

A TECHNICAL  
DESCRIPTION OF  
AN IMPORTANT  
SPORTING SAILPLANE



# The D.F.S. REIHER

By B. S. SHENSTONE

*Chairman, Technical Committee, Soaring Association of Canada*

## I. INTRODUCTION

BECAUSE soaring flight is a peacetime pursuit, sailplane development since 1939 has been negligible. Effort has necessarily been diverted into the design of large military gliders having no soaring ability. With so many out of touch for so long, it may be worthwhile to look back a little and examine the best of the immediate prewar period.

Of these prewar designs perhaps the REIHER (Heron) shown on Fig. 1 deserves the most attention. Although it was not extreme in any way, it was a highly developed type, the end-product of many years of design and experimentation on the part of the D.F.S. Sailplane Department headed by Hans Jacobs and formerly headed by Alexander Lippisch.

Perhaps the reader may say that all sailplanes are extremes because of their very slim wings and peculiar duties. However, among sailplanes the Reiher steered an effective middle course among such passionate outbursts as the Darmstadt D-30, the Darmstadt D-28 (Windspiel) and the Hannover AFH-4, to say nothing of the earlier Austria. It is not the writer's desire to disparage these efforts for they are essential to the good breeding of sailplanes. They were, however, experiments and the Reiher was a development.

Let us compare them. Relevant information is shown on Table I. The D-28 was exaggerated in that extreme care was taken to reduce the structure weight regardless

of expense in order to produce a small highly maneuverable sailplane with good performance. The AFH-4 used a Fowler flap, a very difficult thing to make on a small scale and almost impossible to keep in order on a wooden wing of light construction. The object was to have a high wing loading for cruising, but a low wing loading for other operations. The Fowler flaps when fully extended increased the wing area by 14%. The D-30 had an extreme aspect ratio of 33 and to attain it had to use a metal box spar, and in so doing no expense was spared. The D-30 was a most interesting type with a performance better than that of the Reiher, but must have been very difficult to design from the stiffness and flutter points of view. The Austria with its nearly 100 ft. span was probably the biggest single seater ever flown and was designed for thermal operation without the use of turns. It was interesting but not an outstanding performer due to lack of maneuverability. At both ends of the scale, neither the D-28 nor the Austria was worthwhile operating although they were technically both worth building. To give a clear idea of the relative sizes of these four machines, drawings of the wing plan forms are shown in Fig. 2.

The Reiher's span of 62.5 feet (19 m.) was chosen on the basis of experience which indicated that for greater spans it was difficult to achieve enough roll maneuverability for thermal flying because of the excessive rolling inertia. It is worth noting that of former D.F.S. aircraft, the span of Fafnir II was also 62.5 feet and that the two-seater Kranich (Crane) had a span of 59.1 feet (18 m.).