

CONTACT INFO

President,
CAHS Toronto
65 Sussex Avenue
Toronto, Ontario
M5S 1J8

+1 416-923-3414

cahsnatmem67@
sympatico.ca



Canadian Aviation
Historical Society,
Toronto Chapter

*A division of the
Canadian Aviation
Historical Society*

VOLUME 56

NUMBER 5

FEBRUARY
2022

FLYPAST

NEWSLETTER

www.cahs.com/cahs-toronto-chapter | www.torontoaviationhistory.com | www.facebook.com/groups/1794796724128270/

Personal recollections of the Toronto Aerospace Museum and the Avro Arrow Replica Claude Sherwood



UPCOMING CAHS TORONTO CHAPTER ZOOM MEETING



Bob Wilhelm speaks about his time
as a Test Pilot with de Havilland
Aircraft of Canada.

DHC TEST PILOT- AROUND THE WORLD ADVENTURES

THURSDAY, FEBRUARY 10, 2022 7:30 PM EST

Non-members can request access by sending their name, affiliation (if applicable) and location to cahstorsvp@gmail.com





Avro Arrow replica in May 2009 with Canadair CT-114 Tutor (114168) in Snowbird colours (as 114156) and the Aerial Experiment Association 2005's Silver Dart replica which astronaut Bjarni Tryggvason flew at Baddeck, NS to commemorate Canada's 100th anniversary of powered flight in February 2009. This Silver Dart is now at the Alexander Graham Bell National Historic Site in Baddeck. Photo Ken Swartz.

Personal recollections of the Toronto Aerospace Museum and the Avro Arrow Replica

CAHS Toronto Meeting Dec. 9, 2021 | Presentation by Claude Sherwood | Report by Gord McNulty

FIFTY-EIGHT ATTENDEES INCLUDING CAHS members and guests enjoyed Claude Sherwood's engaging and well-illustrated personal recollections of the Toronto Aerospace Museum (TAM) and the celebrated Avro Arrow replica. It was the first Zoom presentation by Claude, who was introduced by Ken Swartz, a Chapter Director. Ken worked with Claude for years at the TAM.

Claude worked at Avro Canada as a draughtsman. He always remembers the day he was laid off, with the cancellation of the CF-105 Arrow. It was his 21st birthday. As aerospace jobs in Toronto evaporated, Claude entered the University of Waterloo and graduated in Civil Engineering in 1966. He subsequently worked in the GTA for many years in transportation planning, working with consultants and the Ontario government. The TAM was formed in 1997, a year before Claude retired in 1998. Claude learned about the new museum, its proposal to construct a replica of the Arrow, and contacted the CEO, Robin Murray. Claude soon joined a team composed of ex-Avro, ex-de Havilland Canada and ex-RCAF volunteers who went to work on building the full-scale replica. Claude subsequently became the Chairman of the Board of the museum. Ken was welcomed as the Bombardier representative on the Board in 2002. He noted Claude ran tight, well-organized Board meetings and was a key to TAM's success.

Claude began with an overview of the various heritage, military and aviation museums in Canada, totalling 53 in all. Nearly every major city has an aviation museum, except Toronto, despite the provincial capital's status as the largest airline hub in Canada and

its lengthy aviation and aerospace history. When CFB Downsview closed after 50 years of operation, Canada Lands Corporation took over the property that included a large Cold War warehouse, military housing and the site of the de Havilland Aircraft of Canada factory, Plant #1, that the Department of National Defence had bought after the war to establish an air force base at Downsview.

In 1997, three aviation-minded entrepreneurs registered the TAM as a non-profit corporation in Ontario and proposed to use the leg-

endary Plant #1. To their delight, Canada Lands accepted the proposal, recognizing the museum's potential to pay rent and attract visitors to the park.

The museum was established in the east third portion of the building, the oldest aviation factory in Canada. Small businesses operated in the rest of the building.

The TAM opened to the public in the summer of 1998. Volunteers, Claude said, "came out of

the woodwork almost from day one" to clean up the plant that had been in rough shape when Bombardier Aerospace left the factory. Abandoned fixtures and materials had to be sorted and stored. Promotional brochures were created. Educational programs were established. Groups came from far and wide. School children were thrilled. Interesting displays were planned and constructed by volunteers and some displays were loaned to the TAM by other museums. In 1999, the TAM drew considerable interest when it began restoration of the City of Toronto's priceless Avro Lancaster Mk. X, FM104 that had been displayed on the Toronto waterfront.

After the museum was operating, responsibility for the land was



Four new production RCAF DH 82C Tiger Moths outside the Downsview factory in Spring 1941. Photo Fred Hotson.



Avro Lancaster FM104 was displayed at Coronation Park from 1964 until removed on Oct 30, 1999. Photo Martin Keenan.

transferred to Parc Downsview Park (PDP) which was officially dedicated by Prime Minister Jean Chrétien on September 29, 2003. PDP's mandate was to operate a multi-purpose national urban park on the site of Downsview Airport and adjacent area, totalling 572 acres.

An impressive 'homecoming' occurred in July 2004 when Toronto-born Bob Laidlaw flew his restored DH 82C Tiger Moth, ex-RCAF 3874, on a 4,500-kilometre journey from California to its birthplace in Downsview and donated it to the TAM. Bob visited several airports that had been BCATP bases, including Brandon, Manitoba.



Bob Laidlaw and Bob Murphy flew Tiger Moth, RCAF 3874, from Oshawa home to Downsview on July 16, 2004. Photo Ken Swartz.

Unfortunately, engine problems grounded the Tiger Moth in Brandon. The TAM arranged with CN Intermodal to get the disassembled aircraft to the Museum on time. CN sent a truck and a 43-foot trailer to Brandon to pick up the aircraft. Then the trailer was loaded on a railway car in Winnipeg for the rail journey to Toronto. Bob then flew the fully restored Tiger Moth from Oshawa to a handover ceremony and public celebration at Downsview. The last flight was personally significant to Bob, since he learned to fly on Tiger Moths at RCAF



Bellanca CH-400 Special Model J "Miss Veedol." Replica of the first aircraft to fly non-stop across the Pacific in 1931. Sep. 2005. Photo Parr Yonemoto.



Vickers Vimy and Orenda engine team preparing aircraft for trans-Atlantic flight in TAM hangar, May 30, 2004. Photo Ken Swartz.

Oshawa during the war and began his postwar engineering career as summer student with DHC at Downsview in the late 1940s.

In another memorable event, a replica of the Vickers Vimy First World War bomber flew at TAM in May 2005 as part of a trans-Atlantic flight to retrace the first non-stop Atlantic crossing by Alcock and Brown in 1919. The Vimy replica was piloted by Steve Fossett and Mark Rebholz. A four-plane formation from the Great War Flying Museum added to the excitement. The crew was billeted in the museum's workshop for the special occasion, with Ken Swartz contributing public relations. An article and photos, headlined "HISTORY RECREATED" provided coverage and was published in the *CAHS Journal* Vol. 44, No.1, Spring 2006. The museum also hosted a 2005



60th Anniversary DHC-1 Chipmunk homecoming, May 2006.

visit by Miss Veedol II, a replica of the Bellanca CH-400 Special Model J that made the world's first non-stop flight across the Pacific Ocean in 1931.

In 2006, the museum began an annual Wings and Wheels Heritage Festival. The initial

event, a 60th annual birthday party to honour the first flight of the DHC-1 Chipmunk, was highlighted by a fly-in of Chipmunks.

Wing and Wheels proved to be a popular event that attracted a range of aircraft, cars and motorcycles. The second annual event in 2007, celebrating the 60th anniversary of the first flight of the DHC-2 Beaver, included a fly-in of Beavers that again delighted aviation



60th Anniversary DHC-2 Beaver homecoming, May 2007.



Arrow replica on April 10, 2006 after the fuselage was mated together and the main landing gear installed. The museum hangar was built by DHC in 1941-1942 as the paint shop for Avro Anson II trainers and DH 98 Mosquito fighter-bombers. Photo Ken Swartz.

fans. The TAM hosted the 44th Annual Convention of the CAHS during the Beaver festival, 23-25 May. Details of the fly-in are in a full report entitled "Convention '07" in the *CAHS Journal*, Vol. 45 No. 4, Winter 2007.

The heritage festival continued for several years and would feature appearances by the CF-18 Hornet, the CP-140 Aurora, Air Canada's Lockheed 10A, Canadian Warplane Heritage Museum aircraft and more. The TAM occasionally displayed other attractions including the flying replica of the Silver Dart. Over the years, the museum grew its collection to include a CT-114 Tutor in Snowbirds colours, a Canadair CT-133 Silver Star, a Grumman CS2F Tracker, a Bell CH-136 Kiowa, a Fleet Canuck, a Beech CT-134 Musketeer and more. The museum's public profile undoubtedly reached a pinnacle when the fully completed, full-scale Avro Arrow replica was officially unveiled in October 2006.

By 2008, fundraising became a top priority since the Museum was forced to sign a lease with the Downsview Park that would escalate to \$15,000 a month by 2012, replacing a revenue sharing agreement in place since about 2003. In 2009, the TAM adopted a new name --- the Canadian Air & Space Museum --- in response to aerospace industry senior representatives who felt it would be easier to obtain internal corporate support for a museum with Canadian in its name rather than the name of Canada's largest city. (The loss of the distinctive TAM name was controversial, given that many other aviation museums in Canada have "Canadian" in their title).

Then, the TAM was dealt a staggering blow when the Parc Downsview Park Board decided to repurpose Plant #1. They proposed a hockey rink for the building and issued an eviction notice for all ten-

ants in September 2011. The museum felt it was producing excellent work at the site and was well-suited to the Board's heritage objectives. Despite the museum's compelling case and a petition containing 22,000 signatures, lobbying efforts were unsuccessful. The museum's entire collection of aircraft, artifacts and equipment was packed up in 44 rented 40-foot shipping containers. "That was a tear jerker for a lot of us," Claude recalled. Fifteen years of progressive and successful operation at Downsview had ended. The museum executive was initially unsuccessful in trying to find a new home. Fortunately, the Greater Toronto Airports Authority (GTAA) executive provided outdoor storage space at Pearson International Airport in 2013. The contents of the containers were later transferred to an air cargo building generously made available by the GTAA where they were securely held for several years.

In 2018, there was finally a positive development. An arrangement was made to put the museum's collection on display at the Edenvale Aerodrome, owned by Milan Kroupa, who heard of the troubles experienced by the museum. Edenvale is a good location, as the well-known site of the annual Gathering of the Classics vintage aircraft fly-in among other things. The museum's collection is still owned by the registered Canadian Air & Space Museum Inc.

What was the Museum is now known as the Canadian Air and Space Conservancy, which safely stores and protects the collection including the Arrow replica. The Conservancy is in a strong position to advance the museum's goals of promoting public interest in our aviation and space heritage.

Claude noted the Parc Downsview Park idea of a hockey rink was soon abandoned when Centennial College lobbied various parties to



Design engineer Jim Floyd beside Lancaster FM104 in May 2005. He joined Avro in the UK in 1930 became Avro Canada's chief design engineer in 1946.

entire 137,000 square feet original site that formerly housed Toronto's only aviation museum.

Building a Legacy

DISCUSSING THE AMBITIOUS, ALL-VOLUNTEER building of the Arrow Replica, Claude noted it was not a true replica, which should be constructed with the same materials as the original. The museum's replica is officially called a display model, with the replica terminology being used loosely. The registration RL203 was chosen for several reasons. It was the only Arrow to fly with a crew of two, the first Arrow with dayglow paint to be more visible to chase plane pilots during the winter flights, the only Arrow with the Canadian Red Ensign on the fin, and was the last Arrow flown by chief test pilot Janus Zurakowski.

There was precious little information to bolster the construction plans. Volunteers started with very few tools and had to improvise. The 2004 Boston Mills Press book on the Arrow, by the Arrowheads, became Claude's "bible." Claude described the references and techniques he successfully used to assemble parts that would fit together and to ensure accurate measurements.

The replica had to be considerably simplified, given the multitude of parts in the origi-

nal Arrow. But it was to be accurate in shape and size for static display in the museum. It was to be a full-scale model, with museum quality detailing for visual accuracy. Major parts were to be constructed of metal materials for durability, with fibreglass for minor parts. The structure would be segmented for easy handling, construction, and possible teardown if ever necessary. All components had to be similar to the original Arrow.



Reporter David Onley helped inspire the Arrow project, and became the Museum's patron when he was Lt. Governor of Ontario. Photo Gord McNulty.



Engineering team of Claude Sherwood & Stan Porter.

nal Arrow. But it was to be accurate in shape and size for static display in the museum. It was to be a full-scale model, with museum quality detailing for visual accuracy. Major parts were to be constructed of metal materials for durability, with fibreglass for minor parts. The structure would be segmented for easy handling, construction, and possible teardown if ever necessary. All components had to be similar to the original Arrow.

Claude and Stan Porter, a well-respected aeronautical engineer, formed the engineering team. They were "blessed," as Claude said, with more than 170 eager volunteers who worked on Wednesday nights and Saturdays. Volunteers from elsewhere, including other provinces, assisted with tools and fabrication of parts in home workshops. The engineering was bolstered when Associated Tube Industries of Markham donated rectangular stainless steel tubing for the basic internal structure. Claude said it was "just fantastic" when the required tubes, precisely engineered, were delivered to the museum. The aluminum skin was donated by Alcan Aluminum. Avdel-Texttron of Canada, of Rexdale, donated more than 120,000 aluminum blind rivets needed to attach the skin directly to the tubing. Fibreglass was purchased for the radome, the shaped intakes, the cockpit canopy, position lights and other fairings.

Claude produced 75 "old school" pencil and paper drawings while Stan used a computer and printer. Constantly worried about how much weight they would need to manage, they initially estimated the Replica would weigh about 13,000 pounds. It came in at more than 14,000 pounds, including the heavy landing gear. Each component had a leader with a team of volunteers from all walks of life.

The engineering team allowed fabrication decisions to be made on the shop floor. Museum quality was emphasized. Messier Dowty of Canada, in Ajax, made a significant donation at an early stage, committing to provide a complete simulated landing gear, including the nose gear, which Claude described as "a godsend." The structural frames required welding. Lincoln Electric of Canada loaned a TIG welder that did the job. Avro Canada luminaries Jim Floyd and Janus Zurakowski visited the museum and were suitably impressed, assisting and encouraging the teams.

All paint was donated by SICO Paints Aviation Division. Bombardier was a great supportive neighbour. While painting corporate jets, Bombardier's painters had to wait for the paint to dry. The company allowed their painters to use the 'waiting time' to paint all the



Messier Dowty of Ajax, ON donated a set of replica Arrow landing gear for the Museum. Here volunteers celebrate the installation of the nose gear on April 22, 2006. Photo Ken Swartz.

replica components.

The inner and outer wings, and the fin structures, were large and heavy. A stable work area was built by constructing a dozen wood tables with leveling devices and bolting them together. The inner wing sections were really the backbone structure for the Arrow, with the largest stress loads. Stronger steel tubes were used in these parts. The centre section had the removable weapons pack, requiring an additional structure to carry the internal loads.

The engine section had an “unexpected first flight” while the Vimy replica was in the museum. Some of the Arrow parts had to be moved outside and covered. During that time, a heavy wind storm carried the finished engine section all the way between buildings on the site towards the railway tracks. It didn’t hit anything but ended up in a rock pile at least 500 feet from where it was. “Not a pretty landing,” Claude observed. However, the volunteers refinished it within a week.

Bombardier completed the final painting of the fully assembled replica in a large and busy production bay, “a real gift” in Claude’s words. The freshly painted replica emerged from the shop on 25 Sep-



The completed Arrow replica was unveiled in Oct. 2006, 49 years after the original roll out on Oct. 4, 1957. Photo Ken Swartz.

tember. Bombardier timed the event to allow their employees to view the replica on the ramp, as hundreds of people gathered around the Arrow Replica on a bright sunny day for the occasion.

Special events were then held in appreciation of the volunteers, corporate supporters, museum members, and former Avro Canada employees. The growing ‘Arrow fever’ culminated in the much-anticipated first public rollout of the replica on 9 October under bright

sunshine again. Extensive TV, newspaper, radio and Internet coverage was provided.

In closing, Claude paid credit to all of the volunteers who invested 55,000 man-hours of labour over an eight-year period. Materials, equipment and services donated in-kind were valued at \$130,000.



The replica was unveiled at Edenvale Airport on Aug 10, 2019 after relocation from Toronto. Photo Gord McNulty.

Cash donations totalled \$18,000–\$20,000. The estimated replacement value of the Replica is more than \$1.5 million. That includes rent for the space needed to fabricate and complete such a project, the painting with all of the labour involved, and more. “That would be the cost you would have to be insured for.” Many visitors, Claude concluded, invariably say they didn’t have any idea the Arrow was so big.

For more details on this fascinating achievement, see the “Arrow Replica Project” comprehensive article that Claude wrote in the *CAHS Journal*, Vol. 45, No. 4, Winter 2007.

John Bertram, our Zoom host, showed numerous additional slides and images courtesy of Ken and John. The photos showed more of the replica construction and illustrated the evolution over the years from the original TAM to the present Canadian Air and Space Conservancy. The replica departed Pearson Airport on Dec. 3, 2018 for Edenvale. Looking as impressive as always, it’s now housed appropriately in a large modern hangar at Edenvale.

John Bertram thanked Claude for an excellent presentation that was very well received. It is, as John noted, a special privilege when we get to hear first-hand from a person who was on the scene as a visionary goal became an inspiring achievement. Claude’s presentation certainly reflected his dedication, experience and leadership in making the Arrow Replica an incredible accomplishment. ✨

CAHS Toronto Chapter Executive 2021-2022

PRES. & MEMBERSHIP SECRETARY:

Sheldon Benner

1ST VP: John Bertram

2ND VP & ACTING SECRETARY:

Geoff Pyne

ARCHIVIST & HISTORIAN:

Neil McGavock

ACTING TREASURER:

Sheldon Benner

DIRECTORS:

Brigadier-General Paul A. Hayes,
OMM, CD (Retd)

Gord McNulty, *Flypast* Reporter

Ken Swartz, *Flypast* Editor

Eric Roscoe, Welcoming
Committee

WEBMASTER: Bob Winson

NEWSLETTER DESIGN:

Anthony Aird

UPCOMING CAHS ZOOM MEETING

Feb 10. Chapter members will receive Zoom meeting access passwords by email. Non-members must contact cahstorsvp@gmail.com to be added to the meeting notification list.

DONATIONS

Tax receipts for the year 2021 will be issued by CAHS National for donations of \$25.00 or greater. No 2021 tax receipts will be issued for donations received after December 31, 2021.

BECOME A CHAPTER MEMBER

Members receive seven issues of the *Flypast* newsletter a year:

Regular Printed*	\$50.00 (8 pages max)
Regular Email	\$25.00 (10+ pages)
Serving Military Email	\$20.00 (10+ pages)
Student Email	\$15.00 (10+ pages)

*Printed edition limited to 8 pages by printing and postage costs

MEMBERSHIP FORM: www.cahs.com/cahs-toronto-chapter.html

FURTHER INFO: cahsnatmem67@sympatico.ca

Flypast is the newsletter of the Toronto Chapter, Canadian Aviation Historical Society (CAHS), and is available with membership. Membership fees are payable in November. **EDITOR:** Ken Swartz, 190A Lowther Avenue, Toronto, M5R 1E8, +1 416-836-7094 — newsletter@cahstoronto.ca



Toronto aviation photographer Andy Cline took this photo of visiting RCAF CF-18 Hornet, 188782, beside the Arrow on May 28, 2007 when thousands of people were attending the Museum's annual Wings & Wheels Heritage Festival.



Claude Sherwood oversees the joining of the Arrow cockpit and fuselage, April 8, 2006.



Volunteers attach the starboard wing tip to the Arrow replica on July 22, 2006.



Arrow 25203 (RL-203) outside the Avro plant at Malton, winter 1958-1959. It was the only Arrow to carry the Canadian Red Ensign flag. Photo TAM.



Photographers wait for the Snowbirds to fly over the Arrow at Downsview on Sep 8, 2009. Curator Paul Cabot arranged the flypast.



The Arrow replica departing Downsview on Sep. 22, 2013 on a special trailer for an overnight journey to Malton.



The Arrow travelled to Malton via Thornhill, Woodbridge and Brampton to avoid road obstacles.



A second tractor trailer carried the Arrow's wing tips, weapons pack and other items.



The Arrow was displayed at the International Centre in Malton for Doors Open Mississauga, Sep. 28 2013.



The Arrow replica was moved to Lester B. Pearson International Airport on October 4-5, 2013 for long-term storage. When plans to establish a new museum at YYZ fell through, the Arrow was moved 89 km north to Edenvale Airport.