

The "Denver Pioneer" Utility Glider

By EUGENE M. ARDELT*

THE "Denver Pioneer" utility glider is, we believe, one of the most unusual glider designs yet introduced to the American air youth education. It was originated through the influence of Caleb F. Gates, Jr., Chancellor of the University of Denver, who is an enthusiastic, energetic and ardent supporter of the coming air age. His keen mind perceived long before others, the necessity of an early air age education, one which must start, if need be, in kindergarten, be accelerated through primary schools, so much so that students in secondary schools will be ready to engage in actual flight by the age of 14 or 15.

Motorless flight appeared to be the logical approach to this flight problem. Hence, experts of glider flight were summoned to discuss with them the feasibility, the prerequisites, and a course of action for such a program. In consequence, thereof, it was decided to design and build a suitable glider which must be:

1. Approved by the Civil Aeronautics Administration.
2. Be sturdy and strong.
3. Simple in design.
4. Inexpensive.
5. Safe to fly by teen-aged youngsters.
6. Variable in design, so much so that the initial outlay would fulfill not one, but a number of requirements.

With these decisions made, the project was begun early in 1942, and by fall of the same year, the first two gliders had been finished and were test flown. The same year, before snowfall, the airworthiness certificates were issued to these two gliders. But that was only the beginning. The tedious job of a stress analysis and the ordeal of a load test, observed and supervised by C.A.A. officials, were yet to come.

Only those who have witnessed the procedure of a load test can appreciate the tremendous loads a glider must withstand to be eligible for a type certificate. Thousands of pounds of sand and lead are heaped upon the parts to be tested, depending of course on the flight load required. Every component part is loaded individually—wings, fuselage, aileron, elevator, release hook, and control system. Nothing is taken for granted. All must be tested. Parts of insufficient strength are rejected; they must be re-built and tested again.

Accurate notes of deflection before, during and after

the test, are taken. These are then included in the final report. Perhaps the tensest moment during the test—when one becomes alternately hot and cold, when lumps rise up in the throat and gives heart beats at the temples—is that one "minute of suspense" during which the full load rests on the part being tested, when all structural parts are loaded to the breaking point and all fibers are stressed to the limit. That one minute, which seems like hours, and on which depends the success or failure of the ship—a test such as was described above—is the difference between an approved type certificate and an airworthiness certificate. Once the test is successfully completed and the A.T.C. is issued, no further tests are necessary, except the flight test to which all ships or gliders are subjected upon completion.

All data thus obtained is submitted to the regional and national offices of the C.A.A. From this data, a list of specifications is prepared and a copy sent to every C.A.A. office in the country. This is done for the protection of everyone concerned. If, for example, you are in the market for a set of glider plans and you are uncertain about their validity, your nearest C.A.A. office will give you this information. The specification for the "Denver Pioneer" utility glider, Model EA-5, should now be in every C.A.A. office, because type certificate No. 14 was issued to the University of Denver in August, 1943.

This should be proof of the "Pioneer's" strength and safety. However, the fact that in the past year several ships of this type were flown by teen-aged boys and girls, who had had no previous experience in flight, should be stressed. Several thousand flights have been made without injury to either ship or student, although many very hard landings were experienced during the course of training. This should satisfy the prerequisite, "Safe to fly by teen-age youngsters." The simplicity of construction of the "Pioneer" is evidenced by the fact that six ships have been built by 13- to 17-year-old students.

The "Pioneer" is not expensive, when one considers all the features which make it truly utility. Two of these features are already incorporated in the blueprints and manual. They are the non-flying ground trainer which was designed for the very young. This version is identical to the flying "Pioneer" except for the wings. This model can be towed at a speed of from 40 to 45 miles per hour. Yet it will not leave the ground. It enables the young student

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*Director, Department of Glider Flight and Construction of the University of Denver.