I HAVE finished and tested a new type low aspect-ratio monoplane for the Arup Mfg. Co., South Bend, Ind., which was the fourth one built. One plane previously built was destroyed by fire before any performance data could be obtained.

This new monoplane, a two-seater with dual controls and powered by a 70 H.P. LeBlond engine, has shown remarkable flying qualities characteristic of the low aspect ratio airfoils. It is a near all-wing airplane with the exception that it has horizontal tail surfaces of 23 sq. ft. above rear end.

It has a span of 22 ft., an overall length of 19 ft., a maximum cord of 16 ft. and an empty weight of 675 lbs. The center frame and the two star shaped spars are constructed of chrome alloy steel tubing, the ribs of dural tubing, the entering edge and the rear trailing edge of dural sheets. The fabric covering is stitched to the upper and lower cord of the ribs independently.

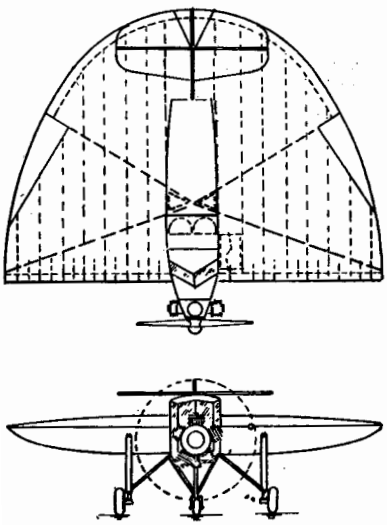
The emergency exit is located over the pilot and passenger seats, entrance being through the bottom, using one part of the wing and a part of the body. The door on the body has a step attached and flaps downward to facilitate entrance into the machine.

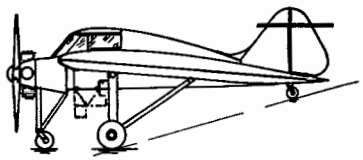
The landing-gear follows the specification of the Bureau of Air Commerce for a third wheel to prevent nosing over after full brakes are applied. The spread of the side wheels is 8 ft., the wheels are 18x8 airwheels with brakes. The shock struts are of Bendix make with a travel of 9-inches. The front swivel wheel is a 12"x5" airwheel.

Two gas tanks are located behind the seats, with a capacity of 18 gals., and are connected with a fuel pump to the engine. The propeller has a diameter of 7 ft. and only 3'-3" pitch, which insures a quick take-off but reduces the top speed.

The easy handling in the air, a gliding angle of 1:2.6 at a gliding speed of 23.4 M.P.H. (one pilot only), insures a safe landing especially in a forced landing; a top speed of 86 M.P.H. has been obtained at the first run, but with a correct pitch a top speed of 100 M.P.H. will be reached. The take-off in a 15 M.P.H. wind is accomplished in 3 seconds and in still air in 5 seconds.

This machine and all other low aspect ratio monoplanes give hope for improvements on speed performances and has aroused a new interest for radical designs in this country as well as in foreign countries, such as France, England and Italy.



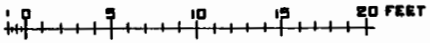


R.J. HOFFMAN

ARUP No.104

TWO SEATER - DUAL CONTROL

SPAN	22 FEET
OVER-ALL LENGTH	19 FEET
MAX. CHORD	16 FEET
WING AREA	276 SQ.FT.
HOR. TAIL AREA	23 " "
WEIGHT, EMPTY	675 POUNDS



Scale drawing of the Arup No. 104 showing recent modifications in the design.