

Outrageous Fortune

Cancelled 40 years ago, the Avro CF-105 Arrow interceptor was the Canadian counterpart of Britain's ill-fated TSR.2. Now, in an echo of history, a full-sized Arrow replica has been the victim of a similarly chequered career, as **JACK MEADOWS** reports

"The Arrow and Britain's TSR.2. were advanced designs, too far ahead of their time perhaps"

The roll-out of the first Avro Canada Arrow at Malton, Ontario, on October 4, 1957.





ABOVE Newly unveiled at Abbotsford in 1997, the Avro Canada CF-105 Arrow replica stands in the setting sun with snow-capped Mount Baker (USA) in the background.

The evening of July 25, 1997, was bright and clear at British Columbia's Abbotsford Airport. Snow-capped mountains provided a traditional background, and with the sun low in the west the curtains of a large blue temporary hangar slowly drew back. The band played stirring 1950s music, and slowly there emerged a fantastic sight, the completed Avro Canada CF-105 Arrow; or rather a full-scale replica. It had been more than 40 years earlier, and 2,500 miles to the east, that the original had similarly first been unveiled to the public.

There are remarkable similarities in the history of the Arrow and Britain's BAC TSR.2. Both were advanced designs, too far ahead of their time perhaps. At first glance the appearance of the two aircraft is similar. Both had the inevitable teething troubles, and for varying reasons overran budgets by a horrifying amount. Both suffered from shortcomings or unavailability of promised ancillary equipment, notably engines, electronics and weapon systems. Each was flying successfully under test and meeting or exceeding all the designer's claims. Both faced the threat of cheaper American alternatives. Both promising projects were scrapped early in their flying life by

politicians frightened by the costs and impressed by the prevailing thought that strategy had changed and the days of manned aircraft were drawing to a close.

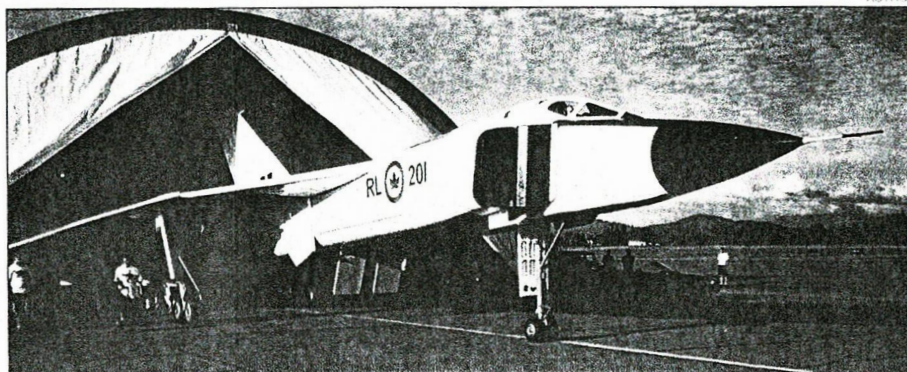
There were also major differences. The TSR.2, cancelled in 1965, was a strike aircraft. The earlier Arrow, in 1957, was a Mach 2.4 fighter designed to protect North America from Russian jet bombers coming in from the north. Ordered straight off the drawing board, it was a pioneer in many ways. It quickly gained serious interest from a number of other countries, and the American aviation industry was somewhat fearful of its competitive possibilities.

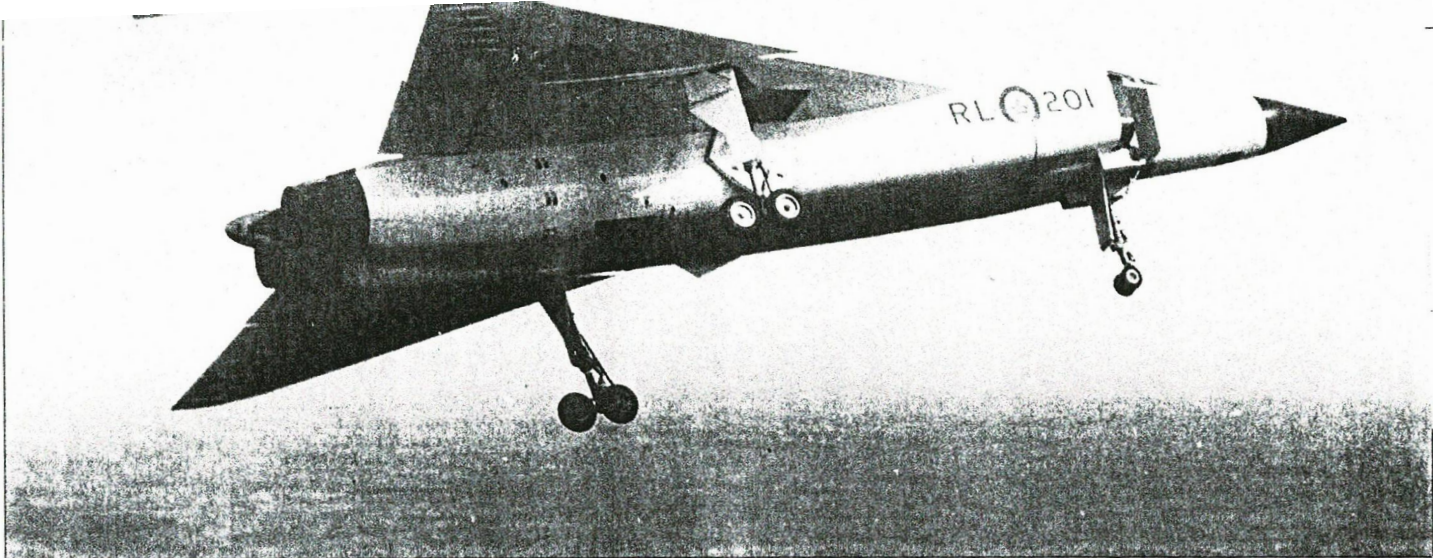
This may well have been partly in mind when America's President offered Canada free Boeing Bomarc missiles to do the job more quickly and easily, and thus considerably more cheaply. Such diplomatic pressure on top of (mistaken) strategic and economic arguments persuaded Prime Minister Diefenbaker of Canada to accept the Bomarc and take an axe — literally — to the wonderful Arrow. Ironically, the Bomarc proved to be a complete failure.

At least in the UK today the public can see a TSR.2. In Canada Diefenbaker ordained that every trace of the Arrow should be destroyed. Some say this was to satisfy the USA's aircraft industry, while others say it was to try to hide the shame of the dirty deed. Officially it was to prevent such advanced technology falling into Russian hands. So the six Arrows already completed, as well as all those under construction, were reduced to scrap. All parts, plans and associated paperwork were also completely destroyed.

This was the unforgivable crime. It is easy in retrospect to criticise any decision, to argue that it might have been a mistake. But it was inexcusable to destroy such beautiful and impressive work, and all the plans, in the hope it would all be forgotten. Another result was the breaking-up of a fine large design team. This was a catastrophic

BELOW The Arrow emerges slowly from its temporary Abbotsford hangar at its 1997 unveiling.





Full-size flying Arrow project launched

While Alan Jackson's replica awaits a new home, another full-scale replica project is under way — and this time the extraordinarily ambitious plan is to fly it.

Conceived by the Arrow Alliance, a growing organisation dedicated to reminding and inspiring Canadians that they can accomplish great things, the flying replica project is still in its very early stages.

In order to encourage sponsorship and promote public awareness of the CF-105 Arrow, the Alliance regularly attends trade and public exhibitions throughout Canada, where it displays a J-75 engine, a wooden Arrow simulator and other memorabilia associated with the programme. The organisation is due to exhibit its collection on the December 17–19 this year at the International Centre in Mississauga, Ontario.

Details of the Arrow Alliance may be found on its website at www.arrow-alliance.com. The site includes a wealth of information including the history of the Avro Arrow programme accompanied by some rare colour photographs and background information.

blow to Canada's aviation industry; many of the team took their skills and knowledge south to contribute to America's NASA and aviation successes. Diefenbaker would have been horrified to know the strength of feeling that still existed in the country 50 years later. Myth and mystique had joined with facts to turn the CF-105 Arrow into a legend, a cult.

In 1996 a Canadian Broadcasting Company documentary overplayed the issues, portraying Diefenbaker as more of an American pawn than was perhaps fair. However, its main theme was correct, though in any such dramatic presentation a purist always finds much to criticise. Playing a star role was a replica Arrow, without which the programme would have been a very poor show. Yet it was quite by accident that this star appeared at all.

In 1989, 62-year-old model aircraft enthusiast Alan Jackson of Wetaskiwin, Alberta (home of the Reynolds Aviation Museum), read a book about the Arrow and built a scale model. One thing led to another. He started to build full-size pieces of the real thing. First were the air intakes, each about 6ft x 3ft x 30ft, whose (then) revolutionary rectangular design has since become

standard for many aircraft. Next came the whole nose section and cockpit, some 28ft long and 10ft wide. Before he knew it he found himself working on a complete replica.

He was making a model 82ft 2in long, 21ft 3in high and, despite its almost bullet-like appearance, with a wingspan of 50ft. The frame was made with steel trusses obtained from the steel fabricating company for which he worked. Other parts, such as the undercarriage, had to be made entirely by hand. For example, each undercarriage leg was made from three concentric pipes. The first took him 35hr of fiddling and fitting; the others were much easier. As the project grew in size a friend provided a workshop big enough to handle it.

"It was not expensive", says Alan, although that must be relative. "It took me about 3,500hr of shop time — that is on top of all the other time spent thinking and planning." His only guide was a one-page plan from a book, and, of course, photographs. He drew no formal plans, just sketches, and then worked from a mock-up. Much later, when he heard that an original nose cone, undercarriage and some plans had somehow survived the scrap dealer and were now

ABOVE Jan Zurakowski made the maiden flight of the prototype Arrow at Malton on March 25, 1958.

in the National Aviation Museum at Ottawa, he went there to make some checks. He found that most of his work was dead accurate, maximum divergence being $\frac{1}{16}$ in. Later a pair of original wingtips also turned up on a farm.

In 1994, when he had nearly finished, news of it reached the film company working on the CBC documentary. They were daunted by the prospect, and by the estimated C\$1 million cost, of trying to produce a full-scale replica themselves. Instead, they offered to rent Jackson's Arrow, and finish it.

Unfortunately, the film company followed the script so closely that at the end they re-enacted the final scrapping scenes too literally. Once again chainsaws came into action. What was returned to Jackson in 1996 horrified him. He is trying to get compensation.

He spent some 200hr starting to put it together again. Then the Abbotsford International Air Show Society had the idea of displaying Jackson's replica Arrow at their 1997 annual air show and Airshow Canada, North America's

BELOW The author (left), with Alan Jackson (centre) and George Proulx, President of the Canadian Museum of Flight, pose in front of the Arrow.



Avro Canada CF-105 Mk 1

Powerplant

Two 23,500lb-thrust Pratt & Whitney J-75-P-3

Dimensions

Wingspan	50ft
Length	82ft 2in
Height	21ft 3in

Weights

Empty	48,923lb
All-up	68,600lb

Performance (estimated)

Speed at sea level	805 m.p.h.
Speed at 40,000 ft	1186 m.p.h.
Rate of climb	39,000ft/min
Combat ceiling	50,000ft

aerospace trade show. How times have changed. The government allowed the Canadian Defence Force to offer a Lockheed Hercules to move the Arrow to Abbotsford. Unfortunately it was just too wide, so it made the 700-mile trip by road, arriving on July 1.

Just a mention of the Arrow in Canada unleashes a horde of enthusiasts. A team of more than 30 volunteers gathered at Abbotsford for the mammoth task of reassembling and refurbishing Jackson's replica in a temporary hangar. Among them were 15 from the Canadian Museum of Flight at nearby Langley, who postponed other much-needed work, and two Defence Forces technical corporals from the base at Comox.

So, just over three weeks later, and after another 3,200hr of work, Jackson's gleaming, pristine Arrow was unveiled to a specially invited audience. It was a moving and memorable occasion. There were many speeches of thanks and congratulations, including of course to Jackson himself. Two weeks later, at the show itself, it was a major attraction. How its designer and builders must have celebrated with the millions of other aficionados. Diefenaker, and his supporters of 40 years ago, must have writhed in their graves at the prospect.

A further indignity for the vandals

will come in about ten years' time at the hands of Doug Hyslip of Calgary, Alberta, whose 1/4-scale flying model of the Arrow was also used in the film. He has now assembled a team to produce a half-scale manned flying replica. Watch this space in about 2008 for its debut.

But back to late 1997: the full-scale replica was unveiled again, and it seemed that everyone would live happily ever after. However, the course of aircraft restoration and replication runs no more smoothly than that of true love.

It had been planned for the Arrow replica to stay at Abbotsford at least until the Airshow Society's 1998 show. That, as is now known (see *News*, March 1998 *Aeroplane*), was cancelled. Short-term housing was offered in the Tradex building, once home of the biennial Aerospace North America (previously Air Show Canada), the trade show which, as also reported earlier, will in future be held in central Vancouver.

The nearby Langley Canadian Museum of Flight badly wanted to capitalise on its own substantial contribution in man-hours to the rebirth, and to house it itself. Alan Jackson was in agreement. However, the museum had no funds to provide the extra covered

space for its existing collection, let alone for the Arrow.

In the end it had to be accepted that the Arrow must be returned to its owner. In late May 1998 the museum, with the Airshow Society, held a farewell day in the Tradex Building.

The next stage was shameful, if less so than those earlier occasions. For the museum then had to dismantle the homeless Arrow, this time with love

"Unfortunately, the film company followed the script so closely that at the end they re-enacted the final scrapping"

and care, load it on to three large trailers and ship it back to Alan Jackson at Wetaskiwin. There, presumably, it will remain in pieces until such time as a new home can be found where it can be displayed to the public once more. The Reynolds Wetaskiwin museum would seem an obvious home, but its new building is also already overflowing with exhibits.

The circumstances surrounding the Arrow are unique. Someone, somewhere, must realise its commercial potential, as well as its historical significance, and offer a proper home for this magnificent trophy.

RIGHT A three-view line drawing illustrates the futuristic lines of the Arrow. It was one of the largest fighters of its time.

BELOW The Arrow's large rectangular air intakes were revolutionary in the Fifties, as was the "notched" leading edge of the delta wing.

