

Article by Mabel Hubbard Bell, 1909, with transcript

Filed Nov. 3, 1941 A copy of the "original" summary of the AEA written by Mrs Bell in summer of 1909 & given me as more desirable than the article which Mr Bell's Secretary Mr. Cox had written for N Y papers this copy is slightly different & not as good as her first original

In the summer of 1907, five men all intensely interested in Aviation were gathered together in Dr. Alexander Graham Bell's home, Beinn Bhreagh, near Baddeck, Cape Breton Island.

Four of them were very young men, the eldest twenty-eight, and the youngest not twenty-one, while the fifth, Dr. Bell himself, was so eager and full of enthusiasm as to seem almost as young as they in his ardour.

These men were, Alexander Graham Bell, best known as the inventor of the telephone, who for many years had been carrying on scientific experiments in Aviation; Glenn H. Curtiss of Hammondsport, New York, the young motor cycle manufacturer holding the world's record for the fastest mile ever made in any machine, won with a motor cycle of his own devising and manufacture; F.W. Baldwin, M.E., of Toronto, Capt. of the Toronto University foot-ball team, which won the Dominion Championship of Canada in 1905; J. A. Douglas McCurdy, M.E., Toronto, a Baddeck boy, who was soon to prove his mettle by flying day after day at forty miles an hour in zero weather, and 1st. Lieut. Thomas E. Selfridge, 5th U.S. Field Artillery of San Francisco, who had already distinguished himself, as a young West Point graduate, by his command of the U.S. Marines at the great San Francisco fire.

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Mr. Curtiss was at work installing one of his motors on an experimental machine of Dr. Bell's: Baldwin and McCurdy were his assistants, and Selfridge had come voluntarily from

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Newport to watch Dr. Bell's experiments, seeing there his chance of familiarizing himself with a line of work which he foresaw must soon form an important branch of our Army.

Watching these men together, it one day occurred to Mrs. Bell what a fine thing it would be to unite these unusual men with their different abilities into still closer relations. She therefore suggested that they form themselves into an Association with the aim of "getting into the air", and added that she would gladly finance it herself with funds from some property of her own.

Dr. Bell seconded the idea enthusiastically and placed his Laboratory with its splendid equipment and trained staff at the disposal of the proposed Association.

Mrs. Bell's original thought had been to limit the work of the Association to the construction of structures of the tetrahedral form invented by her husband, but Dr. Bell took a broader view, and insisted that the object should be to evolve a practical flying machine of any design, untrammelled with any condition whatever; adding that for his part he did not care what form the machine should take so long as it developed such inherent automatic stability that he would be willing to go in it himself, and have his wife do so, which was the goal to which he had so long ardently struggled. To this position Mrs. Bell readily assented.

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Dr. Bell then arranged that the energies of the associates should be devoted first to the completion of the tetrahedral man-carrying kite, then building in his Laboratory, and that afterwards each associate in turn should have the assistance of the others in the construction of a machine according to his fancy.

The Aerial Experiment Association was then organized with Dr. Bell, Chairman, Mr. Curtiss as Director of Experiments, Lieut. Selfridge, Secretary, F.W. Baldwin, Chief Engineer, J.A. Douglas McCurdy, Treasurer, to exist for one year from Oct. 1, 1907.

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The first business taken up by the new Association was the pushing to completion of the tetrahedral kite "Cygnet". On December 6, 1907, it made a beautiful ascent from the Lake, carrying Lieut. Selfridge. It soared immediately to a height of 168 ft., flew with great steadiness for seven minutes in a twenty-five mile breeze, retaining a level keel through all the gusts. Finally during a sudden lull it descended coming down so slowly and gently that Selfridge whose view of the water was cut off by the silk surfaces below him was not aware that the kite was coming down until he reached the water. Not being prepared for the descent, he failed to release the towing-line, so that the kite was wrecked by being dragged full speed through the water by a steamer.

This experiment ended the Beinn Bhreagh work for that year, as the season was now too far advanced for further outdoor work, and the time of the Laboratory staff was fully occupied in the manufacture of new tetrahedral cells to replace those destroyed in the disaster to the Cygnet.

It was therefore decided to accept the invitation of Mr. Curtiss to make use of the tools and machinery of the Curtiss Motor Cycle Co. at Hammondsport, New York, and there to construct a gliding machine with which the younger members could indulge their impatience to be flying, and at the same time gain practice that would be valuable when dynamic flight with an engine and propeller became a possibility. The associates therefore left Beinn Bhreagh late in December. Unfortunately a serious illness overtook Mrs. Bell in Washington, so that Dr. Bell could be at the new Headquarters only at intervals.

At Hammondsport Lieut. Selfridge was chosen by the Chairman to be the first to have a machine built according to his ideas on the ground that he had risked his life in the "Cygnet". Selfridge's Red Wing, the first machine constructed by the Association, as its name indicates, was made according to plans satisfactory to Lieut. Selfridge, but it should be noted as a matter of fact, that while the various aerodromes constructed by the A.E.A. were known by the names of the different members who had the deciding say as to the character of each machine, they were actually the work of all the associates collectively.

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All worked together so loyally and enthusiastically that it was often difficult to say exactly whose idea one or another part of the machine might be.

Selfridge's "Red Wing" made a beautiful flight of three hundred and nineteen feet over the ice on Lake Keuka, near Hammondsport, New York, on March 12, 1908, in the presence of many witnesses. This was the first successful public flight of a flying machine in America, the earlier flights of the Wright Brothers at Dayton, Ohio, having been made in secret. The machine, as can be seen from the photograph, was provided with sledge runners and glided over the ice for about one hundred to one hundred and fifty feet before it rose into the air. It then flew very steadily at ten to twenty feet above the surface of the ice carrying Mr. F. W. Baldwin as aviator.

In rapid succession came A.E.A. aerodromes No. 2, "Baldwin's White Wing", and No. 3, "Curtiss' June Bug", each showing marks of improvement on its predecessor. All were in turn flown by Baldwin, Selfridge, Curtiss and McCurdy for distances varying from a few hundred feet to one half mile, until July 4, Mr. Curtiss in the "June Bug" covered a distance of more than a mile over a measured course in the presence of the Aero Club of New York, and won the Scientific American Trophy for the first heavier-than-air machine to fly one kilometer in America.

Subsequently many longer flights were made particularly by Curtiss, Selfridge, and McCurdy, the latter having a record of two hundred flights. Some of the flights reached a height of 70 feet. Even greater heights might have been attained, but for the strict veto of Dr. Bell who would not countenance the unnecessary risk of higher flights at that time.

It had been originally planned that the Association should resume work on the tetrahedral aerodrome at Beinn Bhrogha early in the Spring, but as this required Dr. Bell's personal supervision, and his wife's continued illness detained him in the south, the time was utilized on the construction of the Hammondsport machines. Later it was found that it would be impossible to finish assembling the Cygnet II until nearly time for the Association

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to expire by time limit, Sept. 30, thus cutting off altogether the opportunity of the fifth member to have his machine made, if it was postponed till the completion of the Cygnet II. Further the trials with the three earlier machines had demonstrated the need of a more powerful motor than the eight cylinder air-cooled Curtiss motor employed, and more time was required before Mr. Curtiss could provide a special water-cooled motor for use on the Cygnet II.

Accordingly the forces of the Association were divided, Mr. Baldwin accompanying Dr. Bell in Beinn Bhreagh, while Curtiss, McCurdy and Selfridge engaged in the construction of the "Silver-Dart" at Hammondsport.

Although separated the members were kept in touch with each other's work by the issuance of private weekly Bulletins. These Bulletins edited by Dr. Bell personally, contain data of great value in relation to aeronautical experiments. The Bulletins are bound in three volumes and comprise about 2000 pages.

In August, Lieut. Selfridge was ordered to Washington detailed to the Signal Corps, and made a member of the newly formed Aeronautical Board of the Army, as a consequence of his expert knowledge gained as an A.E.A. associate. A few 7 weeks later the young officer to his great delight was further distinguished by being invited to accompany Orville Wright in one of the flights he was conducting at Fort Meyer, Va. for the Government. That disastrous flight of Sept. 17, 1908, resulted in a serious injury to Orville Wright, and the death of Selfridge, one of the most promising and gallant officers of our Army. In Selfridge's death the Army lost the only officer with independent experience in heavier-than-air machine flight at that time, and the world one whose knowledge of aviation was second to few. To the members of the A.E.A. his loss came as a severe personal blow, and as Mrs Alexander Graham Bell expressed it, "The beautiful bond of companionship which we called the 'Aerial Experiment Association' was broken when Tom Selfridge sealed his devotion to our cause with his life".

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There now remained only a few days before the Association would come to an end by time limitation. In view however of the unavoidable delays that had occurred, Mrs. Bell offered to finance the Association for another period of six months from Oct. 1, 1908, to March 31, 1909, in order that the unfinished machines might be tried out on the ice at Baddeck during the winter.

These machines were the "Silver-Dart" at Hammondsport, now practically complete, and only waiting for the new motor, The "Cygnet II" and Oionos" at Beinn Bhreagh.

The "Cygnet II" was of pure tetrahedral construction, employing oblique surfaces alone. It was practically the "Cygnet I" over again, but much enlarged so as to be capable of carrying the weight of a 250 lb. machine and man. The advantage of this pure tetrahedral construction is the automatic stability in any kind of breeze which it possesses.

The "Oionos" was designed to combine in itself the virtue of great lifting power possessed by the Hammondsport type of machine together with a degree of the automatic stability characteristic of pure tetrahedral structures. It was therefore being built with both oblique and curved horizontal surfaces. It was further intended to rise directly from the water and a peculiar type of craft was being specially designed for attachment.

Owing to the delay in the completion of the motor and its arrival from Hammondsport, it was not until late in Feb., 1909, that the associates were able to start their experiments on the ice which was now as smooth as glass. On Feb. 22, the Cygnet II was given its first trial. Unfortunately it had been found impossible to keep the new motor within the specified limit of 250 lbs. and develop the requisite horse-power, so that the machine was handicapped from the start by having to carry a heavier machine than originally intended. Nor did the motor ever develop as much power as was hoped. Neither during the trials on Feb. 22 and later on March 15 was the motor able to drive the Cygnet II at a sufficient speed to cause it to actually leave the ice although at times it seemed about to do so. The best the motor could do was 15 miles an hour which was not sufficient to raise the

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machine in the air. Further attempts to try the Cygnet II were therefore postponed pending the acquisition of a more powerful motor, and the motor was installed on the "Silver-Dart".

On Feb. 23, McCurdy flew the "Silver-Dart" a distance of a half mile in the presence of nearly all the townspeople of the little town of Baddeck. This was the first flight of a heavier-than-air machine in Canada, and was immediately followed by others made nearly daily while the ice held. Some of these reached 16 miles and lasted twenty minutes at a time, and most of them were made in temperatures near zero. In fact McCurdy is the only known aviator who has made daily flights in zero weather. On one occasion he was nearly frozen numb by flying at the rate of forty miles an hour in a temperature several degrees below zero.

The "Silver-Dart" could easily have been put to a commercial use, if so desired, by carrying mails across the ice. Experiments were also made with an aerial propeller which drove an ice boat at a maximum speed of about 55 miles an hour. This practically ended the experiments carried on by the Aerial Experiment Association for on the 31st of March the Chairman adjourned it without day.

Now Curtiss in America, and Baldwin and McCurdy in Canada are manufacturing and exploiting the new type of aerodromes evolved by the joint efforts of the Aerial Experiment Association, while Dr. Bell continues to search for a perfectly stable form of flying machine in which the element of safety shall rest not on the skill of the operator, but the automatic action of the machine itself.

While the Association did not realize the Chairman's ideal of an automatically stable machine, it did make great strides toward the desired goal.

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As a result of its eighteen months work the Association has a record of four flying machines successfully flung into the air, one of absolutely unique design and admittedly great qualities completed, but not tried for lack of suitable motive power, and another

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unfinished; the record of innumerable experiments put in permanent form for reference, and the training of four young men for service in this new branch of the world's work. Surely a great record of accomplishment when the art of Aviation was still in its infancy, by a purely scientific Association.