pitching forward to have taken place slowly, and, if so, one would have expected the experimenter to have rectified his error in time.

Unfortunately the apparatus was completely smashed up, and beyond the fact that it was found lying upside down, gives no clue to the cause of the unfortunate mishap.

Captain Moedebeck, one of the best authorities in Germany, conjectures that in shifting the weight of his body, as he was accustomed to do, Lilienthal forgot about the apparatus connected to his head, and so counteracted the balance by the action of the tail.

Though we are, then, unable to account with certainty for the unfortunate mishap, we may at all events avoid in future accidents the causes of which are here suggested.

Dr. Wolferts' Steerable Balloon.

This elliptical-shaped balloon was shown in working order at the Berlin Industrial Exhibition last year, and was said to have acted very satisfactorily. It is provided with two screw propellers; one, about 9 feet diameter, placed in front of the car, is to propel the balloon horizontally, while another is placed underneath on a vertical axis to control the rise and fall. The engine is of 8 horse-power, giving 500 revolutions per minute to the propellers. The balloon is nearly 100 ft. long and 30 ft. through the centre.

Speed of Flying Birds.

To measure the exact velocity of birds in flight is no easy matter. Homing pigeons give a reliable record of the average rate of travel over long distances, but it may reasonably be presumed that this speed is not the maximum obtained, or even an average rate for steady flight, since the course would often not be in a straight line, and the speed affected by variable winds and other causes. Mr. S. P. Fergusson, however, made some careful measurements a short time since on a flock of ducks which happened to pass whilst he was engaged in measuring cloud velocities at the Blue Hill Meteorological Observatory. The result of these trigonometrical observations was that the birds were found to be moving at a height of 958 ft. above the ground, and that the velocity of their flight was 47.8 miles an hour. The wind at the time was light from the north, the direction of flight being from the north-east.

Summary of News.

STENTZEL'S WING MACHINE. — A flying machine, similar in many respects to those of the late Herr Lilienthal and Mr. Pilcher, has lately been experimented with at Altona, Germany. It possesses, however, one great point of difference from its predecessors in that the wings are pivoted so that they may be moved up and down as with those of a bird. The wings have a spread of about 21 ft., having a surface of about 76 square feet, and may be moved through an angle of 70 degs. The apparatus weighs 75 lbs. An engine, worked by compressed carbonic acid gas, is to be used for working the wings. It is stated that this engine, with a pressure of 5 atmospheres, is capable of producing 1 horse power, and that by increasing the pressure to seven or nine atmospheres, the motor may be made to yield 2 or 3 horse power respectively. The wings, in shape, are not so round as those of Lilienthal, but are pointed towards the tips like a gull's. The tail or rudder consists of both horizontal and vertical planes.

DR. RICHET'S MACHINE.—It is announced that a large apparatus, chiefly consisting of two huge wings, is now being constructed in France. The inventor is Dr. Richet, a professor in the Faculty of Medicine at Toulon.

KITES FOR METEOROLOGY.—During last year a great deal has been done in America with regard to meteorological tests of the upper air by means of kites. Mr. Fergusson, of the Blue Hills Observatory, has written an interesting account in the "Monthly Weather Review" for September, of experiments conducted at that institution. The kites used were usually of the Malay pattern for light weather, and of the Hargrave type in strong winds. Self registering instruments were taken up by the kites, and some very great altitudes were attained, the highest being no less than 9,375 ft.

ANDREE'S ARCTIC BALLOON.—M. Andreé has stated that he intends making a fresh start this summer to explore the Arctic regions with his balloon. In addition to the continual adverse winds last year, he found that the balloon did not retain its gas quite so well as was expected, and doubtless before he starts again he will consider it necessary to add another covering, or, at all events, some fresh coats of varnish, to the envelope.

CHANUTE'S EXPERIMENTS.—Although some sensational rumours have been published with regard to the trials of a flying machine on the shores of Lake Michigan, we have the best authority for stating that these have been simply some scientific experiments in gliding flight, which have so far produced no very important results. Mr. Chanute's name is a sufficient guarantee that they will be interesting from a scientific point of view, even though not intended to be a practical success. He has been assisted by Messrs. Paul and Herring.

Recent Patents.

THE following patents connected with Aeronautics were published during 1896 :—