product may be widely spread after a nuclear explosion, the possibility of serious hazard is limited by its relatively short life. Like the non-radioactive form of the element, it concentrates in the thyroid gland and, in excessive quantity, conceivably could damage the thyroid cells.

Scientists of the Atomic Energy Commission have estimated that the average exposure of people in the United States from radioiodine in the fallout from the entire series of tests in the spring of 1954 was only a few percent of the annual dose that can be received year after year and still have no noticeable effects.

These two isotopes — radiostrontium and radioiodine — constitute the principal internal hazards from the radioactivities produced by the detonations of atomic weapons, both fission and thermonuclear. The Atomic Energy Commission has been engaged for three years in a broad study of the radioactive forms of these isotopes and conducts year-round monitoring of these radioactivities in many locations. Any accumulation of these materials can be detected with great sensitivity so that ample warning of potential hazard could be given long before any actual danger occurred from test detonations. The amounts of radiostrontium and radioiodine which have fallen outside the areas near the test sites as a result of all atomic tests up to now are insignificant compared to concentrations that would be considered hazardous to health.

### Genetic Effects of Radiation

One other effect of radiation must be considered in evaluating the long-range possibilities of hazard from nuclear detonations. This is the possible genetic effect upon the germ cells which transmit inherited characteristics from one generation to another. At our present stage of genetic knowledge, there is a rather wide range of admissible opinion on this subject.

In general, the total amount of radiation received

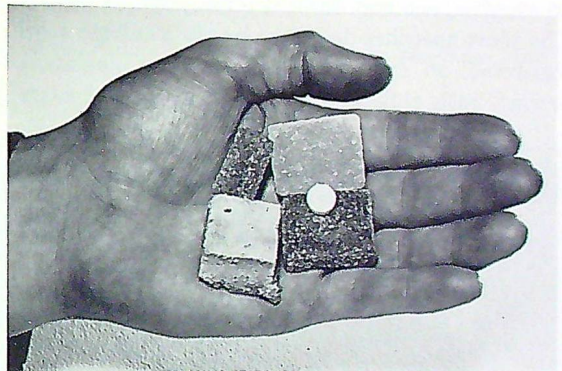
by residents of the United States from all nuclear detonations to date, *including the Russian and British tests* and all of our own tests in the United States and the Pacific, has been about one-tenth of one roentgen. This is only about 1/100th of the average radiation exposure inevitably received from natural causes by a person during his or her reproductive lifetime. It is about the same as the exposure received from one chest x-ray.

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## Dinner for a Survivor

It may not look like much, but the cuisine displayed in the anonymous palm constitutes one meal from the emergency rations which are carried in the seat pack of all fighter personnel. Nine R.C.A.F. officers, who completed a ten-day test of emergency rations and survival equipment, for the most part ate thrice daily only what is shown — i.e. two and a half jelly tablets, a third of a shortbread biscuit, and a vitamin tablet. In addition, a cup of coffee was provided once a day from coffee in powder form. They came through the tests in perfect physical condition, though without any excess weight.

The wild-looking character in our second photograph is one of the nine officers referred to above. He is Flying Officer J. T. Koch, a Sabre pilot. The primordial weapon he holds is an ice-chisel made by lashing a clasp-knife to a pole.



## ACCOUNTS SUPERVISORY TRAINING

This autumn will see the reopening of the Clerk Accounts Supervisor's Course at Aylmer, designed to acquaint senior N.C.O.s who already have a knowledge of supply accounting with the intricacies of pay and of mess and institute accounting. The course, which lasts for six weeks, was established last January and discontinued during the summer months.

Though the twenty-odd members of the first course represented, between them, more than 250 years of accounting experience, they did not find the course to be "a piece of cake", and much midnight oil was burnt on the altar of high finance. One of the most popular features of the course's "miscellaneous" phase was Effective Speaking — an essential accomplishment for any sort of leader. The short speeches delivered by the students were registered on tape recorder, and the playbacks proved both enlightening and — in several cases

— amusing and a bit embarrassing to the speakers.

At the time of writing, the accounts instructional staff at Aylmer includes W.O.1 D. R. Pirie, Flt. Sgt. W. S. Warnock, Sgt. S. F. Licence, Sgt. A. Parks, Sgt. J. A. Wade, and Flt. Sgt. O. Bird.

The accompanying photograph shows the pioneers who composed Course No. 1. Back row (l. to r.): W.O.2 Sigurdson, Sgt. Hayes, Flt. Sgt. Molyneaux, Sgt. Lalonde, Sgt. Kennedy, Sgt. Casault, W.O.2 Leddy, Flt. Sgt. Mandley, Sgt. Wade. Middle row: Flt. Sgt. McBeth, Flt. Sgt. French, Flt. Sgt. La Marre, Flt. Sgt. Butler, Sgt. Dunn, Sgt. Bell, Sgt. Gauvin, Sgt. Lawler. Front row: W.O.2 Coldrey, Flt. Sgt. Warnock, Sgt. Licence, Sqn. Ldr. Hodgins (O.C. of No. 2 Sqn., 1 T.T.S.), Wing Cdr. Hemsley (Chief Training Officer, 1 T.T.S.), W.O.1 Pirie, Sgt. Parks, W.O.2 Robson, W.O.2 Walsh.



# THE MINT

## A Prelude to Contentment

A Review-Article by Flying Officer J. E. G. Dixon, Directorate of Air Force Security.

*(The writer of this review-article came to Canada, after his graduation from Oxford, in 1952 and joined the R.C.A.F. a year later. He had previously enlisted in the R.A.F. in 1940, at the age of 16, and served in it until 1948. It was during his last two years in the R.A.F. that he became deeply interested in T. E. Lawrence's career, his subsequent study of which took him up and down England over a period of several years and brought him into personal contact with several of Lawrence's close friends and relatives. He is, therefore, well qualified to review Lawrence's posthumously-published book, "The Mint".—EDITOR.)*

T. E. LAWRENCE died twenty years ago in May, at the age of 46. He was a legend in his own lifetime, and such was his hold on the public imagination that many refused to believe him dead. Even during the last war there were rumours of him as a secret agent. But his motor-cycle accident in 1935, and his consequent death, were tragically true. Yet he has lived on as a cherished memory to his friends and almost as a messianic influence to his devotees.

Recently there has been a revival of interest focused on this amazing man. It started with the publication by Richard Aldington of a "biographical inquiry", in which he attempts to refute Lawrence's claims to greatness and to belittle all his achievements. Jonathan Cape, the publisher, retaliated by reissuing some books by and about him, doubtless at the behest of his outraged protagonists. And now, for the first time, we have "The Mint", Lawrence's account of his first few months in the R.A.F.

Lawrence joined the R.A.F. in August 1922 as an aircraftman, under the name of John Hume Ross. After five months at the Training Depot, Uxbridge, he was posted to Farnborough, where he was recognized by an officer who let out the information to a newspaper. The outcry was such

Aircraftman T. E. Shaw. (Sketch by Augustus John.)



that the Air Ministry had no option but to release him, in January 1923. His next two and a half years were spent, miserably, in the Royal Tank Corps until, at length, after much beseeching and the intervention of friends in high places, Lawrence was restored to the Air Force — this time as T. E. Shaw, the name he adopted by deed-poll in 1926. He served, always as an “erk”, for the next ten years, contented in the camaraderie of his fellows and in doing a worthwhile job, until his retirement on reaching the age-limit.

\* \* \*

But *why* did Lawrence join the R.A.F.? He knew that any position was open to him in the Government or the Empire. Winston Churchill, who was then Secretary of State for Colonial Affairs, offered him posts which he declined. In order to come to some understanding of his state of mind at the time, it is necessary to recall the events of the four years following the First World War.

In the Introductory Chapter to his “Seven Pillars of Wisdom”, he describes how, after the British Government had promised the Arabs self-government, he had to endorse that promise (indeed, it was his reason for leading their revolt), since they saw in him a free agent of the Government, and “Arabs believe in persons, not in institutions.” Doubting his Government’s sincerity, he saw himself as the central figure in a conspiracy; and as a result of his part in it, “instead of being proud of what we did together, I was continually and bitterly ashamed.”

The war won, Lawrence went to the Peace Conference at Versailles as the Arabs’ adviser, in the belief that President Wilson would secure their “self-determination”. He suffered defeat and disillusionment when the colonial powers reasserted their control in the Near East. The falseness of his position was exacerbated by the doubtless good intentions of Lowell Thomas, who just at this time was building up the legend of Lawrence’s feats in the desert by means of a series of lectures in London. It was Lawrence’s feeling that he had been dishonoured by defeat that twisted him; and the betrayal of all he had fought for and of his

promise to the Arabs forbade him to accept a penny for his services to their cause. Later, in 1921, under Churchill, he effected a settlement in the Near East with which he was well pleased; and then washed his hands of the whole affair.

The despair occasioned by his disgust at the time is, I think, fairly summed up in a letter he wrote to a friend about ten years later. “On the whole I believe that not doing is better than doing, and I believe mankind will reach its zenith when it determines to propagate no more . . . I have done with politics, I have done with the Orient, and I have done with intellectuality. O Lord, I am so tired! I want so much to lie down and sleep and die. Die is best because there is no reveille. I want to forget my sins and the world’s weariness.”

In 1922 he had no money and no job. Economic necessity was a factor in his enlisting. But that is to state only a tithe of the truth: there were other, more important, reasons. Firstly, while understandably enjoying fame and publicity, he also, equally understandably, sought privacy above all else. This, however, the Press would not allow; any arrangement whereby he could have the limelight when it inconvenienced him, and obscurity when he chose, was not possible. The frequent invasions of his seclusion developed in him a persecution mania, and he began to hate the Lawrence of Arabia he had created, and which had been “glamorized” by the very publicity he in turn craved and shunned. To bury himself in the uniformity and anonymity of the ranks seemed an ideal solution.

Secondly, a profounder reason, scarcely appreciable by more normal and less sensitive minds, is stated in the Note to “The Mint” by his brother, A. W. Lawrence: “Presumably the years of over-exertion had resulted, when the need for activity ceased, in a condition of the mind which allowed only negative decisions to be taken without intolerable effort. Life in the ranks, where a decision would never be required, therefore seemed the right solution . . .” Churchill put it in this way: “He was one of those beings whose pace of life was faster and more intense than what is normal . . . He was out of harmony with the normal, and when the storm-wind stopped, he could with



*Lawrence of Arabia. (Sketch by Eric Kennington.)*

difficulty find a reason for existence . . . In an honourable Service, 'the simple round, the common task' furnished him with a way of living."

Lawrence knew himself to be abnormal; perhaps it is a measure at once of his abnormality and his genius that he was never able fully to understand himself and the well-springs of all his actions. The remoteness of the plane on which he had been living, and the intensity of his recent life, had estranged him from the relatively stable and peaceful conditions into which the world had subsided in the '20s. It was essential for his sanity that he should harmonize himself afresh. He saw in the ranks the means of making that readjustment; there he could re-educate himself in the ways of normality and find a community with the common throng.

Finally, in writing "Seven Pillars of Wisdom" he had hoped to add an "English fourth" to the three books\* which to him stood supreme in world literature for their greatness of spirit. He failed in his own judgment to produce a good book at all; but in the R.A.F. he saw the makings of a big book. As he wrote to E. M. Forster: "I had meant to go on to a Squadron, and write the real

Air Force, and make it a book — a BOOK, I mean. It is the biggest subject I have ever seen, and I thought I could get it, as I felt it so keenly." Had he gone on to "write the real Air Force", he might well have created the great book he had the ambition for. But he did not write it; and "The Mint" is not it.

\* \* \*

"The Mint" is divided into three parts: The Raw Material, In The Mill, Service. The first two parts record his life at the Depot, and leave us on the eve of his posting to Farnborough. The third part, after a lapse of nearly three years, gives us a glimpse of the real Air Force, that Air Force in which they could devote themselves wholeheartedly to the fulfilment of its mission and the justification of its second reason for being — the conquest of the air. This part covers the first few months of his service after reinstatement, at Cadet College, Cranwell. It is a pity that the book ends there, for, as it stands, it leaves us on the threshold of an approaching contentment and achievement, the nature of which we can only guess at.

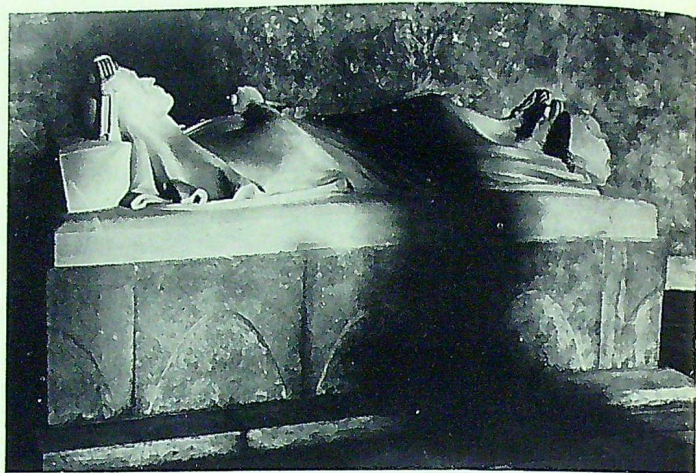
While the short third part offsets much of the grimness of the two preceding parts, "The Mint" as a whole lacks that very element that was necessary to the author's accomplishment of his ambition — the air. The author himself describes it as "an iron, rectangular, abhorrent book, one which no man would willingly read." This reviewer cannot agree. It is indeed a "hard" book, but it is not abhorrent. It is a fascinating book, and in parts moving. The hardness, the cruelty, are inherent in its theme. The N.C.O.s of the pre-war R.A.F. Depot did not believe in mollycoddling their charges. Their motto was "Make them or break them"— and the resultant way of life was faithfully and unsparingly noted down by Lawrence. (There was nothing like it in the wartime R.A.F., which very quickly became "humanized" by the influx of "for-the-duration-only" airmen.)

Even for the average recruit, the life was hard enough to bear; Lawrence's acute sensibility, his cultured mind and fine sense of right and wrong

\*"The Brothers Karamazov", "Zoroaster", and "Moby Dick"

made his endurance of it doubly difficult. And it is painful, if one understands Lawrence, to read of his suffering — in body as well as in soul, for an aircraft crash in 1919 had left him with an unhealed rib which pierced his lung during the strenuous exercises of P.T. and organized sports. He bore the harshness because he regarded it as an ordeal to be mastered if ever he were to be useful again; and he was determined that his usefulness should be devoted to a cause in which he believed. Yet, throughout his life, there is manifest a quirk which impelled him to submit himself to physical pain. His body was so much worthless substance which should do the mind's bidding when required. It was only his steel will that enabled him to submit himself to punishment—at times even counter to the dictates of intelligence. This willingness to suffer can be attributed to the early discovery of his illegitimate birth, a circumstance of which he was ever secretly ashamed, and for which he could atone only by constant self-immolation. It is the classical antithesis of the spirit and the flesh, a struggle which is noticeable in "The Mint" as it is throughout "Seven Pillars of Wisdom".

Those who see or look for in "The Mint" only a journal of the R.A.F. Depot and of Lawrence's training there miss the whole significance of the book. Since it does not portray the real Air Force, it becomes infinitely more important a document as a reflexion of the author's success or failure in spiritual readjustment. Here we must record that, with certain reservations, his success is clear — a success, moreover, that was in the future to become permanent. It is more of a triumph than "Seven Pillars" can claim to be. That success is in no way affected by his reluctance to enter into his fellows' obscenity and swearing, or to share their animal spirits, which, on his own admission, he feared above all else. But it is limited by the impression one gets that Lawrence's full acceptance of the men and their ways is hesitant, if not in part withheld. The opinions and observations he makes are peculiarly his own, and we are not given to see if they are also shared by the others. We do not feel him to be one of them, but rather an observer noting down all that went on through a window in the barrack hut. He was feeling his



*Effigy of Lawrence at St. Martin's Church, Wareham, Dorset. (By Eric Kennington.)*

way among them, uncertainly, and the impression of detachment, valid only during the Depot period, is not corroborated by a study of his subsequent years in the R.A.F. It is scarcely in evidence even in the third part of "The Mint". Two passages will serve to illustrate the author's own feeling.

"My fastidious throat chokes over oaths and obscenities: therefore I cannot speak very friendly to their ears: and my not answering them in kind debars them from cursing me. So in small-talk . . . there's an artificial restraint between us . . . Yet with these exceptions we're on a level and understanding friendship. I find in them an answering male-kindness and natural spark, which makes me curiously safe with them. To live in Hut 4 is to have the feet on solid ground."

And again, at the end of the Depot period:

"Here I have been on my own, and up against it: stretched almost beyond my failing body's bearing to sustain the competition of youth. Depot will have the backward-looking warmth of probably my last trial: survived at least, if not very creditably. Though sometimes I've laughed aloud while I cried hardest into my note-book. And the gain of it is that I shall never be afraid of men, again. For I have learned solidarity with them here. Not that we are very like, or will be. I joined in high hope of sharing their tastes and manners and life: but my

nature persists in seeing all things in the mirror of itself, and not with a direct eye. So I shall never be quite happy, with the happiness of these fellows who find their nectar of life, and its elixir, in the deep stirring of some seminal gland. It seems I can get nearest it by proxy, by using my powers . . . to help them preserve their native happiness against the Commandants and Poultons of this world."

Lawrence's victory over himself was complete. While his self-replacement in the world of his likes was a little less complete (at least, at the Depot), he achieved it wonderfully during the ten succeeding years of his service in the R.A.F.

In the meanwhile, what of the other side of the medal, of the other airmen's attitude to Lawrence, whom they saw as an individual distinct and different from themselves, in many cases without always knowing his real identity? It is important, for the answer gives the measure of his success in its other aspect. Here, too, we must look beyond

the brief period covered by "The Mint", though even so early there are clear indications. He made friends with some airmen, at various stages of his career, with whom he kept in touch for the rest of his life. Since the war I have met and talked at length to two of them, among others of his friends. They are all in accord that his friendship, and the privilege of having served with him, are among their most cherished memories. In the ranks, where each lives candidly with all, a man is taken for what he is, in habit and association: what he was or whom he knows cuts no ice with them. It is not therefore surprising to find that one of those friends was able to write:

"T. E.'s unworldliness gave him a tremendous influence over his comrades; they had no time for 'good' men and knew nothing of saints, but they knew a man when they saw one, and Shaw was their ideal of a man."

## DISTINGUISHED MARKSMEN

The officers and airmen shown here have received the R.C.A.F. Golden Bullet award and the Dominion Marksman Silver Shields. They are, from left to right, L.A.C. M. Dagg, Flying Officer D. Fink, A.F.C., Flying Officer W. Green, and Flt. Sgt. W. Eaton, all of R.C.A.F. Station Portage la Prairie at the time the photograph was taken. Flying Officer Fink has, in addition, won the Dominion Golden Marksman's Shield and the Manitoba Aggregate Rifle Trophy. Golden Bullets, Shields, and Trophy were all won with sporting and Service .22 rifles.



## "DOWN IN THE DRINK"

A Book Review by Squadron Leader N. W. Emmott, D.F.C.

**D**URING the Second World War some 20,000 men were rescued from the sea after having ditched their aircraft. The stories of their endurance, determination and heroism make a thrilling chapter in the history of airmen at war. Eight of these tales have been collected by Flight Lieutenant Ralph Barker, R.A.F., to make up his book "Down in the Drink".\*

The book tells the story of eight R.A.F. crews who ditched during the Second World War in various locations half-way around the world — in the North Sea, the Bay of Biscay, the Mediterranean, and the Indian Ocean. In every case the complete tale of the sortie is told, with all the reasons for the flight, the incidents leading up to the ditching, the actual crash-landing on the water, the struggles of the survivors, the rescue, and what followed the rescue.

All the stories are interesting, and some are enthralling. One account, of a crew that ditched in the Mediterranean, was captured by Italians, and ended up by bringing its captors as prisoners to Malta, injects a note almost of good-natured fun into an otherwise grim record. On the other hand, the story of the crew of a Wellington ditched in the Bay of Biscay, and of the rescue attempts which cost seventeen lives, gives a somewhat darker picture of this aspect of the war.

\*"Down in the Drink", by Flt. Lt. Ralph Barker, D.F.C. Distributed in Canada by Clarke, Irwin and Company Limited, 103 St. Clair Ave. W., Toronto 5, Ont. Price \$2.65.

The last story in the book, that of a flight sergeant equipment assistant who pulled a demoralized camp together by sheer force of character before he joined the "Goldfish Club" when his escape 'plane was shot down, is one of the most inspiring accounts of determination the war in the Far East has produced.

To Canadians, the book is of particular interest because so many of the men involved were Canadians. One story, "The Last Detail", tells of a crew which, except for one member, was all R.C.A.F. The navigator, Sqn. Ldr. W. A. R. Barry, D.F.C., is stationed at A.F.H.Q. in Ottawa now, while two of the other members, E. A. Paulton and F. P. Grant, live in Windsor and Gananoque respectively.

The book is written in clear, readable English, which now and then rises to eloquence. The conversations, although inevitably fictionalized a little, have the ring of complete authenticity. All the background details — the tenseness of waiting, the sick fear that comes with the realization that fuel is running out or that the aircraft is lost, the terror of an approaching crash — are so realistically described as to dry the reader's mouth. In short, the book's people act the way people act, talk the way airmen talk, react just as those who were their comrades remember.

As a series of real-life adventures that show the behaviour of men under deadly stress, this book is a "must" for every member of the Air Force.

### NOTE ON AIRMANSHIP

#### Locking of Seaplane Controls

When a seaplane is at mooring, the controls are in the manner specified to be locked in the Pilot's Operating Instructions. (C.A.P. 100, Vol. 1, Art. 105.32).

# THERE'S ONE ON EVERY STATION!

by Tracy

WATTA YOUSE GUYS TRYIN' TO DO, POISON ME? WE HAD THIS STUFF LAST WEEK AND BESIDES I AINT SUPPOSED TO EAT NO FATTY FOOD Y'KNOW... ... AND LAST SUMMER I FOUND SAND IN THE SPINACH! YOU CALL THIS A FULL HELPING? GIMME SOME MORE PEAS... NO DOUBT WE GET RAISIN PIE FOR DESSERT AGAIN TOO!

LAST NIGHT WE HAD MINCE PIE AND HE WANTED TO KNOW IF IT WAS MADE WITH FRESHLY CAUGHT MINCE!



OUR MOTTO  
IF IT'S SMOKIN'  
IT'S COOKIN',...  
IF IT'S BURNIN'  
IT'S DONE!

THE CHRONIC BEEFER!

tc

# Letters to the Editor ★ ★ ★

## A GREETING FROM THE U.S.A.F.

Dear Sir:

More power to Sgt. Shatterproof! Such humour is greatly appreciated up here in Alaska. Having been in the Training Command for a number of years, I find that the same principles apply in the U.S. Air Force.

Your article on the Rockcliffe Flying Club has planted the idea that such a project could very well be started here. Guess we had better get on the ball and catch up with our neighbours.

Major Berl E. Lightfoot, U.S.A.F.,  
H.Q., Alaskan Air Command.

## BACK COPY WANTED

Dear Sir:

My file of "The Roundel" lacks a copy of the issue for July-August 1953. Can you please provide me with one?

Gordon Snape (R.C.A.F.A.),  
135 Lansdowne St.,  
Peterborough, Ont.

*(We have no copies of this issue left. Perhaps some of our readers can help Mr. Snape.—EDITOR.)*

## INFORMATION WANTED

Dear Sir:

Can you assist me in ascertaining the whereabouts of J. Stark (Flying Officer or Flt. Lt.) who was stationed in or near Toronto about 1943-44? I believe he was originally from Halifax, N.S.

Flt. Sgt. C. H. Asham,  
R.C.A.F.,  
Carberry, Manitoba.

*(Mr. Stark is no longer in the Service and we have no record of his present address. It may be that some of our readers can provide Flt. Sgt. Asham with the required information.—EDITOR.)*

## THE NEW MAN

The proper way to start a man on a new job is:

To show him his place of work.

To introduce him to everyone he should know.

To explain his exact position in the organization.

To explain his duties to him.

To determine his need for training.

*(No. 1 S.S.T.S. précis: R.C.A.F.)*

## A WORD FROM NO. 570 SQN., R.C.A.C.

Dear Sir:

We would like to express our appreciation of the copies of "The Roundel" which we receive each month. The cadets, who now have an Airmen's Library as well as a library in the N.C.O.s' Lounge, greatly enjoy reading it, and I feel that it gives them a good broad view of the Air Cadet movement across the country. It also keeps us-squadron officers valuably informed. We have to be very careful in talking jets to these chaps, because some of them know more about the subject than we do.

May we take advantage of this letter to point out an error on page 34 of the May issue. It seems to have escaped general attention. The officer in the front row of the group appears to be wearing his D.F.C. in reverse. It could be the Dutch D.F.C., but that seems unlikely.

Flying Officer V. T. Fowler, D.F.C.,  
C.O., No. 570 (Edmonton I.R.S.) Sqn., R.C.A.C.

*(That is one error, we are happy to say, for which "The Roundel" is not responsible.—EDITOR.)*

★ ★ ★

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

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

★ ★ ★

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

## No. 1 (F.) WING YEAR BOOK

To commemorate the first year of No. 1 Fighter Wing's life at North Luffenham, England, a very attractive 96-page souvenir book was published. Some copies of this well-illustrated book are still available, and present or former members of the Wing who would like to have a memento of their North Luffenham days may order copies from the printer:

**Stamford Mercury Limited,  
High Street,  
Stamford, Lincolnshire,  
England.**

The price, while the supply lasts, is only 5 shillings per copy, including postage to either Canada or France.

