

MONOSPAR FLYING PLANK AT UNIVERSITY OF ILLINOIS

by TOM PAGE

A Flying Plank, EPB-1A, of the Easley-Powell-Backstrom design, has been built by Herman W. Linder of the Illini Glider Club at the University of Illinois, Champaign-Urbana, for Edward F. Byars, former president of the club and now professor of engineering mechanics at Clemson in South Carolina. This is the most recent of a succession of interesting glider projects by Linder, until recently instructor in aviation shop practice at the Champaign High School and now an instructor in the aviation maintenance curriculum of the University's Institute of Aviation.

restored a Waco Primary Glider to airworthiness several years ago. They rebuilt a Baby Bowlus with a pod of laminated fiberglass and polyester resin which is still undergoing acceptance analysis for normal certification by the F.A.A. In this work he added the much needed spoilers to the Bowlus wings. Students under his supervision have built two Schweizer 1-26 kits, also. Linder participated in the work of the University club which resulted in amendment of the LK-10A approved type certificate for flattopping and other improvements (SOARING, Sept.-Oct., 1955).



Photo: Tom Page

Herman Linder of the Illini Glider Club lifts the lid after test flight of EPB-1A Flying Plank he completed in July, 1959.

Using the new Plank, Linder and Byars competed in the Chicagoland glider meet on the Labor Day weekend.

The new Plank incorporates a monospar and D-nose wing structure and revised airfoil not used in the prototype (SOARING, July-Aug., Sept.-Oct., 1954), but does not include the fairing modifications proposed following evaluation of the original Plank at Mississippi State College (SOARING, Jan.-Feb., 1959).

Basic work on the Plank was done by Linder's high school students but extensive final touches required his own experienced hand. The structure and skin are principally load-bearing plywood; only a few panels of fabric are used.

Linder and his high school classes

Flight tests show the Plank to be an effective sailplane even in marginal conditions because of its small spiraling radius. A glide angle of 18 to 1 at 55 mph has been estimated for this ship but it will be flight tested by Byars to develop the performance polar. On its third flight Linder took it to 6000 feet over the University Airport using the seat of his pants as a variometer. The handling characteristics are generally normal. The Plank tows with only slight evidence of wandering tendency from side to side and will tow without trim problems as fast as 90 M.P.H. In free flight, like any conventional short coupled sailplane, it presents some minor problems of precise speed control, but it spirals below 45 m.p.h. and stalls below 40. It must

be stalled definitely in order for its nose to drop below the horizon in recovery but a slow approach to stalling speed produces, with ample buffeting as warning, only a slight bobbing oscillation in level attitude of about 100 cycles per minute, with no tendency to fall off to either side. It accelerates into a steep slipping spiral with standard attempts to induce spinning. Thus it requires an altitude margin equivalent to that needed for spin recovery, but it seems non-spinnable.

The empty weight is only 180 pounds. Designed for a small race of pilots (an odd thing for Texans to do), an 180-pound test pilot with back pack parachute must be literally shoe-horned into the cockpit, but he can fly it safely (although not comfortably for a long flight). A chest pack has been found to use less critically needed cockpit space.

Take-offs are begun and landings are ended with the tail down for best low speed control but the wheel is so located as to test the load balance—if the glider will tip forward onto the skid from level position, the center of gravity with pilot aboard is safely located.

The fascination of both spectators and pilots with this extraordinary looking tailless sailplane helps to offset its modest performance and the high man-hour requirement of skilled woodworking for its construction and finishing. Its penetration is, however, unusually good for a sailplane of any configuration in its L/D class.

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