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### The Silver Dart's Dream Team

By John Boileau



Members of the Aerial Experiment Association designed and flew four powered aircraft within an 18-month period: from left to right, Glenn Curtiss, Casey Baldwin, Alexander Graham Bell, Thomas Selfridge and Douglas McCurdy. (Library and Archives Canada)



The Silver Dart is shown on the ice at Baddeck, although not on the occasion of her famous flight of Feb. 23, 1909. Note that runners have replaced the two rear wheels of the undercarriage. (RCAF / The Chronicle Herald)



Douglas McCurdy sits at the controls of Silver Dart at Hammondsport, N.Y., with Glenn Curtiss behind him. (Library and Archives Canada)



The Silver Dart takes off from the ice near Baddeck. (Courtesy of N.S. Archives and Records Management)

TOMORROW is the 100th anniversary of the first powered aircraft flight in Canada. This milestone marks a significant contribution in the development of flying machines, but one that is often overlooked. Although the event is usually regarded as a beginning, in many ways it was an end; the culmination of the dedicated efforts of a small group of enthusiasts.

The story of powered flight in Canada begins with Alexander Graham Bell, who had been fascinated by the concept of flight since boyhood. Across the bay from Baddeck, Cape Breton, Bell and his colleagues carried out several of their most impressive aerial experiments, using the research laboratory, workshop and nearby fields and waters of his magnificent estate.

Because engines of the era were not powerful enough to keep both a machine and a man aloft, Bell turned to kites, which he reasoned would lower the risk of death that marked several earlier trials. Bell commenced his unmanned kite flights in 1891, much to the amusement of the locals. One of them described the kite-flying experiments as "the greatest foolishness I ever did see."

By 1903, Bell was determined to build an engine-powered kite capable of lifting a man, but needed someone with an engineering background to help him. Douglas McCurdy had grown up on the Bell estate and had assisted in kite experiments. One of McCurdy's fellow engineering students at the University of Toronto was Frederick "Casey" Baldwin, who had already developed an interest in powered flight.

In 1906, Mabel Bell, who followed her husband's work closely, suggested that McCurdy bring one of his college friends back to Baddeck for a couple of weeks, someone who might be interested in her husband's experiments. Stories about Bell's work had captivated Baldwin, so when McCurdy invited him for a visit that summer, Baldwin jumped at the chance. Bell, 59, impressed with the 24-year-old's enthusiasm for his aerial experiments, invited him to stay. Baldwin accepted, and remained for another 40 years.

To help him realize his dream, Mabel suggested that he find additional flight enthusiasts. As usual, Bell listened to his wife's advice and gathered other bright young men around him.

Lt. Thomas Selfridge, 25, a likeable and determined American officer with an interest in powered flight, came as an official observer for the U.S. Army. Another American, Glenn Curtiss, a scowling, aloof, 29-year-old self-made designer, builder and prize-winning racer of motorcycles, joined the team as engine expert.

As Bell described it, "So, there we were, living in my house, myself, an elderly man, surrounded by brilliant young men, each an expert in his own line. We became very friendly. My wife became very much attracted to them all. She suggested that we form an association . . ."

The five men accepted Mabel's proposal to establish a formal organization, creating the Aerial Experiment Association (AEA). She had recently sold an inherited property for \$20,000 and offered to finance them towards their goal: to "get into the air" with a workable flying machine. Mabel's suggestion probably made her the first woman in history to propose, found and fund a research group.

On Oct. 1, 1907, the AEA was established for one year. Its members travelled to Halifax to have the American consul-general witness their signatures on a formal agreement.

After first constructing Cygnet I, a massive tetrahedral kite that lifted Selfridge 50 metres into the air before unceremoniously dropping him into the chilly waters of the Bras d'Or Lakes, the four young men went to Hammondsport, N.Y., to the workshops of the Curtiss Manufacturing Company. There, they each designed and built a heavier-than-air machine, while sharing their knowledge.

Selfridge's Red Wing was first, named after its red silk covering. Baldwin flew it for 20 seconds on March 12, 1908, the first public powered flight in North America (the Wright Brothers' earlier flights had been made in relative secrecy). It also made Baldwin the first Canadian to fly an aircraft.

Next came Baldwin's White Wing. It was equipped with two innovative firsts for North America: ailerons — moveable wing tips — which had been suggested by Bell, and a three-wheeled

undercarriage. Although Baldwin flew White Wing on its inaugural flight, they all took turns before McCurdy crashed it on his first attempt.

Curtiss's June Bug was their third machine. The AEA entered it in the Scientific American Trophy competition for the first successful public flight of one kilometre. At Hammondsport on July 4, 1908, Curtiss won the prestigious award.

McCurdy built the next machine, which had several modifications from earlier models. He christened it Silver Dart, after the metallic waterproofing compound that covered its silken balloon-cloth wings. The rest of the machine was made of wood, steel tubing, bamboo, wire and friction tape. The aircraft was powered by a water-cooled V-8 engine capable of producing about 40 horsepower, but had no brakes.

While work on Silver Dart continued, Selfridge died from injuries sustained in the crash of an airplane flown by Orville Wright, who himself was badly injured. Selfridge became aviation's first passenger fatality. Upset by the loss of their friend, the others decided they would continue the work of the AEA for six more months, until March 1909. Mabel Bell contributed another \$10,000.

In late January 1909, the men disassembled Silver Dart and shipped it to Baddeck by train. On Feb. 23, the aircraft was ready for its Canadian trial and was towed onto the snow-free ice at Baddeck Bay, with McCurdy at the controls and the entire village watching.

After an aborted first attempt due to a broken fuel line, the fragile aircraft ran along the ice and lifted nine metres into the brilliant, bone-chilling air, much to the spectators' absolute astonishment. It flew for 800 metres at 65 kilometres per hour — Canada's first successful flight of a flying machine.

When he was the province's lieutenant-governor several years later, McCurdy described the experience as "just like being on a high" after a couple of shots of whisky, and he "wanted to do it three or four more times."

At midnight on March 31, 1909, the AEA ceased to exist. Its members passed a resolution thanking Mabel for her unstinting support and expressed their "highest appreciation of her loving and sympathetic devotion without which the work of the association would have come to naught."

Despite its short 18-month existence, the AEA — five inquiring men supported by an equally inquisitive woman — had chalked up considerable aerial achievements. According to one of Bell's biographers, its members made "a major contribution to man's conquest of the air — a contribution out of all proportion to its size, life, and resources (ranking) in precedence next to the Wright brothers."

Bell called the AEA a "co-operative, scientific association, not for gain but for the love of art and doing what we can to help one another." After its dissolution, he wrote "The Aerial Experiment Association is now a thing of the past. It has made its mark upon the history of aviation and its work will live."

Bell was right. Although the Wright Brothers are remembered for making the first flight, it was the AEA's innovations that eventually supplanted the Wrights' and have since been universally applied.

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