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Test Pilots and Their Aircraft

Copy of a Scrap book
Courtesy of AVRO Test Pilot Peter Cope

Arrow 2000 Collection
A.V. Roe Canada Heritage Museum
Calgary, Alberta



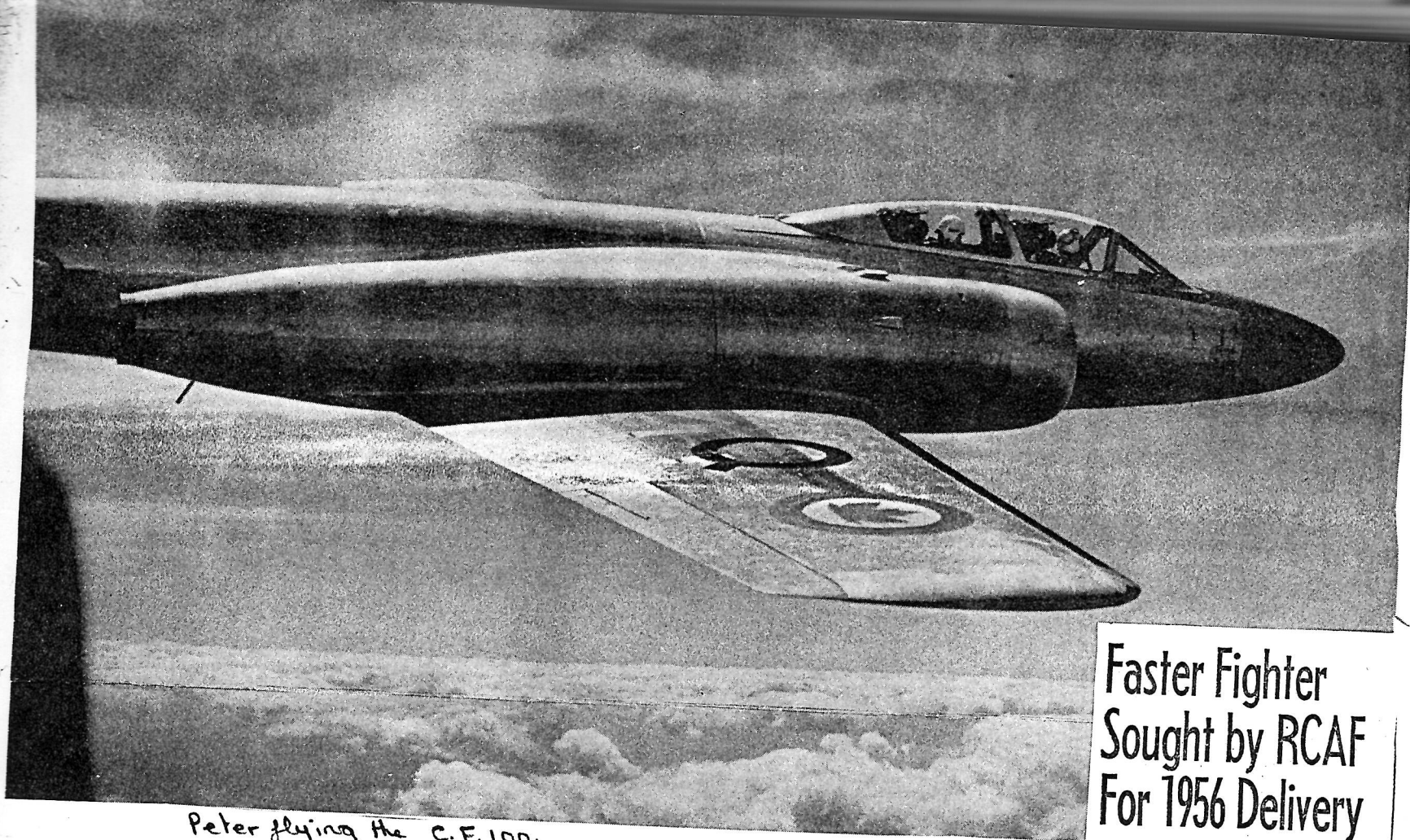
26-421

TEST PILOT
CHRIS PIKE

TEST PILOT
CHRIS PIKE

PHOTOGRAPHER
H. MACKECHNIE

Simulation before camera's click



Peter flying the C.F.100.

Avro Canada Flight-staff Appointments

TO assist in the flight-testing of the C.F.100, Peter R. Cope, who for the past fifteen months has been a test pilot with Armstrong Whitworth at Baginton, Coventry, has transferred to Avro Canada, another member company of the Hawker Siddeley Group. Much of Mr. Cope's test-flying experience has been on Mk 8 and Mk 11 Meteors, but he has more than fifty aircraft in his logbook and a total of nearly 2,000 hours. He passed through the Empire Test Pilots' School at Cranfield in 1946-7 and, while holding a short-term commission with the R.C.A.F., worked with experimental flight sections at Farnborough. During the war he served with an R.A.F. Mustang squadron. Born in England in 1921, he is married and holds a London B.Sc.

Another appointment of a British-born (Edinburgh) pilot is also announced by Avro Canada. Mr. Sydney Howland, who has comparatively wide experience in the aircraft industry, has taken on the duties of flight analyst and staff pilot. Trained by the R.C.A.F. during the war, and at present a member of the Royal Canadian Naval Reserve, he has some 2,500 hours, including recent experience as co-pilot on the Jetliner.

Flight. June 1, 1951.

Faster Fighter Sought by RCAF For 1956 Delivery

By DOUGLAS HOW

Ottawa, Aug. 25 (CP).—The RCAF is understood to have launched a search for a new fighter plane to enable Canada to keep pace in the international race for supremacy of the skies.

Chances are it will be supersonic jet capable of speeds beyond 750 miles an hour, that it will be bigger, more complex and substantially costlier than those Canada now has in use. Certainly it will be considerably faster than the jets of 1952.

The RCAF's two modern jets, the CF-100 Canuck and F-86E Sabre, are considered capable of protecting Canada and her allies for another three to five years.

It's after those years that something better will be needed. Planning has to start long before the need becomes acute because it takes years to design and produce a fighter.

Thus the RCAF is after a plane that could be in production around 1956.

By then Russia, which Defense minister Claxton calls the only potential enemy, may well have jet bombers to throw at North America. Fighter defense consequently will have to be stepped up.

The jets now streaking across Canadian skies at 500 or 600 miles an hour probably won't be fast enough by then. At least, a prudent country can't gamble that they will be.

The problems of producing the CF-100 Canuck, the first all-Canadian jet fighter, emphasized how long it takes to design, develop and produce a modern fighter.

The Canuck was started four or five years ago and is just now coming into use by the RCAF. It will be still another four to seven months before the first Canuck squadrons are in service.

The knowledge Canada built up in developing the Canuck will be helpful when the time comes to start production of the new plane.



—Photo by Nott and Merrill

PRESIDENT and general manager of Avro Canada is Crawford Gordon, Jr., above

FOUNDER of company and dean of British aircraft industries is Sir Roy Dobson

Up She Zooms—Canada's long-range all-weather interceptor jet fighter, the CF-100 Canuck, is seen during a jet-assisted takeoff at RCAF station, Uplands, where it is being tested by the RCAF. Jato cuts normal take off run in half giving CF-100's two Orenda engines an added thrust of 1,000 pounds each.

Peter flying.

Leaders in Canadian defense industry gathered yesterday at Malton for the official opening of this country's first jet engine manufacturing plant.

Avro Canada Ltd. threw open to several hundred guests its newly completed 700,000-square-foot production centre for the Canadian-designed Orenda gas turbine.

The Orenda will, according to government spokesmen, be used to power the Avro CF-100 Canuck night fighter and the Canadair-built F-86E Sabre day fighter.

Principal speaker at the ceremony was Defense Production Minister Howe, who said: "Not only will the volume production of Orendas be a vital contribution to our defense effort, but it will mark yet another step in the development of our aircraft industry and in Canada's continued industrial progress."

Avro had recently been commissioned, he said, to deliver to the government Orendas to the value of \$66,000,000. Most would be used to accelerate production of the CF-100. Others would be diverted to the Canadair plant for F-86E Sabres.

Among the guests were John Jay Hopkins, chairman of the board of General Dynamics and Canadair Ltd.; Geoffrey Notman, general manager of Canadair; P. C. Garratt, managing director of deHavilland Aircraft of Canada Ltd., and Air Marshal W. A. Curtis, the RCAF's chief of staff.

Six CF-100's and four Avro Lancaster bombers provided a flying display. Highlights were the aerobatic performance of Avro test pilot Jan Zurakowski in a CF-100 and test pilot Michael Cooper-Slipper in a Lancaster flying test bed equipped with two Orenda jets.

Three maritime reconnaissance Lancasters from the RCAF base at Greenwood, N.S., passed overhead in formation. Next came five CF-100's flown by Avro and RCAF pilots.

Avro Announces Order Totalling \$65,000,000 For Orenda Jet Engines

By JAMES HORNICK

Defense orders totalling \$65,000,000 have been placed with Avro Canada Ltd. for the Canadian-designed Orenda jet engine.

The Orenda is intended for use in the CF-100 Canuck long-range night fighter and the F-86E Sabre short-range day fighter.

Defense Production Minister Howe is expected to make several announcements as to the Orenda's future when he officiates today at the opening of Avro's new engine factory at Malton.

Crawford Gordon Jr., the company's president and general manager, made several general comments last night at a pre-opening press conference.

The Orenda, he said, is one of the most powerful jet engines currently in production among the Allied powers. Its potentialities for future development are almost limitless.

Avro's \$35,000,000 Crown-financed engine plant would, he said, reach its production targets on schedule. All statistics about production schedules are subject to military security.

said: "Yesterday that land was just prairie. Today it is a plant ready to produce type-tested engines."

"If you guys don't appreciate that, you really ought to wake up. . . . I don't understand the tenor of the questions. . . . If you are going to be a world power this is something you ought to have, and you should be glad of it."

Thomas S. McCrae, general manager of Avro's gas turbine division, said the Orenda's power output would be gradually developed over the next three or four years.

The engine now compares favorably, he said, with all others in its general size class. Many manufacturers in the United States were frankly envious of what had been developed with Canadian talent.

Fred T. Smye, general manager of Avro's aircraft division, said the Orenda had been chosen to power an improved version of the Jetliner commercial transport.

Although the Jetliner has never entered production, inquiries continue to flow in from interested airline operators throughout the world. If the Jetliner ever reaches the production stage, Mr. Smye said, the Orenda is favored as its powerplant.

Alex. Dolan, public relations consultant to the Hawker-Siddeley group of Britain, with which Avro Canada is associated, was critical of some of the questions asked at the press conference.

Reporters from Toronto, Ottawa and Montreal wanted to know why Avro had not reached its production stage by now. Why, they asked, was there such a time lag between development and production?

"I really don't understand," he said, "why the press of Canada shouldn't be delighted at what's going to happen tomorrow."

Referring to the plant opening, he

RCAF CONSIDERS BAN ON LOW LOOP IN AIR DISPLAYS

By WILLIAM STEVENSON

Senior RCAF officials are considering today whether to outlaw loops in low-level aerobatic displays such as that which took the life of Sqdn. Ldr. Ray Greene at the national air show Saturday.

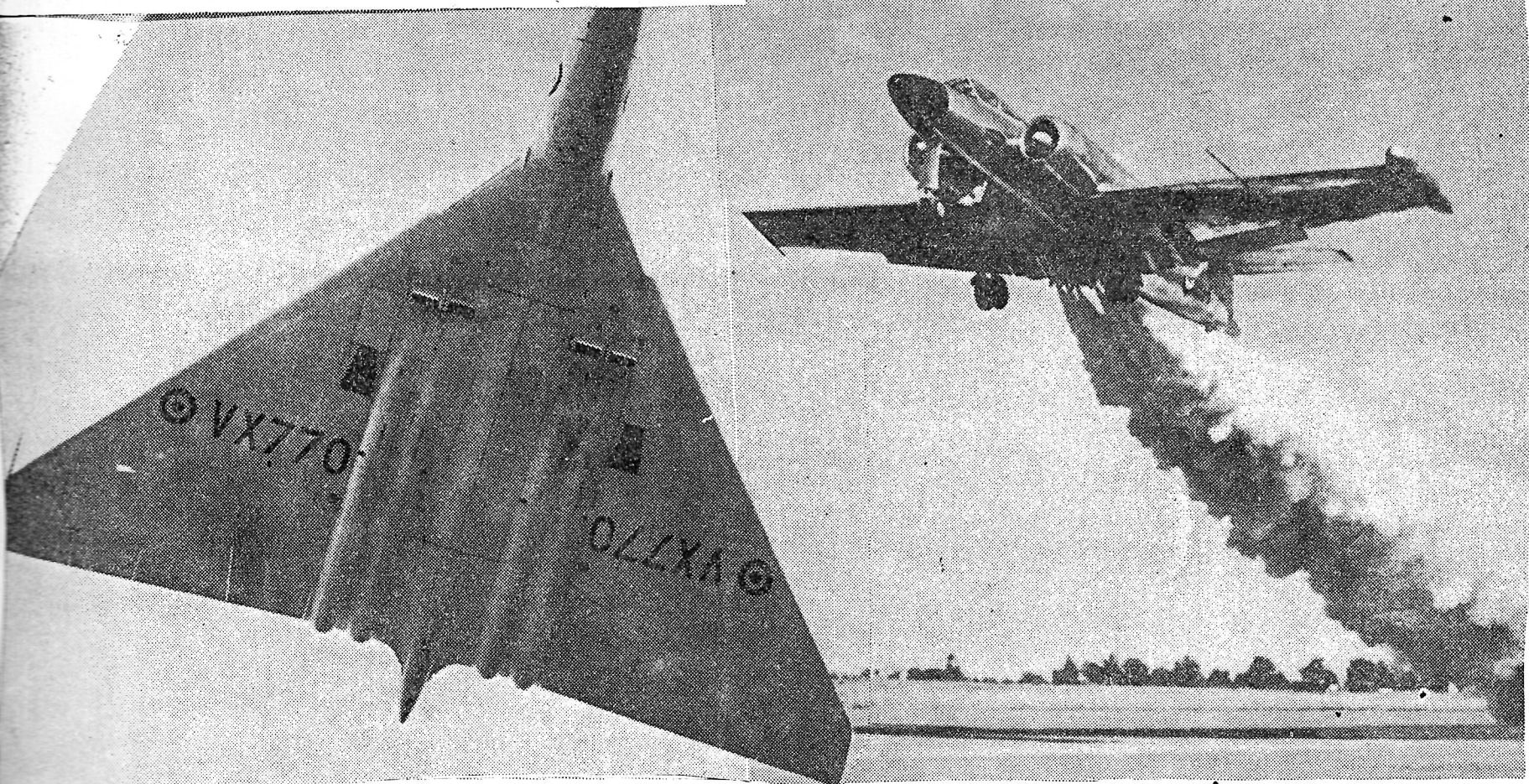
Airmen say the danger to the public from such accidents is negligible, but slight errors of judgment in diving out of loops have caused accidents before, and their value from the spectators' standpoint is doubtful. A wing commander who saw Saturday's display commented: "There are other aerobatics just as interesting where the danger factor is less."

An attempt to loop the Avro Canada Jetliner, which was to have been a surprise act in Saturday's show was cancelled. The four-jet airliner had been already looped successfully last week.

Jan Zurakowski was persuaded to abandon his own aerobatic display in a CF-100. This was to have climaxed the show. Zurakowski argued that weather by that time was perfect for aerobatics. He flew a single, low pass and then rolled three times

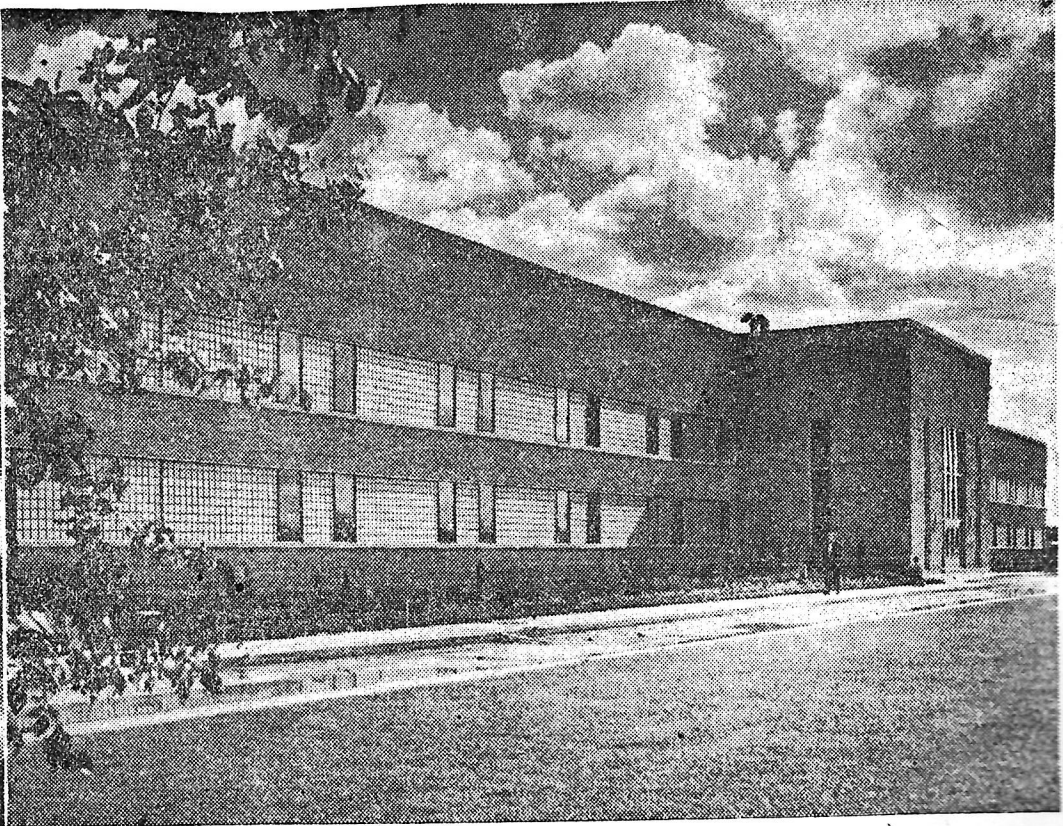
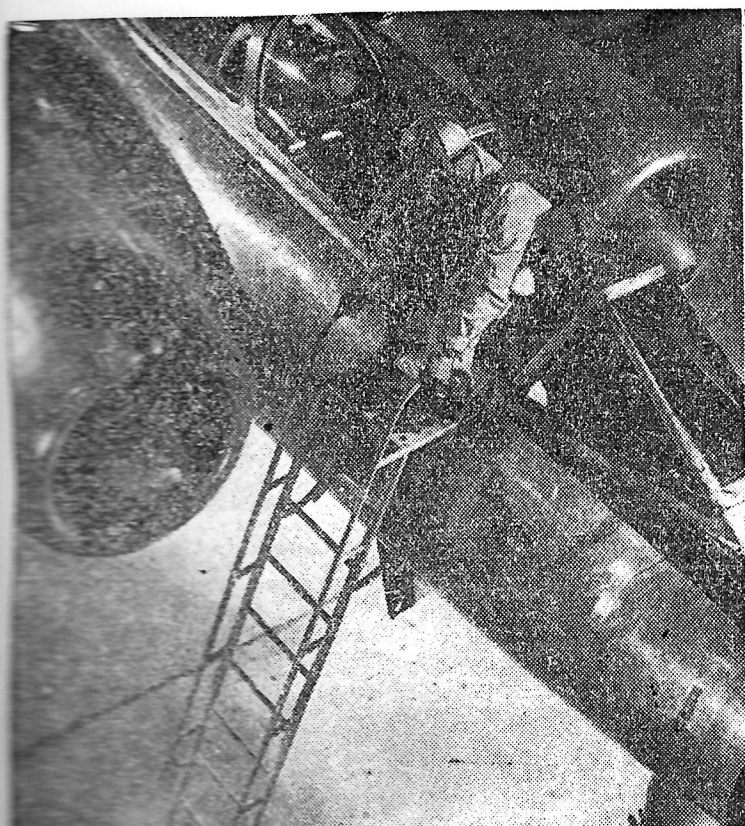
—Reuterphoto

"FLYING TRIANGLE," like this British Avro Delta-wing jet, is planned in Avro Canada company's \$45,000,000 jet-engine plant which opened today at Malton. Planes are needed for Arctic and northern Canada operations



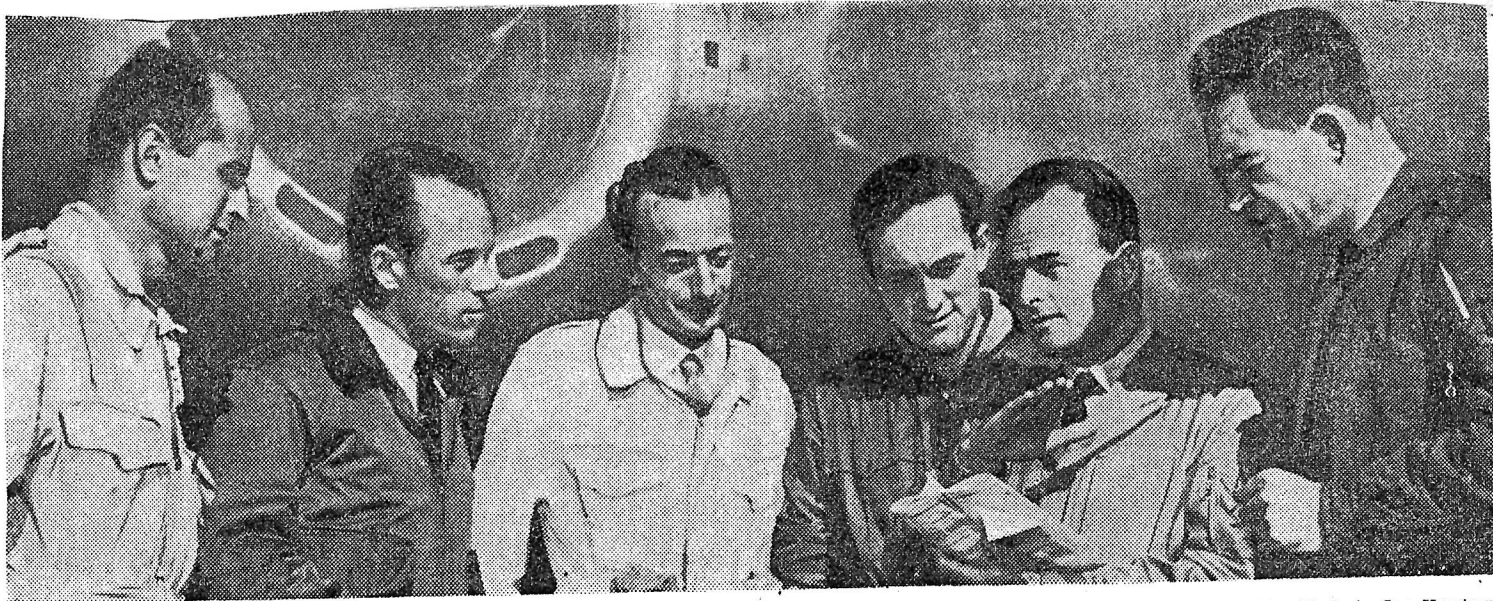
Peter flying ↑

AVRO CANADA CF-100 FIGHTER, powered by twin Orenda jet engines, is shown here. The engines will be built in the new production plant. Canada is challenging world leadership in the three most advanced fields of aviation, atomic power for warplanes, supersonic flight and jet-engine development. Production will be increased at the plant



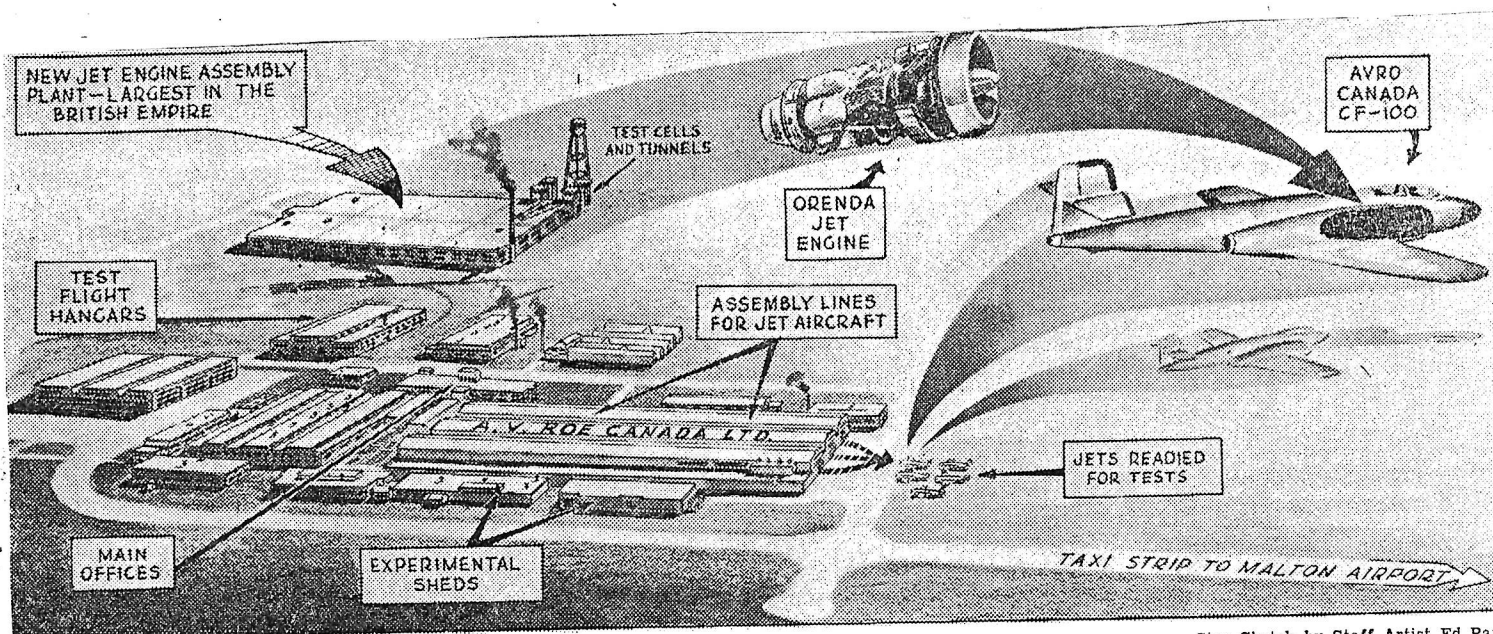
Open New Jet Plant—Flight of CF-100s will be feature of today's opening ceremonies at Avro's Malton factory for production of Orenda jet engines. Test pilot Jan

Zurakowski (left) is seen dismounting from CF-100 fighter with its twin engines which are now in quantity production at the new plant. He plans to put the craft through a number of complicated manoeuvres.



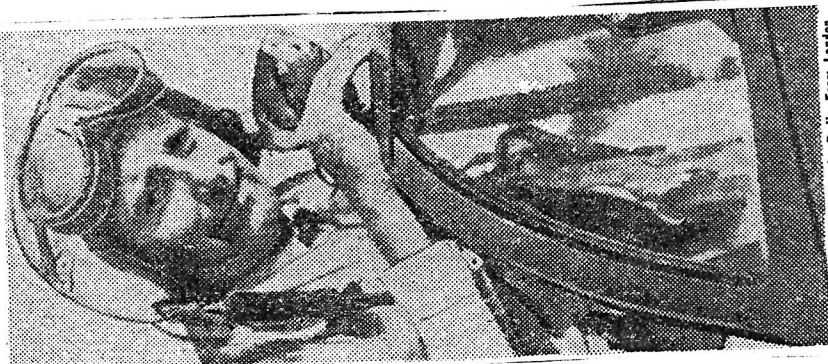
—Star Photo by Leo Harrison

FLYING CF-100 CANUCKS will be Jan Zurakowski, RAF test pilot, left, Flt.-Lieuts. J. F. Fewell and Peter R. Cope, of RCAF; Flt.-Lieut. P. Needham and Wing-Cmdr. E. D. Crew of RAF and Flt.-Lieut. J. A. Watt of RCAF. A new, high-temperature metal alloy, which may solve major problem in atomic-propulsion of aircraft, has been discovered



—Star Sketch by Staff Artist Ed Park

LAYOUT OF AVRO BUILDINGS AT MALTON is shown here in sketch. The new top-secret alloy is the most startling result of Avro Canada's impact on Canadian industry. It is under joint Anglo-Canadian development by atomic scientists. It makes possible a light screen around the atomic reactor. Before, heavy ones were impracticable



—AP Wirephoto by Radio From London.
Neville Duke

**Briton Breaks
Speed Record
At 777 MPH**

Dignitaries Dignity-Less As Air Ace Swoops Low At Avro Opening Fete

By ALLAN KENT
Telegram Staff Reporter

Test Pilot Jan Zurakowski scared the dignity out of several hundred dignitaries yesterday as Avro, Canada staged a breathtaking air show in connection with the formal opening of the Malton aircraft company's big new jet-engine plant.

But it wasn't the failing-leaf descents or the vertical climbs of his CF-100 that shattered the aplomb of the officials and industrialists gathered at the scene.

It was an unexpected low-level swoop over their heads that alarmed the crowd. Without warning the famous war ace zoomed his 17-ton Canadian-designed fighter from behind the new engine plant at over 600 miles per hour, with a deafening scream-roar from the twin Orenda jets manufactured at the Avro plant.

There was one exception in the shaken crowd. The Zurakowski show failed to disturb phlegmatic Defense Production Minister C. D. Howe, who a few minutes before had officially declared the new engine plant open.

The plant, built with Government money and to be operated by Avro Canada's gas turbine division under Thomas S. McCrae, will enable the company to swing into full production of the Orenda engine, which experts say is the equal of any other jet produced in North America.

MORE SPACE

The increased facilities also give more working space to the company's aircraft division, which manufactures the all-purpose, all-weather CF-100 and also turned out one civilian transport jetliner and then had to stop because of the pressure of defense orders.

The exceptional qualities of both the Orenda and the CF-100 were placed beyond doubt in the minds of the dignitaries yesterday, after a formation fly-past of CF-100's and an Orenda-powered Lancaster and after the Zurakowski aerobatic display.

Zurakowski, who came to Avro Canada recently from the famous Gloster aircraft firm in the United Kingdom, did not show off his "Zurabatic Cartwheel," but he put his sleek silver plane through just about every other aerial manoeuvre in the book.

Highest speeds announced for the performance were "over 600 miles

per hour," but several of his fly-pasts—some of them upside down—were admittedly at a much higher speed. The CF-100's highest announced speed was a 638 m.p.h. flight from Toronto to Montreal, but it is no secret the aircraft has done better than that.

OLD PLANES TOO

Four Lancasters—manufactured at Malton during the war by Avro's predecessor, Victory Aircraft, and converted since by A. V. Roe Canada Ltd.—also took part in the air show.

The familiar, authoritative thunder of their piston-driven engines (Rolls-Royce Merlins) came as a relief after the weird, terrifying sound of the jets.

One of the old Lances, however, carried two Merlins and two Orendas. It is an experimental plane or "flying testbed"—popularly known as a "flying bedstead." Twice it flew at low level overhead at about 300 m.p.h. using only its Orendas, the bed-fellow Merlins switched off and their propellers feathered.

The Zurakowski aerobatic show dispelled most of the crowd's disappointment that the Jetliner and an Orenda-powered Sabre jet did not put on performances as expected.

After the formal opening ceremonies and the air show, visitors were conducted on an extensive tour of the engine plant where Orendas are already being run off the production lines at a rate which security says must not be disclosed.

Heading the tour through the plant were Mr. Howe and Avro Canada's president and general manager, Crawford Gordon Jr., together with RCAF Air Marshal W. A. Curtis, Deputy Defense Minister Drury, Deputy Defense Production Minister Brophy, Avro Director J. S. D. Tory, Sir Roy Dobson of the A. V. Roe Co. in England, and others.

The President and Directors

of

A. V. ROE CANADA LIMITED

Cordially Invite You to Attend the Official Opening
of the Company's New Jet Engine Plant

by

THE RIGHT HONOURABLE C. D. HOWE, P.C., LL.D.

Minister of Defence Production

2.30 P.M., Monday, September 29, 1952

at Malton, Ontario

R.S.V.P.
TO MISS A. UNDERWOOD
TELEPHONE: CHERRY 1-2651

(OVER)

OFFICIAL
OPENING
AVRO CANADA
JET ENGINE PLANT

GUEST

MRS. P. R. COPE

SEPTEMBER 29 1952



—Keystone Photo

SQDN.-LDR. NEVILLE DUKE of the Royal Air Force, cracked the world's air speed record, Sunday, when he piloted his swept-wing Hawker Hunter fighter at about 727 mph. Earlier last week, he was foiled in his attempt to gain back the speed record for Britain from U.S., because of defect in under-carriage of plane

Wait A Minute!

AMAZING AIR FEATS

By Wessely Hicks

Out at Malton yesterday, A. V. Roe Canada, Limited, unveiled its new jet engine plant, where Orenda engines are being manufactured. When the ceremonies were completed and the company brass and the Government brass and the Air Force brass had made their speeches, the company undertook to prove that the Orenda jet engine would lift a plane off the ground.

The proof of the flying capabilities of the Orenda engine was entrusted largely to a Polish test pilot named Jan Zurakowski. With an Orenda engine installed on each side of him in a CF-100, an all-purpose jet fighter plane, Mr. Zurakowski performed some remarkable aerobatics.

As a matter of fact, he played that CF-100 the way Louis Armstrong plays a hot horn. And when Armstrong stops blowing, you have maybe heard some notes which aren't even on the horn.

ANCIENT ALREADY

Yesterday, in a sort of ceremonial fly-past, three Lancaster bombers flew overhead and already the Lancasters look like craft out of a museum. The bombers were followed by five CF-100's in formation and then a Lancaster powered with two jet engines whistled over.

There were three more black jet fighters then, and they were followed by still three more CF-100's. The last three came in very low, and you noticed that, until they are almost overhead, jet fighters make all the noise of moths tip-toeing through a cloud. When they are overhead, their thunder bruises your ears and almost pushes you ankle deep into the ground.

The last three jet fighters were led by Jan Zurakowski. They bruised the air with their sound, then climbed straight up in a manoeuvre called the Prince of Wales' feather. The two flanking planes bore off to left and right, and Zurakowski in the lead plane continued to fly straight ahead and up. Then, far up in the sky, the three planes rolled lazily like curling plumes.

LIKE WOUNDED DUCK

I don't think any of the spectators on the front lawn of the A. V. Roe plant noticed what happened to the two flanking jets, for Jan Zurakowski brought his plane down in a slow roll so that it looked like a wounded duck, and he pulled out of the roll and came over the lawn so low that he was parting tall men's hair.

Then he pulled straight up into the sky, climbing like a hungry angel late for dinner. He came out of the climb and came straight down toward the earth so that you felt like a dart board with the dart coming dead centre.

Then, just to prove that the Orenda engine can perform in any position, Jan Zurakowski pulled out of the dive and flew low over the lawn upside down. He was so low that he was plucking handkerchiefs out of the breast pockets of the jackets of short men.

EASE IN HANDLING

In fact, he was so low that, if a fly had walked on the plane's controls, the fighter probably would have crashed. And, at a speed slightly in excess of 600 miles an hour, Zurakowski was handling the 17-ton CF-100 as delicately as an old lady manipulates a darning needle.

Zurakowski continued to fly in this manner for some time. Once, he evidently came down so low that he hid under a lilac bush, for he disappeared behind the one-story Avro plant. Seconds later, he came over the top of the plant in a roaring, thundering, cataract of sound which had the spectators spinning like dead leaves in a high wind.

When the exhibition was over, I went in to meet Jan Zurakowski. I expected a big-shouldered, deep-chested man with wild eyes just like in the movies.

THIS IS HE

Jan Zurakowski doesn't look quite like that. He is small, slim, diffident, and his hair has moved well to the back of his head where it stands straight up in a wild fringe, evidently in protest at the way Jan flies a plane.

His eyes aren't dark and wild. They are pale hazel and look as though they were packed in ice.

We established Zurakowski's identity by a simple process. I asked him if he were Zurakowski. He said he was. I asked him if he had been flying the CF-100 a few minutes ago. He said he had. I asked him if he were sure. He said he was.

Then I asked him if maybe he had been promised a special spot in heaven and was trying to commit suicide by flying so low. Jan Zurakowski just laughed.

"I'll tell you," he said in a voice dripping in accent. "The life of a test pilot is a short one, for you can't fly forever. But by flying so low, I am preparing for my future. I am going to have lawn mower blades put in the front of a jet fighter and, when I'm through as a test pilot, I can make a living cutting lawns."

\$45,000,000 AVRO JET PLANT SEEN AS BIGGEST EMPLOYER

(Continued from Page One)
now... just. Our figure is 14,850." Most startling result of Avro Canada's impact on Canadian industry has been discovery of a new, high-temperature metal alloy which may solve the major problem in atomic propulsion of aircraft.

The alloy, still a top secret, is under joint Anglo-Canadian development by atomic scientists. It makes possible a light screen around the atomic reactor which would replace the kerosene-burning combustion chamber of jet-engines. Attempts to build such a screen with other metals had left U.S. researchers with impossibly large aircraft projects, because a tremendous weight of the older metals was necessary to protect aircrews. With the light new alloy, it is unofficially estimated that four pounds of uranium would carry an atomic-powered plane round the world non-stop several times.

Forced to keep silent on these secret defence projects, Avro Canada officials today watched the birth of the British Commonwealth's largest jet-engine factory. Among them was the company's founder and dean of British aircraft manufacturers, Sir Roy Dobson. The chunky Englishman had just emerged from five weeks eating and sleeping in a Manchester hangar while his newest project, a four-jet delta-wing bomber, prepared for initial test flights.

He had these reasons for nursing the new plant into life:

It must produce powerful Orenda jet-engines to equip 200 CF-100 Canucks and three times as many Canadian Sabres by the end of 1953.

The government has placed a \$85,000,000 order for Orendas destined to power Sabres alone. Other orders have been placed for engines to power other aircraft, including the CF-100 and the Jetliner, which is undergoing U.S. trials as a military transport.

These engines already develop 6,500 pounds of thrust, enough to drive 100 powerful autos at full throttle. Experimenters must try to boost it into the world's most powerful engine again. Sir Frank Whittle, inventor of the jet and unofficial adviser to Canadian jet men, says the engine is so good it can produce 50 per cent. more power.

Orenda-powered Sabres are wanted now in Korea. They can deal Russian MIG's, according to U.S. air force pilots, a knockout punch. The first are expected to join Canadian-built Sabres already in Korea, but powered by U.S. engines.

A serious shortage of jet engines slowed construction of the new Orenda plant within 12 months. Now it's hoped to get the CF-100 program rolling. Sixty of the twin-jet planes will be moving out of Avro Canada sheds once mass-production of the engines has started. Already 4,000 skilled workers are assembling the engines in the new plant, and the force will be doubled to bring production beyond 100 engines a month.

Twelve thousand men and women work in the Malton plants and another 15,000 craftsmen across the country are geared to the government program for both engines and planes.

Canada has struggled against heavy odds for this competitive position among the world leaders. More than 2,000 British technicians and skilled workers have been imported to overcome almost total inexperience in the jet field. British and U.S. companies have been persuaded to locate in the country to win Canada self-sufficiency in the manufacture of high-precision parts. Today, there are 400 firms across Canada feeding parts to Avro Canada, and both engine and plane production have become wholly Canadian.

Shifting defence requirements delayed smooth production of the all-Canadian CF-100 Canuck, which first flew in January, 1950. It was months later that the government announced Avro Canada would go into production; previously, its role was one of research and development. Today, despite the colossal problems of setting up assembly lines and finding qualified workers, Canucks made their first public appearance in their RCAF guise of Arctic warplanes.

Canada had one tremendous advantage to offset the handicaps facing defence planners when, at the end of World War II, they decided to make the country an independent leader in jet aviation. She had raw materials lacking among her rivals but essential to jet engines — cobalt, nickel, chromium and tungsten.

Engine Grows 3/4 of Inch

These were necessary for metal alloys able to withstand the orange heat of jet engines. The Orenda, for instance, gets so hot it grows three-quarters of an inch in length. Inside, tips of 1,700 turbine blade whistle round above the speed of sound; and each blade holds an individual position in turbines and compressors that multiply their weight 20,000 times when spinning.

Firms across Canada had to find the know-how and the workers to meet the unprecedented demand for parts. Among the new, heat-resistant alloys was one called Shawinigan X. Tied in with its production now are three Quebec companies, at Montreal, Grand Mere and Three Rivers.

Behind Avro Canada lie huge government funds, an additional \$10,000,000 in British money and the backing of the mammoth Hawker - Siddeley group of England. The group's aircraft stole the last Farnborough air show—shop-window for British aircraft.

This is what such backing means to Canada generally and the Toronto area in particular:

An "industrial revolution," producing a hard core of skilled workers vital to any country caught up in rearmament or trying to hold its own industrially. This core scarcely existed when the jet program began to roll seven years ago.

New factories have been established to produce exclusively for jet projects, but capable of switching to other skilled manufactures. British and U.S. firms have been persuaded to open branch factories here. One refrigerator company has diverted its considerable resources to production of jet-engine blades, for instance.

Exploitation of raw material

\$45,000,000 JET PLANT BIGGEST CANADA WORKS SEE AVRO STAFF 15,000

By WILLIAM STEVENSON

Canada is challenging world leadership in the three most advanced fields of aviation—atomic power for warplanes, supersonic flight and jet engine development. That is the story behind today's opening of the \$45,000,000 Avro Canada jet engine plant at Malton.

For its \$120,000,000 investment in the new industry, the Canadian government expects these results from the country's biggest design staff of 1,600 experts:

Delta-wing jets built for Arctic and northern Canadian operation, boasting both long-range and faster-than-sound speeds.

Guided missiles for use for both the delta-wings and the CF-100 Canuck, which has been developed for Arctic warfare.

The Canuck will become a "carrier" for guided missiles now in the experimental stage at Avro Canada and Valcartier, Quebec, and designed for air-to-air combat. Later missiles, fitted with atomic warheads, would be used in the ground attack version of the twin-jet warplane.

Largest in Commonwealth

With its new plant at peak production, Avro Canada becomes the British Commonwealth's largest manufacturer of jet planes and engines. It dwarfs all units of the Hawker-Siddeley group, including the famous Armstrong - Siddeley, Hawker and Gloster companies. Peak employment of 15,000 will make it the biggest employer of labor among Canadian manufacturers, according to a Ford of Canada spokesman.

"We used to hold that title," he said, "but Avro Canada passes us (Continued on Page 3, Col. 1)

sources is being encouraged. A new ferro-silicone plant at Beauharnois, Que., for instance, has replaced Norwegian supplies for the Malton company.

A reserve of machine-tools, badly needed throughout the free world, is being created. There are 600, worth more than \$21,000,000, in the new Avro Canada plant.

Employment figures are expected to reach 15,000 by next year at the company. Workers are buying their homes on a 10 per cent. down-payment basis, so that a \$3,600-a-year machinist can buy a \$10,000 house for only \$1,000 down. About 1,000 such homes are expected by the end of the year to be occupied by men in all categories. Michael Cooper-Slipper, a company test-pilot, was one early buyer.

New homes are within 15 minutes' drive of the plants. But in a further effort to reduce traffic problems, the company has contributed \$250,000 toward a new road leading to the Orenda plant.

Road to Cost \$650,000

"The road is costing \$650,000 altogether," said Malcolm McRae, chairman of Malton village council. "It will open up industry here and in Toronto township, for which there'll also be a water supply, again thanks to the jet plants. Water pumped up from Lake Ontario for the company is also being made available here. We've 3,500 people in the village now. We expect 25,000 within five years."

Just so there won't be any mistake about it, council now refers to Malton as "the aviation centre of Canada." And its local Roman Catholic church has become "Our Lady of the Airways."



A. V. ROE CANADA LIMITED

MEMBER OF THE HAWKER SIDDELEY AIRCRAFT GROUP

Designers and builders of aircraft and of gas turbine engines

CABLES: AVRO
CODES: BENTLEY'S 1st and 2nd

MAILING ADDRESS, BOX 430, TERMINAL "A"
TORONTO, CANADA

TELEPHONE
LYNDHURST 5441

September 30, 1952.

MEMORANDUM TO:
Mr. Peter Cope.

PERSONAL.

Dear Peter:

This is just a brief note to thank and congratulate you for the exceptionally fine flying you did yesterday. It was a real contribution to the success of the day, and was admired and appreciated by all of those who had the opportunity of witnessing the display.

Kindest regards.

Sincerely yours,

FRED T. SMYE,
GENERAL MANAGER, AIRCRAFT DIVISION.

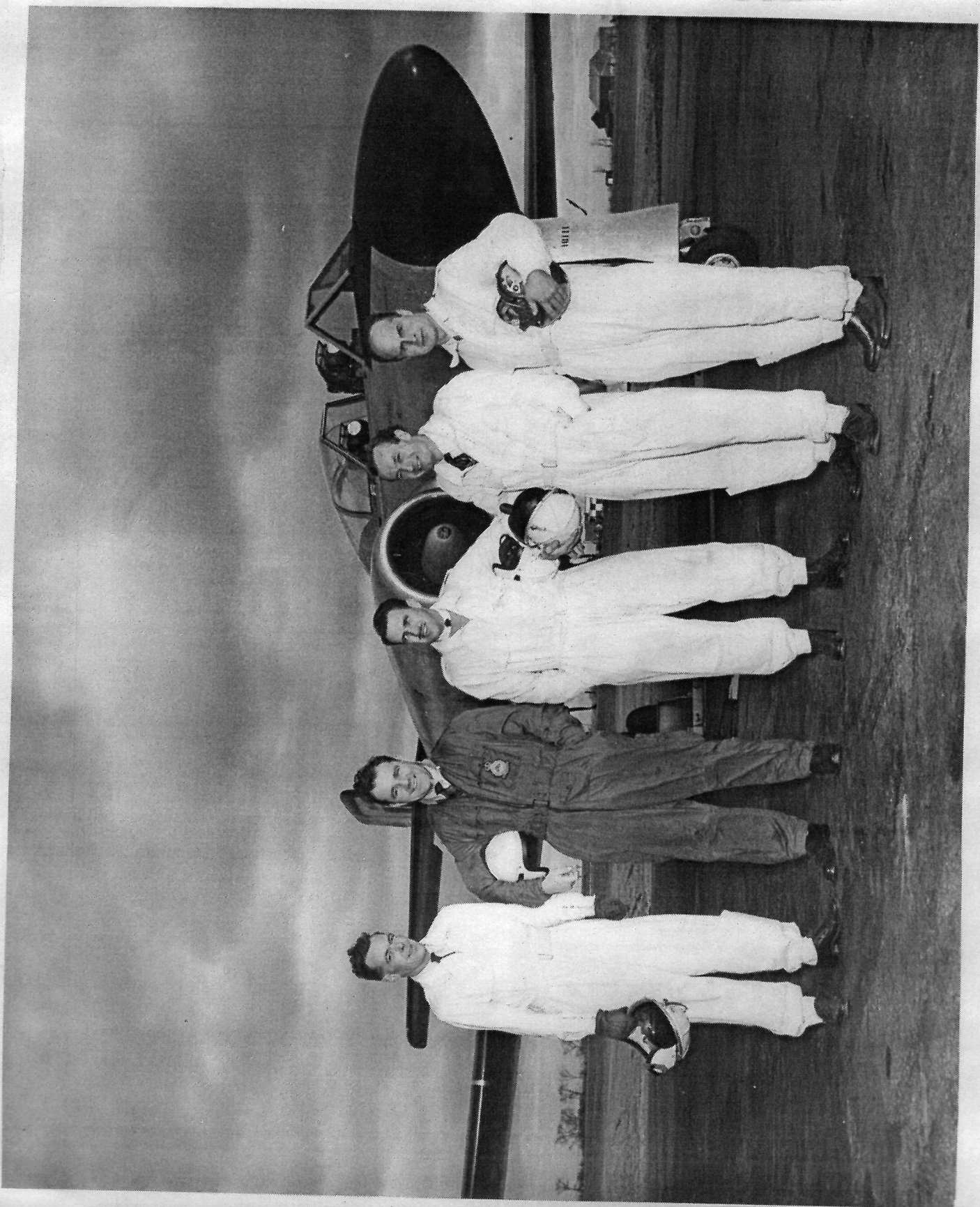
From the Desk of
R. D. ARMSTRONG

September 30, 1952.

Mr. Cope:

You helped to put on a fine show yesterday.
Congratulations are in order.

Director of Finance and
Administration.



TEST PILOT
WINDMILL

TEST PILOT
CHRIS PINE

PHOTOGRAPHER
H. MACKENZIE

Evolution before man's flight



M
Y
Co

Newest Canadian Jet Can Fire 60 Rockets; Passes Tests by RCAF

By JAMES HORNICK

Trenton, Feb. 17 (Staff). — The RCAF has successfully completed the first firing tests of its newest fighter, a supersonic jet which packs 60 radar-aimed rockets.

The aircraft is the Mark IV version of the all-weather CF-100, designed and built at Malton by Avro Canada Ltd. Only the prototype of this particular model is in existence. By late summer, however, it is predicted that the Mark IV will be in mass production.

Although the Mark IV already carries the heaviest disclosed rocket load of any aircraft in the world, Avro engineers are preparing fuselage modifications which will permit the installation of an additional streamlined rocket compartment slung between the plane's two engines. Rocket capacity may, with this device, rise as high as 100.

(One of the newest all-weather interceptors of the United States Air Force, the Lockheed F-94C, Starfire, carries only 24 rockets against the Mark IV's 60. In the Starfire they are enclosed in a nose compartment covered by snap-open doors.)

So deadly are the long, slender rockets, it is said, that only one hit would be required to knock down an enemy bomber. The explosive force would be sufficient to blast a lethal cavity in the bomber's tough hide.

The rockets' striking power was demonstrated for several days on the RCAF's Consecron Ranges, southwest of here. Observers re-

port that huge, fiery craters in the ground were the only visible remnants of their force.

Once the Mark IV picks up a target, either on its own search radar or from a ground station, automatic controls relieve the crew of guesswork. They virtually lock the aircraft onto its quarry, deviating course to correspond with the changing course of the simulated foe. The rocket aiming is equally automatic, assuring a high ratio of hits for the amount of ammunition expended.

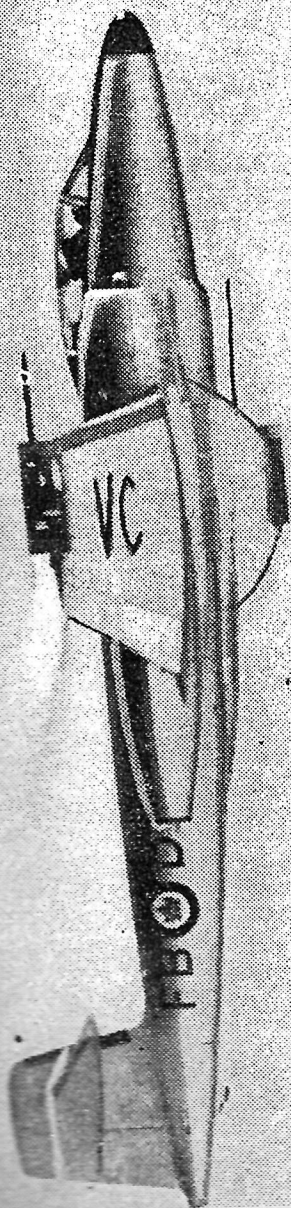
The Mark IV carries its rockets in two pods made from pressed paper. One pod is mounted on the tip of each wing. Once the rockets have been discharged, singly, in groups or in salvo, the pilot can jettison the pods by pressing a button in the cockpit.

The rockets used on the Consecron ranges are believed to have been of 2.75-inch diameter. They were produced in the United States. Later, Mark IV's will be equipped with rockets made in Canada.

Previous models of the CF-100 were armed with six 50-calibre machine guns, the same armament carried by F-86 Sabres of the U.S. Air Force which regularly engage Russian-built MIG-15's over Korea.

The Canadian Government hoped originally to arm some of its long-range jets with 30-millimetre cannon. It was found, however, that this weapon is still undergoing development in Britain and that it will likely not be available for export in quantity for some time.

Quicker Than the Eye Was This Salvo of 29 Rockets Launched From One Wing-Tip Pod by This New Ve-
But camera, stopped down to 1/1000th of a second caught radar-aimed, high explosive missiles just after they were t-



THE BLACK
WINGMAN

TEST PILOT
CHRIS PINE

PHOTOGRAPHER
H. MACKENZIE

Exposition before camera's click

NEW FASTER-THAN-SOUND RCAF JET PLANNED TO FIRE 100 RADAR-AIMED ROCKETS

By WILLIAM STEVENSON

A "thin-wing" version of the CF-100 twin-jet fighter has been ordered from Avro Canada for the RCAF. This high performance fighter, designated Mark V, will supplement a government order for 650 Mark IV aircraft, worth an estimated \$500,000,000, on which rocket-firing trials have just ended.

Another 70 earlier versions of the CF-100 are now in production for Canada's northern defences, but the major burden of guarding our Arctic approaches will fall on the Mark IV. Tests on this aircraft are expected to result in an operational fighter of supersonic speed, packing a radar-aimed punch of 100 rockets.

Thrice Exceeded Sound Speed

Intensive high-speed tests have been undertaken by Jan Zurawski, regarded as one of the world's top test pilots, who has flown the long-nosed fighter three times through the speed of sound in a series of 30 dives.

Rocket tests have been flown by a fellow Avro Canada test pilot, Peter Cope, using pressed-paper pods to house 60 rockets—30 at each wing tip. New, fibre-glass pods will permit individual firing of rockets, and an extra "belly" compartment will boost capacity to 100 rockets.

Mass production of the Mark IV fighters is expected to start late this summer, though Rt. Hon. C. D. Howe, production minister, has warned that there may be delays while the U.S. finishes development of fire-control apparatus. This apparatus will allow pilots to select single rockets from their positions in the pods, now carried on the wing-tips.

The Mark V fighter, it was learned today, will gain higher speed from its thinner wings and may be powered in its final development by an improved version of the Orenda jet-engine.

Needed For Arctic Defence

These developments are expected to give Canada a powerful air defence along her northern boundaries. There has been a grave need for long-range fighters that could maintain a standing patrol in the Arctic.

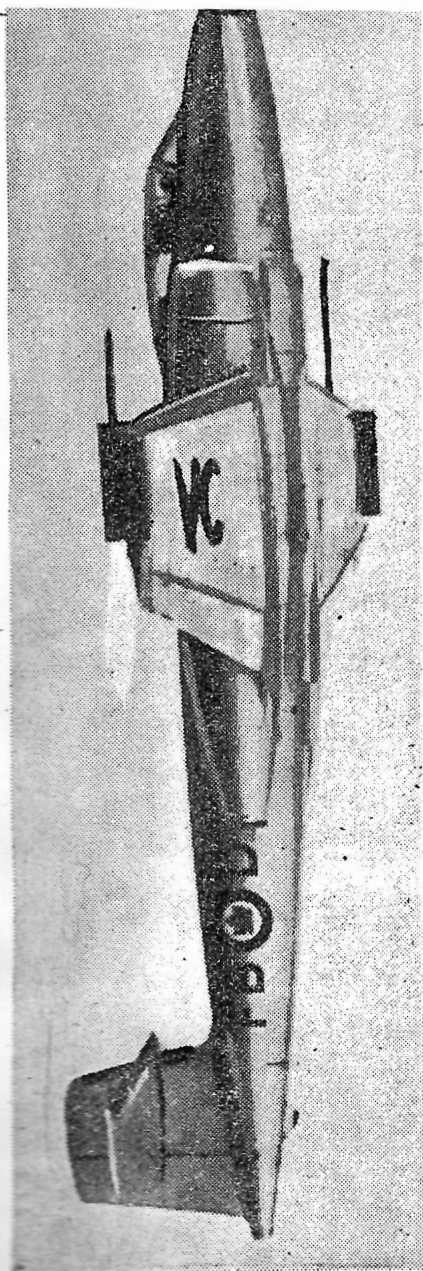
For this standing patrol, defence planners maintain the important thing is to have defending fighters at high altitude, ready to intercept any enemy picked up by long-range, ground radar.

Since the best jet fighters today take some 10 minutes to reach 40,000-feet from a cold start (engines off), a bomber force could advance 100 miles in the interval between detection and interception—unless patrolling fighters were already available at the enemy's altitude.

The Mark IV will be supplied in quantity to defence squadrons watching Canada's back door in the Arctic.

Eventually, the fighter's rockets will themselves be radar-guided to flying targets. Meanwhile, the fighter carries a heavier load of rockets than any other yet known to be flying. Previous models bore eight 50-calibre machine guns, even then a bigger load of armament than the F-86 Sabre jets.

Use Jetliner as Labora



CANADA'S NEWEST JET FIGHTER, the Mark IV version of the CF-100 all-weather fighter, is shown firing a salvo of rockets. The plane, designed and built at Malton by Avro Canada Limited, carries high explosive rockets, which may be discharged singly, in groups, or in salvo. Each rocket is capable of bringing down an

ture caught every

ture caught every

'LIKE OUTSIZED EGGS' PRESSED PAPER PODS HOLD CF-100 ROCKETS

By WILLIAM STEVENSON

Possibly the world's most expensive laboratory has been used in testing the latest rocket-firing version of the RCAF's twin-jet CF-100 fighter. It is the Avro Canada Jetliner, only one of its kind in the world and one of the few aircraft that could carry engineers and designers who wanted to keep pace with flight trials of the fighter.

Flew Alongside CF-100

With movie cameras and binoculars, these observers flew alongside an experimental Mark IV version during rocket-firing trials over the Consec range southwest of Trenton RCAF base. But one of the most remarkable shots they obtained in order to study the effect of rocket-firings, came from the camera of photographer Vern Morse, ordered up to get publicity photographs only.

Sixty rockets are fired from two wing-tip pods. Between the time that the pod "nose" explodes and the discharge of the last rocket, only one-eighth of a second elapses.

"I waited for the yellow flash of the exploding pod," said Morse. "At exactly that moment, I pressed the camera release without attempting to glimpse the rockets myself. Even at 1/1,000th of a second, lens wide open, I just caught them all in the air."

The result is regarded as a remarkable air-airshot. It gave air engineers exactly the information they needed on certain aspects of the firing of grouped rockets.

To contain the clusters of rockets, the chief of Avro Canada's experimental division, Jim Kenny, developed pressed-paper pods which were both light and expendable. The pods are constructed from pressed paper, through which liquid glue is sucked under pressure. Shaped like outside eggs, they each hold 30 rockets and shed both nose and tail-cone during firing. Then the pods themselves are jettisoned.

Pilot during the trials for Avro



PETER COPE, test pilot at Avro, flew new CF-100 during many of rocket tests

was Peter Cope, a graduate of the Empire Test Pilots School in Britain and a wartime fighter pilot who has been test flying ever since.

TEST PILOT

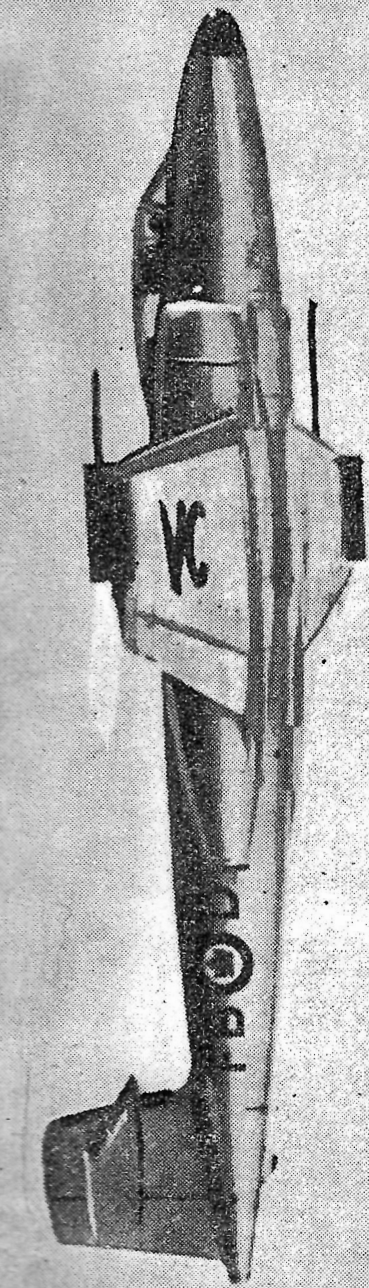
CHRIS PEEK

PHOTOGRAPHER

H. MACKECHNIE

Readers: before camera's click

Use Jetliner as Laboratory to Test Rocket-firing CF-100



CANADA'S NEWEST JET FIGHTER, the Mark IV version of the CF-100 all-weather fighter, is shown in this remarkable picture, firing a salvo of rockets. The plane, designed and built at Malton by Avro Canada Limited, carries 60 radar-aimed high explosive rockets, which may be discharged singly, in groups, or in salvo. Each rocket is capable of bringing down an

enemy bomber. The rockets are carried in two pods, one on each wing, and once the rockets have been fired, the pilot can jettison the pods. This picture was taken by an Avro staff photographer, from a jet liner flying alongside new plane. The picture caught every rocket, even though only one-eighth of a second elapses from time front of pod blows off until last rocket fired

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was Peter Cope, a graduate of the Empire Test Pilots School in Britain and a wartime fighter pilot who has been test flying ever since.

2nd CF-100 Jet In Crash Pilot Lives

North Bay, July 30—(Special)—A CF-100 jet fighter from the RCAF station here crashed and burned this morning 25 miles southwest of this city.

The pilot, FQ G. W. Hunter, 30, of Hamilton, parachuted to safety.

Site of the crash is along the densely wooded shore of Lake Restoule, about 20 miles west of Powassan.

It is believed the big twin-engined jet developed engine trouble. The pilot apparently tried to reach home base, but couldn't make it and used his ejector seat device to shoot himself clear.

It was the second CF-100 to crash here in 10 days. Last week one of the 17-ton fighters crashed and burned on takeoff. The pilot escaped with minor injuries.

Two Toronto girls, holidaying at Root Lake, said they thought an atom bomb had dropped when they saw a mushroom of smoke from their camp.

Dorothy Mae Dunsmoor said she and her friend, Wilma Vander-torre investigated and found the pilot taking off his parachute. "He was smiling when he saw us," said Miss Dunsmoor. The two girls and a friend drove the pilot to Powassan.

Young Pilot Walked Away From This



—Star Photo by Kevin Moore

FIERCELY BURNING CF-100 fighter plane is shown 10 minutes after the pilot was taken to hospital. The plane crashed shortly after take-off from the RCAF base at North Bay. The plane's pilot was William Walker, 24, of London, Ont.

OTTAWA-WINNIPEG HOP MADE INSIDE 3 HOURS JET CAN OUTFLY SOUND

The first all-Canadian jet fighter-bomber, specially designed to guard the vast reaches of the Arctic and the second biggest national territory on earth, has completed the longest non-stop jet flight yet performed in this country. Flying from Ottawa to Winnipeg, 1,100 miles, in two hours and 49 minutes, it demonstrated the speed with which an attack on this country can be intercepted.

Faster Than Sound

The plane is the new CF-100, designed and manufactured by A. V. Roe Canada Ltd. at Malton. Details of its construction and performance are still secret, but it is known to be as long and as wide as the height of a five storey building. Though one of the most manoeuvrable planes made it is heavier than a Dakota transport plane, and can fly faster than sound.

On its Ottawa-Winnipeg dash the CF-100 was piloted by Sqdn. Ldr. Doug Biden of Moncton, N.B., with Cpl. D. L. Barkley of Ottawa aboard. Most jet fighters have a range of only 500 miles, but the new Canadian defender is built to travel up to 2,000 miles. Leaving Winnipeg today, the test plane will undergo cold weather tests at Namao, near Edmonton.

The RCAF squadron at North Bay is at present receiving the new fighter plane and with it devising revolutionary new air tactics to suit Canada's peculiar defence needs. The revolutionary new CF-100 Mk. IV, which has only recently gone into production, and is somewhat difference in appearance from the earlier CF-100's, is designed for "lone wolf" sorties.

In its long nose is installed \$15,000 worth of radar gear which will sight and line up enemy aircraft and may actually automatically fire the guns the instant the enemy is squarely in the sights. Operating out of the main Arctic base at Southampton, an island in the far northern reaches of Hudson bay, its range of 2,000 miles will enable it to roam beyond the North Pole, while its greater-than-sound speed puts it beyond the reach of any potential enemy bomber.

In developing the all-Canadian jet

fighter Avro Canada worked in close conjunction with the RCAF, their object being to design a plane that would be most efficient in guarding the vast distances of a sparsely settled country. An enemy might be encountered anywhere between the North Pole and the Niagara frontier. Such a plane had to have long-range coupled with terrific speed to get it where needed in time. The CF-100 has both in greater measure than any other plane yet developed by any other country.

The plane also had to be capable of warming up and taking off quickly upon the spotting of an approaching enemy on the radar screen, regardless of the time of day or night or the condition of weather.

The RCAF wanted a plane that would also be able to get down to comparatively low speeds so, if needed, it could be used in tactical support. The CF-100 is thus the first of a new breed of big post-war fighters capable of carrying a considerable bomb load—and certainly a large enough load of atom bombs to be a formidable foe to the enemy.

When production reaches its peak work will be given to 30,000 Canadians, of whom only half will be employees of Avro Canada, the rest employees of companies making component parts.

A total of \$36,000,000 is being allocated to sub-contractors on the CF-100 airframe alone.

TEST PILOT
CHAS. FINE
H. MACKENZIE
Photographer
Illustrates before camera's click

CF-100'S, SABRE JETS SEEN BY 27,000 AT 'OPEN HOUSE'

Special to The Star

Malton, May 11 — More than 27,000 employees, friends and relatives wandered through more than a mile of assembly line, inspected finished jets and watched a whistling CF-100 swoop overhead in A. V. Roe Canada's "open house" over the week-end.

On Saturday, workers in the aircraft construction division, with wives, children and neighbors, visited the plant. More than 21,000 came. On Sunday, employees in the jet engine plant and their visitors, numbering 6,000, arrived.

Beneath sunny skies and in near-80-degree temperatures they inspected eight CF-100's on the hangar aprons, an Orenda-powered Sabre F-86, the Avro Jetliner and a jet-converted Lancaster.

Holds Speed Record

The Sabre fighter, equipped with an American-built engine, not the Orenda, now holds the world speed record of 669.7 mph for a single-engine fighter. The day may not be far off when the all-Canadian Orenda engine in the Sabre will also take a crack at the speed record, talk here has it.

In the shiny CF-100's visitors saw the last word in all-weather fighters, the sleek round-the-clock jet that rumor says General

Matthew Ridgway wants for 600 NATO pilots in Europe. Last week a team of American officers visited the plant to see the long-range fighter in production.

While Saturday's curious eyed the roped-in CF-100's on the ground, Peter Cope, AVRO test pilot and former RAF fighter pilot, put the aircraft through its paces in the air as the visitors craned their necks. He sent the manoeuvrable fighter over their heads at breakneck speed, turned, climbed, dived and wheeled high

in the air to show workers' friends and families the plane was everything that has been said about it in beauty, manoeuvrability and speed. On Sunday, Mike Cooper-Slipper was in the cockpit.

Tests Still Going On

The wartime Lancaster "Flying Bedstead" is now powered with two Orenda jet engines and two Rolls Royce propeller driven ones. Much valuable information has been gained from testing this half jet, half propeller-driven aircraft. The tests which have been going on for several months are still being carried out. The stripped-down bomber saw many

raids over enemy territory in World War II and is one of the 400 built at the plant during the war.

A similar open house day will be held for friends and families of the 15,000-odd Avro employees in September when the turbo jet division of the operation, a mile removed from the airframe plant, will be thrown open.

There were many tired feet but few lost children as the 27,000 thronged plant and grounds of the giant factory. Lost children were quickly recovered by a loud speaker system which played gay music the rest of the time to further enliven the visit.

Canada Jet 'Wows' U.S. Experts

By TIM CREERY

Telegram Staff Reporter

If NATO leaders like Canada's all-weather CF-100 jet fighter as much as visiting members of the Industrial College of the U.S. Armed Forces did yesterday on a tour of A.V. Roe Canada Ltd. at Malton, there's likely to be a sale.

In Ottawa, Defense Production Minister C. D. Howe laughed off reports that there was a connection between the visit and the possibility of a \$400,000,000 order for 600 planes.

Eventually, he said, Canada hoped to sell the U.S. some CF-100s and, also to place some with NATO. But it would not be for some time yet.

A senior A.V. Roe official pointed out, however, that the U.S. officers' tour might have a "long-range influence." For the 24 students of the States' highest level military school who visited Malton yesterday are destined to go to the top of the class in military affairs.

The group had nothing but superlatives for the huge, new, sparkling Orenda engine plant, now turning out jet units for the CF-100 and the F-86 Sabre (being built in Montreal by Canadair).

"Canadians can be really proud of what they have here," said Col. C. F. Damberg, U.S. Air Force. "This place seems to have everything I've ever seen in any similar

plant in the States and probably some advantages our plants have not got."

After watching test pilot Peter

Cope put the CF-100 through paces—his sleek silver plane dashing about the sky at speeds over 600 miles an hour—the U.S. Air Force officers in the group came out with more superlatives.

"There's a plane that any pilot in the world would be anxious to fly," said Col. W. G. Davis. "That's a pilot's aeroplane."

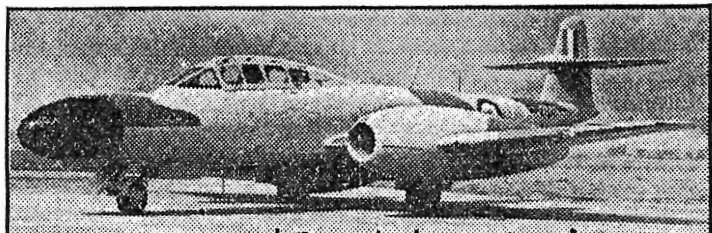
During the day the group did a complete tour of Avro facilities taking in the airframe assembly plants as well as the engine plant. In addition there were several briefings from top Avro officials.

To help mark the occasion the first time a group from the U.S. College had visited a Canadian plant, four members of the U.S. Embassy in Ottawa were on hand: Hon. Don C. Bliss, minister; Miss Claire Wilson, the world's only female civil air attaché; Col. M. D. Blaine, military air attaché; and Col. Paul J. Bryan, military attaché.

The group was led through much of the tour by Avro President Crawford Gordon, Jr. In addition to the students, all of them senior officers who have spent an average of 23 years service with the U.S. armed forces or federal government departments there were seven college faculty members present. The party was flown to and from Malton by the RCA, arriving Thursday night and leaving last night.

SEES IT.

JET FLIES BY NIGHT



WE are very interested in this.
By COURTENAY EDWARDS

BRITAIN'S new jet-propelled night fighter—which can also be used for day-time interception in bad weather—is a two-seater, radar - equipped development of the famous Gloster Meteor, the Air Ministry announced last night.

It is being built at Baginton, near Coventry, by Armstrong-Whitworth Aircraft Ltd. The R.A.F. plan to equip a substantial number of fighter squadrons with it next year.

The Meteor NF II, as it is called, will be the R.A.F.'s first jet night fighter, and their first 600-m.p.h. plane ordered in quantity for night interception. It will replace the celebrated Mosquito.

WARTIME PLAN

In arranging for Armstrong-Whitworth to build the new plane the Ministry of Supply is following a war-time practice under which, to overcome production difficulties, aircraft designed by one firm were sometimes built by another.

Production resources of the Gloster Aircraft Co., designers and builders of the record-breaking Meteor, are fully occupied in building twin-jet day fighters and the two-seater trainer version.

In his speech on the Air Estimates, Mr. Henderson, Secretary for Air, said the new planes would have a vital part to play in the air defence of the United Kingdom by day as well as by night.



JETS IN THE DARK.—First visits have now been made to the jet-equipped night fighter squadrons of Fighter Command. Here is a photograph of the Armstrong-Whitworth N.F.11 all-weather fighter.

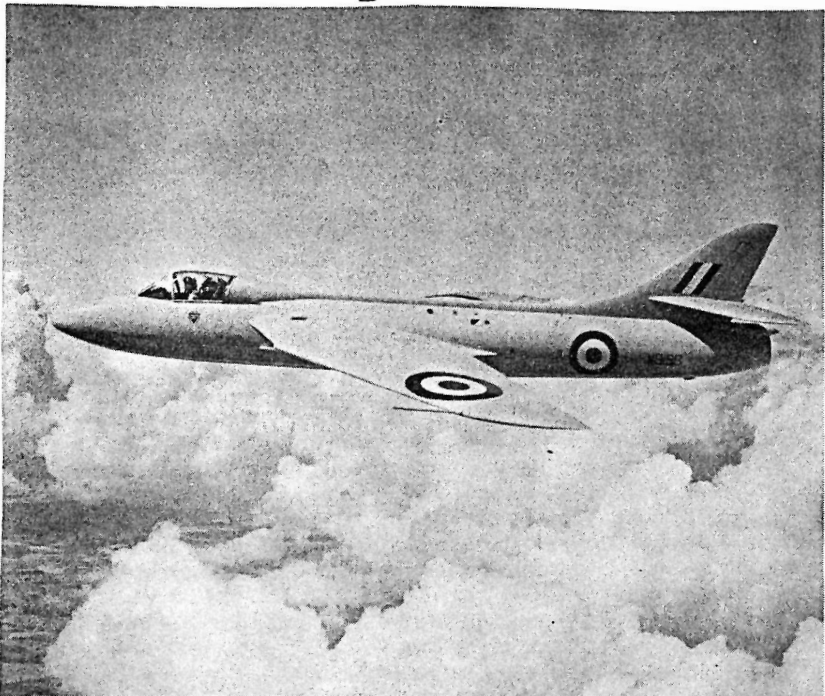
FLY. LT. JACK
WOODMAN

TEST PILOT
CHRIS PIKE

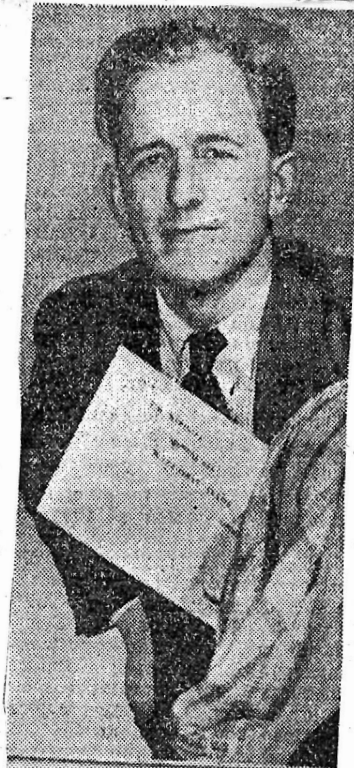
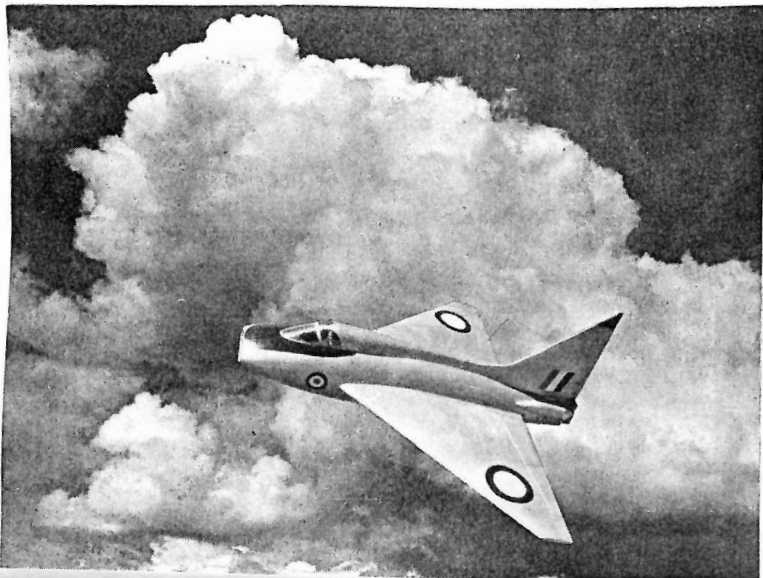
PHOTOGRAPHER
H. MACKECHNIE

Aerobatics before camera's click

War-time Landing.



HERE IS the first published photo, cleared three weeks ago by British Security, of the famous P.1067. Named the Hawker "Hunter", it is reputed to be faster than the speed of sound. Designed by Sydney Camm, of Hurricane fame, it is regarded by Prime Minister Churchill as an aircraft in the top-priority class.



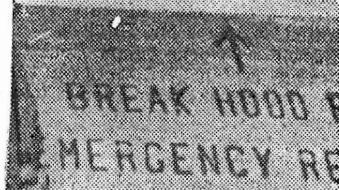
TEST PILOTS' WAGES JUMP BY £2,000

TEST pilots employed by the Ministry of Supply have been awarded large pay rises—some will get an extra £2,000 a year—back-dated to October 1950.

The awards were announced last night by the Civil Service Arbitration Tribunal, who took into consideration the fact that there is no superannuation provision made for the pilots or the men who fly with them.

Chief test pilots jump from £1,200 to £3,200 a year; test pilots from £900-£1,000 to a maximum of £2,900; navigators, flight engineers, and radio officers from between £400 and £600 to a maximum of £1,550.

Chief test pilots will get back pay of about £2,500, test pilots about £1,875, and their crews between £1,000 and £1,125—all less income tax.



—AP Wirephoto. Jet Pilot Killed

John Derry, first British airman to exceed the speed of sound and live to tell about it, who was killed Saturday when a de Havilland 110—new British jet fighter—exploded before a crowd of 120,000 at Farnborough.



At Castel Benito in Tripoli when they stepped from their Canberra jet bomber after flying the 1,451 miles from London Airport in 2 hours 43 minutes 48 seconds, were the pilot, Squadron-leader De Vigne, right, and navigator, Flight-Lieutenant P. A. Hunt. It was a record of 538 miles an hour.

DEATH ENDS THE FLYING WIN

By Daily Mail Reporter



GEORGE GENDERS.
He tried to jump at 200ft.

THE Ministry of Supply will order no new "Flying Wing" experimental high-speed jet planes, the last of which crashed yesterday at Hartley Wintney, near Basingstoke, killing its pilot.

Only three of the aircraft—de Havilland 108's—were built. Each has crashed, and each has killed its pilot.

First to die was Mr. Geoffrey de Havilland, son of the famous designer. The second and third victims were both Ministry of Supply test pilots.

The machine in yesterday's crash was being flown by Squadron Leader George Genders, aged 30. His parachute caught on the aircraft when he tried to jump from 200ft.

The first two machines disintegrated in the air when flying faster than sound.

Squadron Leader Genders' plane

was not destroyed. Practically the whole of the structure is available for research.

Last night Ministry of Supply experts were removing the wreck for detailed examination.

The technical experiments being made with the last of the DH 108's were practically complete. Its destruction is not likely to interfere seriously with Britain's highspeed research programme.

Other experimental planes of strange shape, and with more powerful jet motors, are either in being or nearing completion.

Last night technicians from Farnborough Experimental Air Station, from which the machine

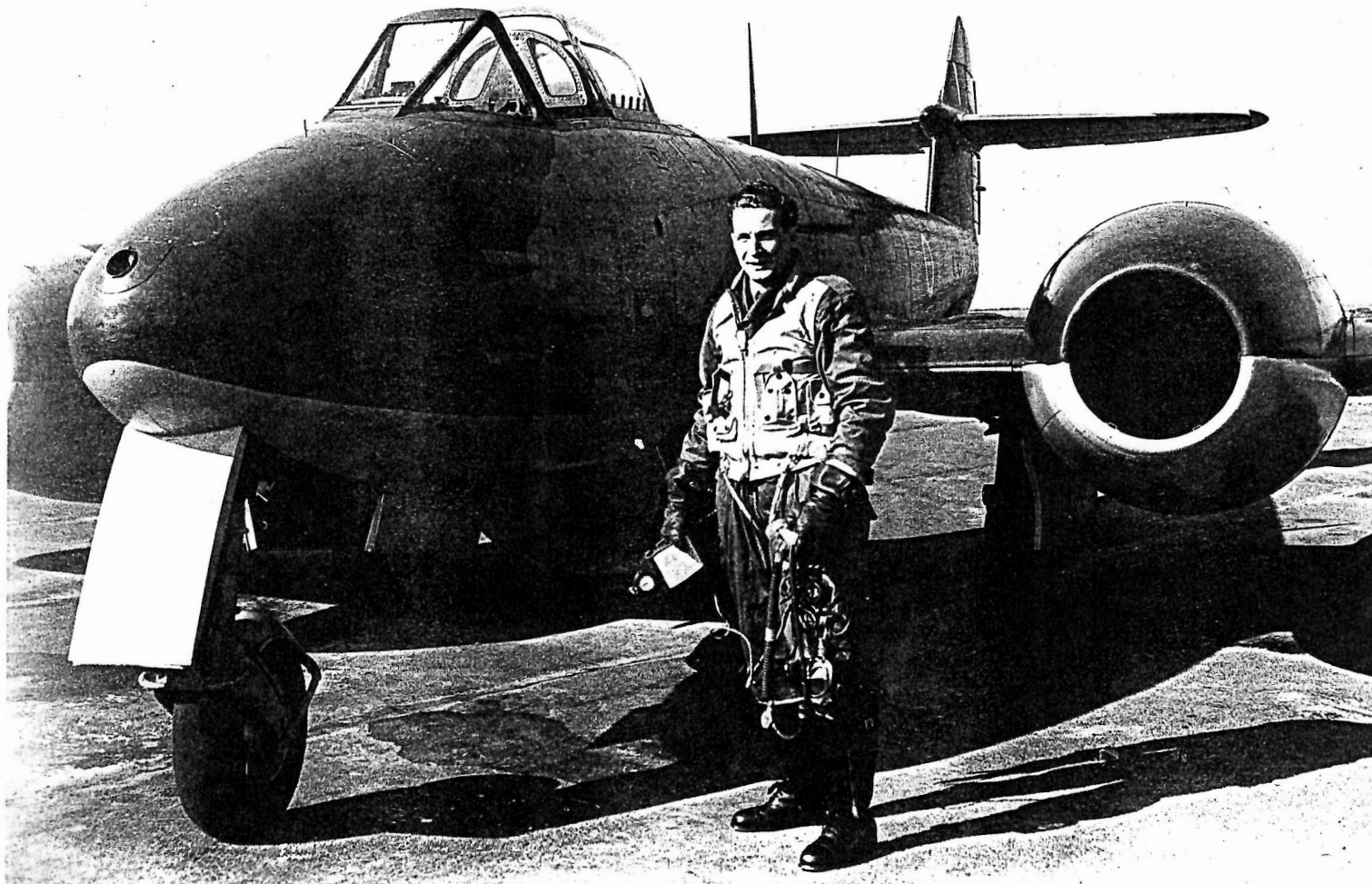
was flying, collected eye-witnesses on what had happened to the aircraft immediately before it crashed.

Mr. A. R. Wolsey, a Hartley Wintney grocer, said:

"I first saw the machine at about 400 feet. From its jerky movements, I thought the pilot was fighting to get it under control."

"The engine was running, and the aircraft was whirling head-over-heels and then windmilling, wing-tip over wing-tip."

"It looked like a sheet of paper caught in a sharp, unsteady breeze; you couldn't guess what movement it would make next."



Keith Butler, test pilot at Westlands, killed in 1950.

FLT. LT. JACK
WOODMAN

TEST PILOT
CHRIS PIKE

PHOTOGRAPHER
H. MACKECHNIE

Aerobatics before camera's click

163 MINUTES TO TRIPOLI BY CANBERRA

By Daily Mail Air
Correspondent

ONE of Britain's new twin-jet Canberra bombers flew yesterday from London Airport to Castel Benito, Tripoli—1,451 miles—at the record speed of 538.13 miles an hour.

Piloted by Squadron Leader L. C. De Vigne, D.S.O., D.F.C., A.F.C., the Canberra completed the journey in 2hr 43min. 48sec.

It clipped 39 minutes off the previous unofficial record for this flight set up in October 1949 by a De Havilland Comet jet-liner, piloted by Group Captain John Cunningham.

It is the second spectacular record-breaking flight by this sleek bomber, which has two Rolls-Royce Avon engines and can carry an atom bomb.

On August 31 last year Wing Commander R. P. Beament, chief test pilot of English Electric, the makers, flew 2,173 miles from Ireland to Newfoundland in 4hr. 18min. at an average speed of 480 m.p.h.

Government sacking test pilots

By CHAPMAN PINCHER

THE Government test pilots—all five had their pay almost trebled by a tribunal last year—are to be sacked for economy. They will be replaced by R.A.F. test pilots, who will cost the Government much less.

The pilots—not men like Neville Duke, who are employed by the aircraft firms—do their jobs on the Government's experimental air stations at Farnborough, Hants, and Boscombe Down, Wilts.

Three of the five—Mr Lee Archer, Mr R. J. Knight, and Mr E. J. Spencer—have been told they are to go. The other two will be replaced eventually.

DANGEROUS WORK

The civilian aircrews who flew with these test pilots and whose pay was doubled by the tribunal are also being sacked. They, too, will be replaced by R.A.F. men.

The Government test pilots tried out every new type of plane after pilot models had been delivered to the Supply Ministry by the manufacturers.

So many of them have been killed since the war that an arbitration tribunal ruled that they were grossly underpaid for their dangerous work.

The Government had paid them only £20 a week with no

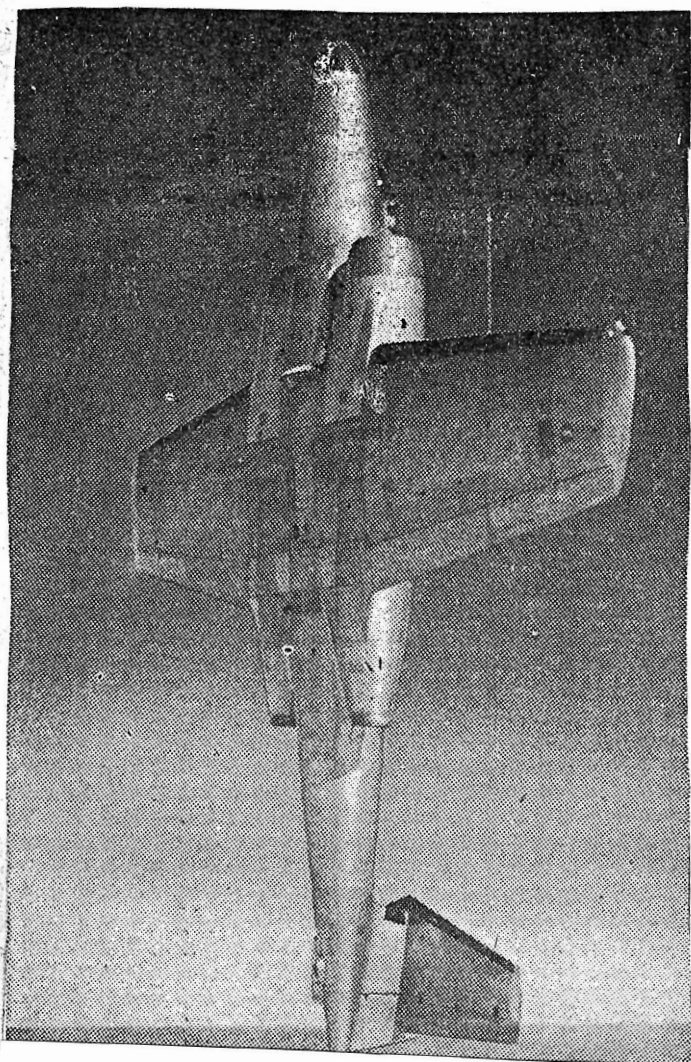
pension. The tribunal awarded them up to £55 a week with 16 months' back pay.

The navigators, flight engineers and radio officers who flew with them had their salaries raised from a maximum of £12 a week to £30.

Since then one of the test pilots has been recommended for the George Medal after safely landing a badly damaged airplane.

The test pilots' union, the Institution of Professional Civil Servants, is fighting the sackings decision.

Note: The Government's chief test pilot Mr H. A. "Bruin" Purvis, whose salary was raised to £3,200 a year by the tribunal, is to keep his job.



CF-100 In A Loop



Picturebatics Tough In CF-100

Those dramatic aerial pictures on Page One today—probably the first of their kind on this continent—weren't easy to get.

Avro Canada's photographer, Hugh Mackechnie, alternated between high-level boredom and hanging upside down by his safety straps on the verge of blacking out.

The photographs, clicked at speeds up to 400 mph with the CF-100 aircraft just a wingspan apart, took experience, skill and nerve. Three Avro test pilots co-operated.

Substantial credit for the pictures goes to Jan Zurakowski, Polish air ace now on Avro's test pilot staff. He's a pioneer of the straight up-straight down type of aerial photography involved in getting these pictures.

Zurakowski laid the groundwork weeks ago. He briefed other Avro test pilots and during regular radar checks, made by jet planes in pairs, the pilots practiced flying loops in formation.

At no time was a special flight arranged for the photography. All the photos were made and the formations rehearsed in periods of up to 10 minutes when the pilots were returning from radar check flights.

TIME HANGS HEAVY

That's where the boredom came in for photographer Mackechnie. While the radar checks were being made—sometimes it took up to an hour of straight flying—time hung heavy.

"I just sat and sat and sat. Nothing to see . . . nothing to do," he said. "One time I even took a book up, but it's hard to read at that height."

Zurakowski and test pilot Chris Pike, Victoria, took turns getting Mackechnie accustomed to the rigors and discomfort of aerobatics—particularly the sickening loops. Mackechnie went along at every opportunity in the two-seat CF-100 just to get used to the flying and to figure out camera angles.

When the actual photography started recently, a third test pilot co-operated. He was Flt. Lt. Jack Woodman, Saskatoon, an RCAF acceptance test pilot attached to Avro.

Zurakowski always assumed the difficult role of flying the photographer, since this job involved maintaining a precise position in relation to the target



JAN ZURAKOWSKI
Expert in straight ups, downs

plane. When flying upside down, or going straight up or down, this kind of precision is not for the ordinary test pilot.

Pike and Woodman took turns at the controls of the target plane.

Usually the loops commenced at about 2,000 ft., at about 400 mph. No dive is required to get up speed, since the CF-100's twin Orenda jet engines produce more power than enough for loops from level flight.

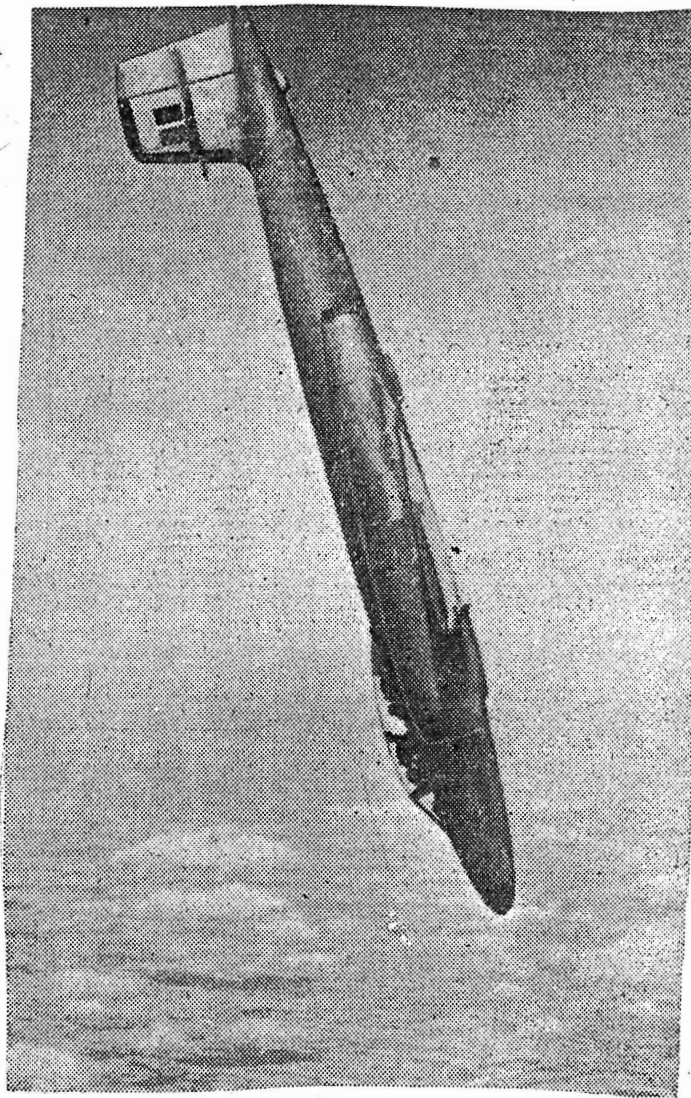
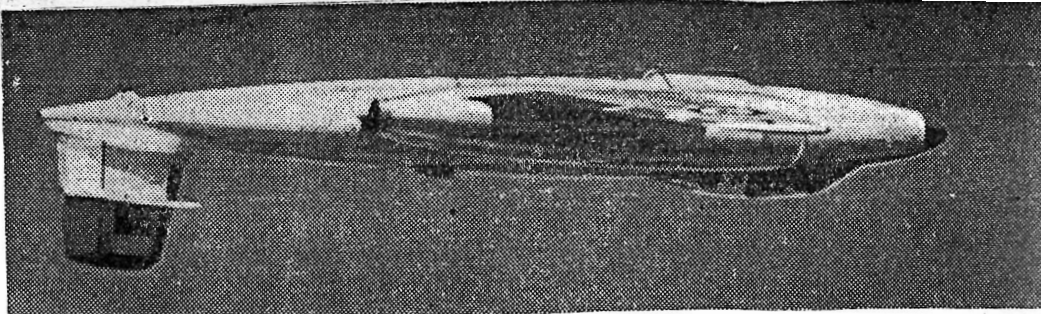
At the top of the loop, the speed ranges from 150 mph to 250 and each loop is about one and one-half miles in diameter. It takes about 40 seconds to complete and in that space, the photographer can shoot not more than four pictures.

QUITE A LOAD!

To get even four pictures, the cameraman must be good, because of the effects of "G"—the flyer's measurement of forced gravity. G makes the photographer's special six-pound camera weigh as much as 24 lbs., and that's quite a load when you're hanging upside down by your safety strap.

Depending on the tightness of the loop, the photographer and the pilots are subjected to anything from two to four G. This means a pressure of up to four times the weight of a man's body. Often four G will cause a blackout.

"Try holding a camera that feels like 24 pounds under those conditions," says Mackechnie.



**FLT. LT. JACK
WOODMAN**

**TEST PILOT
CHRIS PIKE**

**PHOTOGRAPHER
H. MACKECHNIE**

Aerobatics before camera's click

Jet Caught in Closeup, Crashes



THIS astonishing picture was taken by a *Daily Mail* reader. He took it at the Farnborough Air Display last September. Mr. John Derry was breaking the sound barrier in his DH 110 before 100,000 people. Suddenly his plane began to break up. The twin engines tore away from the fuselage, the tail fell off—then this happened. The main part of the plane has just struck the ground and is breaking up into a thousand pieces.

Some components can be identified—the windscreen (top right); part of the seat and part of a hatch (centre, right); part of the engine mounting (centre, left); and part of the control column and another part of the hatch (on the left).

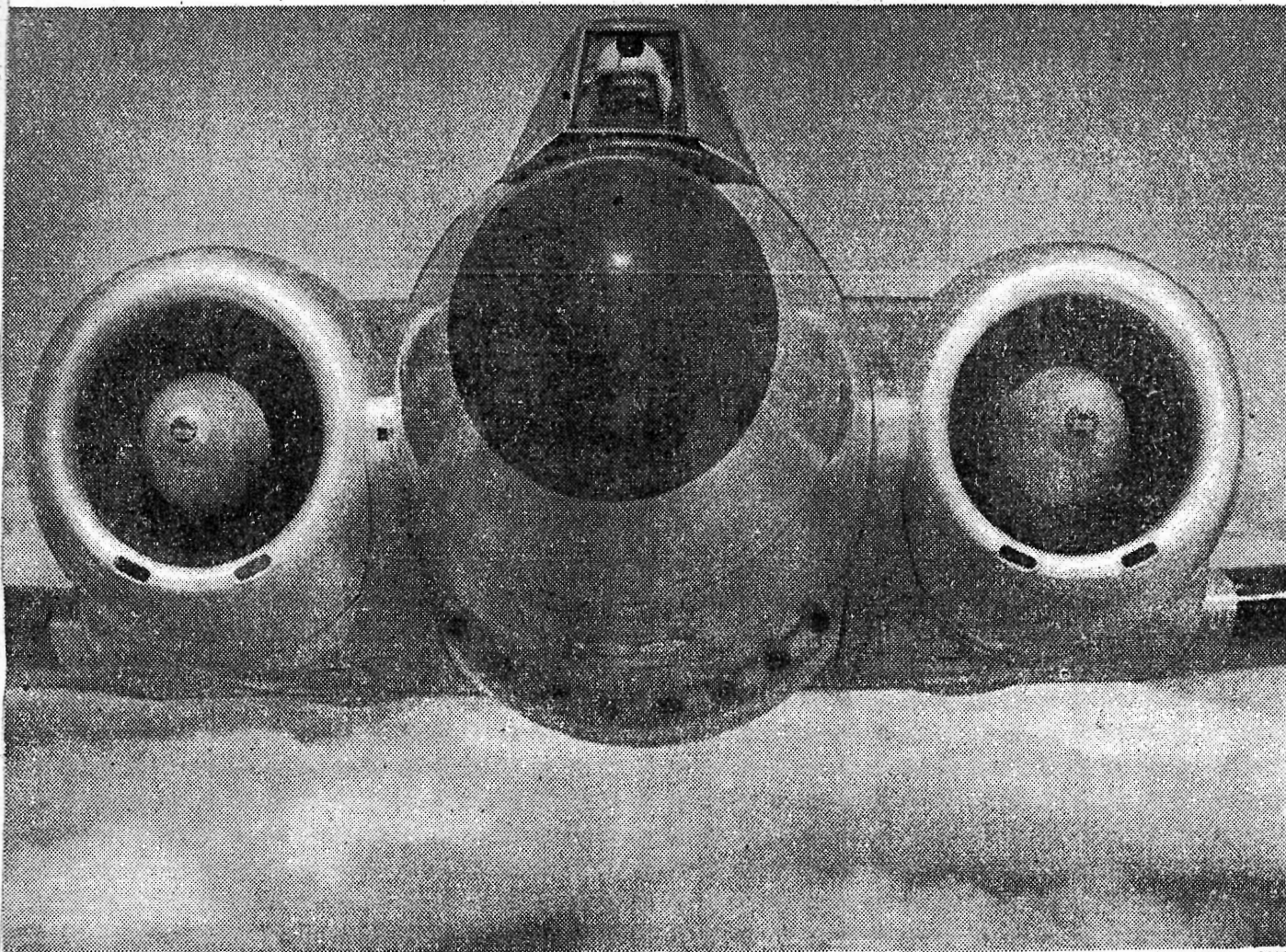
Why has the picture not been published before? Let the man who

took the picture, Mr. H. H. J. Orr, explain: "I was in the 10s. enclosure about 25 to 30 yards from the actual impact, but as most people had ducked I had an unimpeded view. At the time it was given out that the authorities would be glad to have any pictures of the crash for the purposes of an inquiry. I developed and printed mine on the Sunday and handed them in on the Monday morning. I only recently received the negative back, so I have not been able to offer this picture for publication until now."

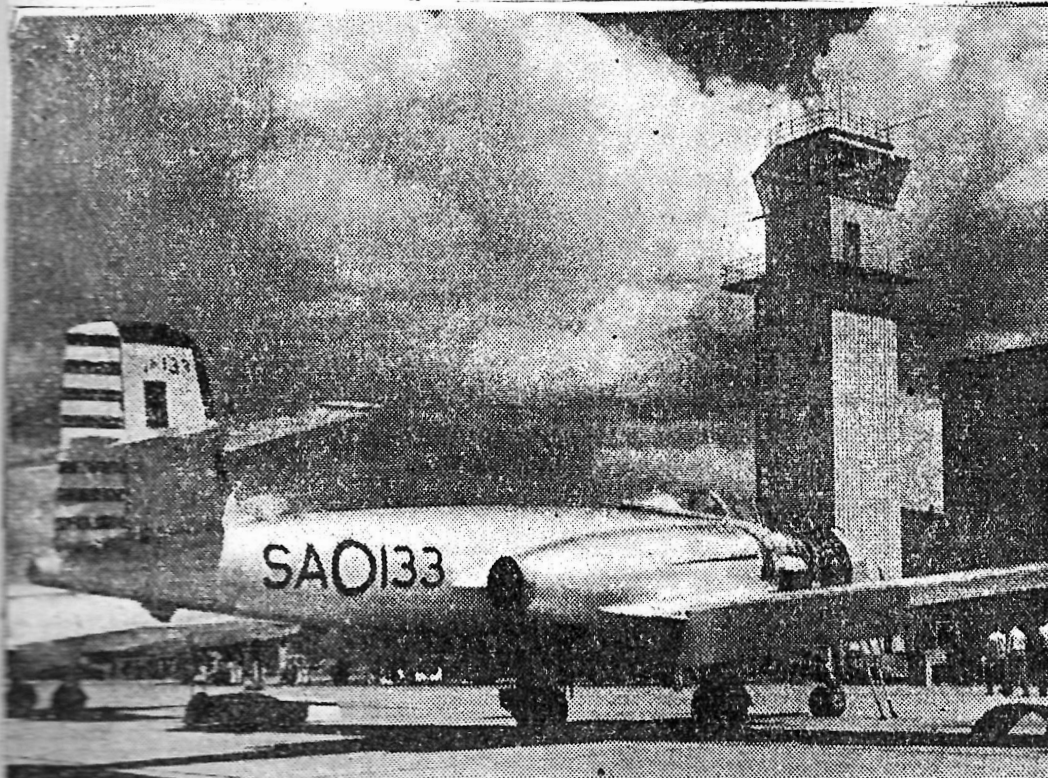
The *Daily Mail* now reproduces it as the most dramatic news picture submitted to this newspaper by a reader this year. Mr. Herbert Henry James Orr, who had the courage to stand up and obtain it with evident risk to his life, is 38, unmarried, and lives in Drummond-road, Bournemouth. He used a miniature camera with long-focus lens; speed 1/1,000sec. at 4.5.



Jet Caught in Closeup, Crashes Following Day



—RCAF.
This is the business end of an Avro CF-100 all-weather jet fighter, photographed high above the RCAF station at North Bay. Slung under fuselage is mounting which carries eight 50-calibre machine guns. Unusual closeup was obtained when pilot lessened speed and closed in on a Mitchell bomber. Photographer was stationed in tail gun turret. The following day this same fighter crashed. The pilot escaped by parachute.



Sleek CF-100 rests on tarmac at North Bay base. In background is modernistic control tower. North Bay is home of RCAF's all-weather operational training unit and one all-weather fighter squadron.

Jets Go Through Paces Of Show Set for CNE

By JAMES HORNICK

North Bay, Aug. 20 (Staff).—The RCAF rolled up one sleeve today and bared the muscular right arm of its fast-growing air defense force.

Concentrated here, outside the gateway city to Northern Ontario, is the great bulk of 70 twin-engine CF-100 all-weather fighters produced at Malton by Avro Canada Ltd.

Before long, as the Avro plant begins delivering an improved version of the aircraft, the RCAF plans to station CF-100's in a strategic line across the country, at such bases as Uplands, outside Ottawa; St. Hubert, Que.; Namao, Alta., and Comox, B.C.

of the manoeuvres executed today are to be a feature of the RCAF's daily show at the CNE.

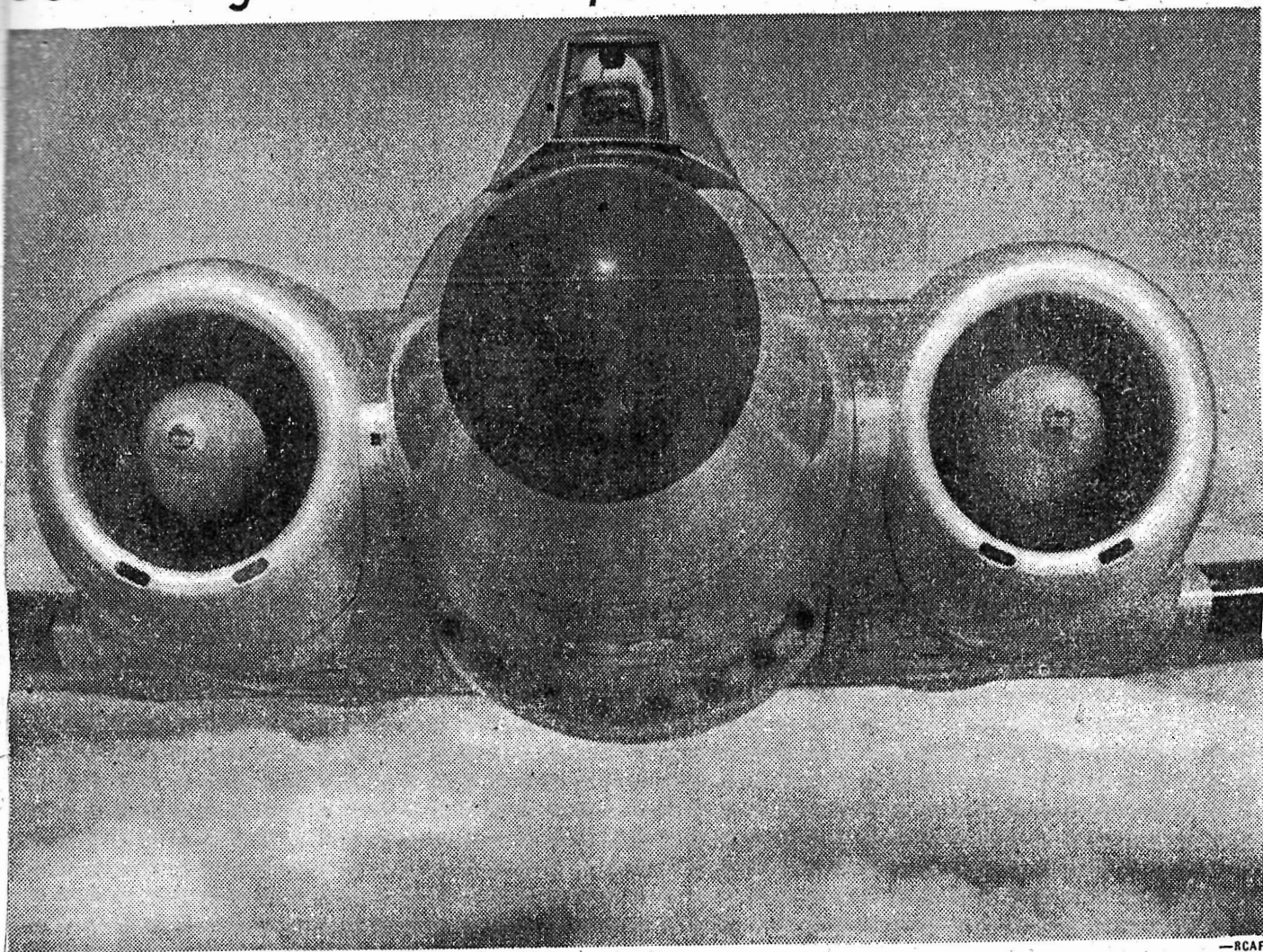
The CF-100, designed, developed and produced by a Canadian company, has been the focal point in a long-standing controversy. The RCAF, in throwing open its \$15,000,000, still-expanding North Bay training centre, sought to prove that its heavy investment in CF-100 production is finally being justified.

Group Capt. F. R. Sharp, the station commander, said: "We feel we have a good aircraft here and a high standard of training."

Wing Cmdr. E. D. Crew, commanding the OTU, said the CF-100 was fully competent to perform the task for which it was created: all-weather, long-range fighting.

And the severest critics of any aircraft, the men who fly and maintain them, were eager in any off-the-record interview to second the motion.

Jet Caught in Closeup, Crashes Following Day



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JETMEN OF AVRO

Every day test pilots of AVRO Canada draw assignments which to them are routine, but to earth-bound mortals are of epic proportions.

Commonplace to them are the G or pressure suit, the crash helmet, the oxygen mask, pressurized cockpits, air-conditioning, ejection seats and radar. But on every flight, eyes, hands, brains and imagination must serve as the link between the most sensitive electronic devices ever installed for flight.

What makes a test pilot valuable is the spark of boldness, the eagerness to probe and the cool judgment and skill to get out of sticky situations. And after test flights the pilot must be able to interpret an aircraft's behaviour for further study by the designers, engineers, stressmen and aerodynamicists.

AVRO Canada considers it is fortunate in having such men as Don Rogers, Michael Cooper-Slipper, Peter Cope, Jan Zurakowski and Chris Pike at the controls of its aircraft. Pilots all, yes, but each of these flight scientists also contributes ideas, methods and answers to the fund of jet flight information, without which there would be no progress.

A.V. ROE CANADA LIMITED

MALTON, ONTARIO



MEMBER OF THE HAWKER SIDDELEY GROUP



Test Pilot
Michael
Cooper-Slipper



Test Pilot
Peter
Cope



Chief
Test Pilot
Don Rogers



Test Pilot
Chris
Pike



Test Pilot
Jan
Zurakowski

Total air time of these test pilots is 14,200 hours accumulated in 240 different aircraft types flown over almost every country in the world.

The following items were loose in the
back of the original scrapbook.

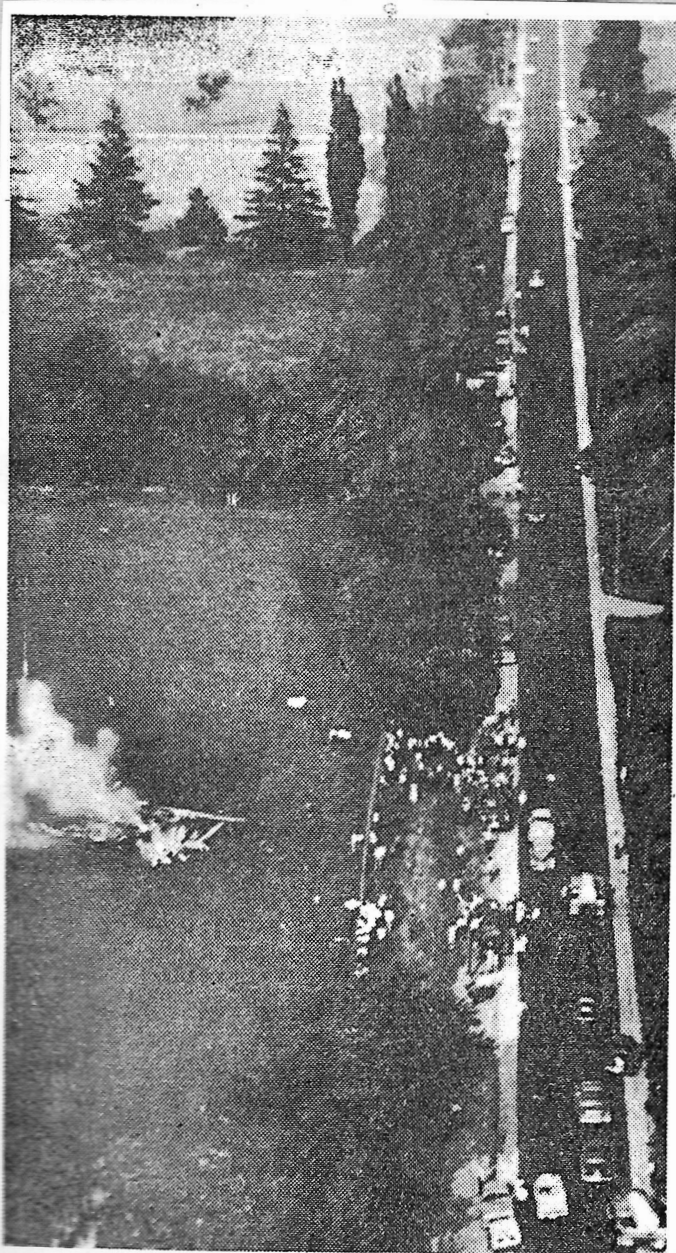
They have been arranged according to
subject matter and may not be in the
correct chronological order.

Jet Ace Hurt, Aide Killed But Save Homes From Crash



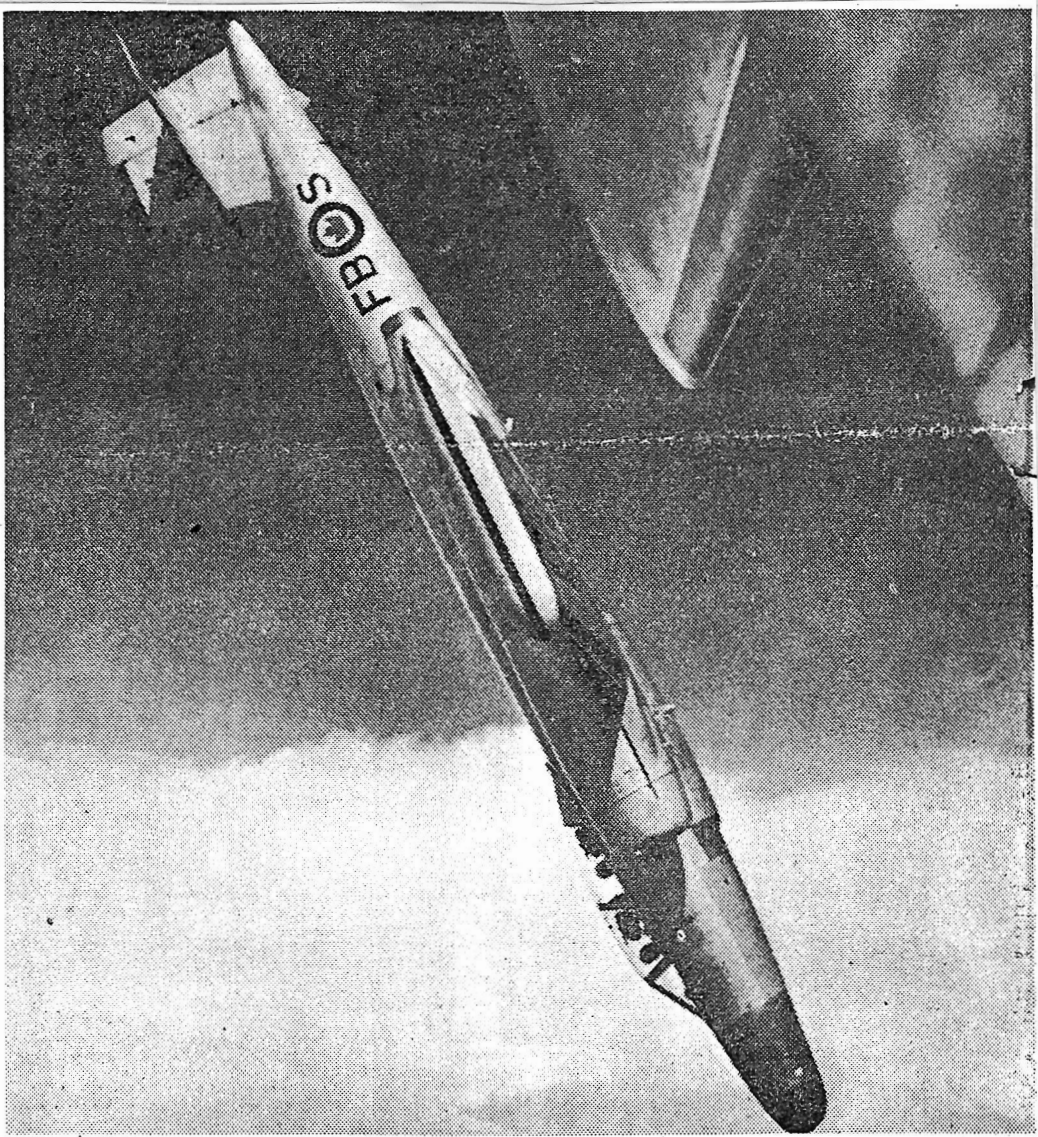
FAMED TEST PILOT ESCAPED flaming jet but observer lost his life as he jettisoned top-secret equipment from the Mark IV CF-100. Plane crashed close to highway 2, in farmer's field, after zooming over villages of Pickering and Ajax. John Hiebert, observer, is believed to have lost his chance to escape because of the delay in making sure the secret instruments used on the

plane would be saved. Jan Zurakowski, Avro test pilot, landed by parachute 500 yards from wreckage and suffered ankle fracture. He said Hiebert died hero's death. Minutes after the crash scene was overrun by hundreds of workers homeward bound, who watched flaming craft seek open country. Top secret instruments, which cost Hiebert his life, were later recovered



—Star Airphoto by Stu Alexander

CRASH OCCURRED just as workers began crowding highway on way home from work. Airphoto shows how close the all-weather jet fighter came to highway



—Avro Photo

PERFORMING OUTSIDE LOOP, Zurakowski is shown at controls of CF-100 on one of hundreds of test flights he has made for Avro Canada. Aircraft was one turned over to Avro by RCAF for further development and was heading home

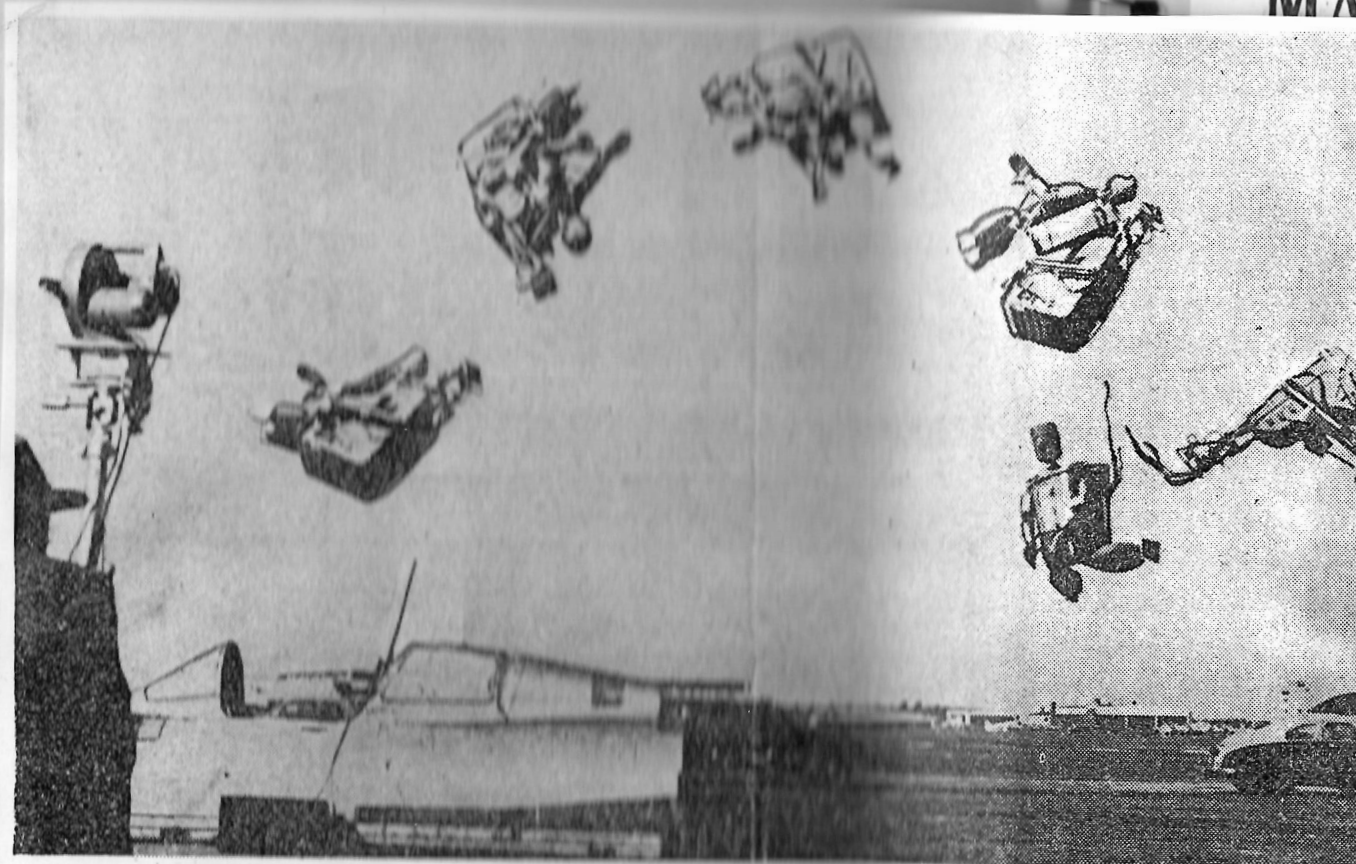


—Star Photo by John Scott

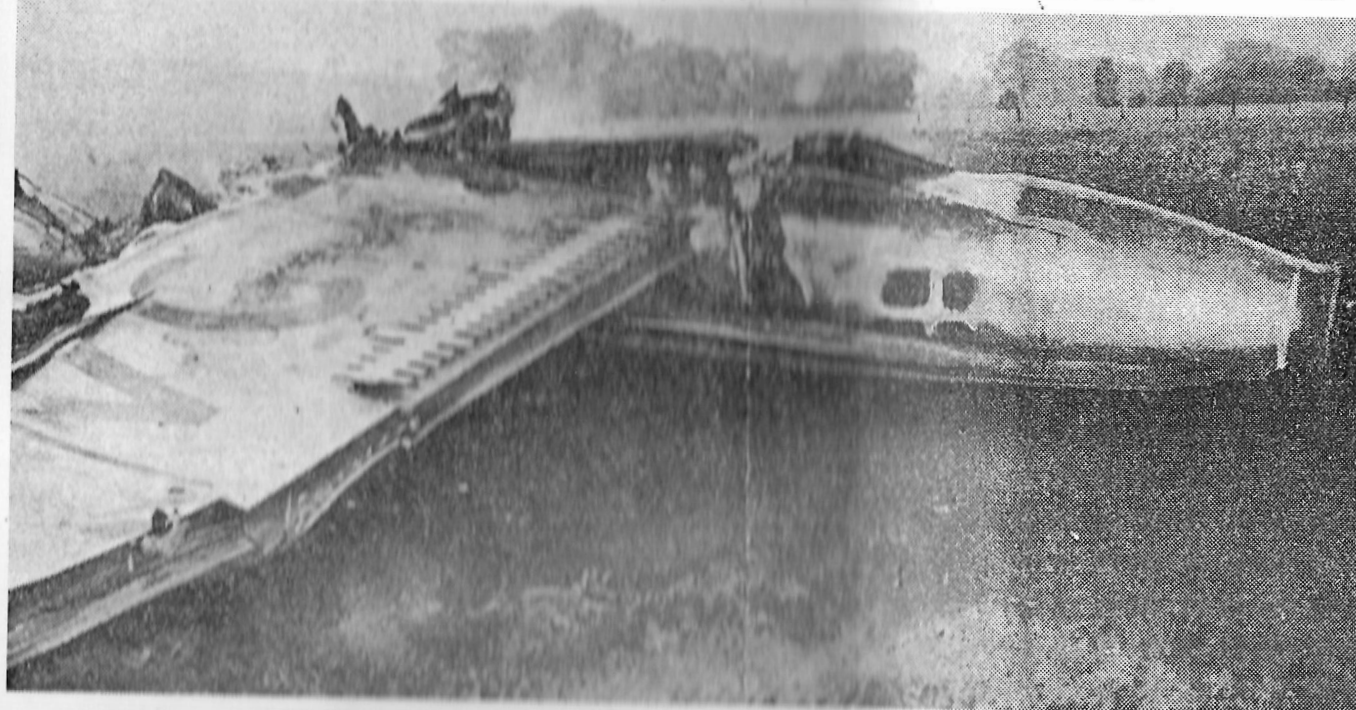
FIGHTER WAS UNDER 2,000 feet before onlookers saw pilot's parachute billow out. It was first time in career of World War II ace that he had to jump. Traffic came to halt east and west of scene as motorists stopped and rushed to aid of Zurakowski who wanted to know how his observer made out in crash

ACE'S SURVIVAL OF CRASH MAY SAVE MANY LIVES THOUGH CREWMAN DIED

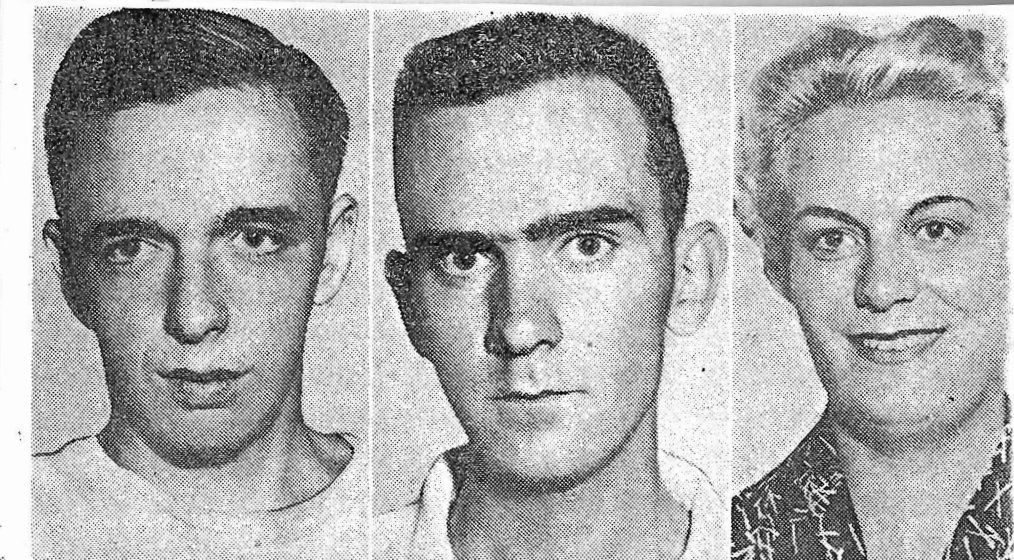
i, Avro's famed test pilot, who jumped from carrying top secret equipment before it yesterday, said from his Oshawa hospital everything but nothing worked," his ejector seat, Zurakowski parachuted 100 yards from where the \$800,000 fighter fell, killing its flight observer, John Hiebert, Zurakowski steered the plane clear of Ajax airport.



TESTING EJECTION SEAT shows dummy being hurled from mock-up cockpit. Pilot was able to blow himself out to safety but observer is believed to have been trapped by pressure of air stream. Aviation experts claim Zurakowski's survival may save many lives, millions of research dollars as he answers riddle



CLOSE-UP VIEW shows CF-100 burned and still smouldering in field. Thousands of residents of Ajax and Pickering watched erratic flight of jet fighter as pilot tried to bring it under control. Zurakowski attempted to turn plane toward lake and when that failed brought his craft into open country before blowing off canopy



—Star Photos by Edwin Feeny

JOHN CHUBB of Whitby was first to reach scene, racing past jet to find Zurakowski. Desmond Kavanagh, centre, carried pilot to car and rushed him to hospital. Ejector seat landed 25 feet from Mrs. Donald Blake, right, a former model



—Star Photos by Edwin Feeny

MRS. JOHN CORSTEN, left, saw plane clip treetops overhead, screamed warning to family. Farm hand on farm where jet crashed is Tony Hubers who was tending cows nearby. Russell Fleming owns farm where fighter crashed in flames



—Federal News Photo

WRECKAGE PODS of the fighter fell a quarter of a mile away from the scene. Examination of the wreckage may show why Hiebert failed to get clear of plane

Falls Semi-Conscious
News of his crewman's death
used the usually stolid Zura-
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An inquiry is now under way
Continued on Page 2, Col. 1)

ACE'S SURVIVAL OF CRASH MAY SAVE MANY OTHERS

(Continued from Page One)

In an effort to determine the
cause of the accident."

Mrs. Zurakowski, who visited
her husband in the hospital, said
he told her he fought desperate-
ly to save the aircraft.

Sacrificed Life

Hiebert died a hero, Zurakow-
ski revealed. In the last frantic
seconds of the dive, the observer
insisted upon jettisoning top
secret equipment before blowing
himself to safety. The delay cost
him his life but the equipment
was later recovered.

"I called out to my observer
over and over," the pilot recount-
ed. "I kept saying: 'Get out!
Ball out! Get out. I waited and
waited. Then I finally had to get
out myself."

Zurakowski told interviewers:
As soon as I realized something
was wrong, I tried to pull the
plane up but I couldn't do it."

He said it was the first time
that he had had to bail out of an
aircraft on a test flight. "During
the war I had to bail out of
burning planes twice."

Zurakowski's heroism in steer-
ing the jet away from the popu-
lated centres of Ajax and
Pickering was attested to by the
thousands who watched the air-
craft in its death dive. As
flames engulfed the fuselage and
trailed far behind it, eye-wit-
nesses believed escape to be
impossible.

Asked About Mate

The fighter screamed to less
than 2,000 feet before the pilot's
parachute billowed out.

He struck the ground heavily.
But when rescuers rushed to his
side, he dismissed his own in-
juries, saying, "How is the other
fellow?"

It is believed Hiebert, flung
back in his seat by the tremen-
dous pressure of the air stream
after the canopy was jettisoned,
was unable to pull down the
screen which sets off the ex-
pulsion charge.

Top Avro officials, including
Crawford Gordon, president, met
in secret today.

Although many spectators
claimed to have heard explosions
before the jet erupted into
flame, company officials were
inclined to discount these stories.
However, they added, they could
make no statement until an in-
quiry had been held.

Saw Flash of Flame

"There was a terrific explosion
and I saw a flash of flame com-
ing from the rear of the plane,"
recounted John Chubb, 19, who
saw the crash from his rear
veranda. "Suddenly it veered
off and seemed to pancake
down."

The CF-100 was at 5,000 feet
en route back to Malton when
Zurakowski found himself in
trouble. When he decided it
was out of control, he fought it
over the farm fields before tell-
ing Hiebert to prepare himself
for ejection procedure.

Pilot and observer then pre-
pare themselves for ejection
from the cockpit, a procedure
that must be followed precisely
and one which allows for no
mistakes or omissions.

Once all connections between
the two men are cut, the cockpit
canopy is jettisoned. The pilot
in the front and the observer
behind, separated from him by
a bulkhead, are now on their
own. Since the slipstream fills
the cockpit with tremendous
pressure, only limited movement
is now possible.

To leave the aircraft, a safety
pin which prevents the ejector
seat's explosive charge from
being accidentally discharged,
must first be removed. The
flier then pulls down a protec-
tive screen in front of his face.
This activates the charge, which
throws the seat and its occupant
clear of the aircraft.

Must Take Chance

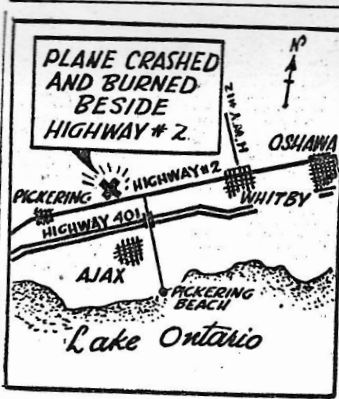
In an extreme emergency,
when there is not enough time
to jettison the canopy, the flier
may be forced to take his chances
on being shot through it on his
ejector seat.

Examination of the wreckage
of the CF-100 may show why
Hiebert failed to get clear of
the aircraft.

An employee of A. V. Roe for
several years, Hiebert was in the
flight test department a short
time. He and his wife, also em-
ployed at the aircraft plant, have
parents living in Winnipeg.

A 19-ton plane, the CF-100
has been pushed through the
sound barrier and cartwheeled
through the skies by Zurakow-
ski. In active service with the
RCAF, it is the backbone of the
"seek and destroy" squadron
based at North Bay. It is the
only all-Canadian aircraft in use
by the RCAF.

Some spectators screamed
when they saw the rocket pods,



going down in a field about a
mile from my house."

Mr. Kavanagh picked up his
two-year-old daughter, Margaret,
jumped in his car and raced east
along Highway 2. He turned up
a lane on the Blake farm, which
borders the Fleming farm on
which the fighter crashed, and
drove almost to the spot where
Zurakowski was sitting.

"He told me his leg was
broken and asked if I'd seen the
other fellow. He was conscious,
but he didn't say anything all
the way to the hospital."

He had to wait with the in-
jured man until police were able
to clear the way for his car.

Zurakowski will go home today,
Dr. Claude Vipond of Oshawa
General hospital, said. The pilot
suffered a minor fracture of the
ankle and has been fitted with a
walking cast. He has some
bruised muscles but suffered no
shock, the doctor added.

Tony Hubers, herdsman on the
Fleming farm, was eating supper
when he heard the jet explode
overhead. "I rushed outside and
saw it crash in the field. Black
smoke was swirling all around
and the whole tail was burning,"
he said.

Mr. and Mrs. Russell Fleming,
who own the farm where the
CF-100 crashed, and their son
Gordon, 11, were just going to

ACE'S SURVIVAL OF CRASH MAY SAVE MANY LIVES THOUGH CREWMAN DIED

Jan Zurakowski, Avro's famed test pilot, who jumped from rocketing CF-100 carrying top secret equipment before it crashed near Ajax yesterday, said from his Oshawa hospital today: "I tried everything but nothing worked."

Blown clear in his ejector seat, Zurakowski parachuted to a hard landing 500 yards from where the \$800,000 fighter disintegrated in a field, killing its flight observer, John Hiebert, 31, of Rexdale. Zurakowski steered the plane clear of Ajax homes before he jumped.

Falls Semi-Conscious

News of his crewman's death caused the usually stolid Zurakowski to lapse into semi-consciousness at the hospital. It was found later that his ankle had received a minor fracture.

The Battle of Britain ace was in the controls of the hush-hush Mark IV fighter in a routine night and aviation experts say his survival may save countless other lives and untold millions of research dollars as he fills in answers to the mystery crash.

The following statement was issued today by A. V. Roe, Canadian Ltd.:

"The aircraft involved in yesterday's accident was the Mark IV prototype which has been in service for the past three years as a development test vehicle. The aircraft was returning to base after completing a normal routine test flight.

An inquiry is now under way.
Continued on Page 2, Col. 1)

AT AJAX



Jan Zurakowski
Polish ace hurt.



John Hiebert
Died in crash.

Blazing Plane Roars Over Two Villages

See Page 8

Ajax, Aug. 23 (Staff).—An ejection seat-parachute escape saved Canada's most famous test pilot Janusz (Jan) Zurakowski from the explosive death that claimed his observer when their CF-100 crashed and burned on a farm northeast of here late this afternoon.

The observer was 28-year-old John Hiebert, formerly of Winnipeg. He was married and lived on Allenby Ave., Rexdale, a Malton subdivision. The Hiebarts had no children.

Zurakowski, Polish-born ace of the Battle of Britain and aerodynamics test pilot for Avro Canada Ltd., is in Ajax Hospital with a broken leg received when he landed less than 300 yards from the scattered wreckage of his aircraft.

Zurakowski bailed out from 2,000 feet. It was the first time in his long flying career that he had been forced to use a chute.

The CF-100, on a test flight from Avro's Malton field, ripped into a pasture on the farm of R. R. Fleming after veering away from the populated centres of Ajax and Pickering where thousands of residents followed its flaming flight across the sky. Eyewitnesses said they were sure the pilot had taken the jet plane away from the towns before bailing out.

There was no doubt that Zurakowski knew the CF-100—the same type of plane with which he had made aeronautical history—was going to crash. He had jettisoned the rocket pods just north of Ajax as he fought to keep the 19-ton aircraft from smashing into the homes in the area.

Avro company officials said Zurakowski and his observer were on their way back from a routine test flight. This report strengthens the story that Zurakowski turned the aircraft for open country—possibly when he was over the east end of Toronto—when trouble developed.

The CF-100 struck a low knoll less than 100 feet from No. 2 Highway, exploded and flopped over on its back. An unexplained mid-air explosion over Pickering started the \$800,000 aircraft and its two occupants on their downward plunge.

Crewman Gave Life in Saving Secret Equipment From CF-100 Which Crashed and Burned in Farmer's Field at Ajax

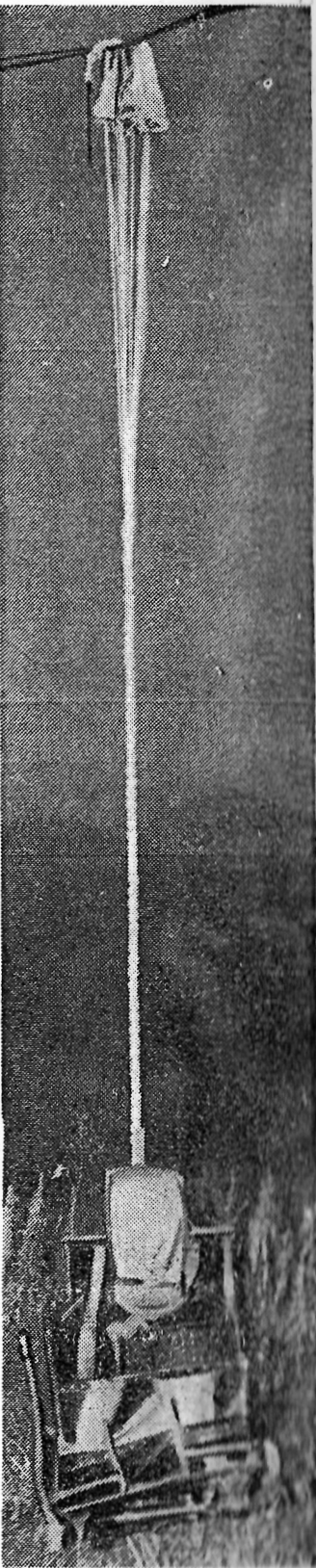


—Star Photo by Edwin Feeny

FAMED Avro test pilot, Jan Zurakowski was blown clear of the fiery crash of the CF-100 which disintegrated in Ajax field

STILL-SMOULDERING WRECKAGE of the \$800,000 fighter is shown here as a large crowd gathers around it. John Hiebert, 28, of Rexdale, flight observer, was killed in the crash. Zurakowski was blasted from the plane in his ejector seat but suffered a fractured ankle after he parachuted down. "I tried everything but nothing worked," he said from his hospital bed

HIEBERT DIED a hero, said Zurakowski. The last concern of the flight observer, seen here, was to jettison some of the top secret equipment carried in the plane



—Star Photo by Edwin Feeny

EJECTOR seat of Zurakowski is seen on ground with parachute in wires

Zurakowski and His CF-100 Jet Stars of British Air Show

By JOHN GALE
London Observer Service

FARNBOROUGH.

A Canadian aircraft gave one of the finest displays at this year's Farnborough air show.

This was the CF-100 Mark IV interceptor, designed and developed by Avro Canada Ltd. and superbly flown by test pilot Jan Zurakowski.

It was the first time a military jet aircraft produced outside the British Isles had performed at Farnborough. The appearance of the Canadian machine was awaited with interest, for it was one of the few new aircraft—new, that is, to English eyes—in this year's show.

Zurakowski first made a fastish run across the airfield and, then, climbing away, did a perfect outside loop. He did a series of upward rolls and, having gained height, switched to the falling leaf in alternating directions. The fighter fell and floated about the sky like a piece of paper.

This manoeuvre had sometimes been performed in the past with light aircraft; it was almost unbelievable to see it done with a modern fighter that, when fully laden, weighs nearly 20 tons.

Next, and without pause, Zurakowski went into a spin, pulling out with beautiful accuracy above the central runway. Many of the spectators on this opening day were, or had been, fliers; they could not have asked for anything better.

The aircraft, with straight, square-tipped wings, high, stark tail, the two large Orenda engines slung close into the fuselage, and a long bump of radar in the nose, looked strong and formidable, which it is. It is not a beautiful aircraft, but it looks right.

Zurakowski, a Pole, was a wartime fighter pilot with the RAF. He left Gloster Aircraft

Co. to join Avro Canada in 1952. His name is still a byword in British flying circles, for at Farnborough in 1951 he demonstrated the first new aerobatic manoeuvre in 20 years when he cartwheeled a Meteor jet on one engine. This feat became famous as the Zurbatic Cartwheel.

"Zura," a small, quiet man with an alert face and strong capable hands, has the manner of a fine Alpine guide. Britain's leading test pilot, Neville Duke, has described him as "the best test pilot in the world." He is also a qualified aeronautical engineer. At 41 he is an old man for a test pilot but his flying shows no sign of age.

Zura's polished flying certainly helped the CF-100 on its first public appearance in Britain. The aircraft he flew was one of three RCAF machines that have been in this country for evaluation by the RAF.

Experienced British service pilots speak highly of the aircraft, which has almost no vices. It is strong, serviceable and

heavily armed; it has a long range—about twice as long as that of any British fighter, since Canada's defense requirements are very different from those of a small island.

Its navigational equipment, automatic pilot, collision-interception radar and gun-firing mechanism are all of high standard. The only complaint by British pilots is about the CF-100's performance when carrying something like 10,000 pounds of fuel; they would rather fly her with half the amount of fuel in the tank.

But they realize that she was produced, on time, for a specific

long-range role: this type of heavy, two-engined aircraft is bound to be behind a short-range, single-seat fighter on sheer performance.

Although Zurakowski has persuaded the CF-100 through the sound barrier, it is definitely a subsonic machine.

In some respects, it could be compared to the British Gloster Javelin, or to the DH-110, which is soon going into service with the Royal Navy. It is probably slower than either, but has longer range and great hitting power.

That the RCAF plans to begin replacement of its NATO Sabre fighters with CF-100 interceptors

in 1956 is proof that this is by no means an obsolete aircraft.

The Canadian aircraft industry has made an impressive debut at Farnborough; Avro Canada's future projects, of which there are exciting whispers here, are eagerly awaited here.

Avro Jet Fighter Goes Backward At Air Display

Farnborough, Sept. 7 (Reuters).—Sqn. Ldr. Jan Zurakowski, Polish-born Battle of Britain pilot, made his jet fighter go backwards in a spectacular display of aerobatics during the third day of Britain's big air show here.

Zurakowski, a test pilot for Avro Canada Ltd., lives in Toronto.

He climbed vertically in his CF-100 twin-jet fighter and kept in the vertical position until he slid backwards before dropping into a spin. The CF-100 is built by Avro Canada and is taking part in the Farnborough show for the first time.

The English Electric supersonic P-1 interceptor was prevented from taking part in the show today because of a "minor unserviceability."

...produced outside the
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...ugh. The appearance of
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...craft; it was almost un-
...e to see it done with a
...fighter that, when fully
...ighs nearly 20 tons.

...nd without pause, Zura-
...ent into a spin, pulling
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...al runway. Many of the
...s on this opening day
...had been, fliers; they
...have asked for anything

...ircraft, with straight,
...oped wings, high, stark
...two large Orenda engines
...se into the fuselage, and
...ump of radar in the nose,
...strong and formidable,
...is. It is not a beautiful
...but it looks right.

...wski, a Pole, was a
...fighter pilot with the
...left Gloster Aircraft

...entitled him as "the best test pilot
...in the world." He is also a
...qualified aeronautical engineer.
...At 41 he is an old man for a test
...pilot but his flying shows no sign
...of age.

Zura's polished flying certainly
helped the CF-100 on its first
public appearance in Britain. The
aircraft he flew was one of three
RCAF machines that have been in
this country for evaluation by the
RAF.

Experienced British service
pilots speak highly of the air-
craft, which has almost no vices.
It is strong, serviceable and

...ing something like 10,000 pounds
...of fuel; they would rather fly
...her with half the amount of fuel
...in the tank.

But they realize that she was
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than others, but has longer range
and great hitting power.

That the RCAF plans to begin
replacement of its NATO Sabre
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CF-100's Stunts Startle Viewers At U.K. Air Show

By DAVE McINTOSH

Farnborough, England, Sept. 5 (CP).—The Canadian CF-100 jet interceptor, piloted by Jan Zurakowski of Toronto, turned in the best single performance at the Farnborough air show today.

The 40-year-old Polish-born pilot, credited with destroying six planes while serving with the RAF during the Second World War, put the twin-jet craft through a spin and a falling leaf. Seldom is either manoeuvre attempted in anything so large as the 17-ton CF-100.

Reporters and technicians gasped as Zurakowski pulled out of the spin at the last possible second.

There was an overcast sky for the display of military and commercial planes, but the ceiling was high enough to let operations proceed on schedule.

Today's performance by the CF-100 was the first at Farnborough for a military plane designed and produced outside Britain. It was also learned that Avro Canada has developed a new version of the craft with an operation level 6,000 to 8,000 feet higher than the Mark IV at the show.

The new type is called the Mark IV-C, has wings each three feet longer and operates at more than 600 miles an hour at a ceiling of about 55,000 feet.

In Toronto, Fred Smye, assistant general manager of Avro, confirmed that his company is experimenting with a modified version of the CF-100. He said several have been produced at Malton and flown but they have not yet been shown outside the Toronto area.)

Also flying at today's show was a Trans-Canada Air Lines Viscount, and the longer-range turbo-prop, the Britannia. Canadair is producing a military version of this for RCAF maritime reconnaissance.

A Mark VIII Canberra, a twin-jet light bomber that is being considered by the RCAF, was shown. So was the Provost twin-jet trainer, which the RCAF is looking over.

Giant British bombers, capable of delivering atomic bombs long distances, also cavorted about the skies in a spectacular aerobatic display.

The delta-wing Avro Vulcan jet bomber was a star of the show, too. Test pilot Roland Falk drew gasps from a select crowd in demonstrating the Vulcans capabilities.

Flying for the first time here were new British fighters that can go faster than sound in level flight. One, the delta-wing Fairey FD-2, streaked past the spectators at a speed rarely seen even at this high-speed display.

Britain's new Folland Gnat jet fighter made an impressive debut with high-speed runs and the tightest turns ever seen at Farnborough.

The annual exhibition of the British aircraft manufacturers' shop window for the industry—unveiled many of Britain's secrets including the de Havilland Gyron gas turbine, the world's most powerful jet engine. It is rated at 15,000 pounds static thrust.

Another new British turbine, the Rolls-Royce Convey bypass, was seen flying for the first time mounted under the belly of an Ashton four-jet transport.

Also going through its paces was the new British jetliner, the Comet IV, due to go into service with BOAC in 1958.

A spectacular contribution was provided by the RAF with a mass flypast of 12 Valiant four-jet bombers and 64 faster-than-sound Hawker Hunter fighters. Both planes are in squadron service.

RCAF to Get New Jet

Ottawa, Sept. 5 (CP).—A new, improved version of the CF-100 jet fighter will definitely be put into service by the RCAF, air force officials said today.

Existence of the Mark IV-C, with a speed of more than 600 miles an hour at an operational ceiling of about 55,000 feet, was disclosed earlier in the day at the Farnborough air show.

It was produced by Avro Canada Ltd. at its plant in Malton.

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The English Electric supersonic P-1 interceptor was prevented from taking part in the show today because of a "minor unserviceability."

Ex-Bush Pilot

War Ace Will Head Air Transport Board

From the Ottawa Bureau of The Globe and Mail
Ottawa, Feb. 16—An airman with a distinguished, 30-year record spanning the era of bush flying to the jet age has become the top authority on Canada's civil aviation.

Transport Minister Hees today announced that Paul Y. Davoud has been appointed chairman of the Air Transport Board, the licensing authority for civil air transport.

In making the announcement, Mr. Hees said the government "was most fortunate in securing the services of Mr. Davoud for the chairmanship of the Air Transport Board as he enjoys



Paul Davoud
New appointment.

the confidence and respect of all branches of the aviation industry and has demonstrated great ability in this field of endeavor."

His appointment, effective March 1, fills the vacancy created by the death last year of W. J. Matthews.

Paul Davoud, although only 47, is high on the list of Can-

ada's aviation pioneers, the bush pilots who opened up much of this country by flying the uncharted vastness then awakening to development.

His love for flying and the adventure that went with it took the stocky, genial bush pilot into the Second World War where he developed into a hard-hitting fighter pilot and RCAF commander whose services won him the DSO, DFC and led to his being created an officer of the Order of the British Empire.

He began flying with the RCAF at the age of 17 while attending Royal Military College at Kingston. After finishing an engineering course at Queen's University in 1933, he joined the Royal Air Force and flew fighters and bombers for two years before returning to Canada.

Again a civilian, he joined Canadian Airways and flew Junkers transports into the north country. This experience led him to the post of transport manager of the Hudson's Bay Co. fur department in 1938.

He rejoined the RCAF in 1940 and won his DFC as a night fighter pilot. He later formed and led the famed 418 Night Intruder Squadron, the only unit of its kind in the RCAF, and won the DSO. Transferred to command a wing of Typhoon fighter-bombers, he won added honors for outstanding work in the invasion of Europe. At the end of hostilities he was appointed Group Captain Operations with the Second Tactical Air Force, RAF.

On his return to Canada he became assistant to the vice-president for operations of Trans-Canada Air Lines and held other executive positions with other companies before his appointment as vice-president sales and a director of Orenda Engines Ltd., builders of the Iroquois jet engine designed as the power plant of the supersonic Arrow fighter.

Paul Davoud's eye was always on the future of aviation. At the height of war he made this observation: "The coming of peace will find this world more air minded than we ever thought it would be in our lifetime."

He is moving into his new post when the board is undertaking an urgent review of the role of civil aviation air transport in the Canadian economy.

A BOOST FOR THE CF-100



THE CF-100 FIGHTER LEAPS AWAY AS JET-ASSISTED TAKE-OFF BOTTLES HALVE THE NORMAL RUN DURING THE TAKE-OFF TESTS AT THE ROYAL CANADIAN AIR FORCE STATION AT UPLANDS, ONTARIO

New Production Test Pilot

Christopher A. Pike has been appointed as an Avro production test pilot for CF-100's. In his new position Chris will help Mike Cooper-Slipper with engine development test flying.

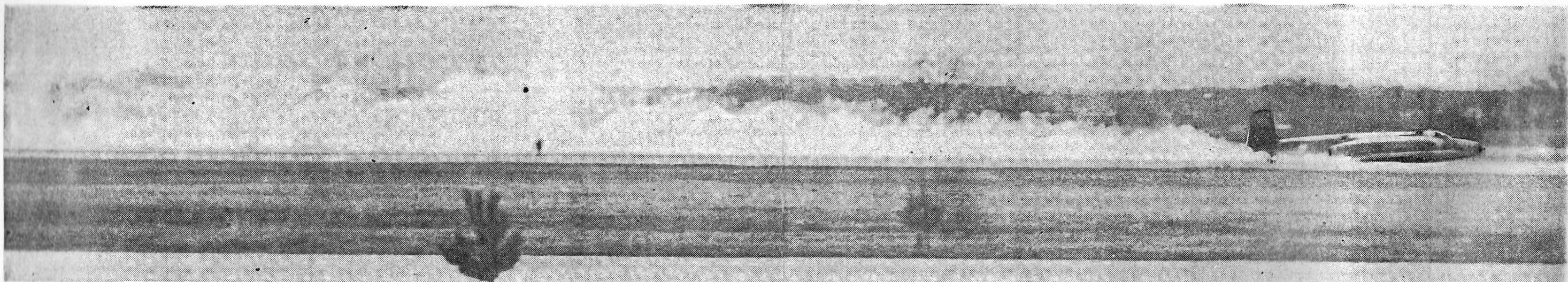
Ex-RCAF and RAF, he has logged 1,950 flying hours in such planes as the Vampire, Meteor, Canberra, Shackleton, Hastings, Lincoln, Varsity and Spit-22.

Born in Victoria, B.C., Chris has been flying for ten years.

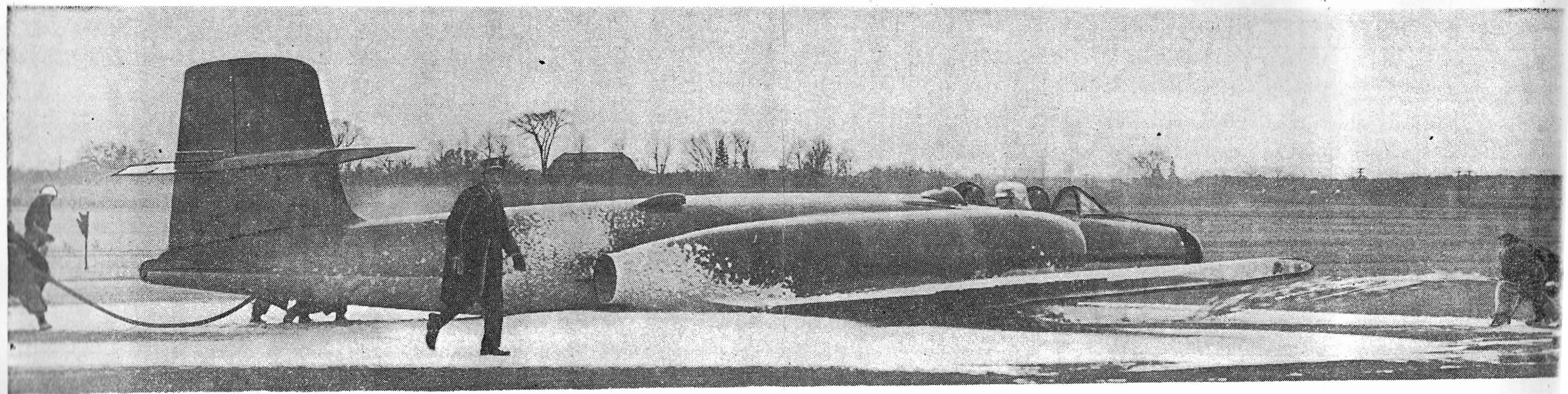


CHRISTOPHER PIKE - TO TEST FLY THE CF-100'S

Pilot Unhurt in Blazing Crash-Landing at Malton



CRIPPLED CF-100, WITH JAMMED LANDING GEAR KICKS UP SMOKE AND DUST AS IT MAKES A BELLY LANDING AT MALTON



A CF-100 BEING READIED FOR delivery to the Belgian air force crash-landed at Malton yesterday but the pilot, F/L Jack Woodman of the RCAF was uninjured. Star photographer Fred McClement was right on the spot to record the events. In dusk of late afternoon the plane touched down on two wheels, the nose wheel being caught half way. The pilot took off

again, pulled up his two main wheels and decided to skid along the concrete. His fireswept landing can be seen in the picture. Friction caused flames to gush 100 feet but the plane didn't explode. Firemen rushed to the plane and poured foam on it, as shown below. The pilot had made two passes at field before he came down to find only two wheels tou

—Star Photos by Fred M

Canada's CF-100 Interceptor Described as 'Waddling Cow'

By Ted Douglas

The cloak of secrecy and the guise of security regulation are wonderful tools for shrouding the truth. Case in point is the Canadian aircraft industry, and its "jet age" accomplishments.

The ballyhoo boys of this new industry have pumped out some fine superlatives to describe the R.C.A.F. fighters, the Canadian Sabre and the CF-100 all-weather interceptor.

There have been no reservations. The CF-100, for example, is claimed to be the "best all-weather interceptor." The Canadian Sabre has been called "superior" to its American progenitors.

Half a grain of horse sense would indicate that this is just not so—and cannot be so.

There is an interesting comparison of Canada, son between the U.S. Planes Canadian CF-100, and the American Scorpion F-89C and F-89D. Both were designed for the same purpose (all-weather interception), both carry a pilot and observer, both are well-equipped with radar searching devices.

The CF-100 weighs in at 40 tons, carries two Canadian Orenda jet engines, and slung under the fuselage is a gun pod which mounts eight 50 calibre machine guns. A limited number of later models mount some rocket projectiles in wing-tip pods.

The American Scorpion weighs 20 tons—exactly half the bulk of her Canadian cousin. The Scorpion carries a two-man crew and twin jet engines.

Armament of the heavier U.S. Scorpion makes the CF-100 look like a flit gun. One model, the F-89C, mounts six 20 mm cannon, and 16 rockets, of five-inch calibre.

The North American defence model—and there are some in Oscoda, Mich.—bristle with 105 "Mighty Mouse" rocket projectiles in wing pods, these missiles of 2.75 mm calibre.

The American aircraft obviously slings far more lead and sting when it must.

It is a minor tribute to the Orenda jet engine that speeds of the CF-100 and the Scorpion are about in the same class, sub-sonic, in the 600 m.p.h. range.

However, turning 20 tons at 600 m.p.h. is quite a different story from changing the direction of 40 tons at the same speed.

Every law in the book shouts that the Scorpion, because of this weight factor, has to be far more manageable in a scrap. Yet, we are told, the CF-100 is the best there is.

It is quickly apparent that the CF-100, when viewed in the world jet picture, is a waddling cow in a stable of thoroughbreds.

There is also no justification for the statement that the Canadian Sabre fighter is superior to the American Sabre. If it was,

the U.S. Air Force would be full of them.

The best authority this writer knows on that subject is Maj. Charles E. "Chuck" Yeager, top test pilot of the U.S. Air Force. He was first to break the sound barrier.

According to Chuck Yeager, increases of power make no difference to the performance of sub-sonic and super-sonic aircraft. The design of the wings must be changed to alter characteristics.

Yeager test-flew the Canadian Sabre for the U.S. Air Force. His analysis was simply that there was less vibration in the Orenda-powered Canadian model—and no change in performance.

Canadians have been paying a multi-million-dollar price for Canadian-made jet fighters.

It is surprising that the value received has not been a stronger issue in the House of Commons.

The Canadian aircraft industry has tried to sell both the Canadian Sabre and the CF-100 to other Allied countries. But other countries are not buying — and there obviously is a reason.

The only aircraft this country has produced for the foreign market successfully are bush-type freight machines. Planes like the DeHavilland Beaver and Otter, and the old Norseman have been outstanding successes—and you will find them doing yeoman duty with the U.S. Air Force.

There is one other classic blunder which has been allowed to fade from the Canadian aviation scene—the much-vaunted Jetliner.

This aircraft made some fine speed records from New York to Toronto, but now it gathers dust, an almost forgotten memory.

Ask any airline executive about the Jetliner. The reply likely will be that no more impractical aircraft was ever conceived. Straight-jets make poor short-hop airliners.

A bundle of government money has taken wing in those projects.

Jet Fliers Seek London to N.Y. Return Record

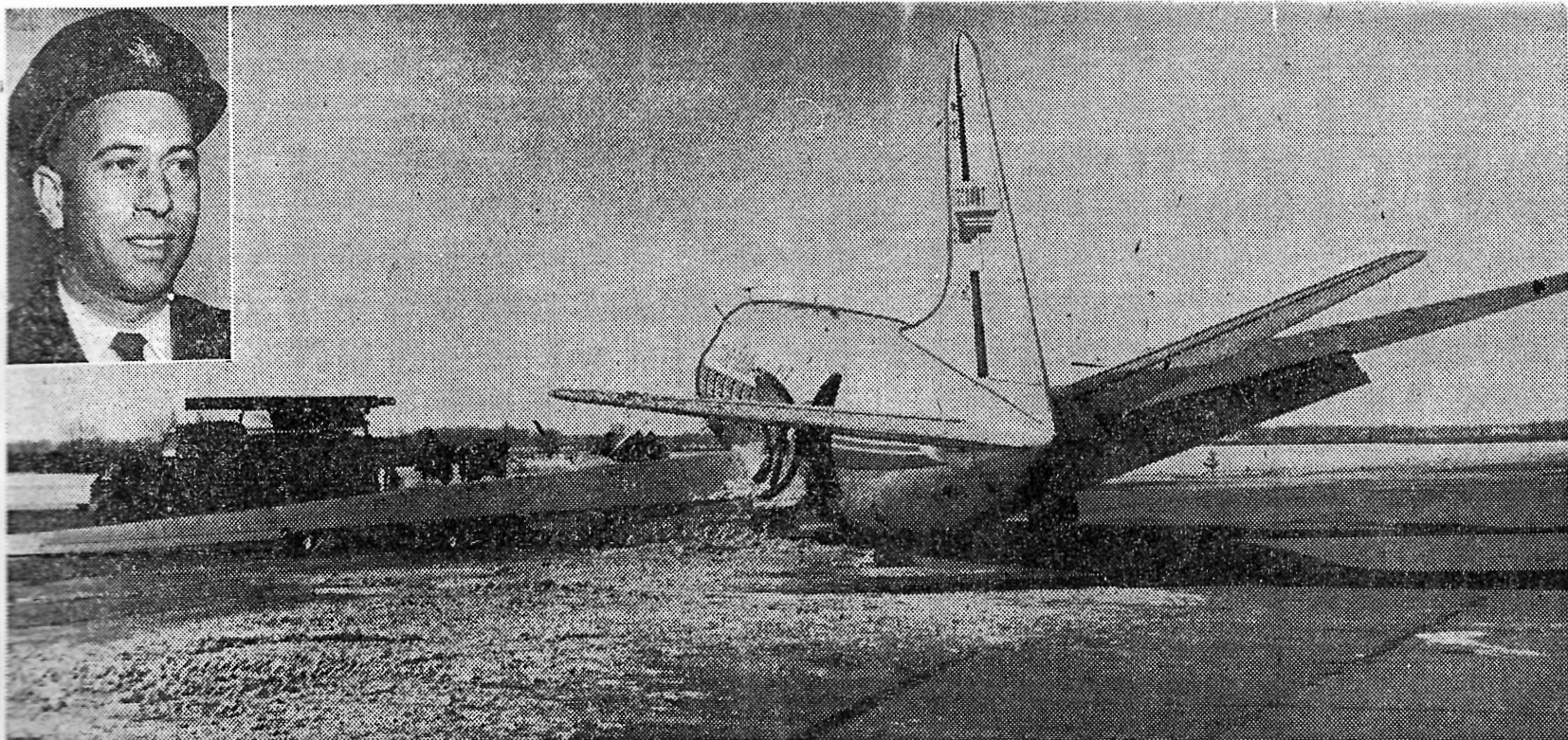
London, Aug. 22 (Reuters). — Two Britons take off from London airport in a Canberra jet bomber tomorrow in an attempt to establish a record for flying to New York and back.

They will fly non-stop to Floyd Bennett Field, New York, and after refuelling will take off again for London. They hope to cover the round trip of 6,920 miles in about 15 hours.

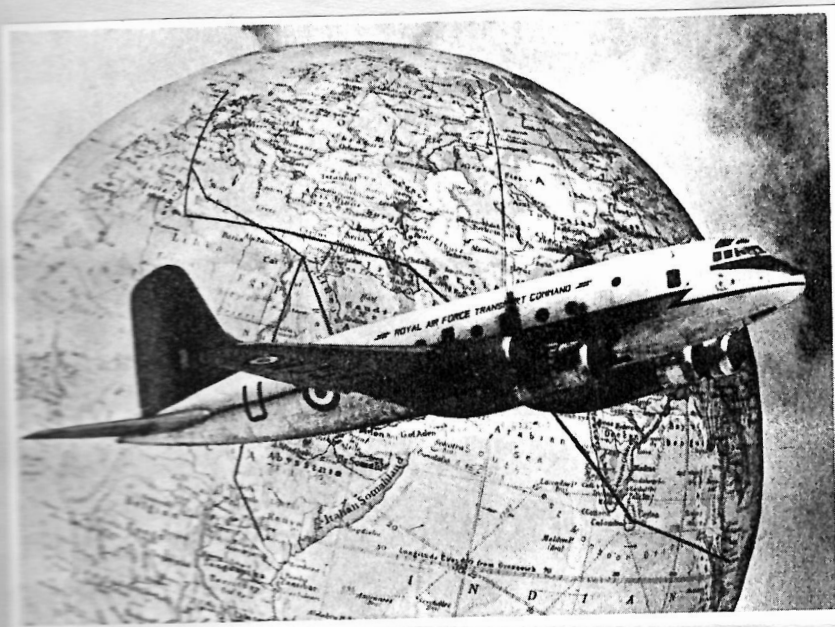
The attempt will be made in a Canberra Mark VII photographic reconnaissance model powered by two Rolls-Royce jet engines and piloted by Capt. John William Hackett, 32-year-old former Royal Air Force flier.

His navigator, Peter Money-penny, 28, also served with the Royal Air Force.

The return flight is 2,776 miles longer than the course covered exactly three years ago to the day when a Canberra set two world records flying from Belfast, Northern Ireland, to Gander, Nfld., and back in one day.



Crash Landing—This Trans-Canada Air Lines Viscount landed on one wheel yesterday after circling Malton Airport for an hour with part of its landing gear jammed. None of the passengers or crew members was injured. Foam was sprayed around the plane as a precautionary measure against fire. Inset: Pilot Bruce Walker. —*Story on Page 8.*



KEEN-NOSED DOG, a German shepherd trained to sniff out people and cattle buried in the snow, is taken aboard a helicopter in Ludesch for the flight into disaster area. These dogs augmented the efforts of searchers who, before dogs' arrival, had been entirely dependent on long steel hooks poked into snow banks.



—AP Wirephoto by radio from London.

Toast to Success With Wives Completes Fast Day for English Fliers

Navigator Peter Money Penny (left) and pilot John Hackett were gone from London just over 14 hours on trip that took them by Canberra jet bomber to New York for lunch and back home for dinner.

London-N.Y., Return—14 Hrs.

London, Aug. 23 (CP).—Two nonchalant British airmen breakfasted in London this morning, nipped over to New York for lunch and flew back home to dine with their wives tonight.

They did it by Canberra jet bomber and the whole thing took just over 14 hours.

Pilot John Hackett and navigator Peter Money Penny averaged 481.52 miles an hour on their trans-Atlantic shuttle, and that included 31 minutes for a lunch of scrambled eggs at New York's Floyd Bennett airfield.

The official elapsed time was 14 hours, 21 minutes and 45.4 seconds.

As they climbed out of their sleek twin-jet at the London airport they were nearly mobbed by hundreds of cheering men and women who broke through a police cordon.

"A routine flight," reported Hackett.

Both Hackett and Money Penny, who work for a civilian airline ferrying cars across the Channel, looked fresh and happy and were full of smiles for crowds surging around them.

On the flight to New York, the Canberra bucked 40-mile-per-hour head winds to cover the 3,457 miles in 7 hours 29 minutes and 56.7 seconds. The average speed was 461.12 miles an hour.

With tail winds coming back, she covered the same distance in 6 hours 20 minutes 59.5 seconds.

The London clockings were taken by the Royal Aero Club as the plane whooshed over Croydon Airport. Actual take-off and landings were made at nearby London Airport, the city's main air terminal.

The English Electric Company, maker of the Canberra, announced it would ask official recognition of three records for the trans-Atlantic shuttle — the westward and eastward crossings and the round trip. Official records for these runs have not been entered previously.

Hackett, 32, told an airport press conference:

"We expected it to go right and it did go right. We had 40-mile-an-hour head winds, which we expected, going out, and we followed exactly the same route, but at different altitudes, coming back with about 60-mile-an-hour tail winds."

Asked if anything went wrong, Hackett said there was rain over Floyd Bennett Field and they had to come down by radar.

"It was nothing very much and I am relatively satisfied with what we have done, or should I say what the Canberra has done," Hackett added.

Money Penny, 31, said smilingly: "I don't think there was a tough time in it, thanks to the co-operation we got from both sides."

"I think the Canberra can do the trip faster," Hackett said. "But, I think any other gent in any other aircraft is going to have some difficulty."

As the Canberra landed at the airport, hundreds of people, who had been waiting for hours for the plane to land, rushed through a police cordon and Hackett and Money Penny had to be escorted to the official reception room through the cheering crowds.

Before taking off this morning Hackett said that flying the Atlantic in a Canberra is a rest cure from his normal work. He and Money Penny normally fly across the 22-mile-wide English Channel 12 times a day.

Sir Winston Churchill on some of his post-war trips. Navigator Money Penny is also a former RAF flier.

Today's two-way flight is 2,776 miles longer than a round trip from Belfast, Northern Ireland, to Gander and back made

four hours and 26 minutes for the 2,250-mile hop from North-west England to Gander in a Canberra.

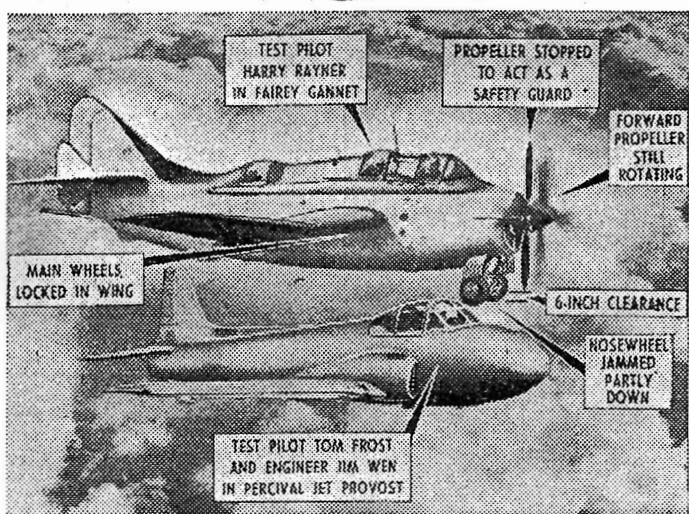
A British maintenance crew snapped into action as soon as the Canberra landed at Floyd Bennett field. U.S. Navy techni-



Ron. Francis

G/CAPT. DOUGLAS BADER, D.S.O., D.F.C., relaxes after a round of golf. His biography, *Reach for the Sky*, by Paul Brickhill (Collins 15s.), is one of the outstanding successes of the spring publishing season

The air peril that ended in escape



Jet nudges plane to save pilot

By STEVENSON PUGH

GOVERNMENT officials are studying reports of an astonishing air-rescue attempt by two test pilots who risked their lives to save a crippled experimental plane.



HARRY RAYNER
A call for help



TOM FROST
Twelve attempts

It happened over a secret test airfield at Bitteswell, near Rugby.

Test pilot Harry Rayner, 37, flying a Royal Navy turbo-prop Gannet fitted with an experimental engine, radioed that his undercarriage had failed.

Chief test pilot Tom Frost, 35, saw the Gannet flash past with the main nose wheel jammed half-down. The main wheels were locked in the wings. A landing attempt in that position meant disaster.

With engineer Jim Wen in the co-pilot's seat, Frost took off in a Provost jet.

"I had an idea that if we got alongside and had a close look we might see the trouble," he told me last night.

'Steady'

"When we got up there we could see it was hopeless. We knew the main wheels would not come down unless the nose wheel could be pushed out and locked in its proper position.

"I radioed Harry and told him to hold the Gannet steady so that I could come up underneath and try bumping the wheel with my cockpit hood."

Twelve times Tom Frost flew up underneath the Gannet trying to bump the wheel. Each time, as his transparent canopy came within inches of the wheel, the nose of his jet was lying just below the Gannet's propellers.

"The plane has two big propellers one in front of the other," said Rayner. "I stopped the back one to make a kind of fence to stop Tom going into the front one and getting chewed up."

At the twelfth try they hit. Nothing happened. The wheel remained jammed.

Test pilot Rayner refused to bale out. He had another idea.

He told Tom Frost to land, take a pair of binoculars, and watch him closely as he tried flying down the runway, bumping the jammed wheel on the ground.

The snag was that the Gannet's outsize propellers fitted for the experimental engine were turning with only 6in. ground clearance above the jammed wheel.

Foam

Three times Frost crossed his fingers and talked non-stop over the radio to Harry Rayner as he skimmed down the runway on his locked nosewheel.

Again nothing happened. So Rayner decided to try to get the plane down as it was.

The runway was sprayed with fire-fighting foam to make it slippery.

Grinning cheerfully, Rayner told me: "I admit I thought it was a bit dicey because if the nose wheel stayed where it was the Gannet might have tipped over."

Slowly the Gannet sank on to the foam-covered runway. The wheel snapped up into the fuselage and the plane skidded dead level along the ground.

The damage: two bent propellers and buckled bomb doors. The Gannet will be test-flying its secret engine again next week.

New Saucer To Speed Avro Recovery

By VAL SEARS
Telegram Staff Reporter

Avro's hopes of regaining its position as Canada's top aircraft manufacturer got a jet-boost today as engineers recorded new successes in flying the saucer-like Avrocar.

The vertical take-off vehicle, under experimental contract to both the United States Army and Air Force, is a potential replacement for the helicopter.

If it fulfills Avro's hopes, a tremendous commercial and military market would be opened up.

At its peak employment periods, during construction of the CF-100 and CF-105 aircraft, the Malton plant employed more than 13,000 persons; but now it stands virtually empty.

The public got a sneak look at the engine-testing vehicle for the Avrocar yesterday when a photographer flew over the plant.

The picture showed an apparently pilotless disc, about 20 feet in diameter, with a large intake duct in the centre and electric cables leading to an exposed section of the engine.

COANDA EFFECT

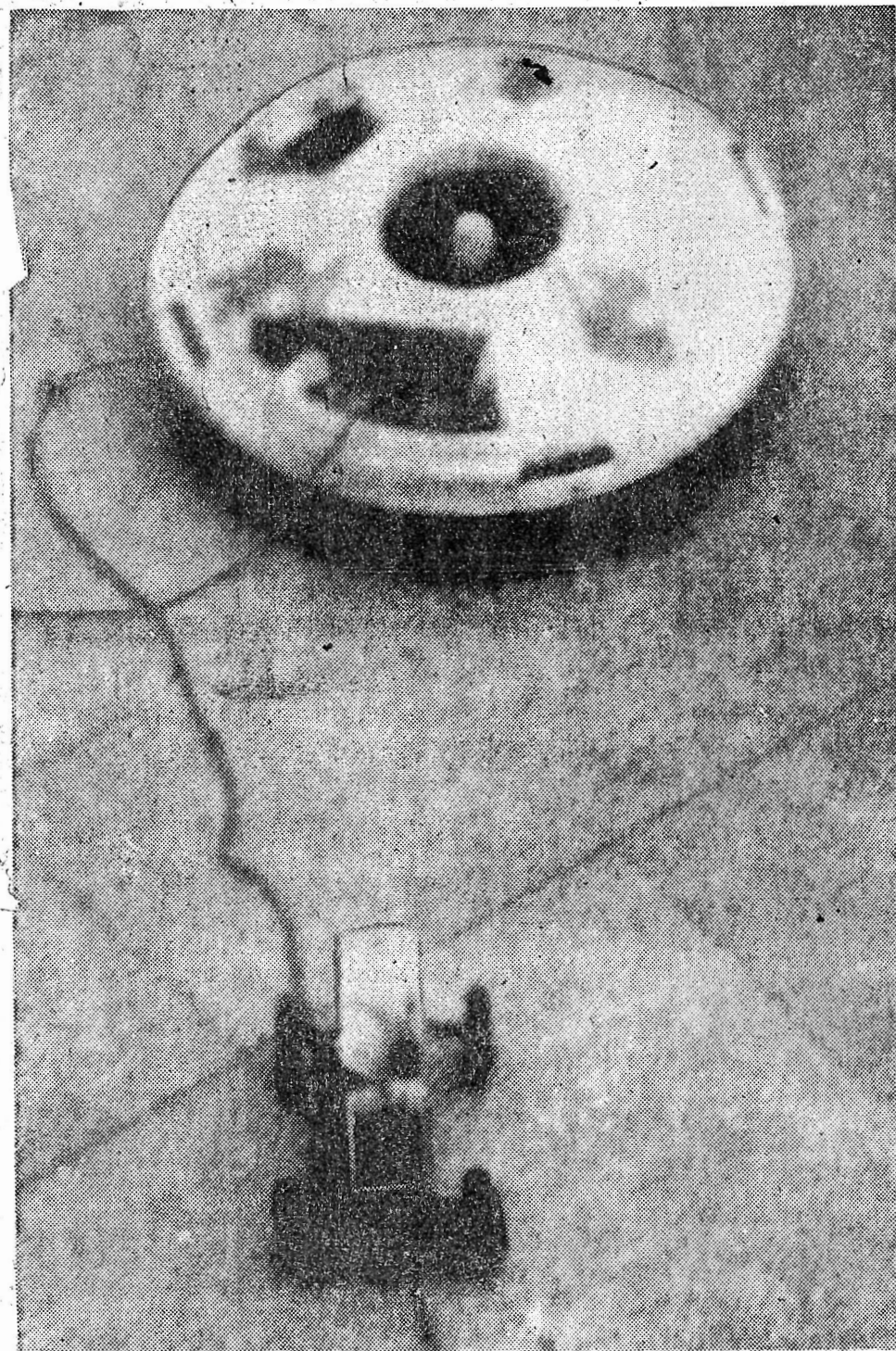
The actual flying model operates by employing a physics principle called the Coanda Effect.

This is a situation, well known to hydraulic engineers, which states that fluids in motion tend to follow a curved surface.

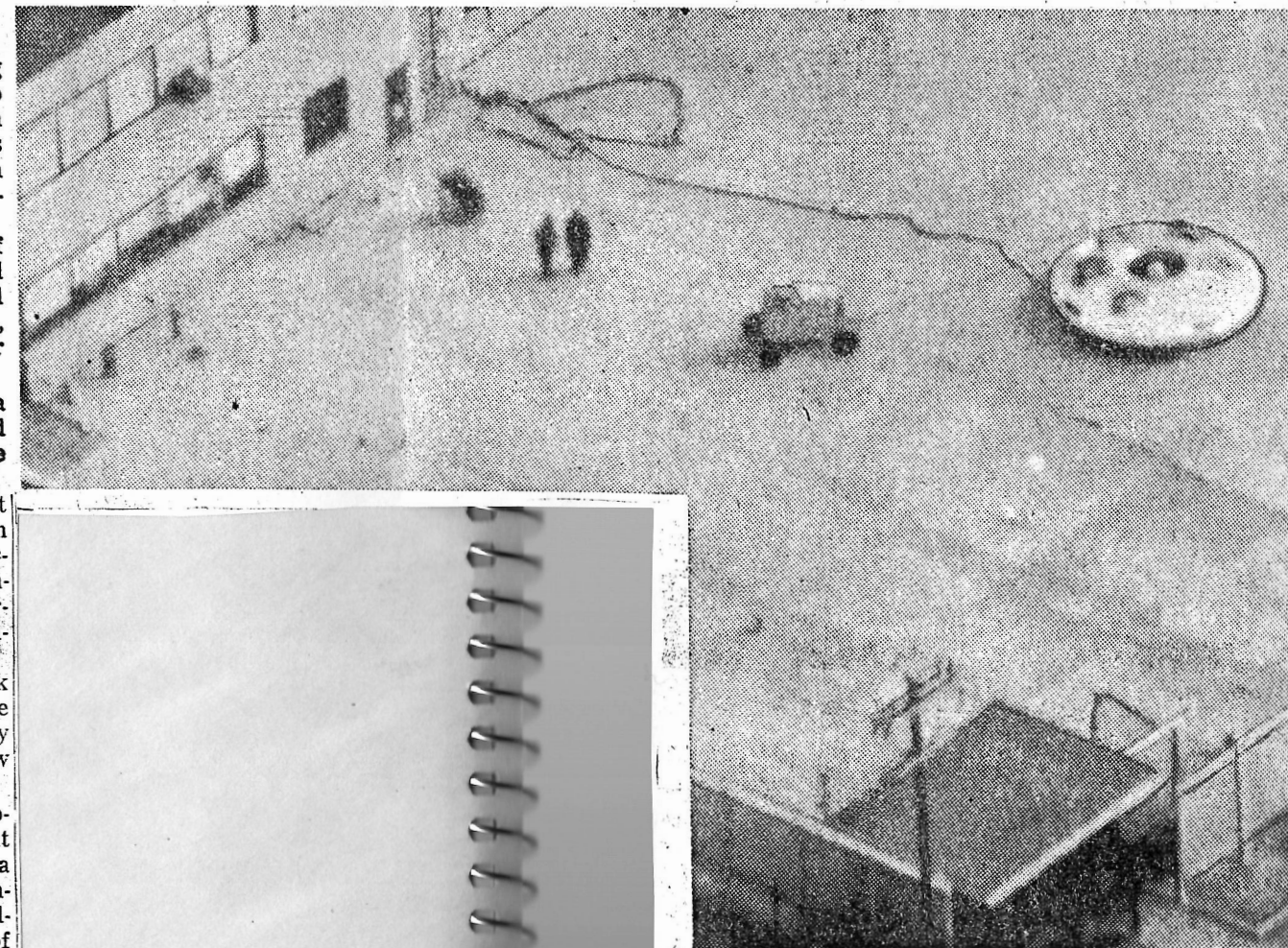
The novelty of the Avrocar, as opposed to "ground-cushion vehicles" such as the British Hovercraft, is that a variation of the Coanda is used to provide forward motion.

The principle can be simply demonstrated by holding a finger under a stream of tap water. The water tends to curve around the finger.

In the Avrocar is this



The wraps are off—temporarily—as the saucer-like Avrocar squats behind its enclosure, exposed to the view of an aerial camera.



CBC-TV
This public peek at the circular craft came after Avro announced new successes in flying it. At the centre of the disc, which is about 20 feet across, is the intake duct. Cables lead to an exposed section of engine.

Avro

Continued From Page One

"bent-air" which transforms the lifting power to forward motion.

Initial design requirements for the vehicle gave it a forward speed of 300 miles an hour, a ceiling of 40,000 feet and a range of 1,000 miles. These are expected to be greatly exceeded in future models.

Sir Roy Dobson, A. V. Roe chairman, who saw the vehicle rise off the ground a few days ago, said it has "obvious commercial possibilities as a helicopter replacement."

The engine-test vehicle has

been undergoing tethered vertical rising tests for months but its forward motion potential has yet to be tried in practice.

Engineers say this will be the important test—whether it can transform its rising power to forward power efficiently and economically.

The design is the brain-child of British-born engineer Jack Frost and some \$10,000,000 has been poured into it by both the Canadian and American governments. The Canadian government withdrew its support in 1954.

Several experimental vertical take-off devices are being sponsored by the U.S. Army and Airforce, but the Avro-

car is believed to have an edge because of its theoretical high forward speed.

The U.S. government's \$3,000,000 grant is almost exhausted, but an American official said: "We've been very pleased so far."

"Additional funding, of course, depends on the evaluations."

The Avrocar is expected to undergo wind tunnel test in a matter of weeks.

In its tethered testing, Avro engineers are reported to be troubled by engine overheating and stability control.

A military spokesman in Washington said the U.S. army hopes to purchase substantial numbers of saucers to give infantry troops unprecedented mobility and speed.

The craft is said to be de-

signed to skim along the ground or fly at high altitudes and to be capable of dropping vertically at high speeds.

It is also said to be able to change direction more easily than existing aircraft.

THE TELEGRAM, Toronto, Thurs., Oct. 29, 1959

15

One source said it would be equipped with rockets and reported the U.S. navy is considering adapting it for antisubmarine work.

Said a public relations officer for the company:

"None of our men here is at liberty to say anything about it. It's strictly up to the United States government to release the information.

"And there won't be any pictures," he added.

SAUCER FOR U.S. SUCCESS, FLY IT SOON—AVRO

Avro's top-secret "flying saucer" will blast up vertically in free flight soon after its successful tied-down tests.

The wingless aircraft "employs a new principle in vertical takeoff," said Jack C. Frost, young Avro designer.

The saucer is his brain-child.

"It is behaving beautifully and living up to expectations," he said today. But he admitted it was "a difficult child."

Sir Roy Dobson, chairman of the board of Avro, said the circular aircraft would soon be "unshackled."

An Avro spokesman quoted the chairman as saying the craft rose on its own air cushion on several test

SAUCER SAID OKAY SOON FLY IT—AVRO

(Continued from Page 1)

It was tethered in the controlled-height tests.

The craft is being developed for the U.S. army and air force, which are paying the costs. The project was taken over by the U.S. in 1954 after the Canadian government withdrew support.

The craft is expected to have a high forward speed and be able to manoeuvre in all directions.

The Germans claim to have built a saucer in 1945 that rose to 37,000 feet and screamed along at 1,200 miles an hour.

Britain developed a vertical take-off and landing (VTOL) craft after Mr. Frost's saucer theory and a mock-up model were sent to England from Malton. Duncan Sandys, then minister of supply, announced in 1954 that a saucer-like craft had flown successfully.

Pictures of the "Avrocar" taken at Malton show it to be a bright-colored saucer-shaped craft with what appears to be a pilot's cockpit in the centre.

The craft is believed to "ride" up on a column of air

Still Interested In Avro Saucer, U.S. Army Says

By PHILIP DEANE

Globe and Mail Correspondent

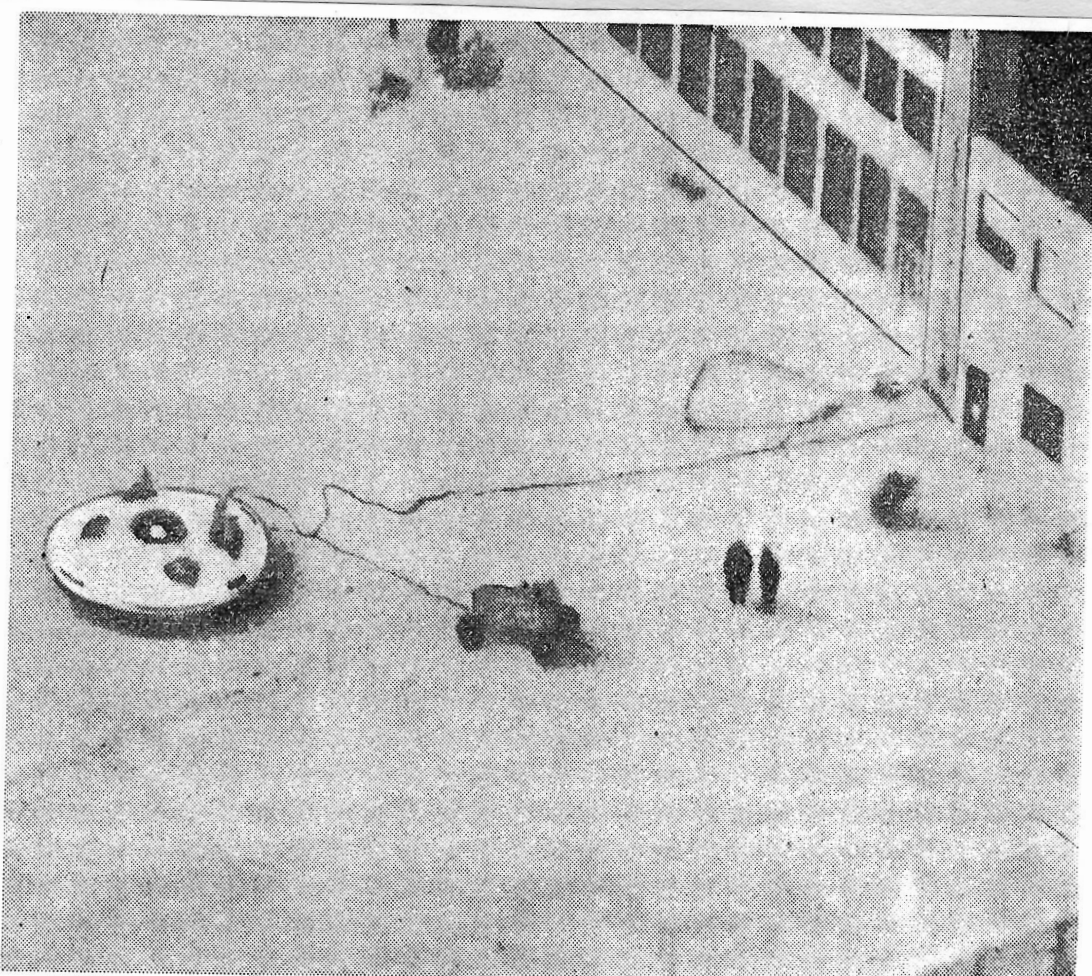
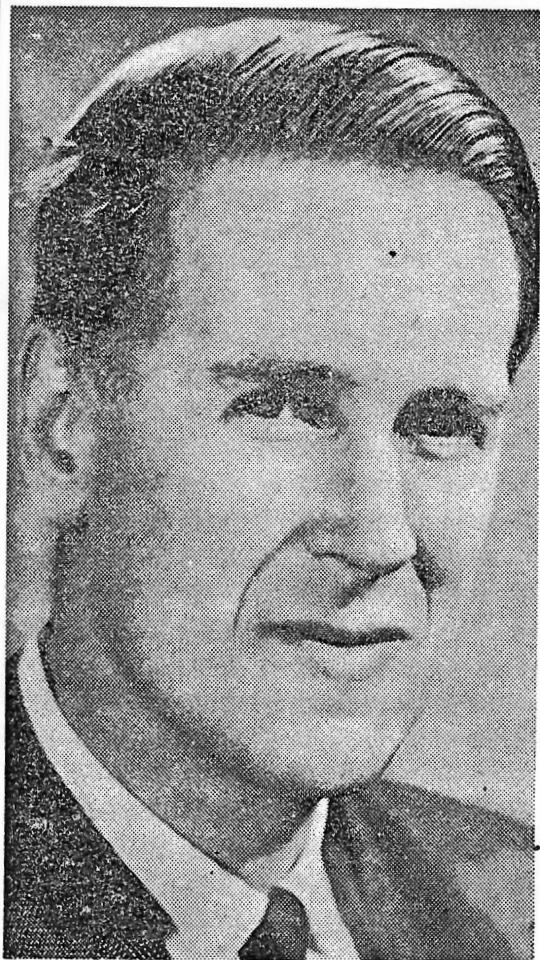
Washington, Feb. 15 — U.S.

Army sources said today they are still intensely interested in the Avro flying saucer, whose development they are financing. This abiding interest was confirmed by Canadian sources. It is confidently expected that whoever is the next U.S. president will launch a major reorganization of the armed forces and will give the army the modern equipment needed for the battlefield of the limited nuclear war.

In this modernization of the army, the Avro vehicle will play a major role; it will be air transport, jeep, assault craft, flying television platform, surprise raider and 'soaring tank' all in one.

The reason why such hopes are pinned on the Avro saucer is that it differs substantially from the other types of machines that move on a column of air. Most of them are designed to move or less skim the ground at fairly low speeds; they would be replacements for cars, buses or ferry boats.

The Avrocar can fly both high above the ground and



—Star Photo by Federal Newsphotos

Avro Flying Saucer Passes First Test

SAUCER DESIGNER is young Avro engineer Jack C. Frost (above). The novel aircraft "is behaving beautifully,"

FREE FLIGHT SOON is heralded for Avro's saucer following its successful tests at Malton yesterday. Here the "Avro-car" is shown on closely-guarded with control cable running into hangar. It hovered at shoulder height

Speed Tests in U.S. Planned for Avrocar

By JAMES HORNICK

High speed flight tests of Canada's newly unveiled flying saucer are to take place in the United States, it was learned last night.

Lack of suitable test facilities in this country has compelled A. V. Roe Canada Ltd., designer of the Avrocar, to enlist the aid of the U.S. Defense Department.

The tests, which are expected to begin within a few weeks, will be made at the Ames Research Centre at Moffet Field, Calif. The centre is operated by the National Aeronautics and Space Administration.

A full-scale test vehicle —

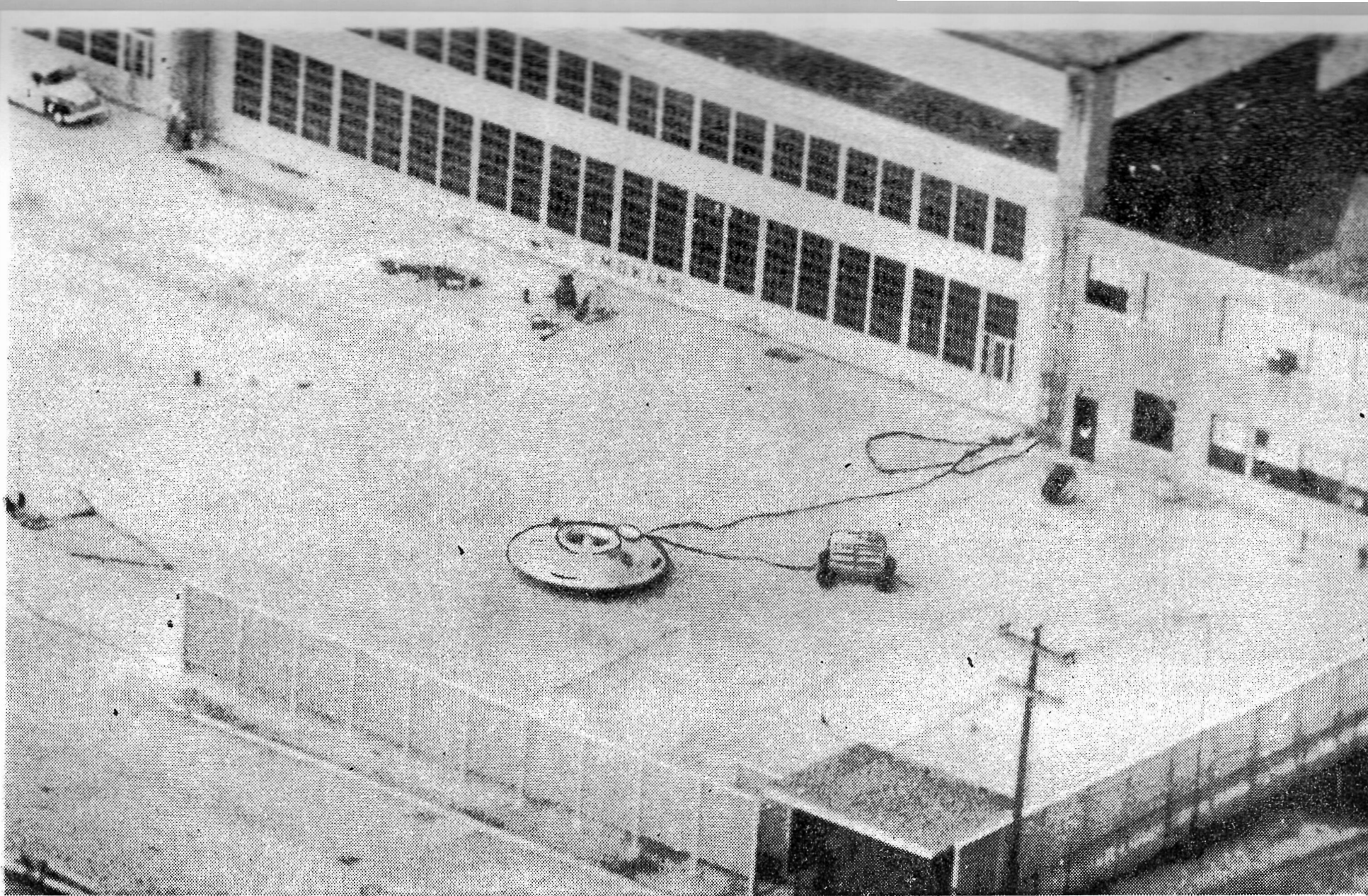
identical to the machine photographed this week at Malton Airport—has been crated for shipment. It will be accompanied by members of the A. V. Roe special projects group responsible for its development.

Funds for the Avrocar project have been provided since 1954 by the Air Research and Development Command of the U.S. Air Force. Previously, all design and development costs were absorbed by A. V. Roe.

The circular-shaped flying machine is said to possess the prime virtues of the helicopter — the ability to take off and land vertically. Additionally — when it is further developed — it will be able to perform at high speeds and with a degree of manoeuvrability unparalleled by conventional aircraft.

A public demonstration of the Avrocar is expected to take place late in November at Malton Airport. However, until further testing is completed, performance will be restricted to low-level, low-speed manoeuvres.

Principal guests at the demonstration will be officers of the USAF and the U.S. army.



First Photograph of Hush-Hush "Flying Saucer" Shows It on Tether With Generating Truck After Takeoff and Landing Tests at Malton Yesterday
Revolutionary Avrocar lies in carefully screened enclosure on Avro Aircraft property. Turret in middle is thought to be cockpit for craft's pilot.

Avrocar Saucer in Successful Flights In Tethered Tests at Malton Enclosure

The Avrocar, a wingless aircraft built by A. V. Roe (Canada) Ltd. under U.S. Army and Air Force direction, has had a successful

flight, it was reported yesterday.

Sir Roy Dobson, chairman of the board of A. V. Roe, said the craft rose on its own power—a cushion of air from jets underneath—on several tethered tests in an enclosure outside an Avro Aircraft Ltd. hangar at Malton.

The tests were conducted with the craft tethered by what appeared to be a long cable stretching into the hangar. Sir Roy said he expected the saucer-shaped aircraft soon would get a test in free flight. He said it was in an advanced stage of testing.

The craft is cloaked in tight security established by the U.S. Government, according to Sir Roy and several A. V. Roe spokesmen.

However, photographer Jack Judges took a series of

pictures of the Avrocar yesterday by flying over the enclosed open area outside the hangar.

The pictures reveal the Avrocar to resemble a flying saucer, with a turret in the centre, believed to be the pilot's cockpit.

The Avrocar is a form of vertical takeoff and landing craft, and is believed to have a much higher speed than most air-cushion vehicles under development.

The craft makes a loud roaring sound when in flight. The sound is said to have a far higher pitch than that made by propeller-driven aircraft or jets.

Sir Roy said success of the device would mean it could replace the helicopter as a vertical takeoff and landing machine.

The Avrocar project was

taken over by the United States in 1954 after the Liberal Government, then in office in Ottawa, withdrew support.

USAF to Buy Avro Saucers, Official Says

By PHILIP DEANE

Globe and Mail Staff Reporter

Washington, Oct. 28—A Pentagon official here, excited by today's report that the Avrocar had flown successfully in restricted tests, said the U.S. Air Force would buy the vehicle for the U.S. Army (according to an interservice agreement the Air Force purchases all flying machines for the Army).

The military spokesman said the U.S. Army is highly excited by the possibility of having at its disposal some time in the future substantial numbers of Avrocar "flying saucers" which will give infantry troops unprecedented mobility and speed.

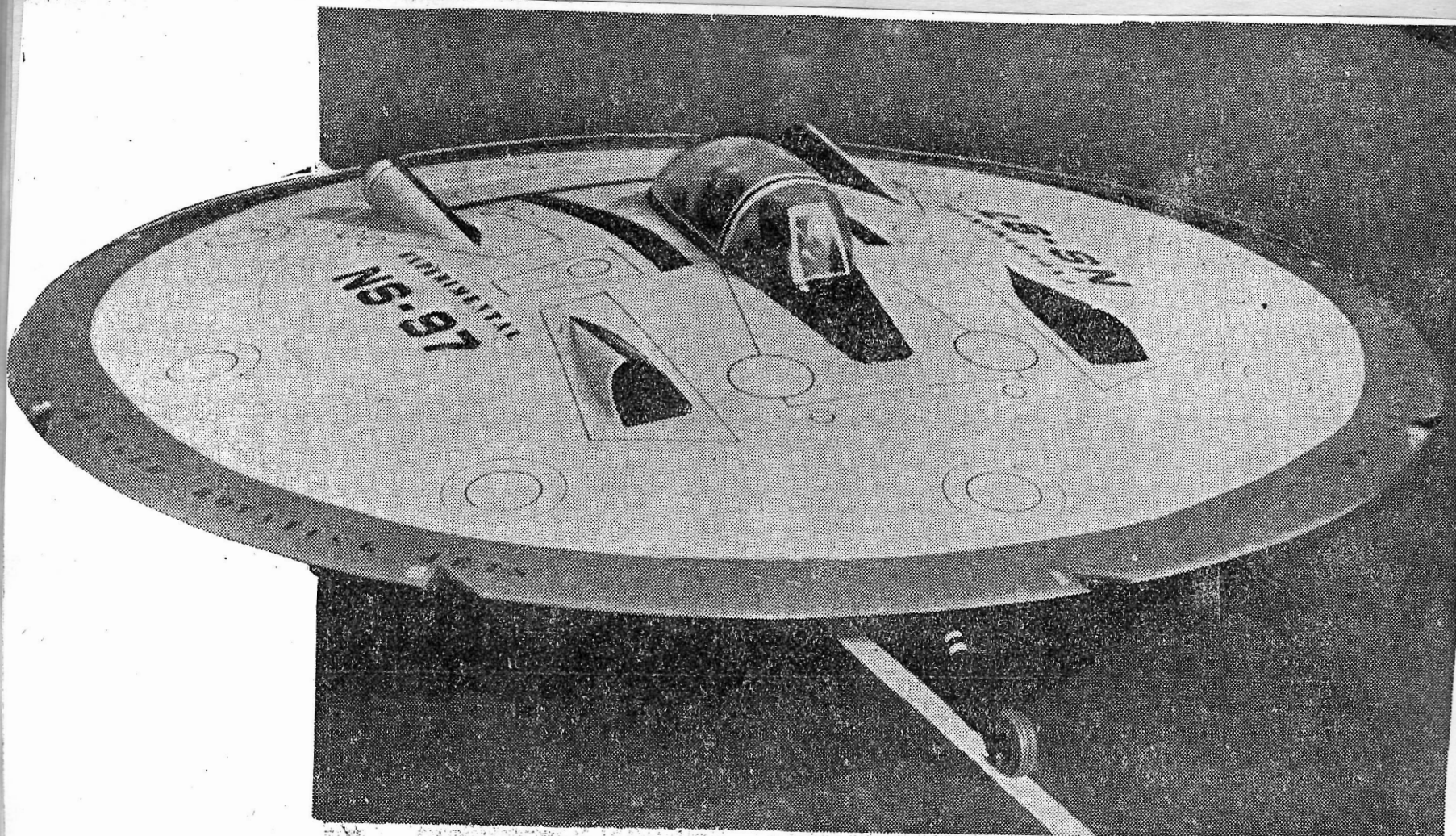
The vehicle, developed by A. V. Roe (Canada) Ltd. under direction of the U.S. Army and Air Force, depends for its propulsion and climb, the Pentagon source explained, on a revolutionary principle invented by the Canadians. He refused to reveal the secret of the principle, but said it could be applied to machines of varying sizes.

The new aircraft was said to be totally unlike any other saucer-shaped flying machine which rides on a cushion or column of air.

It was said to be designed to fly either skimming the ground or at very high altitudes, to climb and drop vertically at high speed, and to be capable of changing direction more easily than any other existing craft.

According to available information here, the first operational version of the Avrocar will be armed with rockets. The U.S. Navy is said to be considering adapting this vehicle for anti-submarine work.

After further development, the new Avro principle may be used for advance observation platforms, flying television "spies," and ambulances.



For A Round Trip, A Round Aircraft?

This "flying saucer" model never will leave the ground nor is present research related in any way to a flying saucer—but there is no doubt many of the principles in the reported actions of "flying saucers" are much sought after by researchers.

United Press

New Gyro Fighter Supersonic speed Is RCAF Project

Ottawa, Feb. 11.—(Staff Special)—Research on a revolutionary new type of fighter aircraft embodying a gyroscopic principle, which may allow vertical takeoffs and supersonic speeds in level flight, is engaging the full time of a group of top aerophysicists in the RCAF, the Defense Research Board and the A. V. Roe Company.

Air Vice-Marshal Douglas Smith, chief of RCAF Technical Services told The Telegram today that "we are giving preliminary consideration to a project of this nature, but we have not gone far beyond the thinking-out-loud stage."

The project, the Air Vice-Marshal said, was "in the research, rather than the development stage" and he scouted reports that a wooden "mock-up" had already been constructed at the Avro plant in Malton.

For obvious security reasons, AVM Smith could disclose no details of the project, but he scoffed at suggestions that what the researchers had in mind was related in any fashion to a flying saucer.

He said that in general, "the most restrained and cautious view" must

be taken of the possibilities which the researchers had in mind; and he emphasized that the search in which they are engaged is not confined to Canada.

In broad terms, an RCAF spokesman said a search was being made for a principle which would permit vertical take-offs for fighter craft

and thus eliminate the necessity of long runways. Inclusion of the gyroscopic principle in the main power plant might, the researchers believe, provide stability until the aircraft has attained sufficient height to gain the forward speed which would give the pilot control.

An RCAF spokesman told The Telegram that experts were agreed modern fighters were too big, too heavy and thus too costly.

"We are hopeful of something entirely new in principle but we have not yet conceived of the actual shape the aircraft might take," he said.

So far as the layman is concerned, what the researchers have in mind is certainly in the realm of "flying saucers" and "space ships" but scientists decry the use of such terms.

Basically the proposal is to have the power plant revolve around a central control cockpit, as well as to provide forward propulsion. Thus the ship should be able to rise vertically from any base without a take-off runway, and then rapidly attain supersonic forward speeds.

In addition to the "pure-research" team engaged on the basic principle of the new aircraft a "design team" is also known to be at work with its headquarters at AVRO's Malton plant.

TAKES OFF STRAIGHT UP REPORT MALTON 'FLYING SAUCER' TO DO 1,500 MPH

By WILLIAM STEVENSON

Star Staff Correspondent

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Ottawa, Feb. 11—Highly secret reports of a Canadian "flying saucer" are circulating among British and U.S. defence scientists. Inquiries here and in Britain indicate the craft is designed to take-off vertically, fly horizontally at around 1,500 mph and make use of the gyroscopic effect of a revolving power plant to acquire stability. A wooden mock-up is reported to lie behind tarpaulin screens in Avro Canada's experimental hangar at Malton, to which only holders of "super-security" cards are admitted.

No project of this kind is known to be under development elsewhere in the Western world. But reports have been so persistent and apparently authentic concerning the Canadian craft that Western scientists must consider the possibility that Soviet Russia has carried similar development to a more advanced stage.

SO REVOLUTIONARY

Blueprints of the Canadian craft, which apparently remains in the category of pure research, were reported from London this week to have been studied by the British air ministry. An engineer identified as "chief of an Avro Canada design team," was stated to have submitted plans some weeks ago.

Such an engineer, a young Englishman working now at Malton on original aircraft design, flew to Britain recently on a top-secret mission.

Crawford Gordon, president of A. V. Roe, said, "No comment. Similar "no comment" answers were given to early reports of the Avro Canada CF-104, a delta-wing fighter now known to await government approval.

"This craft is so revolutionary," one air ministry official admitted in London, "that if it flies, everything now in the air becomes obsolete."

COST MAY BE HIGH

A top British aviation authority described the craft as "coming closest to what everyone is looking for—a warplane independent of runways or carriers because it takes off vertically, and is still able to fly at terrific speed. This could be it."

Two years will be needed to put a prototype "saucer" in the air, a Canadian government scientist reported. He said: "The RAF is very keen on the project and suggested Canada should see it through to final development. It contains so many revolutionary features that the cost may be very high—but it would clinch Canadian prestige in the scientific world."

So much secrecy surrounds the project that Canadian Defence Research board officials consider it "much too hot to handle." But it is known that Dr. O. M. Solandt, chairman of the board, is urging the government to finance construction of a prototype model.

FROM RELIABLE SOURCES

This description of the project has been obtained from reliable British sources. The pilot sits in a plastic "bubble"; a gas-turbine engine of unconventional design revolves around him several hundred times a minute; the "saucer's rim" remains stationary. Air is sucked through inlets on the

(Continued on Page 3, Col. 1)

next page

TAKES OFF VERTICALLY, SAY MALTON'S 'FLYING SAUCER' WILL DO 1,500 MPH

(Continued From Page One)

rim's forward surfaces, and blasts of hot air are ejected through combustion chambers along the remaining perimeter and out of the "tail," a flat surface to the rear which is the craft's only control.

Gyroscopic Stability

This swiftly revolving engine gives the craft a gyroscopic stability so great that, according to reports, the design team had difficulty devising control methods.

Because of its almost circular shape, the craft is described as having diameter rather than wing-span, measuring some 40 feet across. Few other details are available, though the principle is described as "So darn simple, it sounds silly—that if you use 25 pounds of force to move a 10-pound object, you can make even a brick fly."

Another report adds that the craft would be capable of making 180-degree turns without changing attitude.

Descriptions so far available suggest that the Canadian craft would display in flight the characteristics credited to "flying saucers," reports on which have been under investigation by the U.S. Air Force. Maj.-Gen. Roger Ramey, USAF operations chief, said in Washington yesterday: "But the Canadian project apparently has 'mass.' In other words, it has substance—and our investigations so far show that whatever caused 'saucer' reports was insubstantial, like

electronic phenomena."

The Canadian project clearly offers a possible answer to the growing problem of bases for high-speed jet planes. All over the free world, designers have been seeking a method of leaving the ground vertically as in a helicopter, but without the helicopter's speed limitations. Stanley Hiller, brilliant young U.S. designer of helicopters, came up with blueprints for a rocket-plane which would use a tripod of auxiliary rocket units to force itself into the air vertically, and would then turn through 90 degrees and gain forward speed on its main jet engines.

Have Moving Wings

A more practical design is the Bell X-5, built at Buffalo and using adjustable wings which, forward for take-off, make a shorter run possible, but when pulled back give the swept-wing effect necessary for supersonic speeds.

Nearest thing to the Canadian project is a scale-model "saucer" built by Dr. Eugene Kay of Glendale, Calif. It is a 41-inch aluminum disc with slotted vanes like fan blades.

Difference here is that the

vanes spin around the motor. The Canadian "saucer," instead of gaining flying speed by a swiftly rotating "wing," would use sheer brute force to get off the ground. A tripod undercarriage assists the launching but reportedly is left behind, so that the craft lands again on its "belly."

Reports Reds Have Project

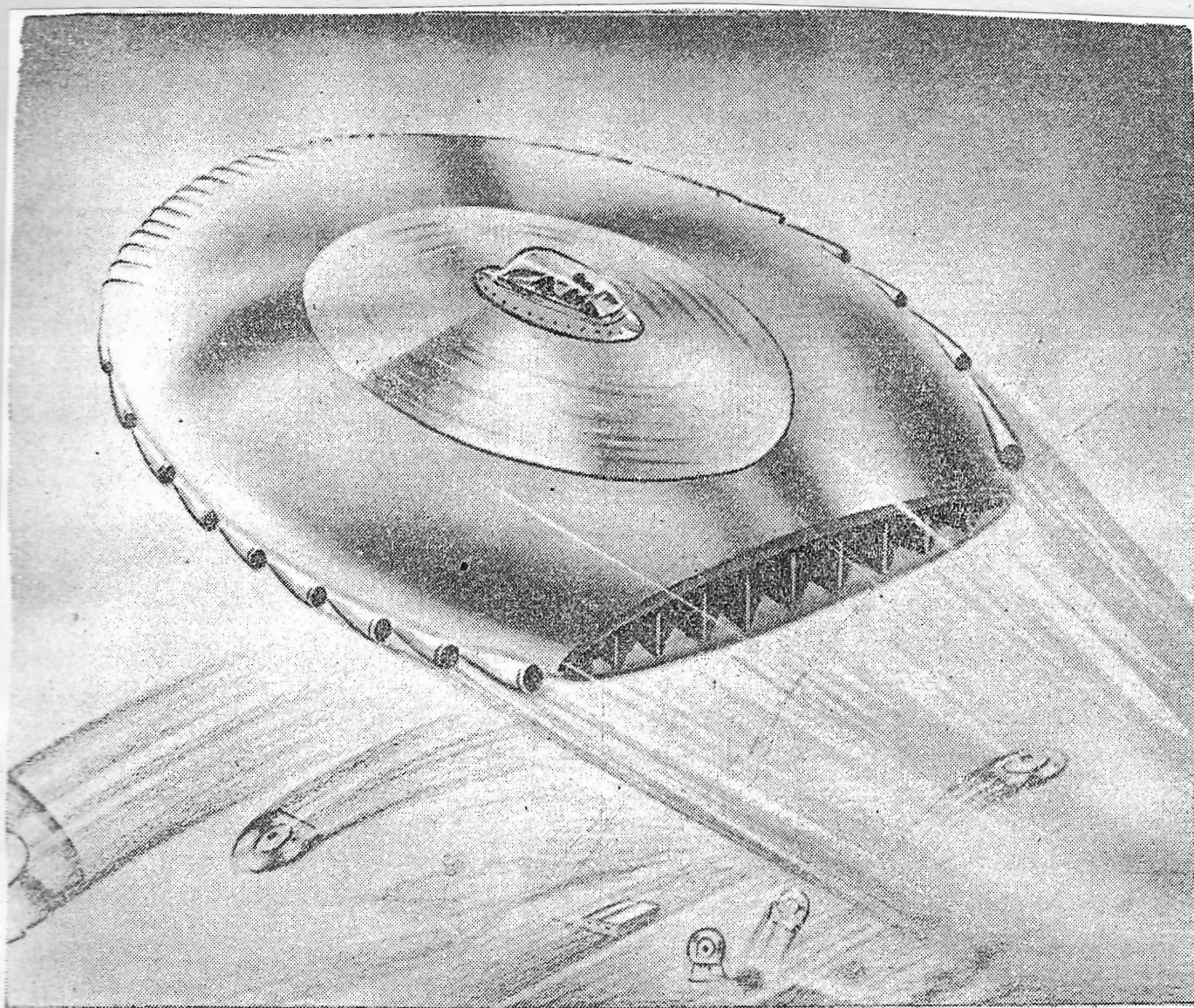
Two serious projects using similar methods of launch and return have been semi-officially confirmed in Soviet Russia and Britain, but in neither case do the aircraft depart so radically from conventional design.

The British project is reported to be in an advanced stage of design at A. V. Roe, Manchester, one of AVRO Canada's associated companies. The Russian project has been reported by various intelligence services for some time. Both use new but not abnormal wing configurations.

So many new theories must be proved in the Canadian project, though, that some defence scientists say it will take a lot of time and money at every stage of practical development before our own "flying saucer"

becomes reality. That Canada should nevertheless "go it alone," they do not question, arguing that in the realms of pure research lies our greatest strength. They foresee the project breaking fresh ground in the field of aeronautical science, with every step in development yielding a harvest of knowledge.

Since in theory anyway the craft seems to be considered practical, the project has another major significance. If Canadians have got this far in designing their own flying saucer without government backing, how far might a totalitarian state have progressed by marshalling all its resources to make the flying saucer real?



—Star Sketch by Staff Artist Edwin Parker

THE CANADIAN-DESIGNED CRAFT is said to be so revolutionary that everything now in the air will become obsolete. This is an artist's sketch of what the "saucer" will look like. Pilot sits in the "plastic bubble," while a gas-turbine engine of an unconventional design revolves about him several hundred times a minute



THE HAWKER SEA HAWK has been under test by the French Navy, and here Lt.-Cdr. Mauban, S/Ldr. Franklin and Rear Admiral Ruyssen stand watching as Mr. Norman Wilson, Service Manager of Armstrong Whitworth, gives some advice to Lt. Vercken before his first flight