

Last week FLIGHT was the only journal, of any nationality, to publish a complete report of all machines shown. This report was, however, necessarily somewhat brief, and in the present and subsequent issues we propose to devote space to a more detailed reference, illustrated by sketches, to such machines as appear to merit closer inspection. Certain machines, notably among the French exhibits, were of old and well-known types, already familiar to readers of FLIGHT, and we do not in such cases intend to do more than mention their presence at the exhibition.

The Swedish Exhibit

On the Swedish stand four complete machines were exhibited, and a few days after the opening of the Aero Show a monoplane glider made its appearance, bringing the total up to five machines. To these must be added a small side-by-side school biplane shown on a separate stand, and built by the Nordiska Phoenix Aktiebolaget of Gothenburg. Thus in all six machines carrying the Swedish flag on their rudders were staged at I.L.U.G.

Of the four power-driven machines, one was a monoplane of unmistakable German influence in design. In fact, we heard it stated that the majority of the parts had been made in Germany and sent to Sweden, where the machine was erected by the Svenska Marinens Flygväsen. It was to all intents and purposes a Hansa-Brandenburg twin-float seaplane of monoplane type, with the wing placed low as in the machines surrendered to England, of which examples were, at one time, to be found at Isle of Grain. Being of fairly ancient type, and presenting no novel features, the Swedish Hansa-Brandenburg seaplane does not appear to call for further comment.

If the single example of "Swedish" design and construction shown by the Naval Aircraft Works possessed but little interest, the same cannot be said of the three machines exhibited by Härens Flygvapens Flygverkstäder of Malmslätt. If these machines still bear traces of German influence in design, they do, at least, indicate individual thought on the part of the designers, and an attempt has quite obviously been made to break away from the stereotyped, and to evolve new features. This applies particularly to the monoplane, the type J.23, which is a strut-braced parasol monoplane, possessing such modern features as streamline fuselage and thick wings tapered off to the tips and centre as in the latest British monoplanes, such as the Bristol and Hawker machines. It was difficult to determine with any degree of accuracy the wing section used, but at the point of greatest depth, *i.e.* where the bracing struts were attached, the section appeared to resemble one of the Göttingen, or Joukowsky, aerofoils.

A remarkable feature of the J.23, shared by the larger biplane, was the slotted ailerons, which, although possibly infringing the Handley Page patent, differed from the H.P. slotted ailerons as we know them by the fact that as the aileron was moved up or down the size of the slot did not change. While experiments in this country have shown the slotted ailerons to be very effective, it may be doubted whether the ailerons on the Swedish J.23 are of sufficient area. From one of the accompanying sketches it will be seen that the

shape of the ailerons on the J.23 are of approximately triangular plan form, and as the length of each aileron cannot be much more than 3 ft. the area is quite small. Similar remarks apply to the rudder of almost all Swedish machines, which appear to be ridiculously small according to British standards. Reference was made in our Editorial Comments last week to this fact, and it was not surprising to learn, from one with practical experience of Swedish naval and military aviation, that spins frequently occur, and, unfortunately, often with serious results. While the small control surfaces may be, and probably are, sufficient at high speeds, it is inconceivable that they can have sufficient power at or near the stalling speed. Consequently it would seem probable that pilots are not able to make use of the lowest speeds at which the machines are capable of flying.

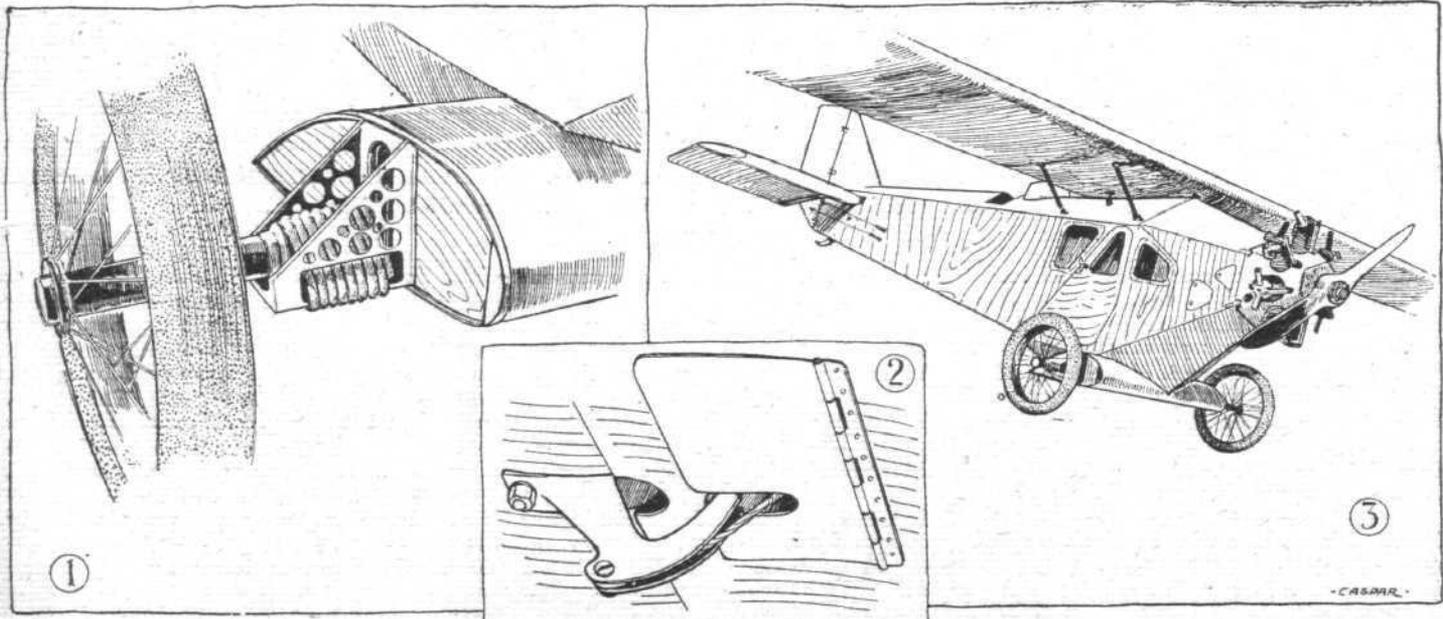
The fuselage of the J.23 is of elliptical cross section, and is constructed of three-ply panels over a light framework of stringers and formers. A specimen of such a fuselage was exhibited in the scientific section, and the workmanship of this was of a very high order of excellence.

No figures relating to wing area were available, but the following performance figures are of interest, and indicate that the machine must be of more than ordinary efficiency to attain the speeds claimed for it, bearing in mind that the engine is a B.M.W. rated at 185 h.p. only. This engine is of the high-compression type, and maintains its power up to considerable altitudes, but the performance, if really attained, is one nevertheless of which the designers have good cause to be proud.

The weight of the J.23 is 760 kg. (1,670 lbs.) empty and 980 kg. (2,160 lbs.) loaded. The speed at 1,000 m. (3,280 ft.) is stated to be 220 km. (136.4 m.p.h.), and at 3,000 m. (10,000 ft.) 250 km. (155 m.p.h.). The ceiling is given as 8,000 m. (26,300 ft.). The machine is armed with two synchronised machine guns, the sights for which are of very elementary type, placed on each side so that the pilot can sight from either side.

The second large machine is a two-seater fighter and reconnaissance biplane with Maybach engine (240-300 h.p.). It does not present any very unusual features, except that the rear portion of the fuselage is of triangular section, the lower longerons converging rapidly just aft of the gunner's cockpit. The radiator is mounted on the nose of the top centre-section, which gives the machine a somewhat German appearance. The main characteristics of this machine, the S.21, are as follows: Engine, 230-300 h.p. Maybach; weight of machine empty, 1,100 kg. (2,210 lbs.); weight fully loaded, 1,600 kg. (3,520 lbs.); speed at 1,000 m., 170 km. (105 m.p.h.); speed at 3,000 m. (10,000 ft.), 180 km. (111 m.p.h.); ceiling, 6,500 m. (21,300 ft.).

A small school machine, a single-seater with 90 h.p. Thulin-Rhone engine, was also exhibited. This machine is of orthodox design, and is only remarkable for the fact that ailerons, which run the whole length of the wings, are fitted to the bottom plane only. The machine is known as the "Tummeliten," and is said to be very easy to fly, and to be capable of all the modern stunts, such as looping, spinning, rolling, etc. The single-bay bracing is in the form of stranded



THE CASPAR COMMERCIAL MONOPLANE : 1 Shows the arrangement of the rubber shock absorbers on the end of the wing-section fairing over the axle. An aileron crank lever is shown in 2, while 3 is a perspective view of the machine as she was exhibited—on a steep left-hand banked turn.