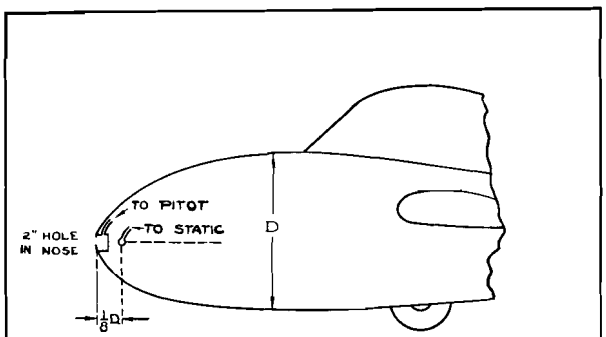

FUSELAGE AS PITOT STATIC HEAD

FIG. 3

geometry only. It is intended as part of the Soaring Society's Research Program to publish flight polars of every available high performance sailplane. From this work valid conclusions may be drawn and used in future projects.

Examination of Figure 2 confirms the fact that this ship attains a rather low CL max. A very interesting point easily gleaned from the polar is the low minimum drag coefficient of the TG-32. This means that for high speed cross-country soaring in strong thermals of large diameter the Pratt-Read should stand out ahead of other designs. It is suggested that TG-32 owners clean-up their TG-32 by sealing the canopy, straightening warped canopies, covering sides of skid, removing venturi and airspeed tube and using fuselage nose pitot-static such as described by the author at the 1945 Motorless Flight Conference (See Fig. 3). Such an improved TG-32 should be a strong contender in the coming Wichita Falls meet on the plains of Texas.

In Figures 4 and 5 are displayed flight polars of a number of sailplanes. In Figure 4 the polars are plotted in rectangular coordinates. To those who are accustomed to this type of presentation, the curves will reveal many valuable features. However, a much more revealing plot is shown in Figure 5 where the square of the lift coefficient is plotted against the drag coefficient (Ref. 7).

Critical comparison of the TG-32 and TG-4A should yield some light on the behavior of these ships at low speeds. That is, some aerodynamic knowledge on the comparatively high induced drag of the TG-32 should be obtained. The efficiency of the TG-32 is seen to be 57% and that of the TG-4A 66%. Apparently the much wider fuselage of the TG-32 results in more interference with the flow over the wing than that of the TG-4A. The intercepts on the horizontal axis show the minimum drag coefficient of the TG-32 to be 0.0126 and that of the TG-4A 0.0242. This means that to improve the TG-4A emphasis should be placed on parasite drag reduction, whereas because of its lower efficiency the TG-32 can best be improved by a fuselage-wing interference reduction.

Thus far flight test data and their presentation have been described. The contribution to be expected from a coordinated nationwide program of flight analysis of American sailplanes is clearly shown to be worth our sincerest efforts. The Soaring Society's Research Staff offers its aid to any member wishing flight test data evaluated, and will, furthermore, aid in the collection of the flight data by issuing instructions for flight test procedure to anyone writing to the S.S.A. In the meantime the Society is developing a reliable flight recorder which will be circulated among various interested persons for cataloging American sailplane performance. In a future paper will be described the Ciné camera recording technique employed in evaluating the TG-32 and TG-4A.

In conclusion it must be emphasized that our only avenue for sailplane improvement lies in collecting experimental data in the full scale wind tunnel which nature has provided for all of us. By a rational cooperative program of modification and flight testing it should be possible to improve current designs so that these ships will be capable of breaking world's records in next summer's National Meet at Wichita Falls, Texas.

It is the author's pleasure to express his gratitude to Captain Walter S. Diehl of the U. S. Navy, to test pilots Paul Tuntland and George Tabery, to William Dolger and Ben Shupack for aid in evaluating film data; to Specialties, Inc. for loaning equipment for the evaluation of data; and to the Laister-Kauffmann Aircraft Corp. for their contribution of a TG-4A to the Soaring Society's research.

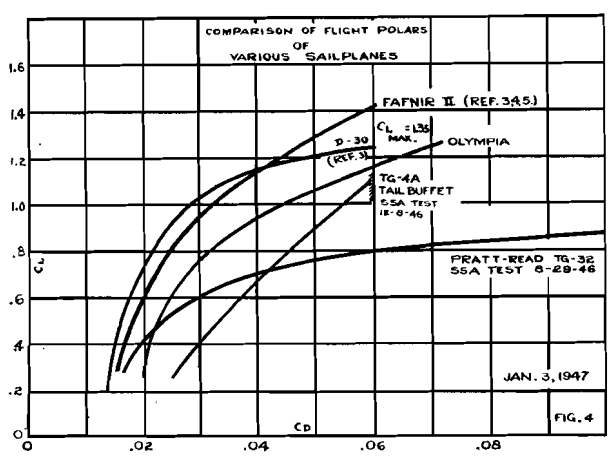

FIG. 4

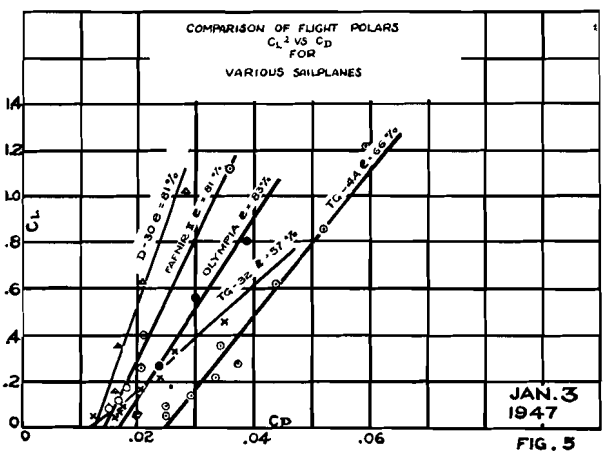

FIG. 5