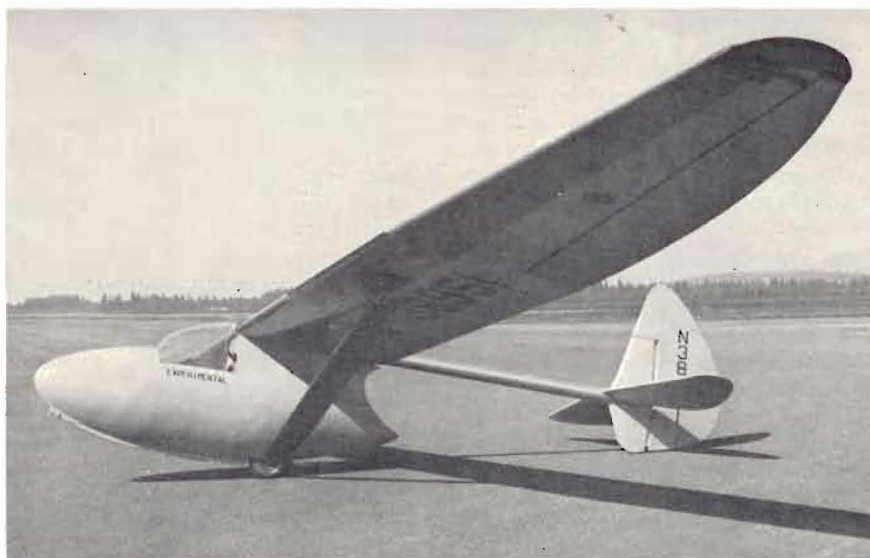


INTERESTING GLIDERS

by PETER M. BOWERS



The accident last year involving the one and only "Dragonross" stirred up considerable interest in the actual details of this ship and the accident (SOARING, Sept.-Oct., 1957). In view of the considerable amount of misinformation that was circulated, this column will be devoted to a discussion of the ship.

Newspaper descriptions referred to the sailplane as a "Hybrid." This is true, since Nelson Dragonfly wings were fitted to the pod, boom, and tail surfaces of a standard Bowlus Baby Albatross. As used in the press, however, the word "Hybrid" carried a derogatory implication when actually the reverse was true. The combination resulted in a better sailplane than either of the originals.

The Bowlus was originally fitted with lightweight wings using the deeply-undercambered Gottingen 535 airfoil. This was compatible with the design philosophy prevailing in 1938, when the Bowlus was designed and the object was to keep 'em light and fly 'em slow. The Baby's main advantage over its contemporaries was that it could soar in weak lift that would not sustain heavier ships. However, in later years, the Baby was at a disadvantage when competing with other ships, especially in cross-country and upwind work, in that the light wing loading and the airfoil characteristics resulted in very poor penetration.

The Dragonfly, also designed by Hawley Bowlus, was an auxiliary-

powered two-seater that appeared shortly after World War II. In addition to being designed to higher load factors as a result of changed design philosophy, a two-man crew, and the weight of an auxiliary powerplant, the Dragonfly wing used the NACA 4412 airfoil which had much better speed and penetration characteristics than the Gottingen.

This wing from the root fittings out was of the same size and planform as the original Bowlus wing, and very little work was required to fit it to a Bowlus boom. This was done by owner Stanley Graham, not with the primary intention of producing the improved sailplane which actually resulted, but because the old pre-war Bowlus wings were unairworthy and a set of Dragonfly wings was available.

The resulting combination was a very satisfactory sailplane. While the weight was slightly higher with the new wings, the handling characteristics were the same as the Bowlus. The author flew the Dragonross for over an hour under the marginal conditions that favor the Bowlus and found that the extra weight was no handicap. Penetration was greatly improved, and control forces and settings were found to be the same as for the Bowlus by direct comparison with another Seattle-based Bowlus.

Both the Bowlus Baby and the Dragonfly were type-certificated sailplanes, but the Dragonross was flying on an experimental license main-

ly because of the paperwork problems involved in combining the major parts of two separate designs. There was no question of the strength factors of either component or the aerodynamic characteristics of the combination. At the time the author flew it, the stall characteristics of the Dragonross were most gentle as a result of still having the original Dragonfly stall-strips on the inboard leading edge.

The fact that the Dragonross broke up in the air should not in itself be counted against it. The ship got caught in weather that was too much for it. In this light, it is interesting to consider how much sooner the standard wings, or any equivalent lightweight prewar wings without spoilers, would have let go under the same conditions. Eye-witness accounts indicate that shortly before the accident, Stan was headed back to El Mirage. A 1-26 at his altitude, 14,000 feet, had to drop his nose sharply at cloud base to avoid being sucked into the storm cloud. The Dragonross, placarded against cloud-flying, had no spoilers and could not safely increase its rate of sink enough to get out of trouble. Once caught in the storm, the Dragonross was destroyed by forces that would have seriously damaged much stronger ships.

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1958 DIRECTORY AVAILABLE

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