

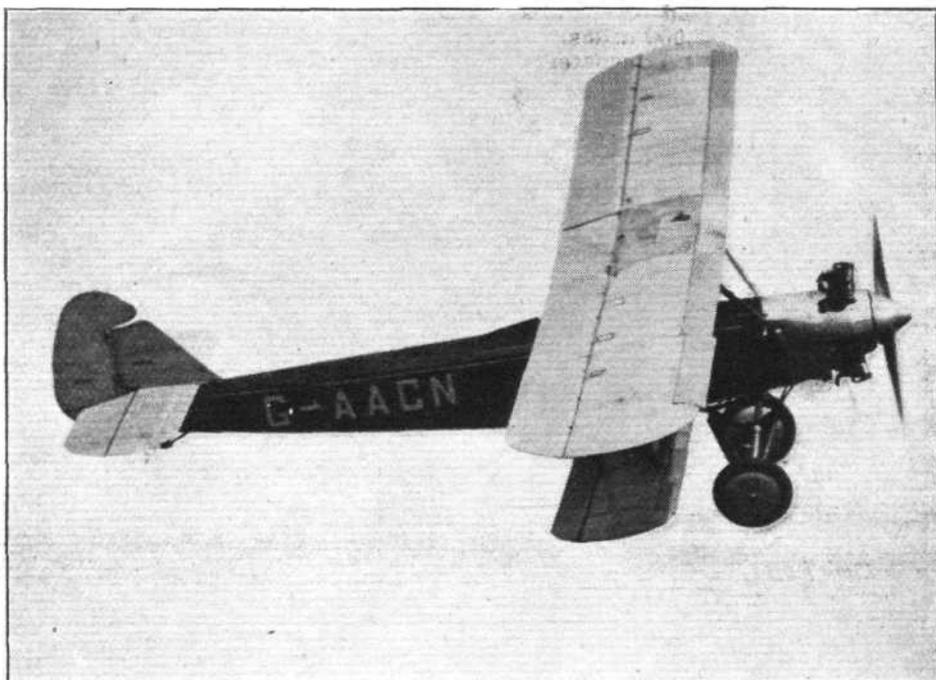
HANDLEY PAGE TYPE 39

Guggenheim Competition Machine

ONE of the articles in last week's issue of THE AIRCRAFT ENGINEER (Monthly Technical Supplement to FLIGHT) was by Mr. Russell, who is in charge of the Handley Page wind tunnel, and dealt with the subject of lateral control by means of automatic wing-tip slots and normal ailerons, interconnected slots and ailerons, and slot and "interceptors." In the Handley Page type 39 biplane built for the Guggenheim safe aircraft competition, the Handley Page slot is used in addition to give extra lift, not as in the early Handley Page experiments by mechanically-operated slots and flaps, but by automatic slots and flaps extending over the entire top plane. Thus the pilot is relieved, in this machine, of the work of operating the lift slots. To the best of our knowledge, this is the first time that the slot has been so employed on an actual machine (as distinct from wind tunnel model experiments), and this fact entitles the Handley Page "Gugnunc," as it is usually called, to inclusion in FLIGHT's gallery of new aircraft. That the machine did not win the Guggenheim competition, and that lawsuits and other forms of unpleasantness attended its appearance in America, is neither here nor there, and need not be taken into consideration when trying to form an idea of the merits of this particular use of slots.

The automatic wing tip slots have proved themselves, and have, although they may not represent the ultimate solution of the problem, "come to stay," at least for some considerable time. But, in addition, the slot may be used as a "lift slot" as well as a "stability slot," and it is of interest to discover whether, when so used, the slot is likely to become generally adopted. It has been pointed out in FLIGHT that when one comes down to fundamentals it is found that in effect what the slot enables one to do is to reduce the area (for a given landing speed) by reducing the chord only. The wing span is determined by considerations other than landing speed. For taking off and for climbing the span cannot be reduced beyond a certain limit if induced drag is to be kept down. That being so, it might be thought

that the lift slot would not be likely to have very great advantages, and that a machine with automatic wing tip slots only could be designed to do all that the lift-slotted machine can do. It is not certain that this is necessarily quite true. For instance, a speed range of 3.36 to 1 (as the



"Gugnunc" has) is not easily achieved in an unslotted machine, and if one did manage to attain it, the machine would in all probability have a gliding angle so flat that it would be difficult for a pilot of only moderate skill to bring it into a small field. The "Gugnunc," when flying at large angles of incidence, has a very steep gliding angle because of the higher drag of the wing with slots open, and can, therefore, be brought down more *a la* Autogiro. Put in another way, with the system of lift slots a pilot of moderate skill can bring the machine down steeply without thereby reaching a high speed, much as the skilled pilot sideslips an ordinary machine. To us it seems that this

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This side view of the Handley Page Guggenheim Competition machine shows very clearly the lift slots open and the trailing edge flaps down, in the position of maximum lift. (FLIGHT Photos.)