



CANADAIR SABRE PRODUCTION REACHES THE End of the Line

AFTER NINE years of building jet fighters for Canada and her NATO allies, Canadair last month rolled out the last of the swept-back-and-trans-sonic Sabres. It was the completion of a West German order for 225 of the Mark 6 version, and the last of 1815 Sabres built at the Montreal plant. In a sense, the roll-out marked the end of an era; it was the Canadair-built Sabre that catapulted Canada into the jet age. At the present time the RCAF is still flying the Sabre in its fighter squadrons of Air Division; but the handwriting for the sturdy day-fighter is obscuring the wall.

The North American-designed Sabre built under licence at Canadair, was the beginning of an immense development in Canadian industry. It predicated the learning of new skills and new techniques, and resulted in hundreds of millions of dollars worth of

production to be shared by thousands of Canadian manufacturers of aircraft parts and components.

Half a Billion: The sales value of Canadair Sabres totalled almost \$560 million, including exports of planes and parts. Salaries and wages paid directly to Canadians employed on the program amounted to about \$190 million, of which \$100 million went to Canadair personnel. It is estimated that approximately 65% of the \$560 million eventually found its way to federal, provincial and municipal treasuries through taxes of all kinds. In terms of dollar output, the aircraft industry in Canada became the ninth largest; and the third largest industrial employer of labor.

Of the 1815 Sabres built in the Montreal plant, more than 1500 are presently flying in the air forces of nine different nations: Canada, Germany, South Africa, Colombia, the

U.S., Greece, Italy, Turkey and Yugoslavia. The Royal Air Force was equipped with Sabre 4's as its chief air defence weapon until 1956 when British-built Hawker Hunters became available as replacements.

At the beginning of Canadair's Sabre program, many of the 15,000 parts and components for each aircraft had to be obtained from the United States because Canadian companies lacked the facilities and technicians necessary to produce them. To further a buy-in-Canada campaign, Canadair assisted sub-contractors and suppliers to establish facilities, provided them with complete design data, and trained sub-contractors' personnel in specialized processes and techniques.

Incentive: Other industries were affected. Industries such as plastics, electrical, electronic, hydraulic and rubber expanded rapidly through the demands of the burgeoning aircraft

industry. Producers of such raw materials as aluminum and steel were obliged to extend their aviation departments. In many cases, industries developed especially for the aircraft business have been able to expand into other fields.

The result of this campaign was that although in the beginning Sabre components were almost 90% produced in the U.S., the proportion was rapidly reduced and virtually inverted. By 1956, nearly 85%, by value, of the purchased components were Canadian-made; and small items of hardware which could not be bought economically in Canada were the only non-Canadian materials. Government-supplied parts and components built to Canadair specifications were 95% Canadian-made; raw material was 83% Canadian.

Throughout the Sabre-building program, \$40 million has been paid to Canadair's own sub-contractors, and a total of more than \$325 million to suppliers. Behind the actual sub-contractors and suppliers were the people who produced the raw materials including vast amounts of aluminum and steel. The Sabre program also shared the company's routine main-

tenance expenditures such as \$206,000 annually for fuel oil; \$160,000 for coal; \$303,000 for electricity; and \$50,000 for snow removal.

One and Only: The first Canadair Sabre, and the only one to be designated Mark 1, came off the assembly line in early August 1950, just one year after the contract had been signed with North American. Interesting to note is the fact that it was just two weeks behind the first F-86E Sabre to roll off the North American assembly line, the company that had designed it. That first Canadair Sabre was given RCAF registration 19101, and is today in storage at Lethbridge, Alta.

Sabre "101" was first flown on August 9, 1950, by A. J. (Al) Lilly, at that time Canadair's chief test pilot. (Today Lilly is the company's sales director). Because the main runway at Cartierville Airport was in the course of being lengthened, the aircraft had to be towed to nearby Dorval Airport for its first flight. A few days later in the same aircraft, Al Lilly became the first Canadian to exceed Mach 1.

The next 350 production Sabres were designated Mark 2; they were powered by General Electric J-47 engines and incorporated new engineer-

ing changes. These aircraft, which were notable for their slatted wings and black smoke trails at low levels, equipped the RCAF's rapidly-forming fighter squadrons. They also became the first single-engine jet aircraft to be flown in mass across the North Atlantic as Canada began filling her NATO commitment overseas.

And Still Champion: The Canadair Sabre 2's were given to the USAF for use in Korea. This war, which in a way became a testing ground for Russian and American weapons, saw jet fighters tangling for the first time in history. Though the Russian-built MiG was considerably more maneuverable than the Sabre due to a lighter all-up weight, the Sabres enjoyed a high ratio of kills. This performance is generally attributed to better trained pilots, team-tactics, and the range-computing radar gunsights. Only 22 Canadian fighter pilots saw action in Korea, flying with USAF squadrons on exchange duties.

In December of 1951, the RCAF asked Canadair to study the possibility of installing Canadian-built Orenda engines in the Sabre. Aircraft number 100 was chosen for the test, and was designated Mark 3. It was fitted with

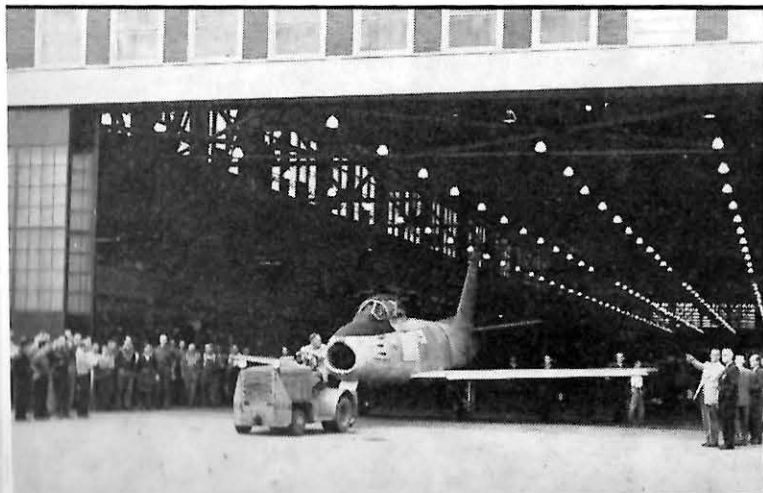
By way of contrast with scene at left, this photo was taken in November, 1951, when production was at a peak.



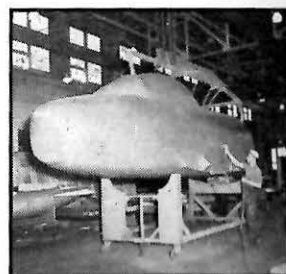
The 1815th Sabre to be built by Canadair rounds the corner onto the final assembly line.



The last Sabre is shown being towed from the final assembly line.



Sabre being cocooned for shipment to Germany. All German Sabres were delivered by surface transportation.



the Orenda 3, which was the prototype of the Orenda 10 production engine. This aircraft was flying on tests within the year.

The Orenda is an axial-type turbojet with a ten-stage compressor, six large combustion chambers and two-stage turbine. Diameter is 42 in.; length 122 in. approx.; frontal area 9.6 sq. ft.; weight 2700 lbs.; fuel consumption 1.0 lb. per lb./th./hr.

Meanwhile, the Sabre Mark 4 had come into production. This aircraft incorporated numerous modifications from the Mark 2, but still used the GE J-47 engine as its powerplant. None of these were to enter general squadron use with the RCAF, but were given to the RAF. They were flown to the U.K. via the North Atlantic route of Goose Bay, Bluie West One, and Keflavik, Iceland, by pilots of both the RAF and RCAF. The Canadians were selected from fighter squadrons already in Europe.

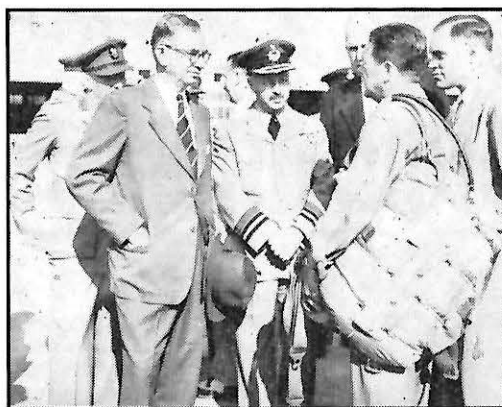
Toward the end of the production run of the Sabre 4, the "6-3" wing was incorporated.

Number Five: The next model to follow off the Canadair line was the Orenda 10 powered Sabre 5. This work began with the July 1953 appearance of the first one, and continued through almost 500 more. These souped-up (6200 lb. thrust) Sabre 5's were fitted with the large 200-gallon size drop tanks. The RCAF at this time organized No. 1 Overseas Ferry Unit based at nearby St. Hubert air base, to take delivery of the new Sabres from Canadair. The OFU pilots, gathered from all squadrons in Air Division, flew the long-range 5's to Europe in mass ferry flights known as "Random Operations". It was with Sabre 5's that these young pilots set a trans-Atlantic jet ferrying speed record that has never been equalled.

On April 20, 1954, the then Defence Minister Brooke Claxton officiated at a Canadair ceremony marking the completion of the 1000th Canadian Sabre. Said Mr. Claxton: "It is the first time in Canada's history that an aircraft company has produced 1000 front-line planes.* In addition to ful-

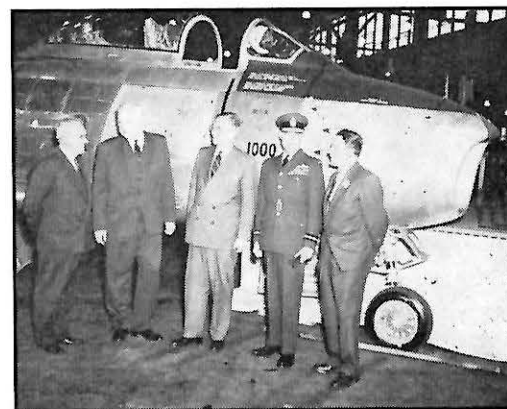
*Mr. Claxton's statement was more dramatic than accurate. Between 1937 and 1945, the Aircraft Division of Canadian Car & Foundry Co. Ltd., Fort William, Ont., produced some 1650 Hawker Hurricanes, as well as 836 Curtiss Helldivers, for the RAF and the USN respectively.

The first Canadair Sabre, on the day of its maiden flight, Aug. 9, 1950. This aircraft has been preserved by the RCAF.



L to R, Hon. Brooke Claxton, A/M W. A. Curtis, Al Lilly and Dr. O. M. Solandt having a chat following Lilly's return from first flight.

L to R, Hon. C. D. Howe, Geoff. Notman, Brooke Claxton, A/M C. R. Slemon and Al Lilly mark completion of 1000th Canadair Sabre.



Visitors to Canadair inspect thousands of employees' signatures on 1000th Sabre, which was completed in April, 1954.



Canadair Sabres here and there:
top row L, on modification line before
delivery to USAF; middle, on operations
in Korea; R, being ferried to U.K.
for RAF; centre row, in Greek (L)
and Turkish (R) air forces;
bottom row L, with RCAF in Europe
and R, about to be flown overseas
by the RCAF's OFU

filling the requirements of the RCAF, aircraft were also supplied to the USAF for service in Korea, and 370 have been delivered to the RAF for the defence of the United Kingdom."

It has not been established whether the USAF is still using Canadian Sabres in the Far East, as for instance in Formosa, but it is known that some are in the service of the Utah National Guard and others at a National Guard base at Tuscon, Arizona.

Number Six: On November 2, 1954, the first Mark 6 Sabre rolled off the line at Canadair. This model, powered by the advance-designed Orenda 14 engine (7200 lb. thrust), was delivered to the overseas squadrons by the OFU where it quickly proved its superiority over every other fighter in the NATO line-up. For the next two years RCAF fighter pilots in Europe were "cock-of-the-walk". Back in Canada, a team of four OFU pilots led by F/L Ralph Annis flying Mark 6 Sabres set a new trans-Canada speed record of 5 hours and 30 seconds. That was in August 1956.

About the same time came orders for Mark 6 aircraft from South Africa, Colombia and Germany. Meanwhile, however, the earlier Marks 2 and 4 continued to do yeoman service with the RAF and the air forces of Greece, Turkey, Italy and Yugoslavia. These latter countries received the aircraft through Mutual Aid agreement with Canada and the United States. For

several years an Italian air force aerobatic team, flying Canadair Sabre 4's dominated European air shows. For the past two years in succession, an RCAF gunnery team drawn from Air Division squadrons, has won the Guynemer Trophy. This trophy is awarded to the highest scoring team in the Aircen international air firing competition. It is emblematic of gunnery supremacy within the Allied Air Forces Central Europe organization.

Of the over 1800 Sabres built in Canada, few of them are to be seen today. As of a month ago, the last two of the six Reserve squadrons in Canada which were equipped with Sabre 5's traded-in their supersonic hardware for light transports. Though these squadrons only had their Sabres for two years, the performance put up by the "Weekend Warriors" was creditable.

Changing Emphasis: The impression left in some circles that the fast but docile Sabre was too much of a handful for Reserve squadron pilots is in error. More likely reasons for change in role of auxiliary squadrons is Canada's growing emphasis on to missiles; plus the acute shortage of groundcrew technicians needed to keep the Sabre and its complex radar gunsight serviceable.

With these units no longer flying the bent-wing birds, the only major Sabre centre in Canada is Chatham, N.B. Here the RCAF's No. 1 Fighter

Operational Training Unit continues to train replacement Sabre pilots for Air Division. The Sabre 5's used here are getting old and tired; and the number of students going through the OTU have decreased in number. In the five years the OTU has been training pilots on Sabre aircraft, the course has been honed and developed. The instructors here are all highly-qualified individuals, all Air Division experienced. They know what makes a fighter pilot and though they can't "make" students into fighter pilots, they can and do give them a long head-start.

The day of the Sabre is just about over. Though the RCAF will, no doubt, be flying them for a few years yet, there is some pressure being exerted within NATO for Air Division to be re-equipped with a tactical fighter such as the Fiat G.91. In its day, the Sabre was the best. It took men, for the first time, through the magic Mach 1. It allowed the NATO forces to dominate the skies over embattled Korea. And it brought Canadian fighter pilots up to a par with the "best in the west."

Easy to fly, forgiving in its habits, the Sabre will be looked back upon with respect and affection. Like the S.E.5's and Camels of the string-and-strut era, the Spitfire and Mustang of World War II, the Sabre will be remembered as a fighter pilot's aircraft.