



FIG. 5. TYPICAL SYSTEMS OF SUSPENSION

increases. (In the case of inclined flat planes it moves backwards as the angle increases.) If the wings are of two-spar construction the position of the C.P. determines the load on each spar for different attitudes of the wing and the load on each spar will be in inverse proportion to its distance from the C.P.

For stressing purposes the C.P. is assumed to act at one-third of the chord from the leading edge when the machine is at maximum angle of attack, the wings are then designed with a load factor of five for that condition.

In diving flight the position is assumed to be three-quarters the chord from the leading edge, and in this condition a factor of 3.5 is called for. Under these circumstances the rear spar will take practically all the load and in the case of single spar wings with the C.P. in the backward position considerable torsion is

set up as well as bending and the leading edge is boxed in with plywood and suitable diaphragms, which, coupled with the spar, form an ideal member to resist this torsion.

The drag forces on a sailplane when in normal flight are very small and may be of opposite sense to those of powered craft, i.e., the component of weight acting forward may more than balance any backward drag and such forces are easily catered for.

The aerodynamic forces on the ribs are very low, and ordinary former ribs, built from $\frac{1}{4}$ in. sq. members and $\frac{1}{16}$ in. thick plywood gussets, stand up to the task quite well. When the wing is of two-spar construction and the panels braced, a number of struts or compression ribs will be required. Two ordinary former ribs, placed about $1\frac{1}{2}$ inches apart and covered with $\frac{1}{16}$ in. thick plywood, form very satisfactory struts.

The National Soaring Competition in Poland

By A. T. LUTOSLAWSKI

ON the 22nd of September the Minister of Transport declared open the National Gliding Competition in Ustjanowa, Southern Poland. It was the first National meeting of this kind, and as such it has attracted considerable public attention. There are now in Poland 104 gliding clubs, with a total of about 9,000 members, 1,200 of whom are licensed gliding pilots.

Polish gliding came into existence quite recently, as before 1929 no flights had been made except a few very short ones. The development was, however, fast, and it is a point on which the Polish gliding men pride themselves that at no time did they resort to the help of foreign instructors, nor were any foreign sailplanes used in Poland.

The plan of the meeting provided a special task for each day, and points were awarded for the accomplishment of the greatest number of these on successive days. For instance, the task of the third day was the following: Fly to Bezmiechowa (about 10 miles), return and land at the starting point. Some 15 pilots managed to do it on that day. The record for a distance flight with landing at the starting point is held by Mr. Brzezina, who flew from Ustjanowa to Sanok (nearly 40 miles) and back.

On another day distance was set as the goal, but the weather conditions not being what they might be, nobody equalled the 130 miles Polish record. Three competitors have, however, exceeded the 70 miles mark.

The duration of flight day was more successful; Mr. Olenski on a MOSQUITO held the air for 20 hours and 13 minutes, beating at the same time the night flight record with 11 hours and 15 minutes.

The altitude day brought some difficulties, as is usually the case when extra-delicate barographs come into the game. Mr. Wlodarkiewicz, a well-known pilot who distinguished himself in last year's challenge (then with an engine), topped the list with 8,800 ft. above starting point. Capt. Bleicher claimed an altitude of nearly 11,000 ft. but this was not officially recognised, although there is reason to suppose that he exceeded the existing record by a large margin.

There have been several women competitors and they attained excellent results, in some cases nearly equalling the men's records. Miss Mary Younga flew to 7,000 ft. above starting point, and she covered a distance of some 30 miles. Miss Modliborska improved her former duration record and went up for 9 hours 30 minutes.

The names of the winners of the competition have not yet been announced, but it is pointed out that the general standard attained by the pilots is more important than the peak results of some of them. Figures of averages are held in Ustjanowa to mean more than the records, even though the latter are eagerly sought after. For instance, on the 1st of October the 50 flights made contributed a total of