

machine down in front and found that the apparatus then responded promptly to the lateral control. The remedy was found to consist in the more skilful operation of the machine, and not in a different construction.

The trouble was really due to the fact that in circling the machine has to carry the load resulting from centrifugal force, in addition to its own weight, since the actual pressure that the air must sustain is that due to the resultant of the two forces. The machine in question had but a slight surplus of power above what was required for straight flight, and as the additional load, caused by circling, increased rapidly as the circle became smaller, a limit was finally reached beyond which the machine was no longer able to maintain sufficient speed to sustain itself in the air. And as the lifting effect of the inner wing, owing to its reduced speed, counterbalanced a large part of the increased lift resulting from the greater angle of incidence on that wing, the response to lateral control was so slow that the machine sank to the ground usually before it had been brought back to the level again. In other words, the machine was in what has come to be known as a "stalled" condition.

The phenomenon is common to all the aeroplanes in the world and is the cause of frequent disaster to unskilled aviators. Our own machine is still subject to the same trouble. Within the last year four or five Wright machines have been wrecked by novices stalling the machines in attempting to climb too fast while circling, and have come tumbling to the ground, just as we did in 1905. Similar wrecks of other makes of machines now occur almost every week at the foreign flying schools. The remedy for the difficulty lies in more skilful operation of the aeroplanes.

When we had discovered the real nature of the trouble and knew that it could always be remedied by tilting the machine forward a little, so that its flying speed would be restored, we felt that we were ready to place flying machines on the market. We spent the next two years in building machines and making business arrangements for the exploitation of the patent. In 1908 we sold a machine to the United States Government, and in the years 1908 and 1909 flights were made before the officials of the United States, at Washington, and before the rulers of England, France, Spain, Italy, and Germany.

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## APPENDIX H.

*From the AERONAUTICAL JOURNAL, Vol. X., January, 1906.*

### GENERAL MEETING.

The opening meeting of the Forty-First Session of the Aeronautical Society of Great Britain was held at the Society of Arts, John Street, Adelphi, on Friday, December 15th (1905). The President, Major B. F. S. Baden-Powell, was in the chair.

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### RECENT EXPERIMENTS OF THE BROTHERS WRIGHT.

Mr. Alexander then read the following letter from the Wright Brothers, dated November 17, 1905:—

"We have finished our experiments for this year after a season of gratifying success. Our field of experiment, which is situated eight miles east of Dayton, has been very unfavourable for experiment a great part of the time, owing to the nature of the soil, and the frequent rains of the past summer. Up to September 6 we had the machine on but eight different days, testing a number of changes which we had made since 1904, and as a result the flights on these days were not so long

as our 'ones of last year. During the month of September we gradually improved in our practice, and on the 26th made a flight of a little over 11 miles. On the 30th we increased this to twelve and one-fifth miles, on October 3 to fifteen and one-third miles, on October 4 to twenty and three-fourth miles, and on the 5th to twenty-four and one-fourth miles. All of these flights were made at about thirty-eight miles an hour, the flight of the 5th occupying thirty minutes three seconds. Landings were caused by the exhaustion of the supply of fuel in the flights of September 26 and 30, and October 8, and in those of October 3 and 4 by the heating of bearings in the transmission of which oil cups had never been fitted. But before the flight on October 5 oil cups had been fitted to all the bearings, and the small gasoline can had been replaced with one that carried enough fuel for an hour's flight. Unfortunately, we neglected to refill the reservoir just before starting, and as a result the flight was limited to 38 minutes. We had intended to place the record above the hour, but the attention these flights were beginning to attract compelled us to suddenly discontinue our experiments in order to prevent the construction of the machine from becoming public.

"The machine passed through all of these flights without the slightest damage. In each of these flights we returned frequently to the starting point, passing high over the heads of the spectators.

"ORVILLE WRIGHT."

THE PRESIDENT: I think that sounds like a remarkable statement. We have not heard much of what the Brothers Wright have been doing recently. We heard a year or two ago that they had made some successful flights, but this sounds a very successful result. I shall certainly be longing to hear more of the details of these flights. To remain half an hour in the air seems extraordinary.

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## APPENDIX I.

*From the AERONAUTICAL JOURNAL, April, 1906, Vol. X.*

### THE EXPERIMENTS OF THE BROTHERS WRIGHT.

As is notified in another part of this Journal, no less an authority than Sir Hiram Maxim has promised to address the members of the Aeronautical Society of Great Britain, on the subject of the recent experiments of the Brothers Wright, at the meeting of the Society on April 27th next. Many remarks on these experiments will therefore be now deferred. It may, however, be here stated that various reports which have come to hand seem to confirm the statements made by the Brothers Wright in the letter which was read to the members of the Aeronautical Society of Great Britain, at the opening meeting of the present session.

Our contemporary, *L'Aerophile*, in its January issue, has published many interesting statements obtained from various sources, concerning these remarkable experiments which may be the commencement of a new era in aerial navigation. The following details derived from *L'Aerophile*, and various other sources, may be of interest to our readers, though in the absence of the precise information which is still withheld by the experimenters, no responsibility for the accuracy of these details can be taken. Conflicting statements as to some of these details must also be regarded as a sign that full confirmation must be awaited before assigning them to the history of aerial navigation. As far as can be gathered from accounts received, the frame of the machine which in form is evidently very similar to the older double-decked gliding machines of Messrs. Wright, and familiar to our readers, is made of larch wood. From tip to tip of the wings, its length is 40 feet, its breadth in the widest part is only six feet. The frame is covered with canvas. The gasoline motor, is stated in some accounts, to be 15