

So I Decided to Build a Sailplane

By RAY E. LUNGER

At the present time plans for building about a dozen different gliders are available in the United States and Canada (See SSA Soaring Guide). These range all the way from simple utility gliders to high performance sailplanes. The "Olympia" is probably the most difficult of the group to build and here Ray Lunger gives a first-hand account of what it is like to build your own.—Ed.

HAVING always admired the "D.F.S. Olympia," as soon as I had a little spare cash and a suitable shop available, I purchased plans for the ship.

What a thrill it was to get the plans. I could not wait until I got home from work the day that the prints arrived, but sent my wife to the express office for them.

The express bill was more than \$3, so I was not surprised to find approximately 1900 square feet of blueprints, including complete specifications and materials lists.

I knew from previous SSA correspondence that the plans were scaled in the metric system and the language in German. The completeness and the clarity of the drawings pleased me very much, and I translated enough of the German to enable me to order the necessary material.

In peacetime materials procurement would have been no problem. However, in wartime, when I looked for plywood, all I was asked for was a priority number. However, after long waiting, I was able to buy odd sized sheets of plywood and spruce in small cross-section sizes.

Meanwhile I had not been idle. I set up a jig on which to assemble the fuselage, built from scrap lumber and sized to allow clamps to be used to bend the keel. It was lined up and secured to the shop floor so that the thrust line was level and each former

ring plumb. A true center line was also established from points on the shop wall; this permitted me to stretch a line to help me determine the proper center and height of the fuselage formers, when placed on the keel.

I then made a template of quarter inch fir plywood for each station in the fuselage. When these were set up on the keel, I had a true picture of what the finished job would look like. The templates were very helpful in laying out the bending forms and center lines on the rings.

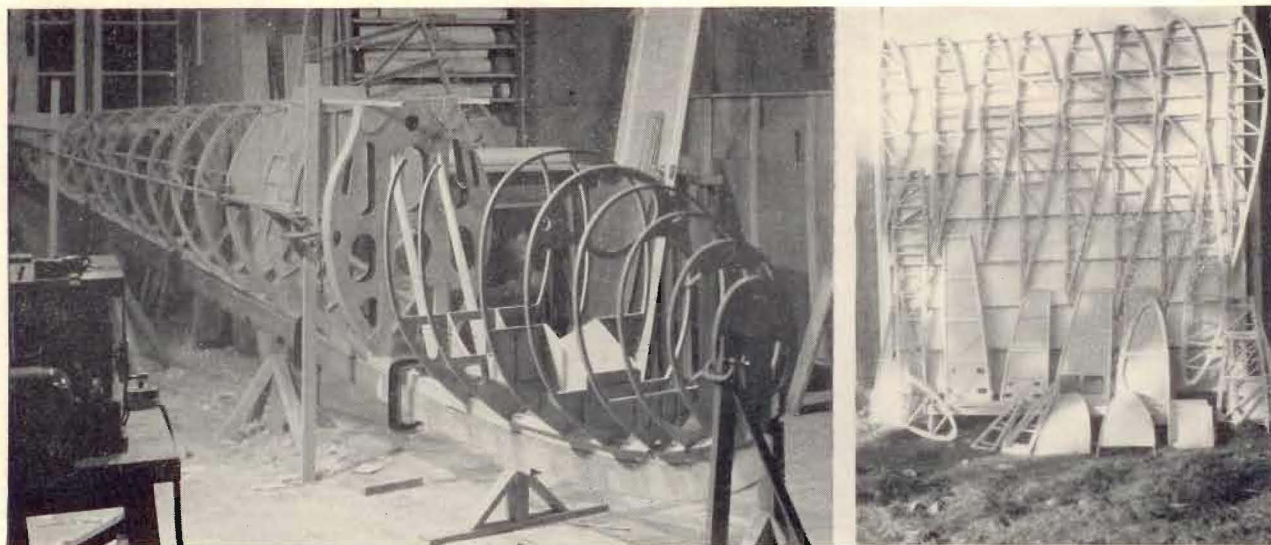
Also I made a check on the shapes of the templates, in place to see if the contour of the fuselage would be true.

Each of the "Olympia's" many bent fuselage former rings requires a bending form. I built these from scrap quarter inch plywood, gluing them up in flat boards of five layers, then jig sawing the forms to shape. By sawing the ring stock into eighth inch strips I could bend them to a very small radius. I used the bending forms as gluing forms, having made these so that they were cut away inside to allow for clamp area.

On some of the large fuselage formers as many as 26 clamps were required around the ring to get the kind of joint necessary to pass C.A.A. Inspection. After the glue set I sawed the rings into the proper thickness to glue to the plywood webs. This put plywood between two cap strips similar to "T" beam wing ribs, which are very strong for their weight.

The rudder post is more than 5 feet 4 inches wide at its widest part. Two people can grasp it firmly in their hands and twist it in opposite directions as far as 90 degrees with ease and safety.

I deliberately destroyed parts of my work to see what stress they would stand. Invariably the wood



At left: Fuselage frames set on keel. Note heavy frame with cutout for wheel, a modification from the original design. At right: A few of the 80 odd pairs of wing ribs in the Olympia.