

SOME ANCIENT HISTORY

Mr. Michael E. Gluhareff, Engineering Consultant with Sikorsky Aircraft in Stratford, Conn., has submitted the following information and accompanying photographs for their historical interest. His (and his brother Serge's) early experimentation with gliders and sailplanes took place in Finland during the years 1921-1923. He later emigrated to the U. S. and was instrumental in the design of the Pratt-Read GRI sailplane, the same war surplus P-R that has brought so much soaring enjoyment to many of our readers and has held the multiplace world soaring altitude records since 1952. Of significant interest is the fact that the P-R has the same airfoil that Mr. Gluhareff developed experimentally in 1921 and used on his S-22 sailplane in 1922. The airfoil is known in the U. S. as the GSM and GS-1 series (NACA Report No. 628, pp. 8-9, 1938) and was also used on all Sikorsky fixed-wing aircraft built in this country, including the Pan American Airways "American Clipper" flying boats.

The Gluhareff brothers worked without outside help in designing, building and flying their 3M biplane glider and S-22 sailplane. Some details concerning these machines are given below:

3M BIPLANE GLIDER

The 3M was designed, built and flown in 1921. It had very light spruce construction and weighed only 90 lb. The top wing's span was 22 ft. and it used a 6% thick Eifel No. 3 airfoil. The all-moving

tail surfaces were controlled by two "joy sticks" moving fore and aft, while moving these sticks sideways twisted the outer top wings for lateral control.

Over 1000 short gliding flights were made with the 3M during the winters of 1921 and 1922. Maximum endurance on the slope flights was 6 minutes, an eternity! The glider was quite controllable and rather easy to fly. Take-off was usually by going down the slope on the skis until flying speed was attained. Michael's first spin was on the 3M but only the skis were damaged because of the 6-ft. cushion of snow.

S-22 MONOPLANE

This machine was designed and first flown in the winter of 1922. It made hundreds of flights in two years without damage although it was more difficult to fly than the 3M. The full-cantilever wing had a span of 33 ft., an aspect ratio of 9 and used the GSM airfoil at the root, blending to the GS-1 at mid-span and to a symmetrical, 9% section at the tips. Wing construction

was of wood with two box spars. The ribs aft of the rear spar were hinged and spring-loaded, permitting the trailing edge to deflect up 3 inches, which gave the feeling of very soft, "mushy" flight. The aerodynamically-balanced, wide-chord ailerons provided very sensitive controllable washout and were operated by two sticks (one for each aileron). The short-coupled empennage surfaces were all-moving, a "touchy" elevator and ineffective rudder.

Usual take-off was with the help of a 110-lb. weight on the end of the towline which, through pulleys, fell from the top of an 80-ft. high tripod tower. In 1923 Serge made a flight of 2½ minutes duration across a 1-mile-wide frozen lake, all the time above the point of departure about 10 feet over the surface of the lake.

These independent efforts paralleled similar achievements by Wolfgang Klemperer and other Germans at the Wasserkuppe in the same years. It is a tribute to the Gluhareff brothers that they made such progress all by themselves in a remote corner of the world, but then, such is the nature of all human achievement.



The Gluhareff 3M biplane glider, foreground, designed and flown in 1921 by Michael and Serge Gluhareff in Finland. Maximum duration was 6 minutes, an eternity! The brothers' S-22 is in the background.



The Gluhareff S-22 (S for Soarer, 22 for the year of construction) with Michael Gluhareff in the open cockpit. It is of special interest in this country because Mr. Gluhareff used the wing airfoil from the S-22 on the U. S. Pratt-Read sailplane which he later designed.

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