

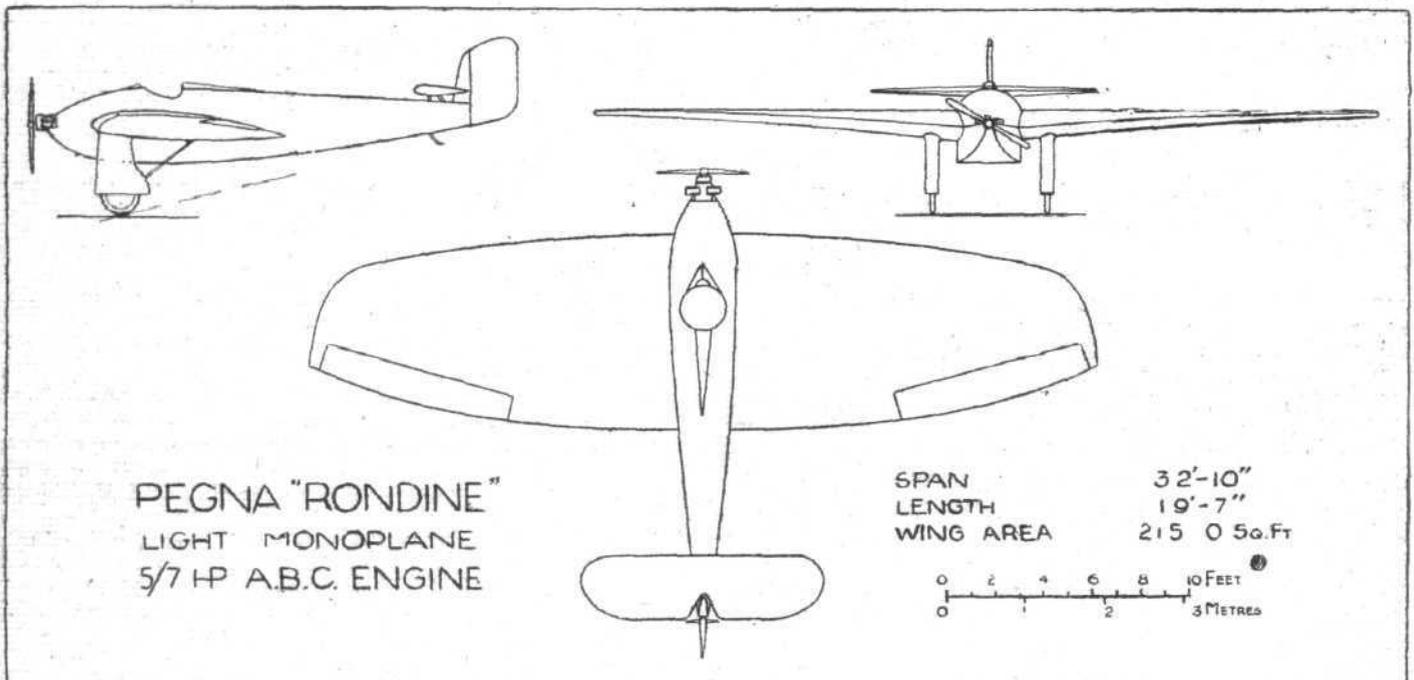
appear to be very great. We understand that several engines were tried, but not found satisfactory, and that ultimately a 400 c.c. A.B.C. flat twin, similar to those fitted on the English Electric Company's "Wren," was tried, and found to fly the machine quite well. In this connection it is interesting to compare the "Wren" and the "Rondine." The former weighs, fully loaded, 420 lbs., and has a wing area of 150 sq. ft., giving a wing loading of 2.8 lbs./sq. ft. The "Rondine" weighs, fully loaded, 464 lbs., and has a wing area of 215 sq. ft., giving a wing loading of 2.16 sq. ft. Assuming that the engines develop the same power (10 h.p.), the power loadings become 42 and 46.4 lbs./h.p. respectively. It is, however, stated that the A.B.C. fitted in the "Rondine" develops a maximum of 5.7 h.p. at 3,450 r.p.m., in which case the power loading of the "Rondine" is 81.5 lbs./h.p. (maximum).

As regards minimum power required for straight flight, the "Wren" will probably fly with the engine developing 3 b.h.p.—i.e., on just over 2 propeller h.p. It is stated that the "Rondine" will just fly level, at 100 metres (330 ft.), with the engine running at 2,400 r.p.m. and developing about 3 h.p. Thus the two machines should require approximately the same power, the higher power loading of the "Rondine" being apparently offset by the slightly lighter wing loading. On the other hand, the monoplane wing of the "Wren" is of much higher aspect ratio, while there is no projecting undercarriage, so that one would expect the overall L/D of this

The fuselage is of even more unusual form, and consists in effect of two separate sections, of which the lower is a load-carrying trough covered with three-ply, while the upper and deeper portion is merely a very deep fairing, consisting of very thin but closely-spaced stringers supported on light formers. As far as can be gathered, the wing is placed in position before the forward portion of the fuselage is built on, so that, apparently, there is no means of removing the wing from the fuselage once the latter has been finished and covered.

The undercarriage is of the two-wheel type, with each wheel supported by, and partly enclosed in, a streamlined structure, very much like the "trousers" of the Aachen glider. The track is fairly wide, as the undercarriage struts are attached to the wing a considerable distance out from the fuselage. The wide track is probably necessary, as the wing tips are a considerable distance above the ground, and there might thus otherwise be some risk of the machine turning over.

The engine, as already stated, is an A.B.C. flat-twin air-cooled of 400 c.c. capacity. A three-to-one reduction gear is employed, and as far as can be ascertained, this is in the form of a simple spur gear, enclosed in an aluminium casing in front of the engine. Thus, with the engine running at maximum revolutions of 3,450 r.p.m., the propeller is only doing 1,150 r.p.m., while when throttled down to minimum power required the propeller is only doing 800 r.p.m.



machine to be considerably the better of the two. Certainly the figure is better than the 14 given for the Italian machine. It might be pointed out, however, that the "Rondine" has a three-to-one reduction gear to the propeller, so that the propeller efficiency may be somewhat higher. By the time one takes into consideration all these various factors it seems reasonable to suppose that in performance there should be little difference, and this appears to be borne out by the figures given.

Constructionally the "Rondine" is somewhat unusual, not only in certain peculiar features in the wing structure, but even more so in the fuselage. The monoplane wing, which is in one piece, has two main spars of spruce, with lattice ribs. From a point on the front spar in the vicinity of the undercarriage strut attachment, stringers radiate out and back to meet the rear spar at a series of points between the tip and the root. These stringers are double—that is to say, one of a pair runs from the top of the spar and one from the bottom. They appear to pass underneath the rib flanges, to which, apparently, they are bound or taped. As far as can be gathered from photographs, there is no internal drag bracing in the wing, and presumably, therefore, the stringers are intended to form the drag bracing. If this is the case it will be seen that the rear spar only is braced against drag loads, the front spar receiving its support against these loads from the ribs. To us this form of bracing does not seem particularly suitable. It can scarcely be as strong as the more usual forms, and must weigh very nearly as much.

The pilot's cockpit is approximately in the centre of the wing chord, so that the view is probably somewhat restricted, although the fact that the wing is placed fairly low helps matters somewhat. The controls are of usual type, with joystick and foot bar.

The main characteristics of the Pegna "Rondine" are as follows: Length, o.a., 6 m. (19 ft. 7 ins.); wing span, 10 m. (32 ft. 10 ins.); mean chord, 2 m. (6 ft. 7 ins.); mean aspect ratio, 5; wing area, 20 sq. m. (215 sq. ft.); weight of machine empty and without engine, etc., 90 kgs. (198 lbs.); engine, reduction gear and propeller, 35 kgs. (77 lbs.); instruments, etc., 6 kgs. (13.4 lbs.); pilot, 65 kgs. (143 lbs.); petrol and oil, 15 kgs. (33 lbs.); total loaded weight, 211 kgs. (464 lbs.). The maximum speed is given as 70 kms. (43 m.p.h.), and the landing speed as 40 kms. (25 m.p.h.).

It is understood that as a result of the experience with the "Rondine" two more machines will be built, which will, however, be slightly different from the experimental machine. For one thing, they will have divided wings, so that the objection to building the wing permanently into the fuselage will then be overcome. One of these machines will, we understand, be a single-seater and the other a two-seater. They will be fitted with larger engines—15 h.p. and 20 h.p. respectively, and the engines themselves will be built by Piaggio. It is expected that both types will be ready early in the new year. The "Rondine" has made something like 100 flights, and has, it is stated, been found to handle well, being both stable and manoeuvrable.