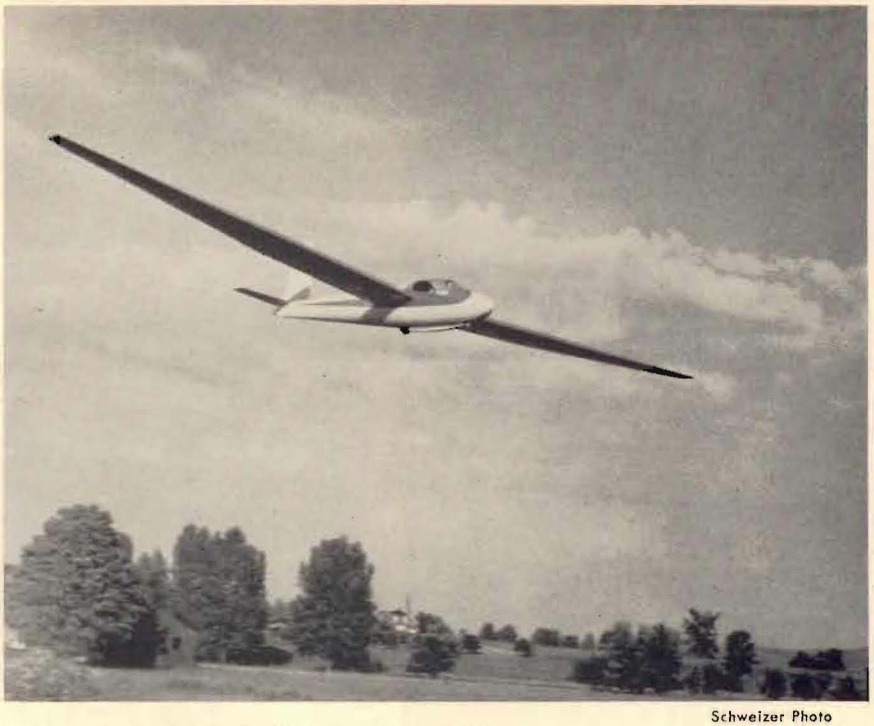
MPH which gives it a wide speed range. An interesting comment made by one of the British team was that he thought there must be some witchcraft involved since the 2-25 consistently left him in a thermal, but he felt that he could stay on equal terms on the ridge. A more practical explanation would seem to be the inferior low speed characteristics of the laminar flow airfoils used on the other sailplane. At any rate a good thin airfoil with good characteristics at low Reynolds Numbers with normal reasonable smooth construction gives excellent low speed performance. NACA data of course, indicates that if such an airfoil is made with the accuracy of contour required of laminar flow conditions a very substantial improvement can be made in C_{D_0}. The wing is designed to operate at a relatively low spar stress to minimize skin deflection, but it does occur so that a measurable performance increase might be expected with more rigid wing skin construction, but it certainly would be more costly.

The fuselage is a simple rounded shape with small flats on the sides and the maximum cross section area per sq. ft. of wing is slightly less than the 1-23 series. It can be considered a more fair shape than the 1-23 fuselages. This was made possible by the considerably greater length in relation to maximum height and width dimensions. The greater length was chosen to keep the control surfaces areas at a minimum. The Vertical Tail Surface volume was increased over previous practice as the long heavy wing would naturally require more powerful Vertical surfaces to get comparable response. The aspect ratio of both Vertical and Horizontal surface was increased over previous practice. No aerodynamic trim devices are used—only a spring bungee on the elevator control to set trim speeds. The trim speeds are satisfactory over a wide range of pilot weights and combinations without the use of ballast.

The ailerons are simple differential type with the hinge line at the top surface. All horns and balance weights are internal (as in the 1-23D). They do not extend all the way to the tip to give a cleaner tip.

The dive brakes are of the DFS type and as mentioned before were not sufficiently powerful to keep the speeds down to the desired level. They proved to be over-balanced also, requiring little or no force to operate. In future ships they would no doubt be redesigned, but for the prototype a modification has been made which seems very satisfactory. It consists of a spoiler added inboard of the dive brakes and connected to the dive brake control. This greatly increases the effectiveness and reduces the overbalance since the spoiler loads build up quite rapidly. No tests have been run as yet to determine actual sinking speeds with the dive brakes.



Schweizer Photo

The high aspect ratio and sleek appearance of the 2-25 are obvious in this shot of Paul Schweizer landing it at Elmira.

Performance — The performance indicated on the curves is calculated and based upon previous methods which have been substantiated by considerable testing and comparison flying of other models. Some sinking speed tests have been run on the 2-25 but there has not been sufficient time to gather enough data to get valid flight test performance curves. However, these tests and comparison flying indicated that the curves are not unduly optimistic and in line with previous experience. As in any new ship there are probably a lot of detailed improvements that can be made as to eliminating gaps and leakages and detail fairing. By doing this refinement for a contest ship it appears that the calculated performances can be improved upon.

Construction — The 2-25 structurally is very similar to the 1-23 series. It is all metal covered except the movable control surfaces and the wing aft of the rear spar which are fabric covered. It has a single wheel and skid, a small tail wheel, and no wing tip skids are used. Assembly of the wings is also similar to the 1-23's except that the outboard main pin is outboard of the fuselage. This was done to remove the pin from the lower Cap area into a neutral area and gives a greater arm for the root attach couple. Also spoilers and dive brakes are automatically connected up by a torque tube. Access to all the set-up rigging is thru a removable deck held by piano hinges and pins.

The horizontal tail is removable by taking out 2 bolts and the elevator connecting bolt.

The canopy is similar to the 1-23, being a steel frame with aluminum edge skins to hold the moulded plexiglas. There are no external latches. Access for locking the canopy from the outside is by a flush access door in the side just below the longeron.

The cockpit is arranged in tandem fashion with the pilots sitting quite close, similar to the 2-22 or Piper Cub arrangements. The width of the fuselage is only 28½" compared to the 23" of a 1-23, hence the cross section is not very large.

There is plenty of room except at the rear pilot's feet where it becomes a little tight if heavy flying boots are used, but is adequate for normal flying clothes. All controls are dual. The dive brakes are operated by a push-pull tube on the left side with open

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