FLIGHT TO

The Short Life and Unnecessary Deat

EDITOR'S NOTE: In our previous articles on the history of the world's most significant commercial airliners, we've covered technical specifications, flight test and development work, in-service evolution of the design, and what the airplane meant to commercial aviation overall. This story offers a departure from that format, in that one cannot talk about the Canadian Avro Jetliner without regard to what airliners were in service at the time the Jetliner first flew, and what airliners went into service after this pioneering aircraft's demise.

The Avro CF.102 was a one-of-a-kind prototype, and even though a second airframe was under construction, it never saw the light of day after the entire program was subsequently cancelled. However, unlike many still-born proposals or concepts that never go into production, the CF.102 was built and flown, going out on promotional tours and setting world speed records with almost every new flight! Why did the Canadian Government put such obstacles in the path of this revolutionary jet airplane, and why did Canada's proud national airline fear that Jetliner production would be detrimental to its health?

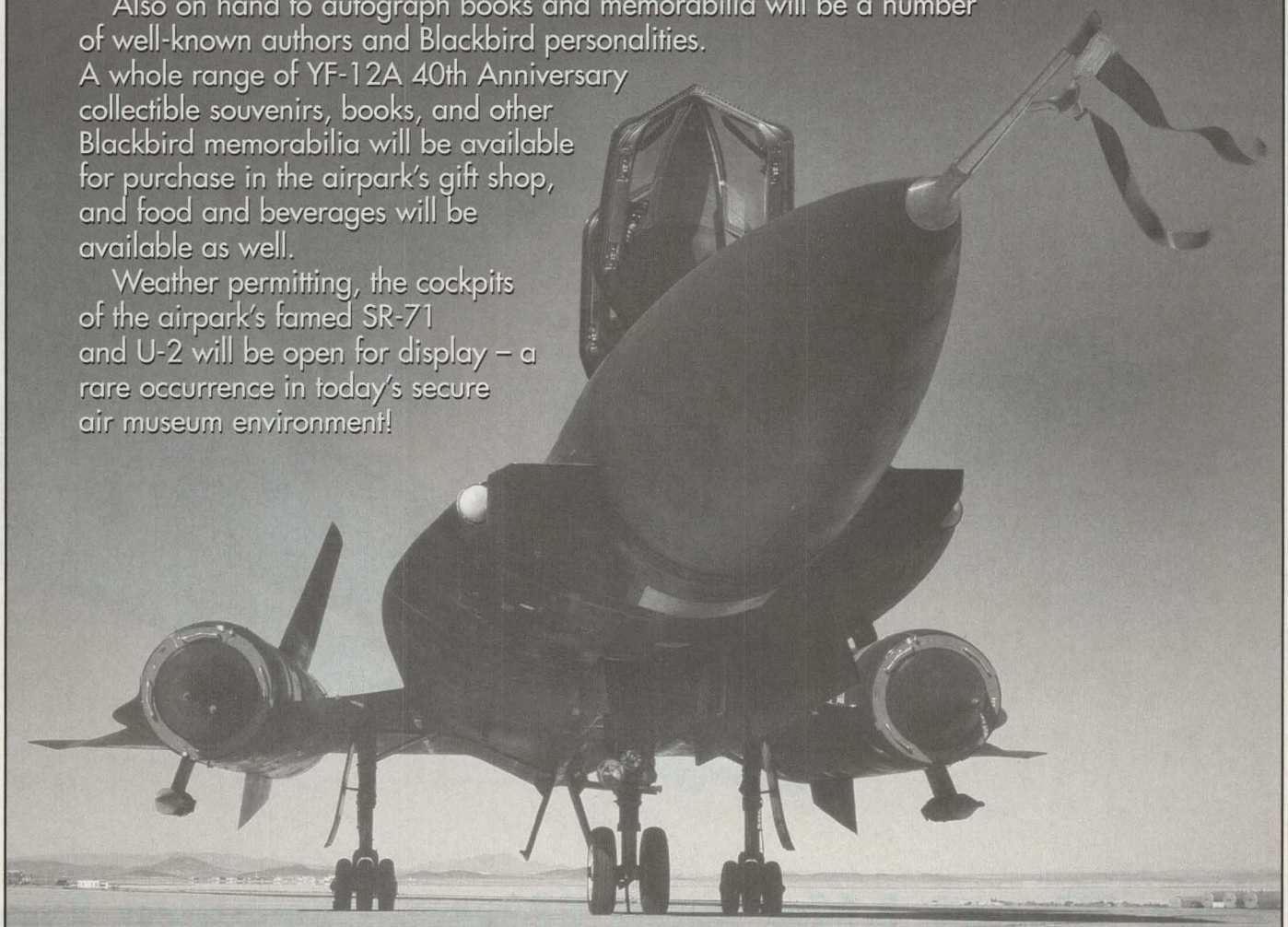
Lockheed YF-12A
40th Anniversary Celebration!

Forty years ago this August, Lockheed's super secret Mach 3+ YF-12A took to the skies on its maiden flight from a secluded Nevada test location. At the controls of the sleek black jet that historic day was Lockheed test pilot Jim Eastham.

Come join us at the Blackbird Airpark located at the corner of Ave. P and 25th St. East in Palmdale, California on Saturday, August 9th, for a day-long gala celebration of this momentous aviation event. The festivities will begin at 10:00am and will conclude at 5:00pm. Come and meet first flight pilot Jim Eastham as well as other former Blackbird crew members!

Also on hand to autograph books and memorabilia will be a number of well-known authors and Blackbird personalities. A whole range of YF-12A 40th Anniversary collectible souvenirs, books, and other Blackbird memorabilia will be available for purchase in the airpark's gift shop, and food and beverages will be available as well.

Weather permitting, the cockpits of the airpark's famed SR-71 and U-2 will be open for display – a rare occurrence in today's secure air museum environment!



This anniversary event is sponsored by the Flight Test Historical Foundation, a non-profit organization devoted to supporting the AFFTC Museum and its Blackbird Airpark Annex. For more information, or updates on event activities, please contact Doug Nelson, Director/Curator, Air Force Flight Test Center Museum at **(661) 277-8050**, or online at **http://home.earthlink.net/~cur8mach/.**

OBSCURITY

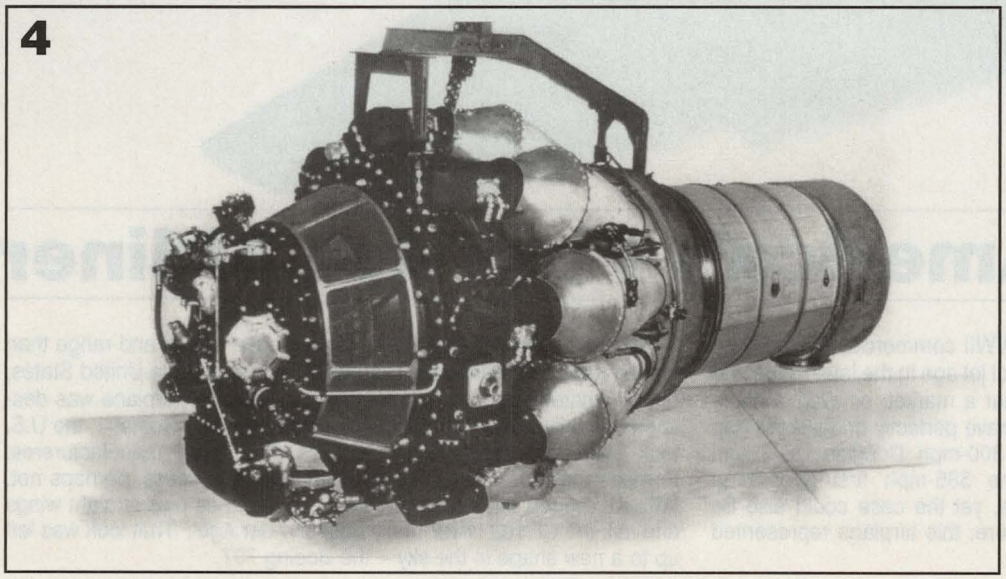
By Herb Kugel

Photos courtesy of Author, and *WINGS & AIRPOWER* historical archives.

h of North America's First Jet Airliner

Sandwiched in between the post-WWII commercial airline boom and the beginning of the true commercial jet age in the late-1950s, the CF.102 Jetliner became a plane without a market, or even a plane without a country, if you will. It would have perfectly bridged the gap in airliner performance between the 300-mph Douglas DC-6 and Lockheed 649 Constellation, and the 585-mph first generation Boeing, Douglas, and Convair jetliners, yet the case could also be made that in the overall historical picture, this airplane represented 'too much too soon'.

Ironically, the Jetliner offered even greater speed and range than interim turboprop transports from both Europe and the United States, but for whatever myriad and complex reasons, the airplane was destined not to be. After the British stumbled with their Comet 1, the U.S. took over with entries from no less than three manufactureres. Perhaps the Avro Jetliner would have been a success, perhaps not. With it's rugged and somewhat bulky appearance plus straight wings and tail, the CF.102 never really bespoke 'Jet Age'. That look was left up to a new shape in the sky – the Boeing 707.



1. Shown on this page are the world's primary airliners at the time of the Avro Jetliner's first flight, and the ones the Jetliner would have outshone had it entered airline service as first hoped. Thoroughbred of the classic Douglas piston-powered family was the elegant, reliable, and long-lived DC-6B. Capable of 300 mph speeds and able to carry as many as 88 passengers in high-density seating configurations, the trusty DC-6 series was powered by four Pratt & Whitney R-2800 Double Wasp engines of 2,500 hp each. The DC-6 first entered airline service in 1947, and flew profitably through the late 1960s. A little known-fact of the DC-6's longevity is that it was still in production at Douglas' Santa Monica plant even after the last DC-7 had been delivered.

2. 'Little Brother' to the longer-range DC-6 was Convair's indomitable 240 and 340 series, also first flown in 1947, and serving as the backbone of short and medium-range 'feederliner' or regional airline service. The Convairs were usually chosen by an airline to compliment the larger aircraft in its fleet, as it did for American, United, Western, Swissair, Eastern, Delta, and Continental just to name a few. The 'Convairliners', as they were known, were powered by the same engines as the DC-6, and could reach speeds of 250 mph while carrying up to 44 passengers.

3. Regarded today as the quintessential post-war airliner, the magnificent triple-tailed Constellation ruled the skies for more than a decade after WWII ended. Built as a pressurized aircraft from inception, the beloved 'Connie' put long-haul airline service on the map with its 300 mph cruising speeds and 3,000-mile range. Unlike the DC-6, the Constellation was powered by Wright R-3350 engines of 2,500 hp. each, and the 649 model shown here entered airline service in 1947. Had the Avro Jetliner come to be, it very possibly could have altered the commercial success and longevity of all three of these legendary aircraft.

4. Turning point for passenger airliner development after World War II occurred with the advent of the turbo-jet engine. Considered as a radical, inefficient, and unpractical source of power for commercial airliners of the time, the jet engine was thought of strictly as a military powerplant. The 3,600-lb. thrust Rolls-Royce RB.37 Derwent engine was chosen as the Jetliner's powerplant, however, and was similar in structure and appearance to the RR Nene engine shown here. The Derwent Mk. 5 engine was first flown on a Gloster Meteor III testbed in August 1945, and went on to power most models of the Meteor, and of course, the prototype CF.102 Jetliner.

In the very early 1950s jet air travel was new and exciting. The first commercial American jet liners were still some seven years away but there were already 500 short to medium-range intercity jet airliners flying with airlines all over the world—jets that had been designed and manufactured in Canada. Impossible? No, just a sad possibility of what could have been.

The end of World War II left Canada a significant industrial power, and as part of this potential, the nation had developed a noteworthy aircraft manufacturing industry, an industry that had produced over 15,000 airplanes during the war. Canada had successfully manufactured everything from light trainers to heavy bombers such as the 48,000- lb. Avro *Lancaster* built at the Government of Canada's Victory Aircraft plant in Malton, a town north of Toronto. Virtually all of these planes were designed in Great Britain, but the winds of change were blowing. At the close of the war, A. V. Roe of Canada, or Avro Canada, was founded to design as well as to build state-of-the-art airplanes and components in Canada.

"This [the Avro Jetliner] should give our nation a good healthful kick in its placidity."

Rochester, New York,
Democrat and Chronicle, January 12, 1951

Avro took the site of the Victory Aircraft plant. Fred Smye, Aircraft Production Director at Victory, became Avro's first employee and the driving force behind the new company. There were exciting successes because Avro had hired some of the best engineering talent in the world. Avro's first airplane was to be a commercial jet transport for Trans-Canada Airlines or TCA, the company that would later became Air Canada. On August 10, 1949, the Avro C-102 *Jetliner* CF-EJD-X, made the first successful flight of a jet transport in North America. The British de Havilland *Comet* had completed its first flight on July 27, 1949. The *Jetliner* flew for 65 minutes and reached altitudes above 10,000 ft. Pilot James Orrell later described the *Jetliner* as "the perfect lady" and the flight as a "piece of cake." Jim Floyd, Avro's Vice-President of Engineering and the *Jetliner's* principal architect informed his family "our beautiful bird has flown."

The first test flight took place during a plant vacation shutdown. The Avro management then decided that it would be a fine idea to schedule the second test flight when all the employees had returned from vacation and could be out along the fence to watch the test. This second flight took place on August 16, 1949, and it was not a piece of cake. At first, everything went fine; the plane went through an hour of tests, but things went wrong when Orrell tried to lower the undercarriage in preparation for landing. Only the nose wheel came down. Don Rogers, the *Jetliner's* Chief Test Pilot, told the story:

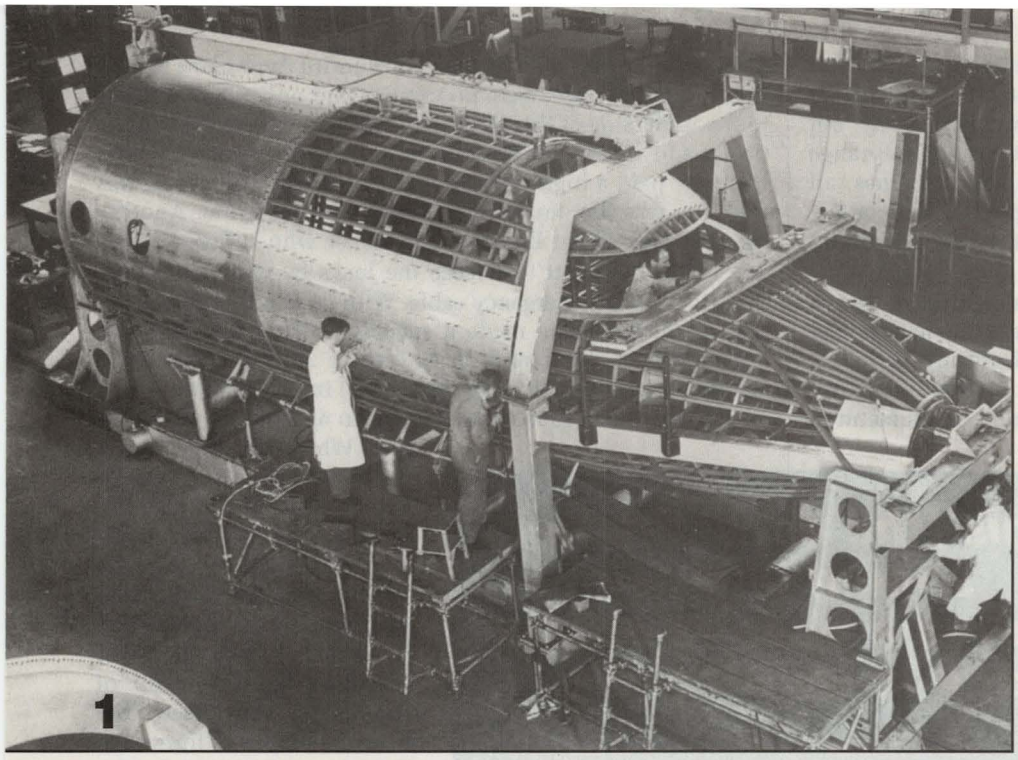
"We had three methods of getting the undercarriage down so we were not too concerned as yet. We had the push button (regular way), an auxiliary hydraulic pump...and a hand pump, and in the main cabin under a panel in the floor was a neat little handle that said 'emergency release.'

None of these methods worked. As the *Jetliner* circled overhead, the airport manager became panicky and begged that the airplane be ditched in nearby Lake Ontario. This was refused; the plane landed on its nose wheel and engine exhaust tail pipes with virtually the entire Avro plant watching. However, there were no injuries and only slight damage to the underside of the plane. The problem was quickly diagnosed and solved. While this was an easily fixed problem, the crew paid a high price in terms of stress. Jim Floyd was told this was the day his hair began turning white. Another casualty was Flight Engineer Bill Baker who suffered a broken rib in his effort to release the locks by manually struggling to pull the emergency cable. With the landing gear problem fixed, the plane made a successful third test flight on September 20, 1949, and on November 22, 1949, reached a speed of just over 500 mph (805 km/h) in level flight.

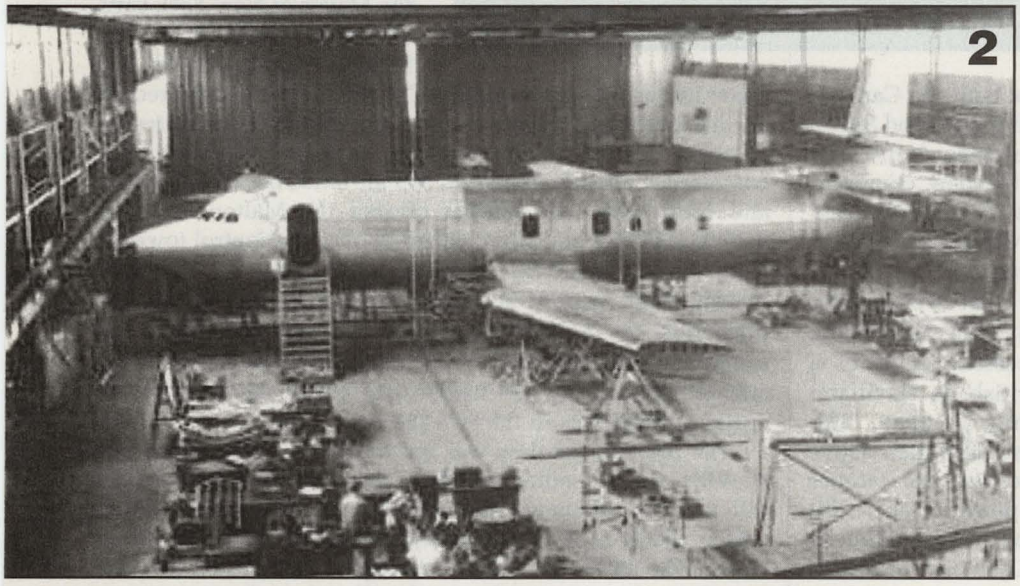
By December 1950, it had flown to an altitude of 39,800 feet. While 500 mph was a milestone in air transport history, this would soon be followed by another milestone. On April 18, 1950, the *Jetliner* completed the first international jet flight when it carried a sack of Royal Canadian Mail, a scroll of friendship, and Peace Pipe from the Mayor of Toronto to the Mayor of New York City. (The pipe went out on the flight but was re-lit by Bill Baker just as the plane landed.) The *Jetliner* set a speed record on this flight and Rogers clocked the time at 59 minutes 56 seconds - about half the 110-min. normal flying time for a commercial aircraft flying the 365 air miles between Toronto and New York. The *Jetliner* cleared the Malton tower at 9:30.04 AM EST and was clocked in over the control tower at New York's Idlewild Airport (now John F. Kennedy International Airport) at exactly 10:30 AM EST. To accomplish this, the *Jetliner*'s average speed was 400 mph. An example of the latest in U.S. air transport technology, a twin-engine Convair *240* had landed just before the *Jetliner*. Its cruising speed was in the 227-234 mph range.

The *Jetliner's* landing was quite a show. After being met by VIPs, the 'Canadian invaders' were escorted to a line of official city limousines and whisked under a siren-blasting police escort to a special reception at the Waldorf-Astoria Hotel. The news of the first jet transport ever to visit the U.S. was flashed continuously on the illuminated news screen over Times Square, and more than 500 newspapers carried the story as well. It was even reported on all the radio and television networks. Sensing some formidable competition from our northern neighbor, the media began to grasp the possible gravity of the situation. 'What Happened to the Great American Aircraft Industry?' screamed the cover of the August 1950 *Air Trails* magazine.

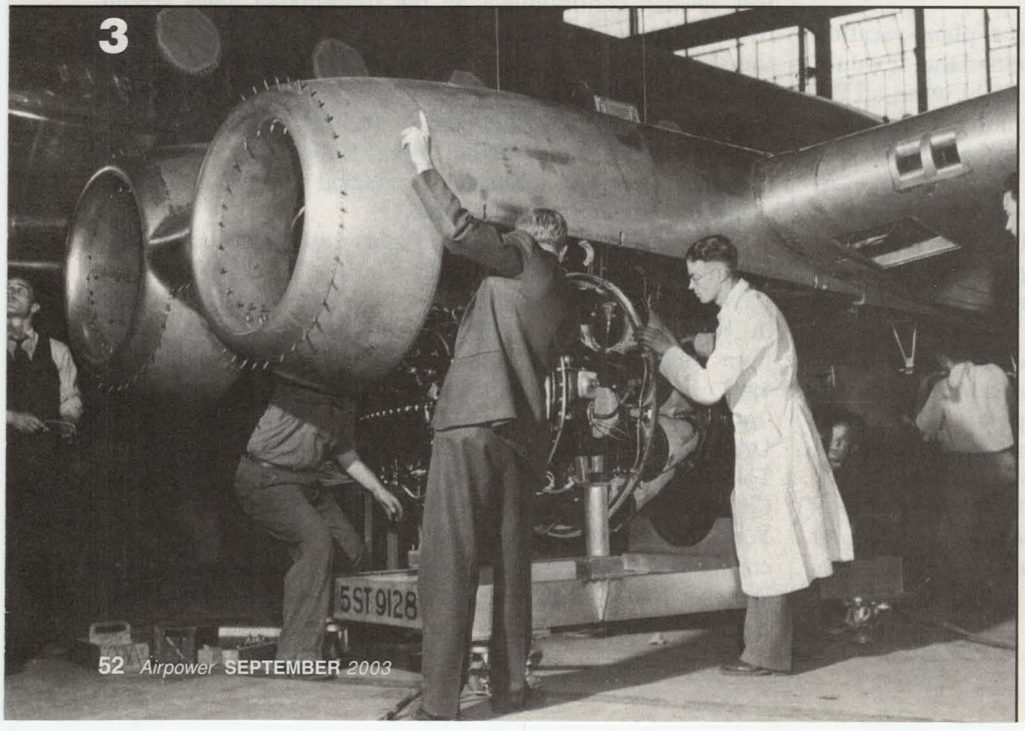
There were other successful flights during 1950 and 1951, including demonstration flights for the U.S. Air Force in Dayton, Ohio, and for senior US Government officials in Washington, DC. There were also successful flights from Toronto to Miami and Chicago. A flight on January 10, 1951, was especially interesting. This was a triangular 'round-robin' flight from Toronto to Chicago, on to LaGuardia field in New York and then back to Toronto. The flight from Toronto to Chicago took 91 minutes; Chicago to New York 116 minutes, while the final New York to Toronto leg took 67 minutes. These times were considered amazing when many airlines were still flying Douglas DC-3s with a cruising speed of only 170 mph.



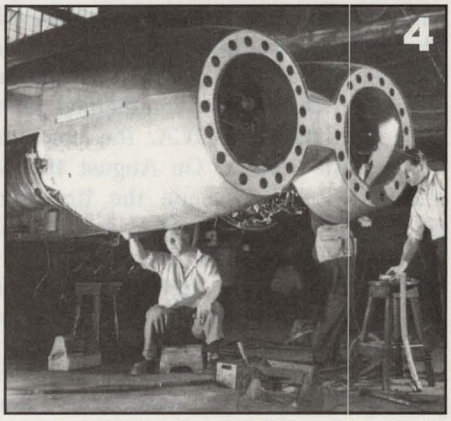
1. Shown during final assembly, the nose section of the lone Avro Jetliner takes shape in its jig at the Avro Victory plant in Malton near Toronto. A novel innovation of the Jetliner's windshield was the absence of heavy and complex windshield wipers, replaced instead with a permanent chemical rain repellent applied directly to the plexiglass.



2. The nearly complete but engineless airframe of the Jetliner awaits installation of its Rolls Royce Derwent V powerplants. This view shows the somewhat dated lines of the Jetliner, sans swept wings or tail surfaces.

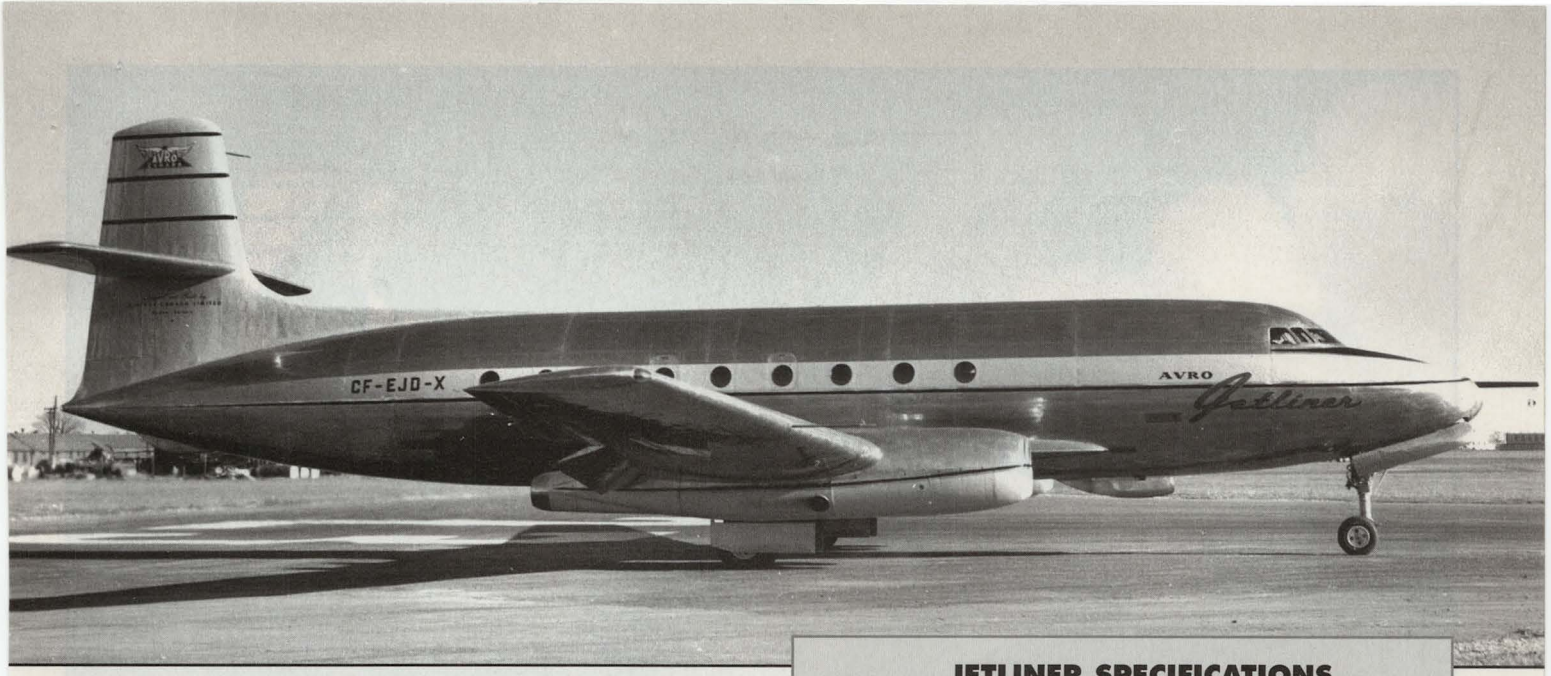


3. Assembly workers carefully align the first Derwent engine for hoisting into place in the number one nacelle. Positioning of the engines so near the airplane's centerline mitigated the effects of adverse yaw during engine-out approaches or go-arounds, while the engines' location so near to the ground facilitated ease of maintenance and inspection.



4. With all four engines now installed, the nacelle nose caps shown temporarily held into position by clecos in photo no. 3 are now ready for permanent installation.

5. Dapper-looking Canadian pilots Donald H. Rogers (left) and Michael Cooper-Slipper pose by the Jetliner's number two engine inlet after flying the pioneering craft from Chicago to New York in January 1951 in a record-breaking 1 hour and 42 minutes.



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There was also a funny side to the flight to New York. While the *Jetliner* was flying toward La Guardia Airfield, the field's airport manager kept insisting that he didn't want this 'fire-spitting' jet aircraft landing at his airport and setting it on fire. The Avro representative kept arguing with the manager as the *Jetliner* approached, trying to explain that the aircraft would not incinerate anything when it landed. The *Jetliner* was finally given reluctant approval to land, provided it would not taxi anywhere but on the runway. The airport authorities would carefully monitor the tarmac; if there were even the slightest danger of a fire, the *Jetliner* would shut down immediately. Of course, nothing caught fire and the flight was a complete success.The *Jetliner* was also a new experience for air traffic controllers. Most commercial transports flew at between 5,000 and 15,000 feet while the *Jetliner* routinely cruised at 30,000 feet. Moreover, the *Jetliner* often flew at 420 to 430 mph while propeller-driven commercial air transports of the period flew at about half that speed or even slower. Every time the *Jetliner*'s crew reported to the ground over a radio fix and gave the plane's height and estimated time

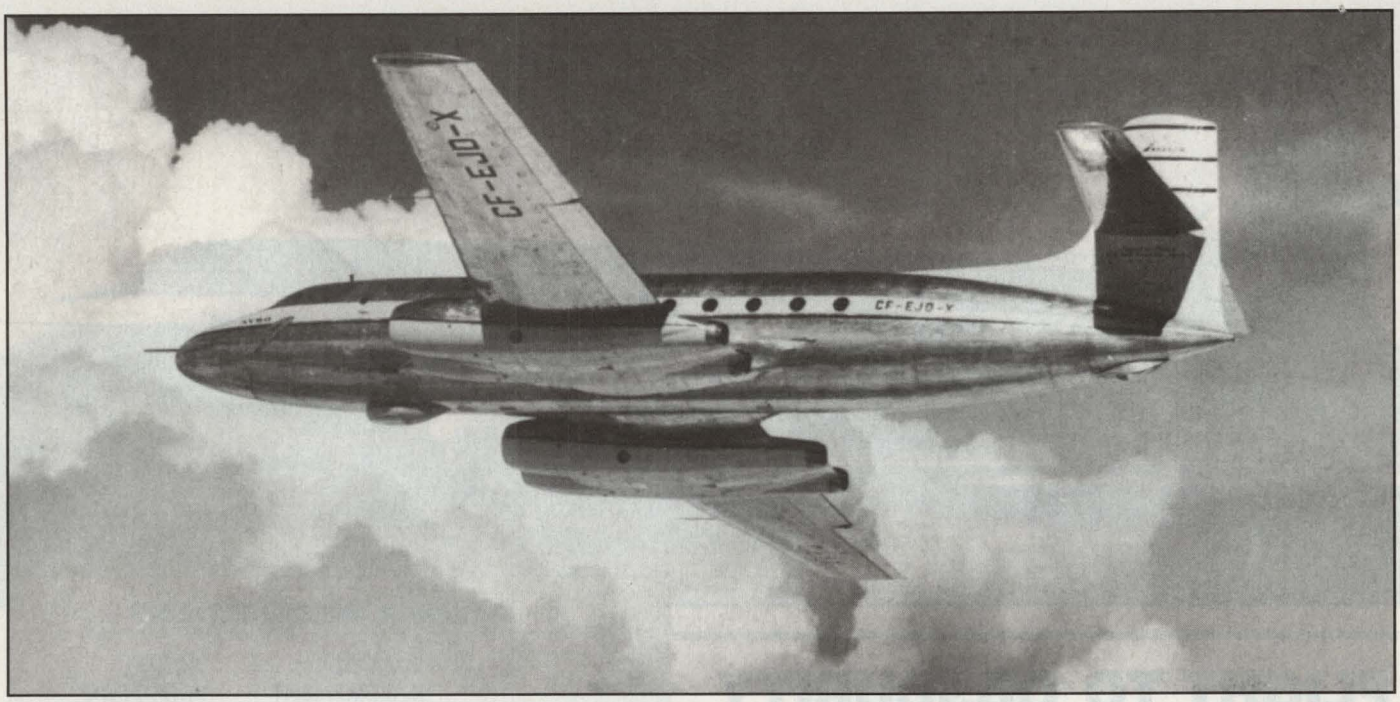
JETLINER SPECIFICATIONS

	1946 TCA REQUIREMENT	ACTUAL PROTOTYPE
Still Air Range:	1,200 miles	1,400 miles*
Payload:	10,000 lbs.	12,700 lbs.
Passengers:	30	Up to 52
Cruising Speed:	400 mph	427-450 mph
Takeoff Length	4,000 ft.	3,100 ft.
Dimensions:	82 ft. 9 in. Length/ 98 ft. 1 in. Span	
Max T.O. Weight:	60,000 lbs.	
Wing Area:	1,157 sq. ft.	

*2,000-mi. range with auxiliary tanks.

Above: The Jetliner's elegant simplicity and cleanliness of line are readily apparent in this excellent ground study. This view is still considered today as the pinnacle of all airliner photography, showing not only the entire airplane, but also the all-important registration number so crucial to airplane spotters and slide collectors the world over.

Below: Although LaGuardia Airport was considered the gateway into New York during the war years, it was apparent that a new larger facility would be required to meet postwar demand. That field, built on fresh landfill on Long Island's south shore 18 miles east of Manhattan was known as Idlewild (now JFK), terminus of the world's first international jet airliner flight when the CF.102 flew from Toronto to New York in April, 1950. The CF.102 covered the 365 mile distance in just under one hour. Note how barren the airport looked in those days!



Beautiful left/rear three-quarter view of the Jetliner in flight. An unusual design element was having the bottoms of the engine nacelles painted yellow – visually attractive, but somewhat unrealistic when considering all the oil and hydraulic fluid seepage inherent in nacelles over many hours of flight operations.

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for the next fix, the crew received statements such as "You mean three thousand feet, don't you?" or "We checked your estimates, there must be a mistake". The *Jetliner* pilots found this amusing; the ground controllers did not until they learned about commercial jet aircraft.

It was ironic that while interest in the *Jetliner* was growing all over the world, the plane was in serious danger in its own country. These difficulties were not technical in nature, for those problems were easily solved. The *Jetliner* now had to face TCA and Government of Canada's bungling and dishonesty—a combination that ultimately proved fatal. Although the Avro Sales Department had received urgent letters from many airlines and the US military who were interested in buying the *Jetliner*, TCA, Canada's national airline, refused to commit to the purchase of even one plane. Both the Hughes Aircraft Company and the U. S. Air Force quickly expressed interest in the plane for their high-altitude navigational programs, and American Airlines executive, R. Dixon Speas, joined an Avro marketing office in New York City. Speas enthusiastically planned to contact all the commercial American air carriers. Not only did the Avro *Jetliner* fly twice as fast as any other commercial airliner, it was also considered twice as comfortable. Other American and European carriers quickly became excited.

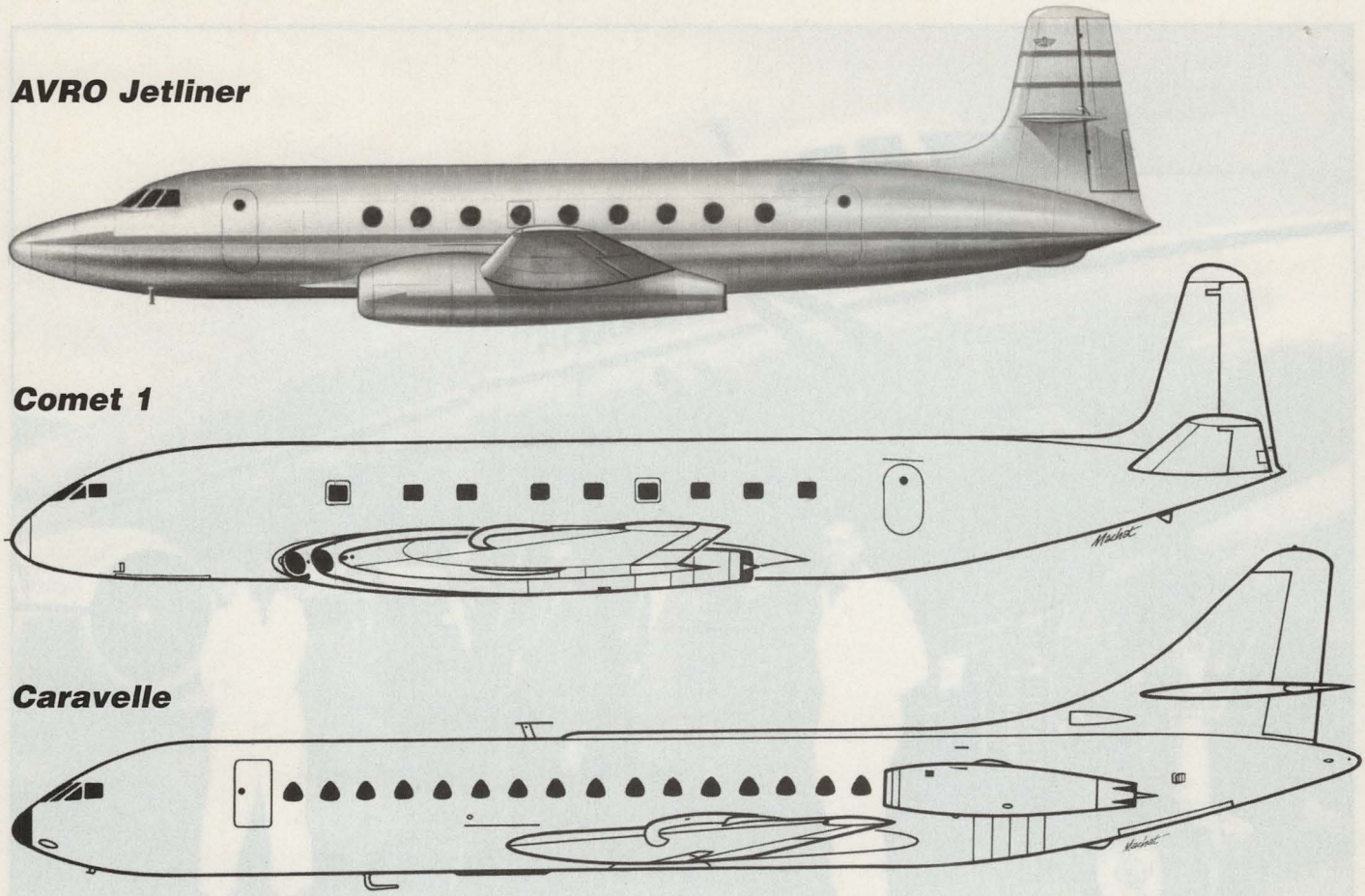
By early autumn, National Airlines had ordered ten *Jetliner*s and both United and Eastern Airlines were preparing to sign purchase agreements, as was the USAF for twenty planes. Speas, who had significant experience in the commercial airline industry, estimated that about 500 planes could easily be sold. For example, the interest expressed by the USAF, National Airlines, United Airlines, Swissair and SAS, the Scandinavian airways System alone amounted to something like 70 planes but none of this made the slightest difference to either TCA or the Government of Canada. No second *Jetliner* would ever be built and no sales would ever take place.

The Government waffled and when it finally acted, did so with monumental stupidity. To the utter disbelief of many in the aviation industry, on November 12, 1951, C.D. Howe, the powerful cabinet minister responsible for aircraft production, ordered Avro to suspend production of the *Jetliner*. This was followed by a series of derogatory public statements about the *Jetliner* by TCA; the Government of Canada made an effort to justify its actions. TCA issued a series of press releases about what they alleged were shortcomings with the prototype. These statements were simply not true since the *Jetliner* exceeded all TCA specifications (see box.) Howe was also quoted in the press as stating the *Jetliner* did not fly properly and that the plane had to carry sand ballast in the rear of its fuselage to fly correctly. This was untrue as well. While ballast was used for testing and certification to move the center of gravity to specific points, this ballast was in no way a requirement for normal flight operation. Howe's next excuse was that, because of the Korean War, the government was forced to stop *Jetliner* construction so that Avro could concentrate on building the CF-100 *Canuck* all-weather Fighter as part of the Korean war effort. This, however, was just an excuse. The USAF was interested in the *Jetliner* and even with TCA backing out, there were many other firms paying serious attention to the aircraft.

The Korean War excuse was untrue for another reason. Canada did not go into a full war production mode and civilian airplanes were still being constructed. What was really going on? Gordon McGregor, the President of TCA, was one of the passengers on the mail flight to New York. He had always opposed the *Jetliner* project, and, upon becoming President of TCA, had announced that he was not interested in TCA becoming the first North American air carrier to operate a jet transport. This attitude was reflected in his lukewarm

Above: Jetliner pilots and American Airlines management personnel pose proudly by the revolutionary aircraft's forward fuselage in New York. The Jetliner's relatively diminutive size is apparent when you compare similar views of later first-generation jet airliners such as the Boeing 707 or Douglas DC-8.

Below: Another inflight photo from the air-to-air soiree shown on top of facing page shows the jetliner's amazingly clean lines. Notice cabin air intake scoop on lower fuselage, just below the single passenger door located forward of the left wing.



Scale comparisons are always quite revealing, and the Jetliner profile shown above handsomely demonstrates its size compared to the European aircraft of that same era. At 83 ft. in length and with a wingspan of only 98-ft., the Jetliner was actually smaller in overall dimension than the Douglas DC-6 shown at top of pg. 50. De Havilland's Comet 1 measured 93 ft. in length, while the French Caravelle twin-jet was the longest of the lot at 105 ft. fuselage length. The common nose section of the Comet and Caravelle are also quite apparent in this comparison drawing.

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enthusiasm when the Jetliner landed in New York. McGregor told the press that jet airliners "might become available commercially during the next two to five years." He also added that the *Jetliner* was only a 'prototype' and could not be used commercially. Was TCA already working to kill the *Jetliner* so they would not have to face competition from U.S. and other world air carriers who were anxious to buy the plane? Many believed this to be the case, but to be fair to TCA, Jim Floyd, in his book *The Avro Canada C102 Jetliner* (published in1986) stated that he felt a significant part of the problem was that both TCA and Avro failed to fully understand the other's approach to the *Jetliner*. In any case, the lies about the *Jetliner* that followed the cancellation were inexcusable.

The story of the Jetliner was not over, however, and the ending involved none other than Howard Hughes, the eccentric businessman, aircraft maker, and film producer. On April 7, 1952, the *Jetliner* was flown to the sprawling Hughes Aircraft Company complex in Culver City, California. The plane, flying via Chicago and Denver, flew over the Rocky Mountains at 30,000 ft., the highest altitude at which any commercial transport had ever flown up to that time. Avro's hope was that Hughes might use the Jetliner as a development tool for the MG2 Fire Control system that his company was building for the *Canuck*. Avro also hoped that since Hughes owned a major share of TWA, he might be able to produce the *Jetliner* under license in America. If this could be done, the *Jetliner* would be removed from the unimaginative and suffocating bureaucratic bungling of the Canadian Government Department of Transport and placed in a direct certification channel with the American Civil Aeronautics Authority, an organization that had been helpful and cooperative in testing the *Jetliner* prototype.

What happened when the plane landed was bizarre. After being greeted by reporters, the Avro crew was asked to remain with the plane since Hughes would wish to inspect it. Two hours elapsed before Hughes arrived in an olive green Chevrolet. Another two hours went by before 'His Majesty' left his car. Hughes did not shake hands (his phobia of germs) but went directly to the plane. He was very interested in the control and instrument layout and asked many questions. The next day he again came to the *Jetliner* but this time he sat in his car for only an hour before getting out. He requested a familiarization flight, which he was given. Hughes was intrigued with the plane, liked it and then took it up himself. As Rogers tells the story:

"When I checked him [Howard Hughes] out on the [Avro] *Jetliner*, which took only a short time, he went around and did...nine takeoffs and landings in a row...When we taxied in, I mentioned to a Hughes Aircraft pilot that we'd done nine landings and takeoffs. He said, 'that's nothing! When he got his Boeing Stratocruiser, he did thirty-seven.' I guess he figured the *Jetliner* was pretty easy to fly, which it was."

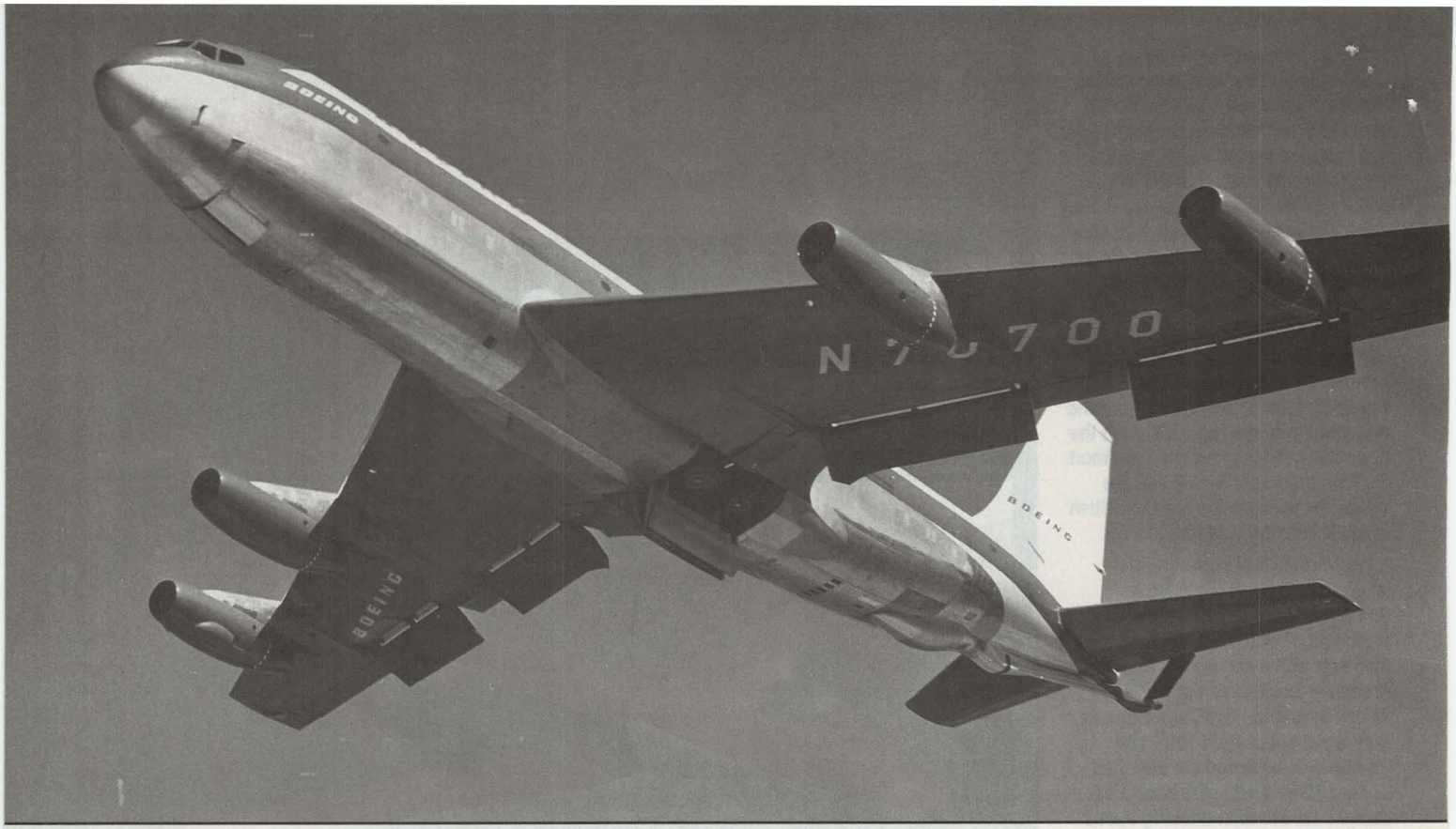
What happened next was completely unexpected; Hughes moved the *Jetliner* to the far side of the field and placed armed

1. Shown here are the airplanes that went on to successfully enter airline service in the wake of the Jetliner's demise. First of the commercial jet airliners, and first to enter commercial service in July 1952, was the revolutionary de Havilland Comet 1, a daring departure in aircraft design, and aesthetically, one of the most elegant jet aircraft ever flown. Unfortunately for the British, being first wasn't necessarily the best, as the early Comets fell victim to the catastrophic effects of explosive decompression at the extremely high altitudes that were the new domain of the jets. Although the Comet was redesigned and later models flew successfully well into the 1980s, the valuable lead of the British aviation industry was lost forever.

2. The world's first rear-mounted jet engines flew on the French Sud-Est SE. 210 Caravelle, the prototype of which is shown here on the ramp of the company's Toulouse assembly facility, current home of Airbus Industrie. The Caravelle was first rolled out in April 1955, and immediately captured the attention of the airliner world with such elegant design. Its 510-mph cruising speed and 2,200 mile range made the Caravelle a favorite for inter-European routes, and later models flew for almost every major world airline and in the U. S. with United Air Lines in 1961. For you trivia buffs, the Caravelle was the first jet transport to fly with a two-man crew.

3. Russia's entry into the grand jetliner sweepstakes was the Tupolev Tu-104 twinjet, basically a converted Tu-16 Badger Bomber, complete with a bombardier's 'glass nose' used by the airliner's navigator. The first truly swept-wing jet airliner to enter commercial service, the Tu-104 was used on short to medium-range routes throughout the Soviet Union and to selected points in Europe and Scandinavia by the late 1950s. Although slower than its contemporaries with a cruise speed of only 480 mph, the Tu-104 carried 50 passengers over routes of up to 1,650 miles, and has the distinction of establishing the world's first *sustained* jet airline service in 1956.

4. Best of the breed for de Havilland's Comet series was the magnificent Comet 4C, first flown in 1957. Solving the early structural problems that ended the short reign of the Comet 1 as king of the world's airline fleets in the early 1950s, the Comet 4 Series regained some of the glory of Britain's tarnished aircraft industry. A BOAC Comet 4 inaugurated the world's first transatlantic commercial jet service on October 4, 1958, trumping Pan American's new Boeing 707 by nearly three weeks.



We end this article with one of the great aircraft that literally changed the world by bringing the term 'Jet Age' into the vocabulary of the masses – the Boeing 367-80. The craft's swept wings and tail and individual podded engines immediately became the distinctive new shape of the jet age. A proof-of-concept demonstrator for the Air Force's new KC-135 jet tanker and progenitor of the classic 707 series, the 'Dash 80' set coast-to-coast speed records and turned the airline world on its ear. This jet also dazzled 'em at the 1955 Seattle Sea Fair when Boeing Chief Test Pilot 'Tex' Johnston barrel rolled the one-of-a-kind aircraft over Lake Washington while a crowd of thousands gasped in disbelief. Note the test aerial refueling boom fitted to the lower aft fuselage. *(Watch for an in-depth feature on this most significant airplane in an upcoming issue of AIRPOWER - Ed.)*

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guards around it. Nobody but the Flight Engineer and the Chief Test Pilot could touch the plane without Hughes' explicit permission. The Avro organization had planned for the *Jetliner* to stay with Hughes for ten days; it stayed for five months before Avro could get it back. Hughes also expected the *Jetliner* personnel to be on twenty-four hour call. Hughes knew a good plane when he saw it and began treating the *Jetliner* as his own. Flight test Engineer Fred Matthews remembered that in all the time the plane was with Hughes, the only problem encountered involved the replacement of a cabin door seal.

Yet, for all of his strange behavior, Hughes was indeed dedicated to saving the *Jetliner*. He first tried to get the aircraft built by Convair under license, but the American Government did not want that because Convair was heavily involved in military contracts. Hughes, who very much wanted to use the *Jetliner* on TWA's prestige flights, then made a personal bid to purchase 30 aircraft from Avro for TWA but the same C. D. Howe who had cancelled production of the *Jetliner* now furiously blocked this purchase. This, unfortunately, proved to be the last straw, and the Avro *Jetliner* was dead. The plane made a few appearances at air shows and flew for the last time on November 23, 1956. It was then quietly ordered dismantled on November 30, 1956. Rogers' words are still moving:

"I can't imagine anything more unpleasant than seeing an airplane that you have lived with for seven years...a really beautiful machine—being cut up with saws, axes and hammers, with pieces falling on the hangar floor. I couldn't go into the hangar...it was a heart rending experience."

The event was even more poignant than Roger's statement described. Before being destroyed, the *Jetliner* was offered to the Canadian National Research Council but they refused it, allegedly for lack of space. Only the nose was preserved and the rest of the aircraft was sold for scrap. The main wheels ended up on a farm wagon and the autopilot flew for many years on a 1930s-vintage Douglas DC-3.

What if TCA had not played politics and ordered the *Jetliner*? What if the Government of Canada politicians and bureaucrats who controlled the *Jetliner's* fate had taken the effort to fully comprehend the plane's potential? In what ways would both Canadian and world airline history have turned out differently? We shall never know, but we can speculate, and it is interesting to observe that the first medium-range jet transport, the French *Caravelle* entered commercial service in 1959, a full ten years after the *Jetliner*, also a medium-range jet, first flew. Rogers estimated that if the *Jetliner* had been allowed to go through a normal commercial aircraft development cycle, a thinner wing with more pronounced sweepback would have been introduced in addition to more powerful engines. If that had happened, Canada would have produced an aircraft equivalent to the original Douglas DC-9 some ten years before the DC-9 first flew on February 25, 1965. Sadly, aside from a bit of space in an air museum, there seems to be only one way the Government of Canada acknowledged the *Jetliner* affair and that was through a postage stamp.