drag bracing are in the form of steel tubes. The outer covering is fabric, but in view of the fact that wing-surface radiators are fitted there is an inner covering of three-ply extending from the leading edge back to the auxiliary spar to which the ailerons are hinged. The radiators themselves, as already pointed out, cover almost the entire wing surface. They have their inlets and outlets inside the wing, with piping running to the engine water jackets. No detail information is, unfortunately, available concerning the construction of the radiators, but it appears likely to be somewhat similar to the system employed on the Curtiss Navy racers at the Schneider Cup race at Cowes last year, the sole British licensees for which are the Fairey Aviation Company.

The monoplane wing is braced by a single streamline steel tube strut on each side, bolted at the top to the wing spars, and at the lower end to the rear spar of the axle fairing. Provision is made for adjustment of length and incidence. The axle fairing, or auxiliary wing, is of duralumin construction, and is also covered with duralumin. The divided axle is supported by the front spar of the fairing. The chassis struts are built up from several laminations of beech and whitewood, and are then covered with sheet duralumin.

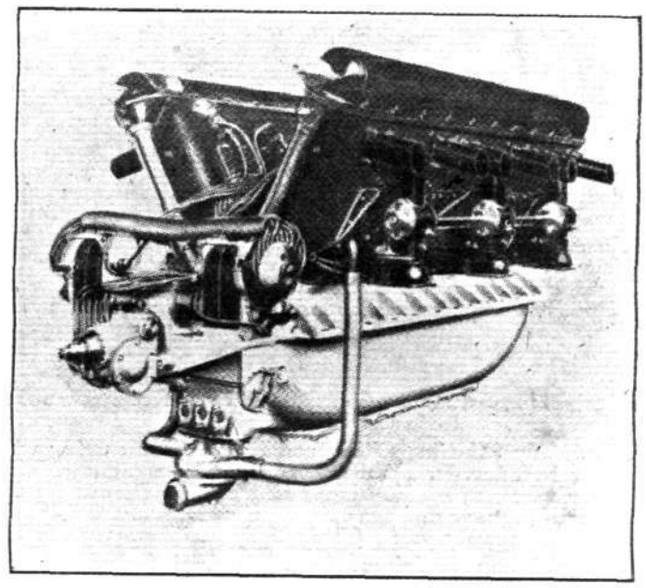
The fuselage, as previously mentioned, is of the monocoque type, with planking laid on in diagonal strips of whitewood over formers and longerons. The thickness of these strips is only 0·9 mm., and the number of layers, each crossing the previous one at an angle of approximately 90 degrees, varies from 5 or 6 in front to three at the stern. The two halves of the *coque* are built complete with longerons on their respective moulds, and are not assembled until after the engine bearers, bulkheads, etc., have been secured in place. The whole is then covered with fabric and doped.

The engine installation is somewhat unusual, and marks a change in usual Nieuport practice. An extremely strong structure of backbone is formed by two longitudinal bearers of duralumin, which extend aft to behind the pilot's cockpit. Forward these bearers carry the engine cradles and the bulkheads supporting the wing spars and the chassis struts, while farther aft they support the pilot's seat, controls, etc. Thus, the direct loads from engine, chassis, wing, and pilot are taken by the bearers, and the only loads not directly transmitted to them are the tail loads, which are taken care of by the monocoque fuselage. The Hispano-Suiza engine is a twelve-cylinder V-type, with a bore of 140 mm. and a stroke of 150 mm. The power developed is stated to be 600 h.p. at 2,000 r.p.m. An aluminium cowl entirely encloses the engine, and a spinner over the propeller boss completes the streamline nose. The petrol tanks are mounted in the fuselage between the wing spars, and in front of them is the oil tank. An oil radiator is fitted in the floor of the fuselage, under the engine, and serves also for heating the air on its way to the carburettors. The fuel is pressure-fed to the carburettors by two A.M. pumps.

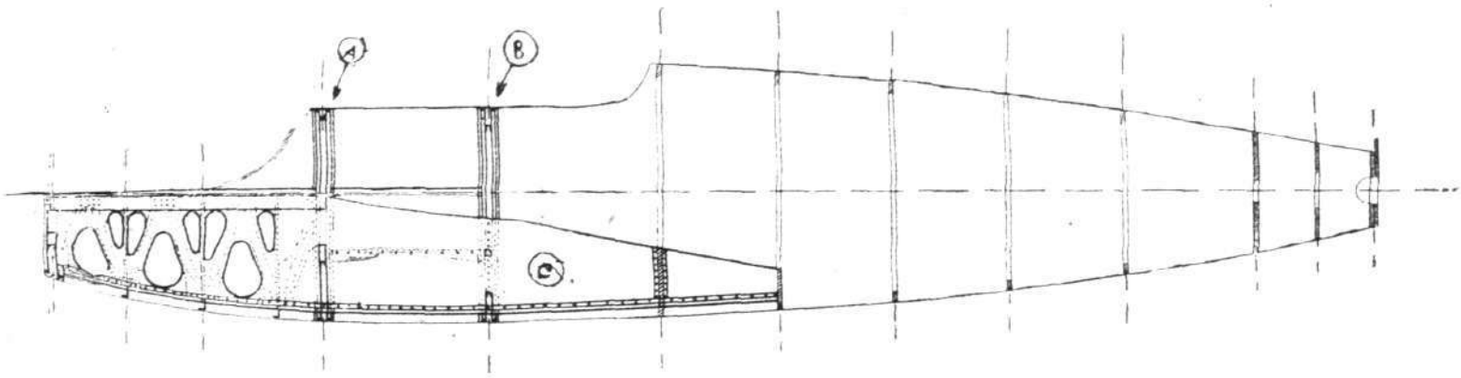
The tail of the Nieuport-Delage 42 is of usual form and construction, with the exception that there is a one-piece elevator with the rudder placed wholly above it. The tail skid is in the form of a laminated steel leaf spring.

Following are the main characteristics of the Nieuport-Delage type 42 : Length o.a. 7·3 m. (23 ft. 11 ins. ; wing span 9·5 m. (31 ft. 2 ins.) ; chord of top plane 1·7 m. (5 ft. 7 ins.) ; area of small plane 1·5 sq. m. (16·15 sq. ft.) ; area of main plane 14 sq. m. (150·5 sq. ft.) ; total lifting surface 15·5 sq. m. (166·65 sq. ft.) ; area of ailerons 1·6 sq. m. (17·25 sq. ft.) ; area of fin 0·7 sq. m. (7·54 sq. ft.) ; area of rudder 0·4 sq. m. (4·31 sq. ft.) ; area of tail plane 1·8 sq. m. (19·4 sq. ft.) ; area of elevator 0·75 sq. m. (8·07 sq. ft.). Weight of machine empty, but including water 1,170 kgs. (2,575 lbs.) ; useful load 100 kgs. (220 lbs.) ; weight of fuel 170 kgs. (374 lbs.) ; total loaded weight 1,440 kgs. (3,169 lbs.) ; wing loading 21 lbs./sq. ft., power loading 5·3 lbs./h.p.

In the Coupe Beaumont, it will be remembered, Sadi Lecointe averaged 311 km. (194·3 m.p.h.) over the 300 km. (187·3 miles) circuit, which was by no means a high speed for the machine being used, although it should be remembered that the course consisted of six laps of a 50 km. circuit, which fact would naturally detract considerably from the speed, considerable time being lost on the turns. Instead of landing after completing the 300 kms. in the Coupe Beaumont, Sadi continued until he had covered the 500 kms., the time for which was improved from 270 kms./hour (168·5 m.p.h.), the previous record, to 306 kms./hour (191·2 m.p.h.). The fact that Sadi was able to fly very nearly as fast over the 500 kms. as over the 300 kms. appears to indicate that he was probably not going all out, but was merely flying fast enough to make sure that he would beat the previous record. Perhaps he may have his eyes on the Pulitzer trophy ; who knows ? At any rate the speed put up at Istres was scarcely what might be expected from a machine of such clean lines as the Nieuport-Delage 42, especially when it is remembered that the Hispano develops about 600 h.p. Doubtless, later on we shall hear of considerably greater speeds being put up by Sadi on this machine.



The 600 h.p. Hispano-Suiza engine fitted on the Nieuport-Delage 42.



THE NIEUPORT-DELAGE TYPE 42 : Longitudinal section through fuselage. A and B are the bulkhead formers to which wings and chassis struts are attached, while C is one of the longitudinal duralumin bearers.

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A New All-Metal Latécoère

A LARGE four-engined all-metal machine constructed by the French Latécoère firm successfully went through its trial flights last week. It has a span of 28·5 m. (94 ft.) and a length of 15·75 m. (51 ft.), and is equipped with three machine gunners, each operating two twin machine guns, giving a firing range practically all round the machine.