

(March 1, 1909.)

Aerial Navigation.

BY MR. F. W. BALDWIN.

AT an evening meeting of the Canadian Club Mr. F. W. (Casey) Baldwin gave an illustrated address on aerial navigation. Mr. Baldwin has been chief assistant to Dr. Graham Bell for the past two years and has conducted several very successful experiments. In his address he dealt especially with aviation. His spoke in darkness to enable the illustration of his address by limelight views.

In opening Mr. Baldwin said it was a matter of great encouragement that so influential an institution as the Canadian Club had so large an attendance present to hear the subject discussed. A few years ago men who were deemed intelligent scoffed at the idea of flying. There had been repeated failures and the critics placed flying along with perpetual motion. Now, however, that experiments had demonstrated the fact the world was convinced that flying was a reality.

Mr. Baldwin presented limelight views showing the machines and experiments made from the time of 1863 to the present. He announced the receipt of the following telegrams:

"Baddeck, Feb. 24.—McCurdy flew Silver Dart one mile and a half in great style.

"(Signed) Graham Bell."

"Baddeck, Feb. 25.—McCurdy succeeded in circumnavigating, or rather in circumdroming, Baddeck Bay. Covered about five miles; average height forty to fifty feet. It was a famous performance.

"(Signed) Graham Bell."

"The flight was made at an average speed of forty miles an hour."

The flight was made, Mr. Baldwin explained, by Mr. J. A. D. McCurdy, of Cape Breton, who graduated from the Toronto School of Science two years before, in a machine that was the invention of Dr. Alexander Graham Bell, a well-known Canadian inventor. The Silver Dart mentioned in the telegrams

was the direct successor of the Red Wing and White Wing, with which the first attempts at flights were made by Dr. Bell. The machine—the technical name of which is areodrome—consists of two superimposed aeroplanes slightly curving towards each other at the extremities. The motive power is developed by a gasoline, water-cooled, twenty-five horse-power motor, which drives a propeller fashioned something after the manner of the blades of the electrical ventilating fans so common in these days.

The Silver Dart has what may be termed two rudders. One is in front, and its function is to lift or depress the whole machine. It consists of an oblong plane placed obliquely to the horizontal, and it is by the movement of this plane, something in the way a cellar flap moves, that the lift power is obtained.

To carry out the cellar flap illustration: when it is half open it presents a greater resistance to the air, with the result that the whole machine is lifted. When it is closed the resistance is less and the machine glides along with a motion similar to that of a bird floating on outstretched pinions. Behind, reaching out beyond the propeller, is the long fish-tail rudder, which enables the aviator—for such is the word chosen to describe the new captains of the air—to divert his flight either to the right or to the left.

In principal the machine is something similar to that of the United States inventor, Wilbur Wright, who not long ago covered twenty-one miles at an average rate of speed of fifty-three and a half miles an hour.

As Mr. Baldwin explained in his address, the great difficulty which the aviator experiences is the maintaining of stability in the air. There is a liability to topple over, and through accidents of this character a number of experimenters have lost their lives. In Dr. Bell's machine and that of Wilbur Wright similar principles carried out on different methods have been adopted to overcome this difficulty. The ends of the supporting planes are movable, and can thus be made to offer a greater or less resistance to the air as is required to counteract any toppling movement.

Apart from the interesting announcement which he made Mr. Baldwin delivered a most informing address on the development of the art of flying. Commencing with the theoretical plans of Leonardo De Vinci in 1492, he traced the experiments made in the effort to conquer the air down to the present time, when the practicability of flight has been proved.

It now remains for aviation and the areodrome to be reduced to a commercial basis. Towards the attainment of this end two dissimilar interests are operating: those of war and sport. The desire for the exhilarating sensation of high speed and the spirit of competition led to the development of the motor car. Now the same spirit is being diverted to the flying machine. Still greater, however, is the influence originating in the desire for military power and control. It had been proved that one guidable balloon of the Zeppelin type could destroy London, in spite of the entire British navy, and, therefore, all the great military nations are striving to secure the advantage of the control of the air first lest some unlucky chance might place them at the mercy of their enemies.

In driving the modern airship there is less danger than in driving a motor car, Mr. Baldwin believes, although the average speeds are greater. There is no vibration. The machine slides along smoothly, and, although travelling at forty miles an hour the aviator gets no impression as to pace. One difficulty is that the road is not visible. In the motor car the driver can see the hills and turns, but the aviator cannot see the air currents, which in the air take the place of the hills and turns of road.