The A.W. XV Monoplane

Designed specifically for the African Section of the London–Capetown Air Route, the Armstrong Whitworth A.W. XV is a Cantilever Monoplane fitted with four Armstrong Siddeley "Double Mongoose" Engines of 340 h.p. each. The first of the eight machines being built, the "Atalanta," was illustrated in FLIGHT last week. The Machines are designed to be, as far as humanly possible, immune from hurried forced landings, and to have a good Performance in the rarefied Air of certain Sections of the African Route

NOT for very many years has there been produced a commercial aircraft with so many interesting features as those one finds on inspecting the new A.W. XV monoplanes which are now passing through the Armstrong-Whitworth shops at Whitley, Coventry. Eight of these machines are on order for Imperial Airways, Ltd., and the first, the "Atalanta," is already flying, and visited the S.B.A.C. Display at Hendon last week, where it attracted unusual attention. The others are well on the way, and for once it looks as if the old saying that no new aircraft type, let alone a batch of large machines, is ever produced on time, will prove false. The "Atalanta" has done a deal of flying, and such minor "teething troubles," as any new type is likely to suffer from, have already been discovered, and, as far as can be ascertained, remedied. It is true, of course, that only in actual service over the route for which it was designed can it be settled quite definitely whether or not a new commercial aircraft type is entirely successful, but the few difficulties encountered have been tackled and overcome, and the first machine is now reported to be ready for its final, searching tests.

The photographs and general arrangement drawings of the "Atalanta" illustrate very well the general appearance of the machine. What they do not show, however, is the internal structure, which is, if anything, even more interesting than the external appearance. In the space available it is quite impossible to do justice to a new type like the "Atalanta" in one issue of FLIGHT, and we, therefore, propose to divide our description into two instalments, the first, published this week, dealing with the general, or aerodynamic, design of the A.W. XV, and the second instalment, which we hope to publish next week, being devoted to the structural details.

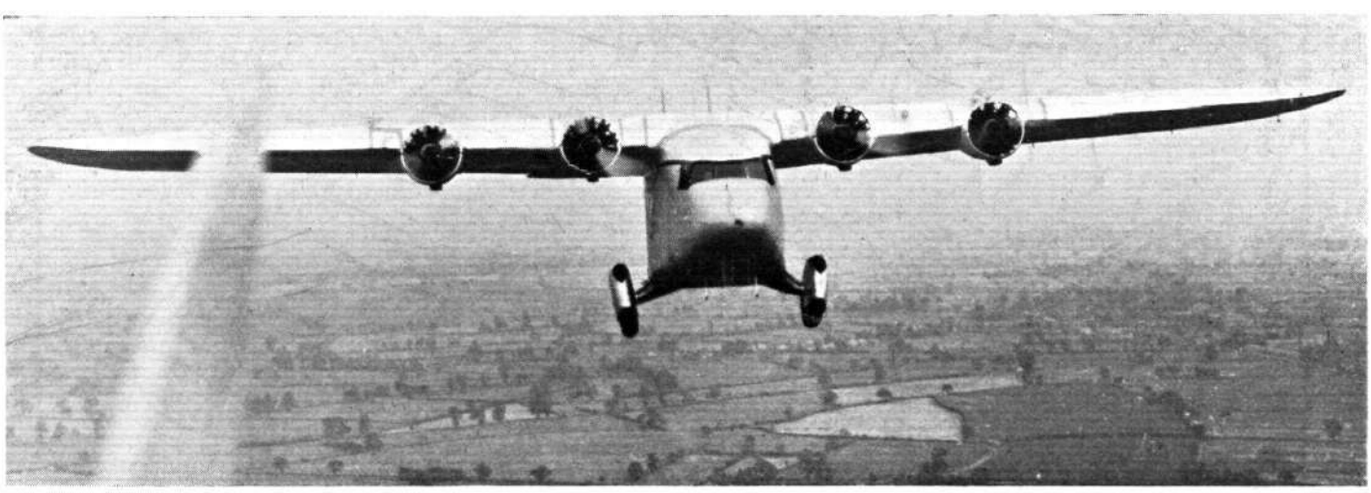
For a good many years the British aircraft designer has been content to follow a conservative policy in the general lay-out of his machines. The biplane type had the advantage of low structure weight, and for a very long time the British aircraft designer refused to be influenced by the vogue of the monoplane type abroad. Nor was he altogether to be blamed for this attitude. The biplane type of structure was known to be lighter, in machines of the same landing speed, than that of the monoplane, particularly the cantilever monoplane. And as it has been a guiding principle in British commercial aviation for many years not to sanction very high landing speeds, a very good case could actually be made out for the biplane.

Progress in aero-engine design and construction during the last years has been such that a complete breakdown of an engine is now a very rare occurrence. By adopting, as the designers of the A.W. XV have done, a four-engined arrangement of the power plant, the chances of what may be termed a hurried forced landing, as distinct from a more leisurely precautionary landing on a selected site, have become still more remote. This means that a somewhat higher landing speed than hitherto adopted can be tolerated. Once that point is conceded, the relative merits of biplane and monoplane have to be reconsidered. For the same landing speed, the monoplane will be a larger machine, larger, that is, in wing span and probably overall length. While the landing speed was low, *i.e.*, while the wing loading was low, the monoplane size as compared with the biplane, was rather prohibitive. As the wing loading is increased in conformity with the higher permissible landing speed, the difference in size becomes less, and a point is reached when it is no longer safe to say that the biplane is, on balance, the "better" type.

In the A.W. XV we have an aircraft designed for a good deal higher performance than we have hitherto been accustomed to in British commercial aeroplanes. Exact performance figures are not yet available, but the cruising speed will probably be somewhere in the neighbourhood of 120 m.p.h. The higher performance, and the increased landing speed made permissible by a reliable power plant divided into four units, has been made the basis of a very exhaustive study by the Armstrong Whitworth engineers into the subject—biplane or monoplane? They came to the conclusion that, for the purpose in view, the monoplane offered the better solution, and the A.W. XV is their interpretation of that solution.

We recently had the pleasure of being shown the monoplanes in various stages of completion at the works at Whitley, and of having their "points" explained to us by no less authorities than Maj. Green, the firm's chief engineer, and Mr. Lloyd, Armstrong-Whitworth's chief designer. If, therefore, we fail to do justice to the new machines, the fault will be entirely our own.

Extremely careful streamlining is the main feature that impresses one when first confronted by the "Atalanta."



THE A.W. XV IN THE AIR : This front view indicates the very low frontal area of the machine. (FLIGHT *Photo.*)