

permanent visible record. All that is required consists of a moving-picture camera, fitted with photographically recording glass time-dials, and a suitable arrangement of "line" wire. To a moving-picture camera, constructed to make an exposure of about twice the usual size, fit a time-piece so arranged that its hour, minute, and second arbors are not placed at the same center, as is customary, but side by side instead. Upon each arbor place a thin, circular, glass disk opaquely engraved, the first with the hours, the second with the minutes, and the third with the seconds, and their fractional divisions. Position these disks to overlap an edge of the film when in its position of exposure, then wind and set the time piece, and the apparatus is ready for use. To provide the necessary "line," at one side of the course, fifty or a hundred or more feet away, raise a pole, and from its top run a bulky iron wire downwardly toward the course, at an angle of forty-five degrees. Beneath this wire, and parallel to it, run another similar one at a distance of five or more feet, and stake both tautly to the ground. These wires and the pole, which may be termed a timing-harp, must be so positioned that the triangle they describe is plumb, and its plane, if projected, will cut the flying-course precisely at right-angles to the line of flight. The photographic timer should then be placed within this triangle, so that both wires appear as one in its field of vision and thus become the official "line." The operation of timing is as follows:

A fleet of airplanes is seen approaching the line, when the official timer begin cranking the camera and continues till they have passed. The strip of exposed film is then quickly detached, by means of a simple "dark room" device which is part of the camera, and is developed on the spot, when there will appear upon each exposure the line, the machines in its immediate neighborhood, and the precise time of passage of each machine printed in hours, minutes, seconds, and fractions thereof. By this means the relative positions of all contestants at the finish of an event may be accurately ascertained and permanently recorded, and the exact time of finish by each be found and placed beyond dispute. If the camera be mounted at a sufficient distance from the course, but one such apparatus should be required to cover the necessary arc of sight; if it be not, two may be necessary. Glass-covered hands, or dials, corresponding to those within, should be visible from outside the camera, and all winding and setting devices should be operable from without. Thus the timer could be kept in regulation, and constantly checked for error. Given this apparatus, a properly constructed timing-harp, and large numbers clearly displayed upon the tails and beneath the wings of contesting airplanes, and every start, lap and finish of the most intricate event—so long as daylight served—could be timed and recorded with an accuracy not possible by any means now in use.

## THE NEW YORK AERO SHOW

By W. H. Phipps

The most pretentious aero show ever held in America and the first one to be held in New York, took place at the Grand Central Palace as a part of the Automobile Show, from December 31st, 1910 to January 7th, 1911, and was in every way a complete success.

Twelve full sized machines were exhibited, including two of foreign make, while a large number of firms who manufacture accessories were also represented.

We append herewith a summary of the main features of the more important exhibits:

### THE WRIGHT.

The Wright Brothers exhibited two of their latest headless fliers: a Wright "Roadster," used by the late Ralph Johnstone when, at the recent Belmont Park meet, he broke the World's Altitude Record, and a standard Model B. passenger carrying machine, built for Messrs. Frederick and Russell Alger of Detroit, a duplicate of which was used by Arch Hoxsey at Los Angeles when he rose to a height of over eleven thousand feet, making a new World's Record.

The Wright "Roadster" is a small single-seater copy of the standard headless flier—designed especially for speed and altitude work. With Orville Wright at the helm, it has climbed faster than any other aeroplane in the world. Wilbur Wright believes this machine capable of going two or three thousand feet higher than Hoxsey's record-breaker.

Its main dimensions are: Spread of planes, 26½ feet. Depth of planes 3 feet 7 inches. Fore and aft length, 24 feet. Height over all 6 feet 10 inches. Weight 585 lbs. The "Roadster" is fitted with two front skids and Farman-type shock absorbing wheels, while the tail is supported by two small springy skids.

The model B. passenger-carrying machine is little altered from the machine used by Hoxsey at Belmont Park, but there are several important detail alterations. The two front skids have been shortened and their points turned up at a sharp angle. The particular machine shown is an example of "show finish." All the steel parts are plated and the woodwork carefully varnished,—a departure from regular Wright practice,—aluminum paint having previously been used on all their machines.

The machine has both a foot and hand magneto control, and as the magneto is a Mea, an exceedingly wide range of control is provided. The control levers and their mountings have been materially strengthened by the use of special steel and aluminum fittings, which are necessary, owing to the complicated operation of the combination wing-warping and rear rudder control lever. The entire machine is governed by two levers, the first of which, when moved forward or backward, warps the wings and at the same time turns the rear vertical rudder, permitting the operator to maintain his balance without changing his course. The vertical rudder can also be operated independently to turn to the right or left by simply twisting the pivoted end of the lever with a wrist motion. The second lever warps the rear horizontal rudder either up or down, causing the

### THE CURTISS BIPLANE.

Glenn H. Curtiss exhibited his famous Hudson flyer. The machine has been altered in several respects since his Albany-New York flight. A noticeable change is in the position of the ailerons which have been moved to the rear uprights. The most important change, however, is a new method of wiring the aileron controls, so that if one breaks or pulls loose, the other may be operated independently to maintain the balance of the machine, using the existing one and counteracting the drag effect by the use of the rear vertical rudder.

Mr. Curtiss also exhibited a section of a new double surfaced biplane which he is building for speed purposes.

### THE BLERIOT.

Moisant's famous Paris to London Blériot was on exhibition. This machine is a two-seater, fitted with a large flat pigeon tail. Drawings and a description of this interesting monoplane will be found on page 439 of this number.

### BURGESS CO. AND CURTIS.

The Burgess Company and Curtis, had on show two very interesting biplanes, a large passenger Model D type, and a small single-seater Model C type.

The Model D is a large modified Farman type of unusual interest, as there are many new features and ideas embodied in its construction, one particularly noticeable feature being the placing of the skids very far apart and prolonging them up to the front rudder as on the old style Wright. There are no wooden members leading from the front elevator to the top main-spar as on the Farman.

The control on both of the Burgess-Curtis machines is unique. It consists of two universally jointed levers situated on each side of the pilot's seat, joined by a cross rod which passes in front of the operator and the whole so constructed as to enable the pilot to guide the machine with both hands—jointly or separately.

The control operates in the same manner as the Farman, with the exception that in this case provision is made to overcome the drag effect of the pulled-down ailerons. This is accomplished by the use of flaps on the upper side of the extremities of the upper planes; normally they lie flat; if, however, a gust of wind heels the machine over the ailerons are used to raise the low side, and at the same time and by the same movement the flap rising on the high side causes a resistance to that side, equal to the drag exerted by the ailerons on the left. Steering to the right and left is done by the feet. In other respects this machine differs but little from the regular Farman.

The main dimensions of the Model D are: Surface, 536 sq. ft. Weight, 700 lbs; motor, Hendee 8-cylinder, 60 H.P.; propeller, 8 ft. Burgess.

The Burgess-Curtis Model C, is a single-seater biplane of about the same dimensions as a Curtiss. In this model the skids are spaced a considerable distance apart and extend up to the bi-

plane of two small wheels on an axle attached to the skids by rubber bands à la Sommer. The control is the same as used on the Model II. The general dimensions of this machine are: Surface, 290 sq. ft. Weight 450 lbs. Motor, 2-cylinder, 30 H.P. Clement-Bayard. Propeller, 6½ ft. Burgess.

### "DEMOISELLE."

A Santos-Dumont "Demoiselle" monoplane which was being reconstructed and strengthened to hold a 50 H.P. Gnome, was shown by Capt. T. T. Lovelace, late of the English Humber firm.

It is to be flown by Roland Garros, and should make some splendid speed records.

The machine shown was constructed almost entirely out of steel tubing and was fitted with a Requa-Gibson propeller, the surfaces being double surfaced and very rigid. We await with interest the trials of this machine.

### THE WITTEMANN BIPLANE.

Messrs. C. & A. Wittemann, of Staten Island, exhibited one of their standard gliders and a two-seater aeroplane which fairly bristled with new and novel ideas.

The large machine has the wings set at a dihedral angle and the ailerons are attached to the rear uprights at the same angle as the main planes. Special steel upright sockets are used in place of the aluminum ones formerly fitted to the Wittemann machines. As may be seen from the sketch, the elevator is supported by two stout booms running aft and suitably braced with wire. The landing gear consists of a combination of skids and shock-absorbing wheels.

The chief novelty of the machine lies in the construction of the tail which somewhat resembles the Blériot XI type, with the important difference that the central position is movable and interconnected to the front elevator, while the two extremities are rigid. The machine is fitted with an Elbridge 40 H.P. motor and a Requa-Gibson propeller.

### THE WALDEN-DYOTT MONOPLANE.

Messrs. Walden & Dyott exhibited one of their front rudder monoplanes. The machine has one large main bearing surface and a small fixed tail, and is steered up or down by a small single plane front rudder.

The pilot sits below and slightly in front of the main plane with the motor situated behind him as in the Curtiss. The running gear and under chassis is similar to that used on the Curtiss. The control is operated by a Curtiss-type wheel and pillar, which in this case can, however, be pushed to the right and left, to operate the Farman-type ailerons.

As an aid in securing automatic side balance a spindle shaped vertical fin is fitted on the ends of the main plane. These fins are set at a dihedral angle to each other.

The monoplane is fitted with a 25 H.P. Anzani motor and a Requa-Gibson propeller. A novelty noticed on the machine was a small instrument for showing the angle at which the machine was

*Burgess  
models  
"COND"*