

Tale-Spin

Michael Cooper-Slipper, D.F.C.



SILK IS THE STUFF THAT SAVES YOUR LIFE OR WINS YOUR WIFE!

AT ONE TIME OUR MICHAEL WAS A MOST ENTHUSIASTIC MOTORCYCLE RACER. FAILING TO KILL HIMSELF AT THIS HAZARDOUS PASTIME, IN 1938 MIKE JOINED THE R.A.F. WHEN HE WAS 17. HE EVENTUALLY BECAME A MEMBER OF A SPITFIRE SQUADRON AND TOOK PART IN THE FIRST OPERATIONAL FIGHTER PATROL OF THE WAR. HE WAS RIGHT IN THERE TO HELP COVER THE RETREAT AT DUNKIRK. HE WAS ALSO A HELPING-FACTOR OF NO MEAN PROPORTIONS, DURING THE BATTLE OF BRITAIN. MIKE HAS SHOT DOWN A GRAND (WE'RE NOT USING THIS WORD LOOSELY) A GRAND TOTAL OF NINE GERMAN AND JAPANESE AIRCRAFT AND THE SPECIFIC DEED WHICH WON HIM THE D.F.C. ENTAILED RAMMING A DORNIER 17 AND HAVING TO BAIL OUT. BAILING-OUT WAS MICHAEL'S CLOSEST ENCOUNTER WITH THAT GAUNT OLD FELLOW WITH THE SCYTHE, FOR, AS MIKE HIMSELF PUTS IT....HE ALMOST DIED....OF FRIGHT. THIS INCIDENT WAS THE "INITIATION FEE" TO THE CATERPILLAR CLUB. A CLUB WHOSE MEMBERS ARE EXCLUSIVELY THOSE WHOSE LIVES HAVE BEEN SAVED BY "HITTING THE SILK."

MIKE MARRIED IN NOVEMBER OF '41 AND FIVE DAYS LATER SAILED FOR SINGAPORE IN COMMAND OF A FIGHTER SQUADRON. HE FOUGHT THE JAPS AROUND MALAYA AND SUMATRA AND WHEN CAPTURED BY JAP PARATROOPS, MANAGED, UNDER COVER OF DARKNESS, TO ESCAPE. ON FOOT HE TRAVELLED 200 MILES THROUGH JUNGLE, REACHING INDIA SEVERAL WEEKS LATER AND 40 POUNDS LIGHTER. A PERIOD OF HOSPITALIZATION WAS NECESSARY BUT THE FOLLOWING YEAR, 1942, FOUND MIKE BACK IN COMMAND OF A SPECIAL HIGH ALTITUDE FIGHTER EXPERIMENTAL UNIT IN EGYPT. AT WAR'S END, MIKE RETURNED TO INTERNATIONAL MOTORCYCLE RACING WHICH HE FOUND RATHER TAME AFTER HIS WAR EXPERIENCES, SO HE DECIDED TO COME TO CANADA. HE SAILED IN NOVEMBER OF '47 AND JOINED A.V.R.O.E. IN DECEMBER OF THE SAME YEAR. SINCE THEN, MIKE HAS INDUSTRIOUSLY APPLIED HIMSELF IN VARIOUS CAPACITIES HERE AT AVRO. FROM FILING TURBINE BLADES, MIKE PROGRESSED TO HIS PRESENT POSITION AS TEST PILOT VIA THE TEST HOUSE.



THE CF-100 MARKS THE FIFTIETH MAJOR TYPE OF AIRCRAFT FLOWN BY MICHAEL, WHO, DESPITE HIS VAST AND VARIED EXPERIENCES, IS STILL IN HIS TWENTIES. MIKE HAS OVER 2000 FLYING HOURS TO HIS CREDIT. HIS AMBITION.....TO BE AN OLD PILOT. MICHAEL'S HOBBIES MIGHT WELL BE COVERED BY SAYING HE LIKES "MESSING ABOUT" WITH ALL SORTS OF THINGS BUT HIS MAIN HOBBY IS PHOTOGRAPHY....A HOBBY THAT HE HAS POLISHED TO PROFESSIONAL BRILLIANCY. IN ANSWER TO THE QUESTION THAT PROBABLY IS PUT TO TEST PILOTS MOST OFTEN; MRS. COOPER-SLIPPER DOES NOT OBJECT TO, OR MIND IN THE LEAST, MIKE'S FLYING. THEIR SON, AS ONE MIGHT EXPECT IS JUSTIFIABLY PROUD OF HIS DAD AND, NO DOUBT, WILL GROW PROGRESSIVELY PROUDER AS TIME PASSES.

THERE ARE GOOD YOUNG PILOTS AND THERE ARE BAD YOUNG PILOTS BUT THERE ARE ONLY GOOD OLD PILOTS

PHOTOGRAPHY....A HOBBY THAT HE HAS POLISHED TO PROFESSIONAL BRILLIANCY. IN ANSWER TO THE QUESTION THAT PROBABLY IS PUT TO TEST PILOTS MOST OFTEN; MRS. COOPER-SLIPPER DOES NOT OBJECT TO, OR MIND IN THE LEAST, MIKE'S FLYING. THEIR SON, AS ONE MIGHT EXPECT IS JUSTIFIABLY PROUD OF HIS DAD AND, NO DOUBT, WILL GROW PROGRESSIVELY PROUDER AS TIME PASSES.

N^{ews}

AVRO CANADA

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AVRO VIEWS

To our readers and contributors we send the season's greetings, resolving to do our best to bring our readers a better magazine next year but reminding them that the best criticism is in the form of a contribution. You'd be surprised to learn how few, even on the editorial staff, really contribute constructively.

Two leading aviation magazines like our humour to the extent of reprinting it. Watch for Rid Dowding's "How to Jet a Make Engine," in the United States "Air Lanes" magazine and Bob Bradford's cartoon on the popularity of "Avro Canada News" in the Arctic in "Canadian Aviation."

Reporter Fred Lawrence is this month's prize-winner for his research on old timers at Avro Canada and other stories.

COVER

Verne Morse worked overtime for this good shot of a couple of would-be aviators eyeing models of the Jetliner and CF-100 in Burden's Hobby Lobby on Toronto's Dundas Street. Long before next Christmas Burden's will have model-making kits of both aircraft for sale.

MORAL REARMAMENT

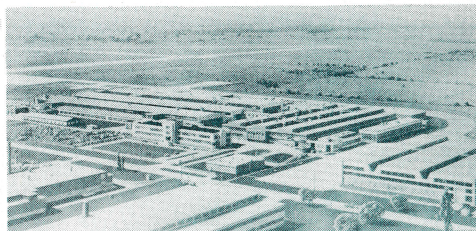
Most of us share the common delusion that we can do nothing to make the Christmas message of peace on earth, goodwill to men, a year-round universal standard of conduct. While it is true that morality in international affairs is anything but praiseworthy nevertheless it is also true that under our form of government the will of the common man is supreme. If you want peace and work for it there is no doubt that if there are enough of you that your wishes will soon have some effect.

One of the cornerstones of Canadian foreign policy is support of the United Nations. Yet how many of us as individuals do anything tangible to further the aims of the United Nations. How many in the plant belong to the United Nations Association or the Canadian Institute of International Affairs. How many of us are so interested that we even keep up with the news about our country's dealings abroad.

Our opponents the communists are so different. Whether their interest is voluntary or not and whether it is based upon fact nevertheless we must recognize that they give an unswerving devotion to the cause which we democrats lack.

At present Canada is re-arming in the hope of discouraging another war. How appropriate it would be if we at Avro Canada, who the "Canadian Tribune" says are working on "accelerated war plans" would take the lead in moral re-armament as well. Not moral re-armament in the pre-war sense of appeasement and arms reduction but in the sense of an enlightened friendliness to the U.S.S.R. backed up by the ability to defend ourselves if necessary.

We might give serious thought to Shakespeare's advice that "It is excellent to have a giant's strength but it is tyrannous to use it like a giant."



PART OF AVRO CANADA

CHRISTMAS CAROL MARK I**or the Inspector who changed his spots***by Rid Dowding*

A gaunt and lanky figure stood
With haggard face and bloodshot eye;
Wondering if he could (or should),
Let a perfect part get by.

The place was in an aircraft plant,
The time was Christmas Eve;
He thought of many a tricky slant,
His aim was just to peeve.

The sun had set, the light was gone,
He stayed, musing, with the part;
Suddenly a ghostly aura shone,
And a whisper made him start.

"I am the ghost of Christmas Past",
The chilly whisper hissed;
"Our thoughts a few years back let's cast,
Oh, come now, don't resist!"

They floated back in time, these two,
To the last place the man had friends;
A busy shop they floated through,
The man a lathe attends.
Good cheer, and greetings are thrown at him,
A smile is on his face,
"Hello, Freddie!" "How's the baby Slim?",
A really cheery place.

The man's head hangs, the ghost shakes his,
The old scene fades away;
"Oh shame on me to sink to this!
That last was a happy day!"

So spake the man, but the ghost had sped,
And another one took his place;
"Let's spend a while" the new one said,
"To look at the present rat race."
For I am the ghost of Christmas Present,
I'll help you, if I can,
To change for the better, to even be pleasant,
To better serve your fellow man."



"Just look at you now, your glance is mean,
Your thoughts are something awful;
On everything you vent your spleen,
By foul means or by lawful.
Children are silent, women weep,
While their husbands sit and sigh,
All because you have sunk so deep,
That never a part gets by!"

A shudder passed over the lanky frame,
The man looked really dejected;
He felt himself go hot with shame,
He glanced at the piece he'd inspected.
But stay, there was still some hope in the game,
It still hadn't been rejected.

He turned to appeal to the ghost at his side,
But a third was there to greet him;
The man would have gladly laid down and died,
But the ghost was there to defeat him.

The ghost of Christmas Yet to Come
Was he, a ghastly type of spectre;
The type of ghoul to extract the last crumb
Of fear, from a trembling inspector.

The trip to the future was cold and gray,
The scene when they got there, was grim;
In a funeral parlour a body lay,
And the man saw the body was HIM!

No one had called, no friends sat and watched,
No flowers were there as a token.
With tears the inspector's face was blotched,
But never a word was spoken.

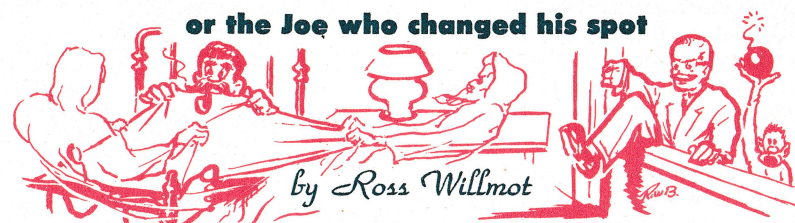
A clock struck twelve, 'twas Christmas Day!,
Once more the man was alone.
He was glad the ghost was unable to stay,
He was happier on his own.

And now we see an altered man,
What a change has taken place!
To please the world is now his plan,
There's a smile upon his face,
Those phantoms threw a scare in him,
We hope he won't forget.
So let's give thanks this Christmas Eve,
For a jolly fine inspector,
Whose life was changed to better things,
By a dismal, gruesome spectre.



CHRISTMAS CAROL MARK II

or the Joe who changed his spot



Uncle Joe stirred uneasily in his sleep. The guards had all been security screened and atom bomb nets had been placed over all the Kremlin windows, but you could never be too sure. Those capitalists might send a CF-100 over at any minute.

Hearing a strange noise, Uncle Joe suddenly awoke and dived under the covers. It was no use for they were quickly torn off by a figure at the foot of his bed. If he had been a capitalist, Uncle Joe might have said the figure was a ghost, but as he was an enlightened communist, he had to get a new explanation. But before he could even consult his bedside "Das Kapital," the shade whipped the covers off him.

"Comrade," the shade said, "arise and strike a blow for the Bolsheviki."

"Lenin," exclaimed Uncle Joe in surprise, for it was indeed he, "What are you doing here instead of being embalmed on display in the Red Square mausoleum?"

Vladimir Isabitch explained he had been called forth by some strange power to remind

Joe of Christmases past. He recalled the days when he, Trotsky and Joe had overthrown Kerensky and established the proletarian dictatorship at the expense of the Romanoffs and in fact of practically everybody in Russia.

"Those were the days, weren't they, Vladimir?" said Uncle Joe reflectively, now more at ease. "Remember those Christmases when the peasants used to gather in their village churches. Now, of course, there aren't any churches -- and if we keep killing them there won't be any peasants. Sometimes, between you and me, I wonder if it's worth it."

"They certainly were better Christmases than I'm spending now," agreed Lenin. "If we hadn't started the revolution that woman wouldn't have taken a shot at me and I'd probably have been where you are."

"Don't be too sure of that, Comrade," said Joe with a grin. "I probably would have had to get rid of you myself. What worries me now are the other guys. I managed to do away with Trotsky, but now

there's Molotoff, Vishinsky, and dear knows who else."

"You were saying," a new voice cut in on Joe's reflections. He looked down and there was Leon Trotsky.

"Speak of the devil," quipped Leon, "Merry Christmas to you, Joe."

"That's very comradely of you, I'm sure," Joe replied. "I'm so glad you've dropped in. I see you've forgiven me for having you murdered. You know, I didn't specify an axe slaying. I prefer a good bomb myself. Anyway, it was for the cause. By the way, do you know where Lenin went. It was a very short visit."

"Oh, he's gone back to the Red Square. They're having a special showing of him Christmas eve, and he doesn't want to disappoint his public. You know, if you hadn't hacked me up so badly, you might have been able to display me as well."

"What am I doing here? Well, that's not a very sociable question. As it was explained to me, I am supposed to remind you of Christmas Present."

"I don't want to be reminded of it," Joe exclaimed as he hid his head under the bedclothes.

"But you must," said Leon, as he yanked them off.

"Well, as you can see," replied Joe slowly, "the revolution hasn't given us all we promised. I have plenty to eat, I've seen to that even if we have had to sacrifice a few million kulaks for the cause.

But there's no security any more. I applied for a 48-hour pass to go to see the missus this Christmas but the NKVD wouldn't give it to me. They say there's a peasant revolt outside. I just want to be able to walk around with my people like Louis St. Laurent does in Ottawa. Oh, if I could only talk to one of them right now."

"No sooner said than done," said Molotoff climbing in through the window screen with several wild peasants in tow, all carrying bombs. Trotsky immediately dissolved in the air and Stalin wished he could follow.

"Who let you in and why?" declared Stalin with a show of what he hoped was a despot's firmness.

"I let myself in and we're going to assassinate you. It's for the cause, Joe."

"Since you put it that way, O.K.," Stalin reluctantly agreed. "But you'll deal kindly with me in the history books won't you, Molly?"

"You're lucky, We've already taken steps to remove all mention of you, not only in the history books, but everywhere. Special crews have been sent out to pull down your statues. We could easily use you as a horrible example of what happens to a Communist when he becomes tainted with capitalist propaganda. Didn't I hear you mention Uncle Louis, a few minutes ago. You know very well those Canadian's have 20 St. Laurents. How else could he do all that work? The real

one does nothing else but pose for publicity pictures. As you know, we only have a dozen Stalins. Ten, I should say, as two were assassinated last night. By the way, I mustn't forget to have them liquidated as well.

Molotoff wrote something in his little black book.

"Talking about liquidation," Stalin ventured feebly as he looked at the peasants with their bombs, "how do you propose to get rid of me?"

Molotoff chuckled and handed him a sheaf of newspapers.

"It'll be a comparatively short death," he said, "but I

OLD TIMERS

As December 1, 1950, marked Avro Canada's fifth anniversary, it is interesting to note how many were working here at Malton on aircraft even before that time. Here are some of them:-

H. Asquith, S. Aiken, Eric Bright, G. Barbour, John Creek, H. Chadwick, J. Cleminson, A. France, P. Francis, Henry Garside, E.H. Griffin, J.T.W. Holley, C. Harris, Robert Johnson, J.H. Japp, T. Lennie, L.E. Marchant, G. Mainprize, D. McGuire, E. Moran, D. Meldrum, J. Main, W.P. McQueen, W. Moodie, H. MacDougall, C. Post, P. Pileski, F. Philpott, Jack Reid, John W. Reid, W.U. Shaw, E.E. Snell, Len Theobald, John R. Thorne, A. Tee, G.W. Veness, M.D. Willer, B. Wheeler, R.T. Wood, and D. Wilson.

won't guarantee it will be painless. These are copies of all your speeches as published in Pravda. Here also are the patent applications for all your inventions the Bell telephone, Massey Harris thresher and Orenda turbojet. You should be interested. You've never seen them before."

Stalin expired at the very thought, and Molotoff rang for the houseboy to put him out with the rest of the trash. He threw the windows open to look at Moscow, its lights glittering in the snow before him.

"Wonder if I'll last until next Christmas?" he said.

RUMOR CLASSIFICATION

As edited by our Rumor Classification Board for the general clarification of news:

1. You were in it. It happened to you personally.
2. You saw it and have an authentic witness to prove it.
3. You saw it happen but have no authentic witness for proof.
4. You heard it from someone you know to be strictly reliable.
5. You heard it from a questionable source.
6. You heard it from Al who had it straight from Joe who got it from Mary's sister-in-law.
7. You saw it in the newspapers.

Per Ardua Ad Astra

by Wing Cdr. H. R. Footitt

FORMERLY RESIDENT ENGINEER OFFICER,
AVRO CANADA

Canada has been steadily shoring up her industrial ramparts which were so painstakingly built during the last war. One of the many cornerstones in this fortification, and vital to the strength of the R.C.A.F., is the sprawling plant of A. V. Roe Canada Limited at Malton, Ontario.

Though the company is engaged in such commercial ventures as the design and production of the famed C-102 "Jetliner," the most significant progress in the last two years has been for the R.C.A.F. Lancaster and Mitchell aircraft conversions have been rolled out, two CF-100 "Canuck" jet fighters have taken to the air, powerful "Orenda" turbojet engines have logged numerous hours on the test stands and only recently have been airborne for the first time.

In August, 1948, the Aircraft Division was just driving

the last rivets and installing the final equipment in the last three photographic Lancaster 10-P aircraft due shortly to be delivered to No. 408 Photographic Squadron at Rockcliffe. Starting from basic Canadian-built airframes with Rolls Royce engines, all of war-time vintage, the company had designed, built and installed all the parts required to convert the aeroplanes from bomber to photographic role, in accordance with R.C.A.F. specifications. Five of these conversions were already in service and all were soon to become the mainstay in all photographic mapping operations in the barren North.

Trailing the photo Lancasters on the production floor were four air-sea rescue Lancaster 10-ASR conversions - the last of twelve on contract. These aircraft were delivered in the early months of 1949, but not before it had been decided that they would be held back for incorporation of some later winterization modifications.

Consequently they went on R.C.A.F. operations as the Lancaster 10-BR (Interim) aircraft.

However, as the fall of '48 approached, the Conversion Engineering group was punching-in two nights a week, rushing through with the preliminary layouts to meet the latest R.C.A.F. specification for a bomber reconnaissance Lancaster 10-BR. By November the design was sufficiently advanced so that a mock-up conference could be held at the plant to check and approve the location of dummy equipment mounted in the fuselage. A large number of A.F.H.Q. officers attended. With the mock-up checked, changed and finally approved, plant engineering and production swung into high gear, and seven months later, in June, 1949, the prototype FM-221 was delivered to Trenton by an R.C.A.F. ferry crew.

Before mid-1950, Avro's conversion shop saw nine of these BR's pass Experimental and Proving Establishment's flight tests, with most of the

aircraft being ferried to Station Greenwood for operational use. Almost a hundred modifications had been designed and built into each of these aircraft by A. V. Roe under R.C.A.F. guidance. However, before the last aeroplane was delivered, the acid test of squadron operations plus a shift in squadron role necessitated some changes.

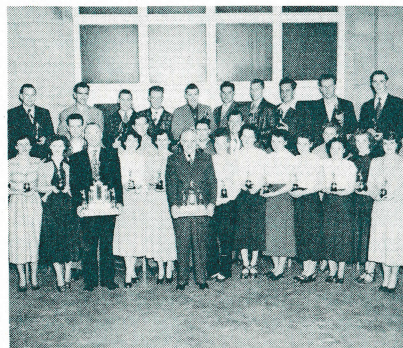
Consequently, April, 1950 saw the successor to the BR - the maritime reconnaissance Lancaster 10-MR - begin to take shape on Avro drawing-boards. Specification requirements and mock-up conferences were hurriedly convened with A.F.H.Q.'s Operational Requirements and Air Operations staff, backed up by officers from the Greenwood squadrons with hours of recent flying experience on the BR's under their belts. By late August the requirements had been translated into Avro shop drawings, and early in '51 the prototype MR will be winging its way to Greenwood, with more conversions to follow as the winter passes.

Between these two major conversions and many minor jobs, Avro engineered, reconditioned and converted fifteen Mitchell 2-LB light bomber aircraft and one navigational trainer Lancaster 10-N. This latter aeroplane was essentially a replica of two previously manufactured and delivered to R.C.A.F. Station

Summerside, where they became front page news after several long polar flights.

In the fall of '49 two additional photographic Lancaster 10-P's were also meshed into the production line. With the specification requirements shepherded along by representatives from A.M.C. and A.F.H.Q., these new conversions will follow the old pattern but will incorporate the latest modifications gleaned from photo operations during the last two summers. In addition a radar altimeter, originally designed in Canada by the National Research Council and produced by a Toronto firm will be fitted - an up-to-the-minute innovation for precision photographic surveys.

While aircraft conversion contracts have provided the drone production at Avro, the queen bee of the industrial hive has always been the R.C.A.F.'s new two-seater,



HERE ARE THE CHAMPION BASEBALL PLAYERS AT AVRO CANADA. RECOGNIZE THEM?

twin turbo-jet, all-weather fighter, the CF-100. Few who have worked on this aircraft know that the preliminary specification for the fighter (although quite different to its final design) was drafted by an A.F.H.Q. staff just before Germany and Japan stumbled to defeat. However, the confusion caused by the dawn of peace delayed finalization of the specification, and it wasn't until a large meeting was convened by Air Vice-Marshal A. L. James at Ottawa, in October, 1946, that the requirements were firmly crystallized.

Armed with the minutes of this meeting - which, surprisingly enough, were essentially the same requirements as those of the sealed specification which was in effect more than three years later when the prototype first circled Malton - the company's engineering group commenced scheming the first three-view arrangement layouts of the fighter. As winter gave way to the spring of '47, stacks of drawings were opened and spread out in the offices of the Chief of the Air Staff and Air Council Members. Fighter design, engineering and operational policies were integrated, argued, and agreed. Air Vice-Marshal James was charged with coordinating the decisions with the company.

With these important preliminaries over, the main bout with the detail design began.

By the end of 1947, Avro had built one cockpit mock-up, revised it and built another. These mock-ups, along with other detailed operational requirements, were under continuous scrutiny by technical and flying personnel from A.F.H.Q.

Far-reaching technical decisions were also being made. At this critical design stage, and in the years to follow, almost every officer in every technical and operational directorate at A.F.H.Q. had a hand in framing at least a part of these important decisions.

In November, 1948, the coordinating A.F.H.Q. Development Engineering Directorate had to face a new technical hurdle. Results arriving from the N.R.C. (Ottawa) wind tunnel model tests showed that it was aerodynamically essential to lengthen the fuselage and shorten the nacelles. All in all, the fighter had passed through four major changes such as this since its birth, though this was to be the last, as high-speed tunnel tests in the U.S. later proved.

With the decision made, the fighter shop personnel modified the parts, jigs and fixtures, and soon details blossomed into completed assemblies as engineering continued its steady release of drawings through 1949. Finally, in December, the prototype fighter, 18101, wearing R.C.A.F. call letters and displaying a special black and white paint job, was



MARG. O'HEARN AND EV. NEWTON, ENJOY ONE OF THE 300,000 MEALS OUR CAFETERIA PREPARES EACH YEAR (NOT COUNTING THE 375,000 SNACK LUNCHES) THEIR HOT DRINKS ARE A VERY SMALL PART OF THE 450,000 SERVED YEARLY AND THEIR POTATOES OF THE 125 TONS.

secretly conveyed from the production line to the flight test hangar. Four weeks later, on the cold afternoon of January 19th, 1950, the R.C. A.F. Inspection Detachment staff signed out the aircraft, and Avro's test pilot lost no time in taking off on the first 15-minute circuit.

On the ground a large Ottawa group, headed by the Minister of National Defence and the Chief of the Air Staff, watched tensely. The dream of 1946 had at last come true, though three years and three months had slipped away since the first requirements were put on paper.

By the summer of 1950, prototype CF-100 had logged numerous hours in the air, steadily shaking out the design "bugs" that plague any new development. The second fighter, 18102, flew on 15 July. Behind it on the production

line, components of other fighters began to appear, heralding a strong air defence for Canada in the restive years to come.

While the Aircraft Division was working overtime on the CF-100, the Avro Gas Turbine Division was deeply embroiled in engineering their two turbo-jet engine projects - the small and compact "Chinook" and the large and powerful "Orenda." This latter engine may well become North America's leading jet, as well as the power-plant for later CF-100 night fighters.

Avro had inherited the Chinook from the original Turbo Research Corporation and had pressed forward with its development as a test machine to screen the best mechanical ideas for later scaling up and incorporating in the Orenda. On March 17th, 1948, the first jet engine ever to be designed and built in Canada was rigged in the test cell, the starting button pressed, and the Chinook I roared to life.

By August, 1948, this engine had logged almost 60 hours' running on the test stand, and had delivered a maximum static thrust of 2600 pounds. This same month a Chinook test compressor, heavily instrumented and driven by a massive steam turbine, began turning over for test at Nobel. In November, the second and last Chinook whined to a start in the test house at Malton.

All through 1949 these two

prototype engines droned monotonously on the test stands, piling up running-hours with increased reliability, proving and disproving intricate modifications. Late in the year a maximum static thrust of 3000 pounds was recorded - a 15% increase over the initial thrust. In January, 1950, it was decided that the Chinook had faithfully served its purpose as a test machine, and since several of the new Orendas were now lining up outside the test cells, the two engines were inhibited and retired to storage. So ended a successful and historical chapter in the annals of Canadian aviation, thanks to R.C.A.F. sponsorship.

However, long before the last days of the Chinook, a section of the Gas Turbine Engineering Division was steadily releasing drawings on the Orenda design, and towards the end of 1948 the first of these big turbo-jets was being assembled in the final assembly shop. Before this time the final issues of R.C.A.F. engine specifications had been drawn up at A.F.H.Q.

On February 10th, 1949 this first Orenda was safely mounted in the test cell, having already cleared R.C.A.F. inspection. As a compact group of Service and company personnel watched, the test crew engaged the starting motor and the Orenda I, with a flash of flame, sprang to life. Undoubtedly this was one of

the most successful prototypes ever built anywhere. Its performance and reliability exceeded all hopes - a remarkable achievement for a relatively green design and production team. Only a few months after its first run, it completed 784 test stand hours with only minor re-placements.

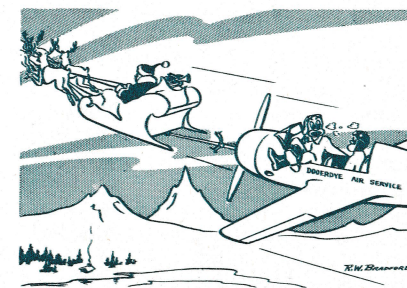
As the year passed, other Orendas were wheeled from the assembly shop to the test cells and unofficial type tests were completed to R.C.A.F., British and American specifications. During these tests minor development problems continually arose, odd parts failed prematurely, a pump seized; but each problem yielded to solution and the test runs ground steadily on.

Before the third Orenda was turning over in the test cell, however, the power and remarkable development reliability of this engine were receiving international acclaim. High-ranking Service and civilian personnel from the U.S. and U.K. began dropping in to visit the Orenda test bed to see for themselves. The upshot of one of these visits came in mid-'49, when arrangements were concluded with the U.S. to have North American Aviation Inc., in Los Angeles, California, install and test an Orenda in one of their F-86 fighters. The primary target of this programme was to produce valuable, high-speed, airborne engine test data, but the air-

craft performance results would also be of interest to both the U.S. and Canada, since the F-86 was then in production in both countries.

At about the same time, Avro received a go-ahead from the R.C.A.F. to install two Orendas in the outboard nacelles of a wartime Lancaster to serve as a flying engine test bed. With this arrangement, the aircraft is capable of safe sustained flight with or without the jet engines operating. According to the formal R.C.A.F. specification, this conversion was to be the Lancaster 10-0, but throughout Avro's shop it is known as the "Flying Bedstead." The modification design and construction were undertaken by the Aircraft Division, under the watchful eye of the Gas Turbine Division, the latter being charged with supplying the Orendas and the test instrumentation.

By the end of June, 1950, two Orenda engines had been selected, endurance-tested in



I JUST GOT THROUGH CONVINCING MY KID
THERE WAS NO SANTA CLAUS!

the test cells to stringent R.C. A.F. pre-flight requirements, and installed in the Lancaster. After preliminary taxi trials early in July, the inspection staffs cleared the aircraft for flight; and on July 13th it took off with company test pilot, Don Rogers, at the controls.

With blue summer skies, the remainder of the month saw log book hours accumulate side by side with engine test hours, with their resulting graphs and test data on the air performance of the Orenda. In the near future this information, backed up by over a year and a half of ground running, will serve to release the engine for safe

high-speed flight in the F-86 and CF-100 fighters.

So another milestone will be passed in the long twisting road of aircraft and engine development. While the past two years have seen trouble and toil, now, at last, just over the horizon lies the goal - the production of Canadian-designed and - built CF-100 fighters with Orenda engines. It is an achievement of which Canadians may well be proud, and Avro Canada can rightly take its place as one of the keystones in the industrial foundation which supports an R.C.A.F. rapidly equipping itself to face war-clouded world skies with confidence.

REPRINTED FROM "THE ROUNDEL"

A TOAST TO THE GROUP

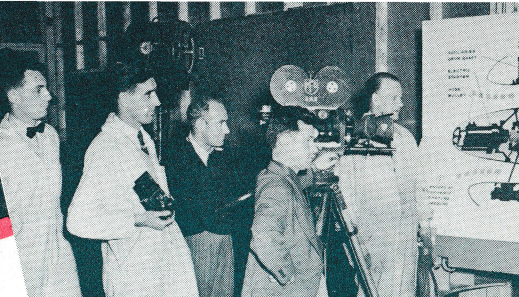
by Rid Dowding

A Merry Christmas to Gloster and Hawker,
May each of their planes turn out a real corker,
May health and wealth continue their lot,
And maybe this year they'll hit the jackpot!

To Armstrong Siddeley a Happy New Year,
May they continue to steam along in high gear,
May good luck and prosperity be showered on them
And each of their engines turn out a real "gem"!

And, now on Avro let's turn our attention
There's a firm that deserves more than a mention!
To the old firm in England, and the new over here,
A right Merry Christmas and a Happy New Year.
May their aircraft be tops, and their engines be best,
To the men in the shops, the staff and the rest
Good luck and good health and good living!

And that's about all of my year's end toast
May all industry prosper, and ours prosper most!



HERE ARE THE N.F.B. MOVIE AND STILL PHOTOGRAPHIC CREW WHO TOOK THE MOVIE OF AVRO CANADA LAST MONTH

at the same time for feature use.

Many interesting assignments have been covered by director Jack Olsen with his two ace movie photographers, Jean-Marie Couture and Johnny Spotton, and his still photographer, Gar Lunney, from shooting mountain goats in the Rockies to Canadian destroyers off Bermuda. None, however, match taking photographs of prototype aircraft which are not ready to fly when the weather is good for photography or vice versa. Their hard work, patience and skill will be rewarded when the film is released for it will be a very interesting one. We can hardly wait to see it.

The lights go down in several thousand theatres all over the world and who should appear on the screen but you or the guy on the next bench.

That's what will be happening early in the new year when the "Canada Carries On" short the National Film Board did on Avro Canada last fall appears in its English, French, Spanish, German and dear knows how many other versions. Millions of movie-goers will be admiring your profile on the screen (as well as those of our aircraft and engines). Additional millions will see our activities in the press as portrayed in a series of still photographs taken by the NFB

PROTOTYPES

Fred de Jersey, of the Illustration Department, has been concerned with the design, manufacture or servicing of no less than 18 prototype aircraft.

Can you beat this list? - Anson, Hector, Gauntlet, Whitley, Wellesley, Gladiator, Vickers B9, Hurricane, Lysander, Henley, Hotspur, Whirlwind, Beaufort, Tornado, Wyvern W34, Wyvern W35, CF-100 and C-102 or Jetliner.

GOLD STAR

Under the heading of helpful hints comes this suggestion to help speed the latest are-you-at-your-desk-on-time-in-the-morning campaign. This disgruntled reader would have a large notice board placed beside each of the time clocks carrying the employees' names and would have a gold star placed after the name of each employee who gropes his way safely through another week.



CANADA SPREADS ITS WINGS

by *H. C. Cotterell*

PRESIDENT, AIR INDUSTRIES AND TRANSPORT ASSOCIATION

Immediately after the last war the Canadian aircraft manufacturing industry found itself all dressed up with no place to go, while our operators found themselves with plenty of places to go but nothing to dress up in, and even very shy on old clothes.

Canada emerged from the war with three scheduled airlines, ten fixed base operators and a tremendous aircraft industrial capacity. We had built medium and heavy bombers, fighters, coastal patrol amphibians, medium transports, and a vast number of training aircraft. In addition to this, we made propellers, instruments and accessories for aircraft; we made everything except engines. We also had the capacity to maintain, overhaul and repair thousands of aircraft, engines and parts, for Canada was the principal field for Commonwealth aviation training. During the war, our production and overhaul facilities had grown strong and healthy, while our operating industry had grown thin and emaciated through lack of equipment and manpower.

Our medium transports were largely taken by armed forces, many by the U.S.A.F., while we made no heavy transports, and, of course, I need not enlarge upon the manpower problem.

The first thing our operators did was to increase their equipment with war surplus aircraft. Our scheduled airlines used converted DC-3's while others used PBY's, Norsemen, Beechcraft and Ansons. Conversions of DC-3's were made in the Canadair plant in Montreal, not only for the Canadian companies, but also for American, Swedish, Danish, Spanish and Indian companies. The Canadair plant in Montreal also built 70 four-engined North Star heavy transports for Trans-Canada Air Lines, British Overseas Airways Corporation, Canadian Pacific Airlines, and the Royal Canadian Air Force.

Many manufacturers of parts converted to other work and only five of the aircraft manufacturers in Canada kept their plants in operation. They kept alive by picking up scraps here and there, con-

verting and modifying aircraft and doing anything else that they could find. While they were just managing to keep alive, and while they could not prevent their diet affecting their physical health, they did not allow it to affect their mental health. They faced the future with a clear eye, courage and original thinking.

We can be justly proud of the aircraft industry situation as it exists to-day in Canada. While the Canadair plant in Montreal has completed its North Star orders, the plant has greatly expanded even since its World War II peak, and is now producing F-86 fighters for the Royal Canadian Air Force under a manufacturing agreement with North American Aviation Corporation.

The A. V. Roe Company in Toronto, which had made Lancaster bombers during the war, saw the possibilities of jet transports very early, moved quietly and quickly, and are now doing flight tests on the first jet transport to be developed and built in the western hemisphere, the C-102 or Jetliner. It is entirely a Canadian project. It is a heavy transport, in the 50 passenger bracket, and is proving out well, and I predict that it will see service under many flags, including that of the United States.

I said previously that during the last war Canada produced everything except engines. This has been sub-

sequently remedied. The A. V. Roe Company have designed and built one of the most powerful jet engines in the world. It is known as the Orenda and it is entirely a Canadian development, from slide-rule to stators.

In addition to these projects, Avro Canada have designed and produced a long-range jet fighter for the Royal Canadian Air Force, for northern operations. This jet fighter, using the Orenda engine, is now undergoing flight tests and was to have flown across the Atlantic this fall for demonstration in Great Britain. Unfortunately, however, the plans had to be cancelled and the performance testing processes speeded up as the aircraft is going into quantity production as part of our preparedness program.

We also have the DeHavilland Aircraft Company in Toronto, a namesake and relative of that famous De Havilland Aircraft Company of Great Britain. The Canadian DeHavilland Company, after making Mosquito bombers during the war, put a group to work and designed and built an elementary trainer known as the Chipmunk. It, too, is an entirely Canadian project. The Chipmunk has been accepted as the elementary trainer for the Royal Canadian Air Force and is in production in Great Britain under license by the Canadian firm.

The DeHavilland Company also saw a field for a utility

transport aircraft, designed for work in Northern Canada and suitable for wheels, floats, and skis. To supply this market, they developed the De Havilland Beaver, which is also an entirely Canadian project. This has turned out to be an extremely useful aircraft, and a large number of them have been sold in Canada. Recently the U.S. forces in Alaska asked that some of these aircraft be procured for them. There is nothing comparable for the purposes that U.S.A.F. has in mind.

The Canadian Car and Foundry Company among their diversified interests have kept their aircraft division active. They have continued to manufacture the Noorduyn "Norseman." This, of course, is a Canadian designed and built aircraft. It is known to the U.S. forces as the DC-64. Quantities were purchased during the war and are still in use. The current aircraft has kept abreast of improvements.

Now for the rest of the pattern. Where we had in Canada three scheduled airlines before, we now have five. Where we had ten fixed base and specialty operators before, we now have over 200. In addition to these, we have a number of quasi-scheduled operators who we hope as time goes on and as the communities which they serve grow, will become scheduled. This is a slow process, however, for aircraft operators

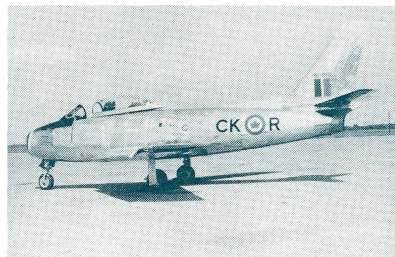
have learned in recent years that it takes many large communities and much traffic to support a scheduled airline.

The capacity of a country to resist an aggressor in modern warfare depends upon its industrial might which, in turn, depends upon its reserves of all kinds, and upon dispersal. This continent has had tremendous reserves for the production of food, iron, and petroleum. We have been drawing on these known re-

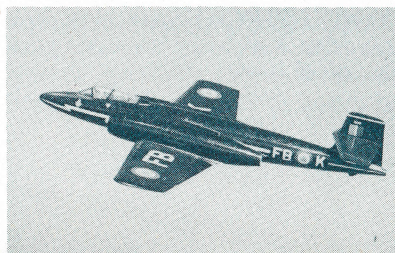
JETLINER



SABRE



CF-100



serves heavily in recent years, and we know they are not bottomless, and in addition we need new deposits of iron and petroleum for dispersal. Therefore, we must keep searching for more reserves.

This search is going apace in Canada. The search is being spurred on by a sense of urgency, fueled by international tension. Its tremendous progress is being made possible by scientific methods of which the airplane is the principal vehicle.

While there are many other ways in which the airplane is playing its part in the development of Canada, and indirectly then, in preparedness, in a picture that is being painted with broad brush strokes, the detail is being filled in at the same time by other artists. While we hear the roar of giant airplanes on these sweeping tasks, if we listen carefully, we will hear the hum of hundreds of aircraft in the supporting cast.

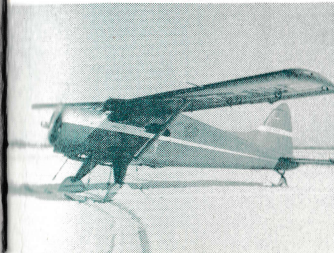
The helicopter, for instance, is finding new uses in Canada and opening up new possibilities. It has been found practical to operate it from mountain sides, mountain tops, from small floats and wharves, and also in and out of swamplands.

In addition to the large aircraft and the helicopter, we have hundreds of small aircraft operating on floats and skis and performing the routine tasks of a busy nation: taking a prospector here, a timber cruiser or industrialist there, a hydro electric engineer somewhere else. These aircraft too are taking their place in the strident development of Canada, spurred on by our sense of urgency, and made possible by the aircraft industry.

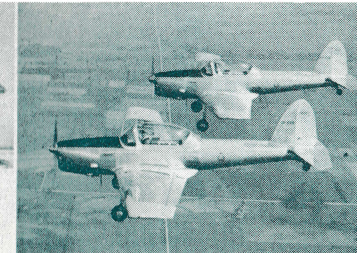
I have endeavoured to give you some idea of the contribution that the aircraft industry, other than the scheduled airlines, is making towards Canada's preparedness. I think perhaps I can sum up by saying that we have a creative and hardworking group of aircraft technicians, designers and operators in Canada.

If war should come, we shall have a sound aircraft production industry capable of rapid expansion. We will have known reserves of natural resources to contribute to the cause of the United Nations—known reserves that could not have been created in time without airplanes. Canada will play its part and the aviation industry is proud of the contributions it is making.

BEAVER



CHIPMUNK



NORSEMAN

