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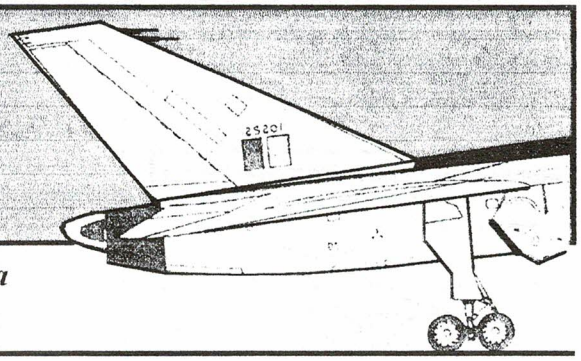

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From Bradford to Malton

Introducing the President of the Aerospace Heritage Foundation of Canada

Ian Farrar

The President of an association, no matter what its structure or function, is to become from the outset the key person of focus, direction and action. The general task must be guidance through co-ordinated and constructive movement toward the realization of the mission and vision of the association. The office of the president demands commitment and thoughtful acceptance and serious consideration. It is a difficult position. It means overseeing and managing the work and tasks of the members of the Board. It means responsibility to the general membership. Ian Farrar is in his second cadence as President of AHFC. He is the fourth President of the Foundation following Nicholas Doran, John Bates and David Onley. Ian was asked to provide an outline, a short descriptive of his time spent at Avro and Orenda. It is hoped that by doing so, along with his photograph, he will be more than a name on the masthead, but a "real" person - and President of AHFC.

pf

I was born November 1935 in Bradford, Yorkshire, England. After graduating from Thornton Grammar School, I joined Low Moor Alloy Steelworks as a metallurgy technician. While attending Bradford Technical College on a co-op program in 1954, inspired by an article in the RAF *Flying Review* about the Avro *Arrow* in Canada, I arranged an interview in London. Thus I arrived in Canada in May 1955, where I joined Avro Canada as a metallurgy Technician.

I worked with a group of brilliant engineers: Dick Smallman-Tew, Mike Bishop, Louis Badone (an AHFC member), Marc Lamarche and others, plus several senior technicians. I was also exposed to some of the giants at Avro: Jim Floyd, Dr. Owen Maynard, Ernie Alderton, come to mind. After two years, on the advice of the chief metallurgist, I left for the Atomic Energy labs at Chalk River. The intent was to get experience of advanced technology, which I would bring back to Avro in a couple of years. Sadly, John Diefenbaker finished that plan with the cancellation of the Avro *Arrow*.

The end result was that I was there for three years. It was not without rewards both in advanced techniques and problem resolutions. My section finally resolved the design problems of the fuel bundles for the new power reactors. The mockup of the solution was made from broom handles and aluminum welding wire, made up after everyone else had gone home.

In 1960, Orenda offered me a position in its metallurgy lab, as it was just starting up on manufacturing the J 79-OCL-7 engine for the

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Ian Farrar

Farrar, *cont'd.*

CF-104 *Starfighters*. After nine years in both the production control lab and the development labs, I accepted a new position as a service analyst in the engineering support department, having done analysis of service failures while in the labs.

This was probably the most rewarding part of my career. From an analyst, I was promoted first to technical specialist, then supervisor, and finally manager. The scope of my responsibilities was wide and ever-changing, covering such items as flight safety, product reliability, logistic support/field service reps, and review of in-service problems with recommended solutions. It was a fun time, for in addition to superb senior managers like Max Nerrier, Bob Reed, Doug Platten and Doug Cameron, I was supported by a terrific team of analysts and specialists.

Such a wide ranging mandate resulted in a fantastic range of contacts throughout the Canadian and U.S. aerospace companies, plus overseas. Some of these relationships lasted for twenty-five years, for which I was most grateful. They enabled me to provide the customer or the Orenda shop with the advice and information they needed, immediately.

In 2000, I retired after 43 years with Avro / Orenda, and I would not have missed it for anything. For in the final analysis, when those people, whose judgment you have learned to respect, tell you that you did OK, it's a hell of a way to end a career.

Aviation History:

How it was then...

Canadian Aviation:

the early years

... and how it came to be.

At the beginning of the 20th Century. Canadians were fascinated by "flying machines" and everything connected with them. In fact, it seems that Canadians of all ages have always been fascinated by aeroplanes. Perhaps that is why today Canada holds an honourable place in the pantheon of aviation, with several firsts over the years of the last century: the variable-pitch propeller, the pressurized oxygen mask, the "anti-G" suit, the Jetliner, the Arrow and the Canadarm on the space shuttle. Yet it is good to remember the historical events, especially the men who had the vision, initiative and courage to do what they did in theoretical and applied aeronautics.

Canadians' love affair with the airplane started before the Wright Brothers at Kitty Hawk, USA. Wallace Rupert Turnbull (1870-1954) was one of these Canadians.He studied engineering at Cornell (USA) and Heidelberg (Germany), and became intrigued by aeronautics because of the work of Liliental of Germany and Langley of the USA, In fact, at the turn of the century, Turnbull was already doing serious aeronautical research in St. John. He had a restless, inquiring mind; his research was meticulous, detailed. When radium and polonium were discovered by Marie Curie in France, Turnbull immediately sought to know more about them. His further scientific investigations showed that electric trains could be constructed to travel at over 250 kph! Turnbull's wife, conscious of their position in the society of the day, begged her husband not to let anyone know what he was working on. She did not want her husband to become known as a "flying machine crank". Nevertheless, in spite of the potential threat of societal disapproval, he continued his work and in 1902, he built a small wind tunnel in St. John to experiment with wing shapes. Canadian aviation and aviation in general benefitted by his persistence.

Turnbull continued to experiment with aerodynamic structures, with longtitudinal stability and especially with propellers. This last work eventually resulted in his invention, the variable pitch propeller on February 25, 1927 at Camp Borden. So the next time you are at an air show and hear the familiar growl of a Harvard prop (prop tips in fine pitch approaching the speed of sound), pause a moment. Doff your cap and think kindly of Wallace Rupert Turnbull.

Other Canadians were involved in aeronautical scientific research at this time. Alexander Graham Bell and his colleagues in Baddeck NS were doing scientific investigation into the theory of how to maintain flight. His wife financed the Aerial and Experimental Association. Some of its members included Frederick Walker ("Casey") Baldwin, J. A. D. McCurdy, Glen Curtiss (maker of light, reliable motorcyle engines) and Lt. Thomas Selfridge. This officer had the dubious distinction of being the first man killed in a powered aircraft – a Wright Flyer in 1908. The Association was active from 1907 to 1909. In this time it designed and built the "Red Wing", "White Wing", "June Bug" and finally the "Silver Dart". F. W. Baldwin became the first Canadian to fly in March 12, 1908 near Hammondsport, New York, USA. J. A. D. McCurdy made the first flight in Canada (as well as in the British Commonwealth) on February 23, 1909 at Baddeck NS. In retrospect, 50 years later, the Avro Arrow made its first flight at Malton .

On September 8, 1910, William Wallace Gibson, a farmer from British Columbia, flew his Gibson Twin Plane for the first time. This aircraft was later destroyed in a disastrous crash. Fortunately, the engine was salvaged and can be seen at the Canada Aviation Museum in Ottawa.

It was the First World War that jump-started the aeroplane to a higher level of development. The reliability of aircraft, the engines and airframe, increased rapidly under the demands of war-time flying. Many young Canadians learned to fly and fight – the most notable of them were Billy Bishop, Bill Barker and Raymond Collishaw. Amazingly, a mere 11 years after the Wright Brothers first feat of flight in 1903, 22,000 Canadians were recruited in the Allied Flying Service during WWI. After the Armistice, Canada inherited large numbers of relatively cheap surplus aircraft and a large pool of young, trained pilots.

Some of these young men, eager for more flying adventures, looked for ways of employing their flying skills. Many took to barnstorming, using the Curtiss JN 4 *Jenny* or *Canuck* as it was called in Canada. The procedure was simple. They would fly over a small town, buzz it a couple of times and then would land in a field on its outskirts and wait. Children would also spread the word. And people would come and pay $5.00 for a ride (You wore an authentic WWI helmet!). And remember the race between a Curtiss Flyer and a race-horse named "Brutus". Barnstorming provided the seeds of interest, enthusiasm and excitement in many of the men who later took up aviation as a profession and business in Canada. Others designed, built and flew new aircraft, like Jim Martin of Vancourver, whose airplane in 1910 set a world record speed of 120 kph (the average speed of cars on the QEW). Still others began to use plentiful surplus aircraft to fly into hitherto inaccessible parts of the True North. Such intrepid young men flew in prospectors and their gear, geologists, trappers (and helped find "the Mad One"), doctors, businessmen and people interested in Canada's North. They even flew airmail from Vancouver over the Rockies for the first time as early as 1919, landing in Calgary 16 hours later.

The first 25 years of the 20th Century were certainly interesting times for those daring Canadian young men in their flying machines.

– Ted Harasymchuk

Aeronews

Hall of Fame Inductees

Paul D. Manson, Chairman of the Board of Directors of Canada's Aviation Hall of Fame, announced that three distinguished individuals are to be inducted into the Hall at the Induction Dinner in Ottawa on June 16, 2001. At this same event, the Belt of Orion Award of Excellence will be presented to the Canadian Aviation Historical Society. The award is given annually to a deserving organization in recognition of distinguished service to aviation in Canada.

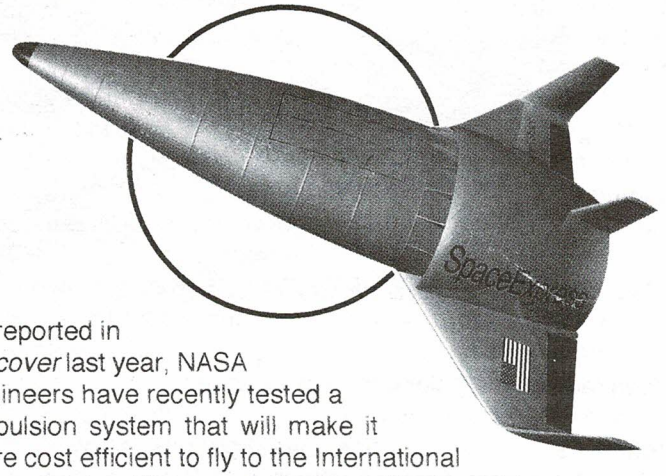
James Arthur Chamberlin, BSc, DIC (deceased) was born in Kamloops, B.C. He joined the engineering staff at Avro Aircraft in Malton in 1946. There he became Chief Aerodynamicist on the C-102 *Jetliner* and the *CF-100 Canuck* interceptor aircraft. In the early 1950s, he was appointed Chief of Technical Design, working on the *Arrow*. Following the cancellation of the *Arrow* program in 1959, he joined the U.S. National Aeronautics and Space Administration (NASA), working on the Mercury, Gemini and Apollo projects. For this work, Jim Chamberlin was awarded the Exceptional Scientific Achievement Medal and the Exceptional Service Medal from NASA. Chamberlin was described as "one of the most brilliant men ever to work at NASA". He died in Houston, TX in 1981.

Lieutenant-General (Ret'd) William Keir Carr, CMM, DFC, OStJ, CD with 4 bars, BA, BSc, of Stittsville, ON, was born in Grand Bank, NF. Carr joined the RCAF in 1941 and flew 143 photographic missions over Europe, Malta, North Africa and Sicily in Spitfire aircraft. During the post-war years, he advanced rapidly in rank, serving as Deputy Chief of the Defence Staff from 1973 to 1975. Subsequently, he was appointed the first Commande of the Canadian Forces Air Command. He is known as the "Father of the Modern Air Force" for his work in consolidating military aviation in the aftermath of the unification of the Forces. After retiring from the military in 1978, Carr joined Canadair, where he enjoyed a remarkable career in worldwide marketing of the then-new Challenger business aircraft.

Air Commodore (Ret'd) Leonard Joseph Birchall, CM, OBE, DFC, CD with 5 bars, of Kingston ON is a graduate and former Commandant of the Royal Military College of Canada. He was pilot of a Catalina in 1942, when he and his crew spotted the advance of the Japanese fleet steaming toward Ceylon (Sri Lanka). Before being shot down and taken POW, they were able to alert the British of the approaching fleet. For this action, then Prime Minister Winston Churchill named Birchall "the Saviour of Ceylon". He was later awarded the DFC for this action and the OBE for gallantry for his selfless conduct during a 40-month stay in a Japanese POW camp. Upon retirement from the military in 1996, Leonard Birchall became the longest serving officer in the history of the RCAF, with sixty-two years of service.

The Canadian Aviation Historical Society (CAHS) was awarded the Belt of Orion Award for Excellence for 2001. The CAHS (www.cahs.com) was formed in 1962; it is dedicated to furthering awareness and understanding of Canda's rich aviation history. Through its excellent publication, the *CAHS Journal*, local chapters across Canada, and annual conventions, this society has for many years been instrumental in the effective research and recording of Canada's aviation heritage.

Rockets at an Airport Near You!



As reported in *Discover* last year, NASA engineers have recently tested a propulsion system that will make it more cost efficient to fly to the International Space Station. The space shuttle at liftoff weighs 4.5 million pounds, with half of this amount being fuel, including the oxygen to burn it. In fact, Uwe Hueter of the Marshall Space Flight Center in Huntsville, AL, says the engine could cut the takeoff weights of the shuttle by half. At approximately $15.00 CDN per pound, this would be a sizeable saving. This *combined-cycle* rocket engine would take off like a rocket, but within minutes into the flight incoming external air would begin to supplement LOX. This liquid oxygen would shut off at twice the speed of sound and the craft would operate like a ramjet, accelerating to ten times the speed of sound. When the air would be too thin for the engine to function, it would shift to rocket mode until crossing into space. Recent tests of the engine in low-speed flight, requiring high thrust levels, were a huge success. It is hoped that flight tests might begin in about four years. Hueter is optimistic. In about 15 years time, using advanced materials now under development, this vehicle also could be constructed almost as inexpensively as a jetliner; if the weight was kept below a million pounds, it could take off and land like a 747 at existing airports. But there is always the nagging question: "What's the hurry?"