The LAWRENCE SAILPLANE

The Lawrence Sailplane was designed by Donald Lawrence of the Eclipse Aviation Corporation, and member of the Aero Club Albatross, of New Jersey. Construction was started during the early part of last summer, and most of the work was done by Don Lawrence and Steve Orban, also of the Aero Club Albatross. The ship is a shoulder high wing performance type, designed for cross country work. The fuselage is constructed of steel tubing with wooden fairing with a single wheel landing gear. The wing is full cantilever of standard plywood construction with a single box spar and plywood stressed skin leading edge. The specifications are as follows:

Area: 170 sq. ft.
Gross Weight: 680 lbs.
Weight Empty: 460 lbs.
Span: 53' 8"
Aspect Ratio: 17"
Loading: 4 lbs. per sq. ft.
Stalling Speed: 32 MPH
Maximum Gliding Angle: 25 to 1 at 55 MPH
Sinking Speed: 80 MPH—8' per second.
Maximum Design Speed: 125 MPH

The craft has had about 20 airport flights, but has not been soared at the time that this is written. It appears to be very fast and has excellent control. Landings are facilitated by the use of spoilers, and no difficulty has been experienced in this respect.

Some of the details of construction are worthy of note.

Wing

An NACA 2418 airfoil is used at the root and tapers to NACA 2412 at the tip. There is a 5° gull extending 9 feet with a constant chord. The radius of the bend at the gull is 41 feet. The wing tapers from the gull point out, with a 2½° geometric washout at the tip.

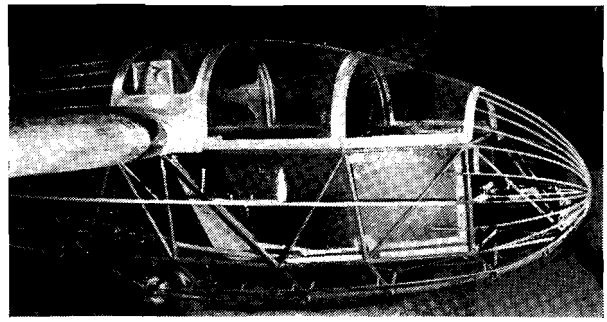
All drag loads are transmitted to the fuselage by a steel tube truss welded to the main root fittings. Tapered pins are used to attach the wing to the fuselage.

The spoilers, located just outboard of the gull point, consist of 4 inches by 3 feet dural plates, reenforced to prevent warping. They are operated by cables and bell cranks.

The ailerons are mounted on steel tube fittings that are attached directly to the spar. They are of the frieze type, with D-tube spars.

Fuselage

The entire fuselage structure is welded from Chrome-moly steel tubing. A heavy steel tube center section with



permanent plywood fillets is used to attach the wings. A plain wooden skid with a steel face is attached forward of the wheel and a tail skid protects the tail. A 16 x 6.50 airwheel is mounted at the center of gravity. The bottom of the fuselage rises slightly behind the wheel, and is curved to supply adequate ground clearance.

Tail Surfaces

The most interesting feature of the tail surfaces is the folding elevator and stabilizer. By removing one bolt from each strut, both elevator and stabilizer can be folded vertically for loading on the trailer. The elevator control is not disconnected during the process.

The fin and rudder are made of wood and fabric in order to facilitate the full cantilever construction. The elevators and stabilizer are strut braced, and are constructed of chrome-moly steel tubing.

Control System

The entire control system is mounted on commercial ball bearings obtained at a cost of $.07½ apiece. A combination of push tubes and cables is used throughout the release is of the DLV type.

The instruments consist of a special pioneer sensitive variometer, airspeed indicator, compass, turn and bank indicator, sensitive altimeter, and clock. The ship is equipped for a back parachute, and adequate storage space is provided, both in the wing roots and under the deck fairing behind the pilot.

The builders expect to enter the ship in the National Soaring meet. Don Lawrence is spending all his spare time in becoming acquainted with it, and it is hoped that he will turn in some good performance. Steve Orban will be unable to attend the meet because of pressure of business.