



With motor extended the Humming Bird climbs at 275 feet per minute until it reaches the thermals. Handling characteristics proved to be excellent. While it is not planned to NC the ship, it has been thoroughly static tested and found to meet all CAA requirements. The sailplane has a plywood fuselage and a metal wing. Fabric covering was used on the trailing and control surfaces to save an estimated 30 pounds in weight.

its fuel and air mixture through the crankcase into the cylinders, this fine abrasive is admitted through the fuel system, causing severe engine wear. A screen type of air filter with a light coating of oil on the screen was installed on the carburetor intake and thus collected the dirt and eliminated the problem.

In conclusion I feel that the auxiliary powered type of sailplane is the answer to the soaring problem and that future gliders should be of all-metal construction with a low cost (under \$3000) and a power loading of not over 30 pounds per horsepower. Maintenance must be negligible and all parts should be readily replaceable without special tooling.

Where commercial operations are to be conducted, I believe that the powered sailplane can be rented for about \$4 an hour, with the original cost being defrayed over a 2,000 hour period. If an operator should fly his ship a minimum of 500 hours per year, the insurance rate would be about 50 cents an hour. If the ship is flown three-fifths soaring time, then fuels should be about 40 cents with a maintenance of about 50 cents per hour or a total hourly cost, not including overhead and interest on investment, of \$2.90 per hour. The operator could make about 25 per cent on his equipment and encourage soaring business.

No other type of soaring craft can offer this to the public at this low rate, and, just as important, from the ordinary airport!

It is hoped that in the not too distant future a good performing, reasonably priced, powered sailplane will be available. When that day comes soaring will be in for a real expansion.

Ed. Note—The single-place powered design should be seriously considered. It offers the advantages of lighter weight, higher performance, less horsepower, and lower cost.

A good many SSA memberships expire in June

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THE POWERED HI 20

Translated and Adapted from Flugsport

By E. F. McGUINNESS

WOLF HIRTH, one of Germany's leading sailplane builders, started on his motor-sailplane in 1937. A special motor had already been designed and built for this purpose and was to be thoroughly tested in a prototype sailplane to eliminate the usual "bugs" before being installed in a performance machine. In the summer of 1939 this prototype was nearing completion but with the start of the war further work was abandoned. Work was resumed in the autumn of 1941, however, and the ship was finished. On October 25, 1941 it made its first flight. A number of minor improvements were made before the work was stopped again.

The HI 20 is a single-place powered sailplane. The full cantilever wings and tail are the same as those of the two-place "Govier"—a wooden framework covered with plywood and fabric. Fuselage is of steel tubing-fabric construction. The landing gear is unusual in that it consists of a wheel mounted in the nose and another behind the center of gravity. In addition there is a rubber ball sprung tail-skid. The initial design featured a wheel in each wing but these are not used in the prototype.

Dipl. Ing. W. Krautter specifically designed the engine to meet the rather difficult requirements of powered sailplanes and gliders. The following are the more important specifications, of which the first three are of prime importance: reliable starting in the air as well as on the ground, with immediate full performance; trouble-free operation, with special attention being paid to adequate cooling; small size; low weight; simple maintenance and low fuel consumption.

The four-cylinder engine has a two-stroke cycle. Cylinders are paired and mounted 180 degrees apart parallel to the crankshaft. Pertinent dimensions are: 500 cc displacement, 51 mm bore, 62 mm stroke.

The motor originally developed 17 hp but was later increased to 25 hp through improved carburetion and porting. This horsepower was obtained at 5500