

Notes by Alexander Graham Bell, December 4, 1907

121

1907, Dec. 4 Wednesday At BeinnBhreagh.

(Dictated by A. G. B. to D. McC. Copied from Home Notes by M. B. McC. p. 194).

Monday Dec. 2. A gale blowing, wind too strong to risk the "Cygnet" in.

Tuesday Dec. 3. A good strong steady wind from W.S.W. First experiment with the "Cygnet".

The Blue Hill and the "Ugly Duckling" both anchored at their mooring places on the bay.

I was rather under some apprehension that the "Gauldrie" would have experienced difficulty in towing the "Ugly Duckling" with the "Cygnet" on board to her mooring place, but it seems that she had none.

Lieut. Selfridge went on board the "Ugly Duckling", Douglas McCurdy on board the "Gauldrie", and Mr. Baldwin and I accompanied by Mrs. Bell and Miss Mabel McCurdy went on board the "Blue Hill". The "Gauldrie" picked up Mrs. Kennan. Other witnesses of the experiments in addition to the crew of the "Blue Hill" and the Laboratory staff were: — Mr. McInnis, Mr. Byrnes, Mr. McNeil and John McNeil. Laboratory staff present so far as I can remember: — Bedwin, Inghram, Stewart, Watson, Ruderham, McKillop, McFarland, McAuly, Wilson McKay and McDonald. Blue Hill people: — Captain McRae, John Hannam, George Reed, Angus Morrison and the engineer Mr. Bleasdale.

The Blue Hill towed the "Ugly Duckling" out into the Little Bras d'or Lake beyond the "Point" and then turned round against the wind heading for Kidston's Island.

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When the tilting frame on the "Ugly Duckling" was lifted the "Cygnet" rose at once into the air and remained poised 2 122 aloft, at an angle of $26^{\circ} 30'$ flying very steadily. It was really a most imposing sight and it was obvious to all that she would have easily lifted a man upon this occasion. We had thought it better however to try her first without a load.

The Anemometer on board the "Blue Hill" (going full speed against the wind) registered 1320 rotations in half a minute corresponding to a wind velocity on the kite of 30 miles an hour. The pull on the flying line was greater than could be directly measured by one spring-balance so that we only know that it exceeded 208 lbs.

Another observation of wind velocity while the "Cygnet" was in the air gave 30.56 miles per hour.

Rot. in 30 sec. miles per hour. Just before flight, full speed against wind 1400 31.81. Just as "Cygnet" arose 1320 30.00. While "Cygnet" was in air at angle of $26^{\circ} 30'$ 1345 30.56.

Attempt was then made to measure the pull of the bow line but the wind velocity diminished perceptibly and it was feared that the kite would not be able to sustain itself by the bow line above so that when the kite had nearly reached the water the strain on the bow line was relaxed allowing the "Cygnet" to rise to her old position on the flying line.

3

123

Wind Velocity. Pull on bow line in lbs. Rot. in 30 sec. Miles per hour. Just before flying by bow line 1200 21.27 Flying by bow line 160 Still flying by bow line but dropping — 10° angle 150 Still flying by bow line — angle less than 8° 130 Wind velocity after experiment 990 22.50

The observation of pull, angular height of kite, and wind velocity were made by Mr. Baldwin on "Blue Hill".

(The Kite proper weighed 85.032 Kg. and the floats 9.400 Kg. Total 94.432 Kg. (208 lbs.). Flying weight 510 grams per sq meter (oblique)

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The kite was composed of 3393 winged cells having a surface of 183.6461 m². The bow was covered below with silk presenting the same dihedral angle as the cells equivalent to 1 m. Total oblique surface 184.6461 m².

In addition to this the bottoms of the floats gave a horizontal surface of 8 m but as the floats undoubtedly blanketed the lowest tiers of cells above them I will count the floats may be counted as dead load, and consider the whole surface considered as equivalent to 185 m oblique.)

Weight 94.432 Kg.

Surface 385 m² oblique.

Flying Weight 510 gms. per m² oblique

By bringing the strain gradually on to the bow line the "Cygnet" was gently lowered into the water upon the stoppage of the "Blue Hill". She floated well, head into the wind the 4 124 sea-anchor taking the water well. Then she was observed to be sinking on one side on account of a leaky float. The row-boat succeeded in reaching her in time, but had great difficulty in sustaining the sinking end of the kite until the "Ugly Duckling" came to the rescue. The corner of the kite was broken at this time and when the "Ugly Duckling" at last got hold of the kite some further damage to the structure occurred on account of the great load of water in the starboard and central floats. Starboard float practically in pieces with great holes in it, central float leaky, port float seemed to be all right. The damage done to the structure can be easily repaired. The "Cygnet" was lifted on to the "Ugly Duckling" and towed to her old mooring place near the mouth of Beinn Bhreagh harbour by the "Blue Hill". The "Gauldrie" then took her in charge and had as much as she could do to tow her back to the aerodrome house. So ended the first flight of the "Cygnet".

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A. G. B.