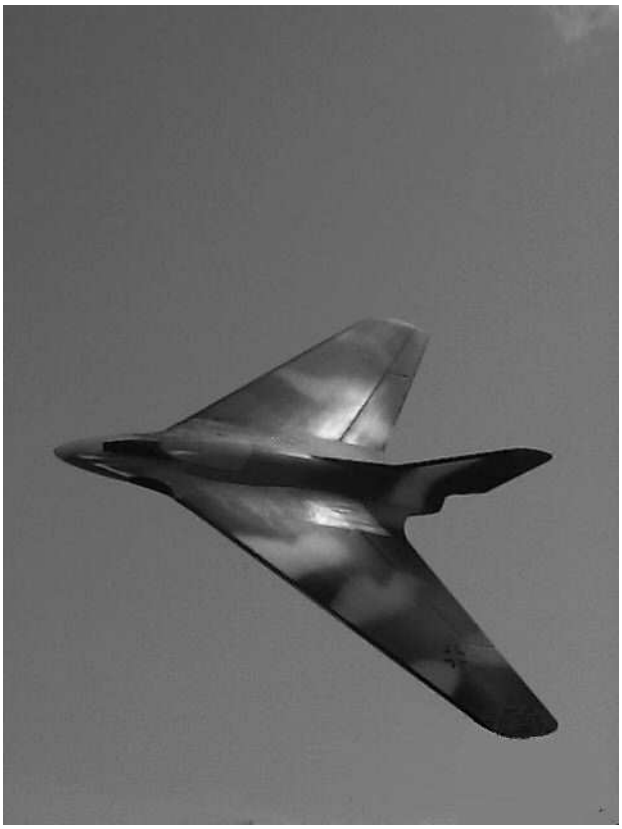
The Messerschmitt Me P.1111 for P.S.S.

Some years ago we purchased a copy of Wooldridge's "Winged Wonders," a historical overview of the development of the Northrop flying wings. "Winged Wonders" includes a large amount of information about other tailless designs, thus enabling the Northrop efforts to be appreciated in proper perspective. As many readers will understand, we found quite a few aircraft which we would eventually like to model. One design, however, was so impressive we placed it at the top of our mental priority list of models to be built.

The design which so captivated our attention was the Messerschmitt P.1111, the Messerschmitt Design Bureau entry into a 1944 design competition. The P.1111 was to be a tailless aircraft with wings swept back at 45 degrees and a single swept back vertical fin and rudder. The pilot was seated in a pressurized cockpit. Armament consisted of four MK 108 30mm cannon; two in the wing roots and two in the nose. The wing span was to be slightly more than nine meters (30' 1"), the length a bit less than nine meters (29' 3.4"). Performance was calculated to give a top speed of well over 600 m.p.h. The P.1111 is similar in design and projected performance to the DeHavilland DH 108 which successfully flew in 1946.



Design

A few days after first seeing the P.1111 three-view, we concluded a model of reasonable size could be built from a small amount of foam using a

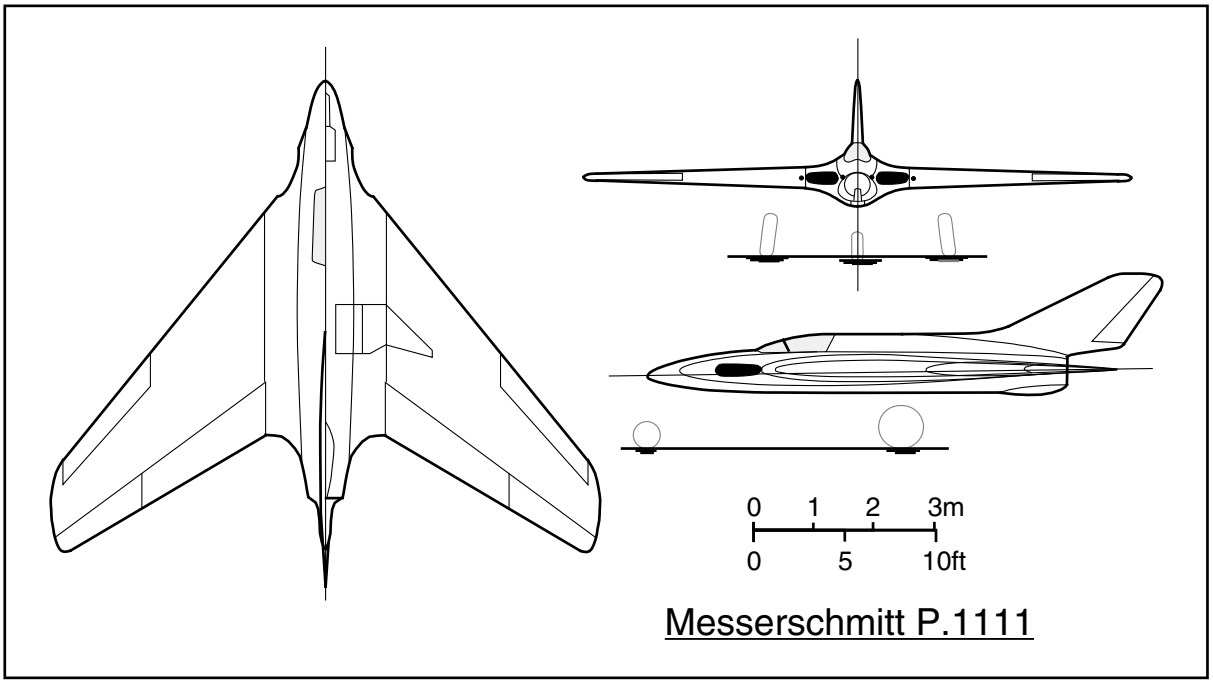
minimum of internal structure. Covered in fiberglass, the resulting model would be relatively light weight, yet because the overall design is so streamlined, model speed would be sufficient to offer acceptable penetration on a wind swept slope.

Because of the projected light weight of this model, we decided to use a symmetrical Quabeck section for all of the flying surfaces. As control surfaces cover the entire trailing edge of the wing, it was an easy matter to hook up two servos in each wing; one servo to control the elevon, the other to operate the inner flap. The trailing edge of the wing could be used to impart the necessary positive pitching moment for stable flight.

Sketches were drawn for a four foot span model. Templates were made from light plywood so the fuselage could be cut from both a top view and side view. Shaping the foam to a three dimensional form would then a relatively easy task. A large opening was planned for the bottom of the fuselage so that the receiver and battery pack would be easily accessible.

Construction

Cavities were cut into foam sheets to accommodate the radio gear and allow for access. These layers of foam were tacked together and cut out to the general P.1111 fuselage outline using the two precut templates. The fuselage was then shaped as planned. Wings and vertical tail were cut from foam using a long hot wire, and a single template through a pivot point. Channels



Messerschmitt P.1111

were cut into the wings and fuselage to accommodate the servo wires and antenna. The resulting shaped parts — fuselage, two wings, and vertical tail — were glued together and the entire model covered in light fiberglass.

After the epoxy cured, we cut out the control surfaces, installed balsa edges to the trailing edge of the wings and the leading edge of the control surfaces. Small nylon Du-Bro hinges were used to reattach the control surfaces to the wing. Cavities for the four servos were then carved in the bottom of the wing and micro servos press fit into place. We also freed the belly hatch, completing construction.

Bill and the Messerschmitt P.1111
The central control surfaces have been locked in neutral and the servos removed, as best performance was found to be with elevons alone.

Flying

First flights of our P.1111 were at one of the Richland Slope Scale Fun Fly meets. We trimmed the inboard flaps and outboard elevons with a small amount of reflex, assured ourselves the CG was a bit forward of its predicted eventual location, and promptly chucked it off the edge. As anticipated, it flew out over the valley making good headway against the stiff wind. It was immediately obvious, however, that the small amount of reflex trimmed into the inner flaps was more of a detriment to performance than anything else. A simple flick of the two position flap switch on the transmitter retrimmed the inner flaps to neutral, and the P.1111 leaped forward.

Fine tuning of control surface throws and elevon reflex tweaked performance further. Roll response was too sensitive, so we set the aileron dual rate to 50%, while elevator function remained at 100%. With reduced reflex, we were able to move the CG back to near the predetermined position. The resulting flights were quite beautiful, with very well coordinated turns, despite lack of a rudder, and large loops. The P.1111 looked incredibly realistic in the air.

Suggested Modifications

We designed and built our model before we became familiar with the EH series of airfoils. Were we to build another we would certainly substitute a thinned EH section for the Quabeck airfoil we originally used. A small amount of washout, just a fraction of an inch at the wing tip, would be more efficient than trimming with the elevons, but those who enjoy good inverted performance might want to forgo that modification. The inboard control surfaces, which never proved beneficial on our model, could be eliminated. The resulting two servo control system, composed of an elevon on each wing, works extremely well on this planform, despite its simplicity.

Given time, and some positive feedback, we may eventually formalize those plans we drew, incorporate the above noted changes, and make them available through Cirrus Aviation Ltd.* Yes, this is a call for positive feedback!

Wooldridge, E.T. Winged Wonders; *The Story of the Flying Wings.* Washington, D.C.: Smithsonian Institution Press, 1988.

* Cirrus Aviation Ltd., Harry Volk, P.O. Box 7093 Depot 4, Victoria B.C. V9B 4Z2, Canada.