

Re. Article in the Globe and Mail - Friday, February 9th. 1990.

'Canada's Avro Arrow -- The Legend that wasn't' by Prof. Hodge.

In addressing the impact of the play 'The Legend of the Arrow', he contends that, unlike the characters in the play, the people at Avro Canada were 'really a bunch of ineptly directed technical incompetents who were wholly out of their depth trying to design an aircraft quite beyond the capacity of their company and this country'.

I have been asked to respond to this diatribe and my first thought was that I would not be prepared to descend to the level of the 'acid-throwers' whose paranoid ravings belong more appropriately to the National Enquirer than the Globe and Mail.

However, since this latest article throws some light on the earlier utterings of some other maverick professors calling themselves 'revisionist historians', although recognised among reasonable Canadians as denigrators of everything Canadian, I decided to put my own thoughts on the matter on record, not in defence against their accusations, since that is not necessary in the light of documented evidence to the contrary, but for the great team that worked at Avro Canada and Orenda Engines. They should not have to be subjected to the vitriolic and demented ramblings of these so-called educators.

The following are some examples of the smear campaign mounted over the years by these irresponsible people;

From the book 'A Military History of Canada' by Prof. Desmond Morton.

Quote; " Nor have the Arrow's own passionate advocates ever settled fundamental questions about crippling design flaws in a reputed triumph of Canadian engineering.

carrying its missiles in a belly pack. Opened for action at high speeds, the rocket pack acted like an air brake, or threatened to tear off. No other high performance fighter ever initiated this Canadian innovation, for good reasons" end of quote. When it was pointed out to Morton that he had become mixed up between the experimental rocket pack on the CF100 and the missile pack on the Arrow, which was not designed ever to be extended in flight under any circumstances, he finally blamed his error on one of his students who had apparently been given the job of researching the subject. So much for 'eminent historians'!

Unfortunately, Morton's false statements on the subject have also been included in two important history books, which will be read by future generations of young Canadians and all attempts to get either Morton or the publishers to respond to letters pointing out the monumental errors have proved to be fruitless.

From the article ' Shutting down the Avro myth', by Michael Bliss, Globe and Mail 'Report on Business' Feb. 1989 Volume 5, No 8.

He describes the Avro Jetliner as 'unsellable' and on discussing the position of the airlines on that project states "not one of them, not a single one -judged the Jetliner to be commercially viable'.

Bliss had obviously not taken the trouble to determine the facts prior to making this ridiculous statement. These are well documented in surviving correspondence between some of the airlines and Avro management, which makes it clear that not only were they ready to sign contracts for the purchase of a number of Jetliners, but they could never understand the blocking of the sales by C.D. Howe and in one case by Avro management on his direction.

In the case of National Airlines, after sending his chief pilot and his chief engineer to Malton to carry out a complete performance and economic check on the viability of the Jetliner on his routes, the President of National, Mr. E Baker, reported that he was ready to negotiate a contract for a number of Jetliners. Reports on his

meeting with his evaluators contain the following comment 'I send two of my most conservative people up to Canada for a couple of days to look at the C102 Jetliner and they come back stark raving with enthusiasm for it'.

Baker could never understand why the contract negotiations were discontinued and even some time after cancellation sent a letter to Avro management containing the following comment, 'We haven't lost interest in the Avro Jetliner and hope that one of these days soon you will be in a position to take orders and make deliveries'.

TWA was another airline which expressed a readiness to purchase the Jetliner after an exhaustive study of the commercial viability on their routes. In later writings about the Jetliner period, Robert Rummel, chief engineer of TWA at the time that they were considering the Jetliner, had this to say on the subject, 'A 48 passenger Derwent powered version and a 52 passenger 'cool' Nene powered one, both with four engines, were shown to carry excellent payloads at good operating costs on New York -Chicago and Chicago- Kansas City length flight segments. A heavier twin-engined version powered with 2 P&W J-57 engines had considerably greater range capability including Chicago- Los Angeles length segments'----- 'One can only wonder what success this superb pioneering project might have enjoyed, if Avro had been permitted to develop and market Jetliners in a timely manner like it wanted to do' ----- 'the Jetliner demonstrated close at home the great promise of jet transportation and thus helped pave the way for the spectacular jet age which it clearly brought into sharp focus and closer to fruition.' end of quotes!

It is ironic that these acknowledgements of Canadian achievements come from citizens of the United States, while people like Bliss attempt to denigrate Canada's achievements at every opportunity.

The USAF had also allocated funds for 20 military Jetliners for jet bomber crew training.

In the face of such evidence I was finding it difficult to understand why practically all of this 'garbage-can' philosophy was confined to a few professors at the U. of T. and Carleton, but Hodge has now provided the clue to that mystery.

He mentions that his 'facts' originate in a paper by Professor Lucasiewicz of Carleton, who he says "was familiar with every stage of the Arrow's development". Since Lucasiewicz was head of the high-speed aerodynamics group at the National Research Council at the time of the Arrow development, he was of course familiar with the program on that project, and thereby hangs an interesting tale!

In mid 1954, when the Arrow design was well under way, a report was submitted to the Chief of the Air Staff and the Chairman of the Defence Research Board by the head of NRC, Dr. J.H. Parkin, which claimed that Avro had their aerodynamics all wrong and that it was NRC's opinion that the aircraft would not meet the RCAF specification. In a subsequent meeting with Avro officials Dr. Parkin suggested that it was doubtful that the aircraft would ever fly supersonically.

This report caused a great deal of consternation within the RCAF, the government and not least in Avro's management, since the NRC staff were supposed to be the scientific advisors to the CAS and the DRB and if NRC were right there would be no point in continuing with the project.

After much discussion between Avro engineering and the NRC engineers, it became obvious that we were not going to resolve the discrepancies by normal discussion and it was decided that the matter should be referred to an independent arbitrator, since we were as convinced that our own conclusions were correct as the NRC were that we were wrong.

Both sides agreed that the National Advisory Committee for

Aeronautics in Washington was the undisputed authority on aircraft research and performance and an approach was made to the Chairman of NACA, Dr. Hugh Dryden, who agreed to arrange a conference to determine the truth in this very delicate situation.

A two day conference was held at the headquarters of NACA in Washington on December 20th. and 21st. 1954, attended by Dr. Dryden, his deputy Dr. Abbott and a number of senior NACA researchers. Other attendees included senior RCAF officers, members of the DRB and NRC and representatives and engineers from Avro, including Fred Smye and myself. (a list of attendees is attached)

The results of this intensive and thorough investigation by what were considered to be the best brains in the world on the subject of high-speed aerodynamics, was a vindication of Avro's assumptions and estimates and the following is a summary statement issued at the end of these conferences;

In summing up the discussions on drag and performance, NACA expressed the opinion that the basic configuration of the CF105 for the mission specified by the RCAF was reasonable, and could not suggest any changes in the basic configuration which would improve the aircraft from the performance point of view.

They also expressed the opinion that all the problems discussed were at present being faced by the whole aircraft industry. Dr. Abbott of NACA pointed out that aircraft design was still very much an art rather than a science and that the state of the art was such that there were no magic formulae for dealing with these problems, and they can only be tackled by normal development and aggressive testing, and should be considered as normal developmental problems.

Fred Smye also makes reference to this incident in his memoirs!

A series of meetings was held in Washington under the auspices and chairmanship of Dr. Dryden attended by all the parties concerned. The outcome was a complete vindication of the company's personnel and their calculations. In fact, NACA considered the figures of the company to be conservative and forecast a more optimistic performance of the aircraft. The company was congratulated for extending the boundaries of the

art, particularly in the field of flutter. Dr. Dryden reassured the management of the company of its confidence in its engineers and added that he was unaware of any to be considered their peers. That was the last of many problems with the NRC.

Fred was unfortunately wrong in the last sentence of his account.

The RCAF were critical of NRC for raising what could only be described as a 'red herring' and it is my opinion that Dr. Parkin never forgave Avro for being right! He and his staff must have been livid when Zura blasted through Mach 1 on his third flight and climbed at 1000 mph at 50,000ft. on the seventh flight while still accelerating. No doubt they also kicked their desks when Potocki later took the Arrow up to Mach 1.98 and reported no significant problems.

If indeed the original misinformation came from Dr. Lucasiewicz's group, this could explain why he attempts to denigrate the company at every opportunity, and why his co-professors at Carleton have caught the 'bug'.

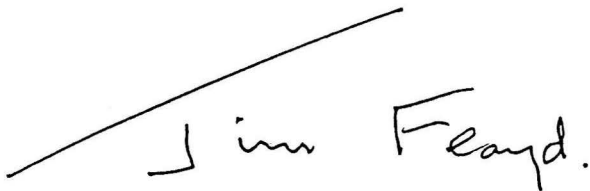
The smear campaign appears to have spread somewhat, but seems to be confined to a few fellow professors at Carleton and the U. of T. who no doubt meet for coffee mornings and 'swap the dirt' about Avro. It must be frustrating for them to be aware that most of them are now known mainly for their 'racism' against Canadian engineers, while the remainder of Canadians are proud to know that Canada was once considered by the rest of the world to be in the lead in aviation technology. I am sure that dear old Tommy Loudon, the distinguished Professor of Aeronautics at the U. of T. who trained many of the great engineers at Avro, would weep in his grave if he could read the garbage uttered by some of the current educators at his beloved U. of T. and Carleton.

The really sad part of the story is that these maverick professors have the minds of our young Canadians in their vicious hands.

Lost to Canada, their country of origin or choice, when the Arrow was cancelled, many of the fine people whom Hodge describes as 'technical incompetents' went on to other leading-edge-of-technology projects, such as major contributions to the US space programs, including Gemini and Apollo space crafts, involvement in Concorde and other major European and United States programs. Although they were scattered to all corners of the globe, almost without exception they continued to play a major role in technical developments in aerospace throughout the globe.

So, Professors Morton, Bliss, Hodge, Lucasiewicz and any other so-called 'revisionist historians' who have joined the unholy cult, the next time you are preparing the acid for throwing, take a look in the mirror, you may not like what you see!

Appended are a few comments from the more responsible and enlightened participants in the Avro programs and some comments from independent sources, which may throw some light on what they thought about Avro and it's products.

 J.C. Floyd.

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February 12th. 1990.

U.S. General Lauris Norstad , head of NATO, after a two day evaluation tour of the Malton complex.

On leaving he described the engineering teams at Avro and Orenda as "Just about the best teams that I have seen anywhere" (and he had seen them all!)

Further Comments on Avro and its Products from various sources.
(non-company sources)

Jetliner.

American comment on the Avro Jetliner, after it's first flight into the United States. April 18th. 1950.(from Air Trails mag. Aug.1950.)

" This is New York City, business capital of America. Most Americans believe that their nation has the greatest aviation industry in the world-- an industry that embraces the most progressive manufacturers and the best in aeronautical brains. How, then, could first honours for a jet-powered transport go to the Canadians instead of to our own fabulous aircraft industry? In the race to get a jetliner into the air Canada won hands down. United States designers had not passed the 'doodling' stage when the Jetliner appeared. Our hat's off to the Canadians."

Rochester Democrat and Chronical. Jan.1951. during Jetliner trials.

" The fact that our massive but underpopulated good neighbor to the North has a mechanical product that licks anything of ours is just what the doctor ordered for our overdeveloped ego. The Canadian plane's feats accelerates a process already begun in this nation --a realisation that Uncle Sam has no monopoly on genius; that our products are not necessarily the best simply because we made them."

Report by Del Rentzel, Civil Aeronautics Administrator in the United States, after an evaluation on the use of the Jetliner in the United States--Report to a special U.S.Senate Committee dealing with the U.S. aviation industry.

" The Canadian C102 (Jetliner) was built to conform in every possible way with U.S.Civil Air regulations. Our people have been working with the Canadian government and the manufacturer on this for quite a time. A definite attempt has been made to build the ship to our regulations, and my impression is that the Avro would meet all U.S.regulations".

One of Rentzel's staff who had been on the evaluation was quoted as saying " It is my opinion that everything that is wanted by an airline for maximum efficiency, combined with definite safety, is combined in this design".

Final evaluation report by the Chief test pilot of the Canadian Department of Transport, Desmond Murphy. dated April 5th. 1950.

" The C102 is quite a docile aeroplane. Some changes are indicated in order to meet fully the requirements of CAR 04(b), but nothing dangerous or undesirable was found in this test series. The undersigned would, therefore, recommend that in so far as performance is concerned permission be given to Avro Canada Ltd. to

carry passengers on bona fide demonstration flights within the following limits;

THEN A LIST OF LIMITS.

It is believed that most pilots flying the aeroplane in it's present stage of development would be agreeably impressed with it's general handling and performance".

Extract from 'The Illustrated Encyclopedia of Commercial Aircraft'

"The Avro Canada C102 remains an example of how a talented and motivated team could work together to produce a unique aircraft in record time".

On the Arrow.

Extracts from Arrow evaluation report by the RCAF chief evaluation pilot, F/L Jack Woodman. (after cancellation.)

" Approximately 95% of the flight envelope was investigated and from where I sat the Arrow was performing as predicted and meeting all guarantees".

In a later speech that Woodman gave at the 25th anniversary of the first flight of the Arrow, he had this to say;

" 25 years ago, as a representative of the customer, I can tell you that it was a good airplane , a darned good airplane, well ahead of the pack. The decision to cancel the Arrow program I think denied Canada and the RCAF from being world leaders in high performance airplanes."

On the Company.

Comments by Sir Sydney Camm, Hawker Aircraft Chief Designer and acknowledged Dean of British aircraft designers, after an extensive visit to Avro Canada with a Design Council evaluation team in October 1953 (prior to Arrow build)

"You have done amazing things here at Malton, Imagine a young company in eight years designing a successful airliner, a successful fighter now in operational service and an engine to power it and the Sabre. No one in England has done anything like that and I doubt whether anyone in the world has. Its remarkable."

Sir Frank Spriggs, Chairman of HSA on the same occasion.

"You have demonstrated beyond question that you can talk on level terms with any design teams in the world".

LIST OF CONFEREES

AT

MEETING TO DISCUSS C-105 PROBLEMS

HELD DECEMBER 20, 1954 AT

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

1512 H Street, N.W., Washington, D.C.

J. J. Green, Defence Research Board
J. C. Floyd, A. V. Roe (Canada) Ltd.
H. R. Footitt, Group Captain, Royal Canadian Air Force
A. W. Armstrong, Squadron Leader, Royal Canadian Air Force
A. W. R. Gilchrist, Defence Research Board
J. Morris, A. V. Roe (Canada) Ltd.
J. H. Lucas, A. V. Roe (Canada) Ltd.
F. A. Woodward, A. V. Roe (Canada) Ltd.
Charles W. Frick, Ames Aeronautical Laboratory, NACA
Richard Whitcomb, Langley Aeronautical Laboratory, NACA
Thomas A. Toll, Langley Aeronautical Laboratory, NACA
J. A. Chamberlin, A. V. Roe (Canada) Ltd.
Ira H. Abbott, Headquarters, National Advisory Committee for Aeronautics
R. N. Lindley, A. V. Roe (Canada) Ltd.
D. D. Wyatt, Lewis Flight Propulsion Laboratory, NACA
D. C. MacPhail, National Aeronautical Establishment, Canada
J. Stalony Dobranski, A. V. Roe (Canada) Ltd.
R. J. Templin, National Aeronautical Establishment, Canada
Hugh L. Dryden, Headquarters, National Advisory Committee for Aeronautics
John W. Crowley, Headquarters, National Advisory Committee for Aeronautics
J. L. Plant, Vice Marshal, Royal Canadian Air Force
M. B. Ames, Jr., Headquarters, National Advisory Committee for Aeronautics
F. T. Smye, A. V. Roe (Canada) Ltd.

A note on journalism.

The written word is an extremely powerful and influential force and those who wield such power have an unusually high degree of responsibility ,in writing about historical events, to ensure that the message of their writings is based on fact, truth and a balanced view of the subject under pen.

However erudite and skilful the resulting writing may appear, if it is not based on fact, whether due to inadequate research or other self-serving reason, the writer is as guilty of misrepresentation and in some cases fraud, as those who commit those crimes in a different field.

While defending the right of all writers to express their personal opinions without fear of repression, it has to be said that historians, particularly, have an awesome responsibility to ensure that future generations are presented with established facts, rather than merely palatable fiction. Any other approach, whether the result of malevolence or incompetence, must be treated with the contempt it deservedly generates.

J.C.Floyd.

February 27th. 1989.