

ENGLISH EXPOSITION OF MODEL FLYING MACHINES.

The Aero Club of Great Britain and the London "Daily Mail" deserve great credit for the encouragement recently given inventors of heavier-than-air machines by the exhibition of such apparatus in Agricultural Hall, London, and by the subsequent trials, both in the Alexandra Palace and in the open air, of such models as were capable of flying. Three cash prizes of \$750, \$375, and \$125 were offered by the "Mail" for the three model aeroplanes which made the longest flights and showed the best stability. Altogether, no less than 128 model aeroplanes and other heavier-than-air machines were exhibited. The inventors of these machines ranged from such experienced men as Major Baden-Powell to a poor old farmer, John Hall, who walked 94 miles to London to exhibit his machine. The striking thing about most of the models was the workmanship and thorough finish put upon them. A number were designed and built by men of marked mechanical ability, but nearly all were noteworthy for the skill and thoroughness spent in their construction. The several models which we illustrate are among the most interesting and typical that were on exhibition.

The Cochrane flier is an aluminium creation consisting of a corrugated cylinder rounded at each end and having peculiar round-blade propellers mounted at each



A Model Aeroplane Propelled by a Skyrocket.

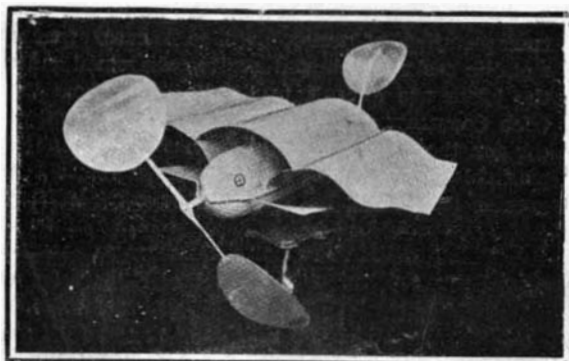
machine—were able to glide along in the air for any distance after the power was exhausted. The former was a machine of the type used by the Wright brothers. It consisted of two rectangular superposed surfaces used in connection with a third following surface of

made a flight of 90 feet indoors, but did not do nearly so well outside. It was awarded the second prize, the first prize being withheld.

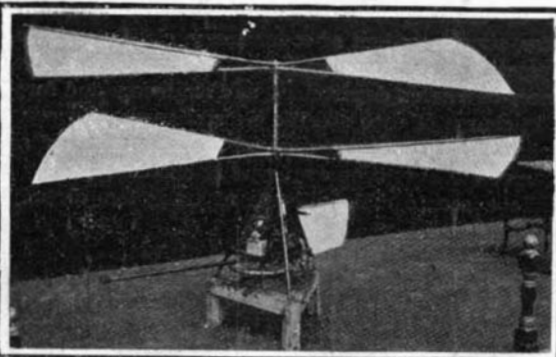
A simple aeroplane designed by W. A. Howard and consisting of two sets of slightly-inclined planes placed at a dihedral angle and driven by a single propeller, made a flight of 108 feet. This flier was awarded the third prize.

The bird-like glider shown in another of our illustrations is called the "Albatross." It was designed and constructed by Mr. Jose Weiss, a landscape gardener, who, after experimenting to a considerable extent with model gliders of this kind, is now about to build a motor-driven aeroplane along the same lines. If properly weighted at the forward end of the body, one of these gliders will perform a flight, when started from a hilltop, of as much as half a mile. By mounting the "Albatross" on a small carriage and towing it at high speed, it can be made to soar in truly bird-like fashion. The models are formed as closely as possible after the bird whose name they bear, and when soaring they look greatly like a bird, and seem to have great stability.

The helicopter, or lifting-screw, type of flying machine was represented by a single well-constructed model. This model was complete in every respect,



Cochrane's Aluminium Flier.



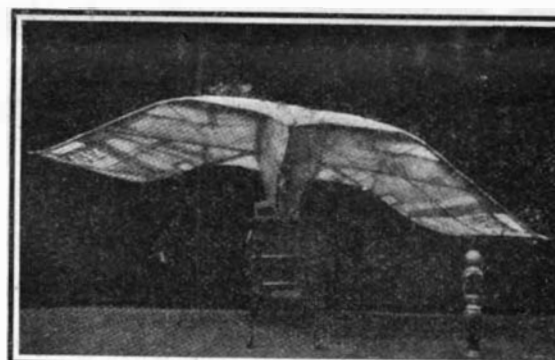
Chubb's Helicopter Model.

end also. Twisted rubber bands extending through the cylinder revolve the propellers. Two curved wings, connected by a central curved surface, are riveted to the cylinder. Four horizontal fins, two on each side of the cylinder at the front and rear ends respectively, serve as horizontal rudders. By setting the rear fins at the proper angle, the machine is controlled in a horizontal plane. At first glance one would hardly expect this queer-looking model to fly, yet that it actually did so for a short distance is attested by one of the photographs. Mr. Cochrane also displayed a still more peculiar model of the flapping-wing type, which consisted of birds' wings attached to a pointed aluminium body having a fan-shaped tail.

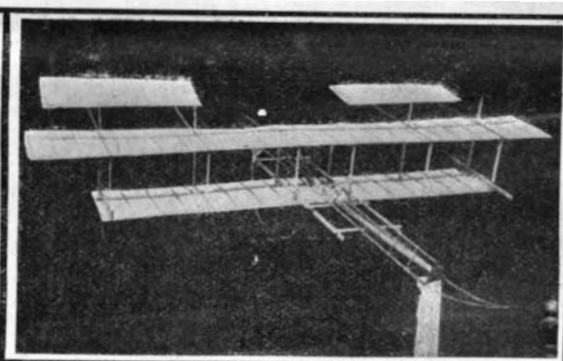
Another aeroplane that flew a short distance only, but which we illustrate on account of its novel propelling power, is the skyrocket-driven machine shown above. This flier, as can be seen, consists of three wings or sails placed one behind the other in the same plane. It soon fell to the ground after being started on its flight. The photograph shows it at the moment of starting.

Although the aeroplane exhibition was a great success, the tests of the working models was, in the main, a fizzle. Of the dozen or more tried, but two—the "Avroplane," of A. V. Roe, and Mr. W. A. Howard's

the same size placed in the same horizontal plane with the upper surface. A horizontal rudder was located in front. A long triangular framework underneath contained the stretched and twisted elastic bands



Weiss's Soaring-Bird Model.



One of A. V. Roe's Double-Deck Fliers.

used to drive a propeller at the rear. One of our illustrations shows a somewhat similar machine designed by the same inventor. Mr. Roe also displayed an excellent model of a single-surface, following-plane machine of the Langley type. His Wright-type glider

even to the man in the basket. A small electric motor was geared to drive the propellers in opposite directions. By sliding a weight along on a projecting horizontal rod, the machine was supposed to tip and thus receive from the screws a movement of translation in addition to sustentation. A rudder was also provided for steering. The model was unable to lift itself, owing to the motor being insufficiently powerful. This machine is particularly interesting just now because of the fact that Prof. R. W. Wood, of Johns Hopkins University at Baltimore, Md., is about to construct a helicopter upon the same lines. Prof. Wood has found it possible to lift about 35 pounds to the horsepower with this type of flier, and he is constructing one with 40-foot propellers and with a 40-horse-power Stanley steam engine for power.

Heavy oil motors of the Diesel pattern are now used extensively in Germany, and we may cite among others the electric plant of the town of Aichach, which contains two 90-horse-power motors of this type. These motors are of the single-cylinder variety, and run at 160 revolutions per minute. For a load of 75.7 horsepower, they consume 0.213 kgs. (0.469 lb.) of oil per horsepower-hour. The combustible used is a paraffine oil which comes from Halle and it has a good calorific power. On the tests it was shown that the variations of speed due to throwing on the load or removing it did not exceed one per cent for a variation of 45 per cent of the full load. Flywheels weighing 9.5 tons and measuring about ten feet in diameter are used. Water for cooling the motor is used at the rate of 3 gallons per horsepower-hour, with a difference of 60 deg. C. between the inlet and outlet. The two motors in the Aichach plant are belted each to a dynamo of 62 kilowatts running at 600 revolutions per minute.



Cochrane's Aluminium Model Making a Flight.
SOME ENGLISH FLYING MACHINE MODELS.