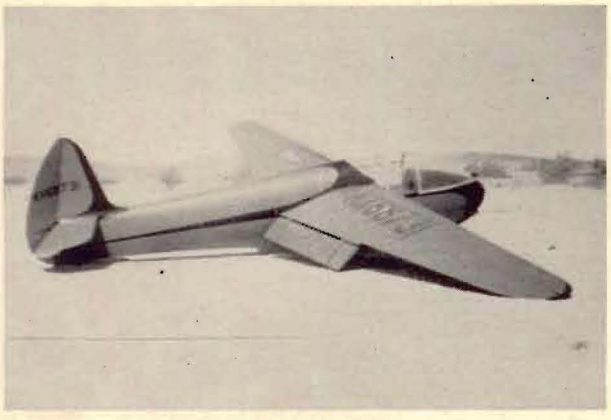
Tiny Mite

By DICK JOHNSON

THE "Tiny Mite" was originally conceived and construction was well started by Ray Parker of Twenty-Nine Palms, California. As the "Screaming Wiener" had met with considerable success, particularly under the stronger western conditions, Ray designed this ship as a refinement of the Wiener with emphasis on high cruising speed combined with high maneuverability. However, there is little similarity in the construction of the two ships.



The Tiny Mite with original canopy. Note Fowler flaps extended their full 30 degrees.

After Ray labored some 700 hours on the structure, I purchased it and have since spent 2,300 hours modifying and completing the craft. An experienced workman undoubtedly could have reduced the total time to less than 2,000 hours, however. This time, I might say, was not unbearably spent, since much satisfaction was gained on my part.

Wings

A straight taper planform wing is used, tapering in planform only. The span is thirty-four feet. Because of the high speed range and low center of pressure movement, the low-drag RAF 34 airfoil was used. This section is 12.5 per cent throughout the span. The spars join in the center of the fuselage with two taper pins.

The wing loading is heavy so I went to the trouble to design a Fowler flap system so that the landing speed would be reduced to gain greater maneuverability for thermal flying and to improve the stall characteristics for landing.

This flap is, of course, very successful in that it reduces the stall speed from 51 mph to 37 mph. However, the drag is too high for much assistance in thermal soaring. The design of the flap track consists of a 24 ST guide outline in which the flaps roll on needle bearings.

The wing and flaps are entirely covered with 3/32-inch plastic-bonded spruce plywood and were built with absolutely no washout. As anticipated, a bad tip stall was the result. On test flights, the ship rolled badly with no warning whatsoever in the stall tests. Wing slots were added and they improved this condition considerably.

Ailerons are of the gapless Lockheed type, swinging at the top on piano hinges. The bottom of the ailerons curve in a radius from the hinge line and allow no break in the junction between the wing and aileron except at extreme "up" deflection. They are completely covered and move in a four-to-one differential of 7° down and 28° up.

Fuselage

A semi-monococque fuselage of spruce was used. Five longerons extend the critical portion of the fuselage and three run the full length. Bulkheads are laminated of spruce. The rather roomy cockpit is 22 inches wide and has plenty of leg room. A 5:00 x 4" x 13" landing wheel is comfortably large for towing in sand and reduces the shock loads in landing.

The original canopy was of plexiglass moulded to a clean spline to reduce drag to a minimum. Although carefully formed on a plaster and felt mould, the distortion at this low angle of vision hardly permitted me to read the numbers on the towplane wing.

After grinding and polishing failed to improve the distortion materially, the entire canopy was discarded in favor of a single carved piece of standard plastic and this offers excellent visibility. No loss in performance was noted.

Empennage

It has been my impression that almost all the sailplanes I have flown have had inadequate vertical fin area for good directional stability. Therefore the fin has a generous area and the rudder has a maximum chord of only 15.5". The rudder is quite adequate because of the short wing span and the long fuselage moment arm. The rudder tilts forward at 16° to allow better distribution of the rudder area.

The horizontal stabilizer has a seven-foot span and is permanently attached to the fuselage. This short span allows the tail to remain on the sailplane while trailering. The area appears to be quite adequate. The entire empennage is plywood covered.

Controls

To minimize pilot fatigue on extended flights, the control system was almost entirely mounted on ball bearings, mostly Fafnir D-3 and K-3. As a result the controls all move with very light pressure.

My favorite controls, the Dep wheel with the Bowlus ankle-hinged rudder pedals, are installed. To me they are the most comfortable.

Flaps are operated by a wheel on the left side of the cockpit. Five turns are required for full deflection.