Hermann Zahlmann's "Horten XV Mod."

It is always of great interest to examine a model in light of the designer's stated goals, and Mr. Zahlmann had a number of goals in mind when he designed his "Horten XV mod." He wanted a good looking, inexpensive, easily transported tailless sailplane. It had to be stable in flight, controllable and quick (but not frantic), and suitable for both thermal and slope flying. A simple RC installation and easy field assembly were also desirable characteristics.

The result is a 2.4 meter span swept 'wing of wood construction with fabric covering which fulfills all of Mr. Zahlmann's objectives. The "Horten XV mod." disassembles into three easily handled pieces which conveniently fit into the trunk of a medium sized car. The center section is large enough for the insertion of ballast, and the servos are mounted in the wings with direct connections to the elevons. While not an ideal thermaling sailplane, as it is a bit too fast, it has competed successfully with conventional tailed designs. Launches using a high-start made of 30 meters of rubber and 150 meters of line result in flight times of three to five minutes.

Mr. Zahlmann incorporated several novel construction methods in the building of this model:

- The center section is built inverted, with the upper surface on the building board. Jig blocks hold the leading and trailing edge and prevent the wing from rocking. When completed, the top of the center section is flat and the lower surface provides a small amount of dihedral.

- The airfoil section used at the center line has some reflex, and the cuspidate tail is formed so the trailing edge is a straight line when viewed from the rear.

- Other than the center line section, all ribs utilize the Clark Y section. Stability is provided by inverting the panels outboard of the fins and incorporating an appropriate amount of washout. A rather ingenious construction method accomplishes this. The outer panels of the wing are built in the usual way, with the flat bottom of the ribs placed directly on the building board, but the spars are assembled with the wing rod tubes very carefully placed. When completed, the outer wing tips are sawed free and exchanged. The right panel is thus inverted and placed on the left wing,

and the left panel is inverted and placed on the right wing. The correct amount of washout, about eight degrees, is automatically achieved when the panels are inverted and attached to the main wing with the wing rods in place.

- The fins serve as fences, separating the two wing panels. This is a good way of handling the junction where there is a drastic change in contour, and the efficiency of both the lifting surface and the stabilizing surface is greatly improved. Holes in the fins allow the wing rods to pass through, and the fins are then held in place by pressure from the two wing panels.

The "Horten XV mod." has fulfilled all of Mr. Zahlmann's stated design goals and offers several innovative construction methods.