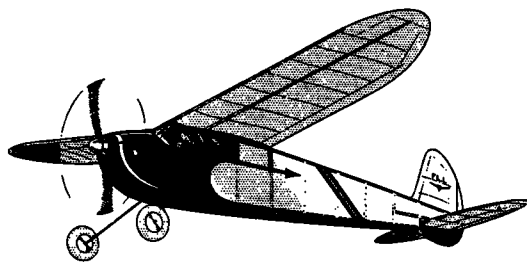

THE CHAMP

by the

1946 Champion of France

F. LAJEUNESSE



THIS machine has established a sound reputation as a first-class contest model by its consistent performance during the eliminating trials and by winning the finals of the French Championship Contest in 1946 and it gave confirmation of its abilities during its visit to England on the occasion of the International Week, held at Eaton Bray.

While it has a semi-scale appearance, its performance is of a high order and it has shown itself capable of holding its own with the more extreme designs.

It has been designed to employ diesel engines of from 1.25 c.c. to 3 c.c., and it is therefore particularly suited to the Mills, E.D., Majesco and similar engines. The original made use of either an Allouchery 1.25 c.c. motor or a Micron 2.8 c.c.

Fuselage

The cabin-type fuselage is built in the orthodox manner with 4 mm. (5/32-in.) hard balsa or poplar longers and spacers, and it is best to make up the two sides in the usual way on the plan and join them together with the horizontal spacers and ply bulkheads at stations C2 and C3. The ply bulkheads are cut from 1.5 mm. three-ply (1/16-in.) and not only serve to stiffen the front end of the fuselage, but help to ensure that it is assembled squarely.

The engine bearers are each built up from two pieces of hardwood, such as birch or ash, 5 mm. × 7 mm (13/64 in. × 9/32 in.), 145 mm. (5 7/8 in.) long and attached to the bulkheads C2 and C3 by cement and supported at their front ends by diagonal hardwood struts 4 mm. (5/32-in.) square.

Two lengths of brass or aluminium tubing to take 14 s.w.g. wire and 3 1/16 in. long should be bound and glued in position on the lower struts of bulkheads C2 and C3 to take the undercarriage struts, and triangular gussets should be glued in position at each corner.

A short permanent decking is built forward of the front bulkhead to form an attachment for the lower end of the celluloid windscreen.

The space between the engine bearers and the fuselage outline is filled 1/8 in. hard balsa sheet strips shaped to give a streamline shape to the nose in conjunction with the balsa nose-block, which measures 1 1/2 in. × 1 5/8 in. × 5/8 in.

Two pieces of 1/4-in. balsa connect the lower end of the nose-block to bulkhead C2 and from the attachment for the fuselage side planking consisting of 1/8-in.

balsa sheet extending from the nose to beyond bulkhead, C3.

The underside of the nose is also planked with 1/8-in. balsa sheet up to bulkhead number C2, a suitable aperture being cut to accommodate the cylinder-head if necessary.

When the nose is completed and planked its corners should be rounded off by sanding and the detachable upper cowling should then be built up to match the contour of the nose.

The fin is built into the tail of the fuselage and provided with a trim tab. The leading edge is built up from two laminations of 1/8-in. hard balsa to prevent warping.

The Undercarriage

The undercarriage legs are bent from 14 s.w.g. piano-wire in the following sequence.

1. Coil the wire round a piece of 14 s.w.g. wire to make the forward attachment to the fuselage.
2. Bend the short end to fit into the fuselage tube, making sure that the bend is the correct distance from the coil.
3. Bend the other end outwards to form the axle 5 1/2 in. from the centre of the coil.
4. Bend at coil to give correct track and fit 2 1/4-in. wheels, which may be built-up in hard balsa, or rubber air-wheels can be used if desired. Two legs—one right and one left-handed, are, of course, needed.

The undercarriage is attached by pushing the rear upper ends into the fuselage tube and passing a length of 14 s.w.g. piano-wire through the front tube into engagement with the undercarriage leg-coils on each side. The assembly is then retained in position by passing a strong rubber band over the ends of the piano-wire retaining strut and under the fuselage.

The detachable cowling is retained in position by simple wire clips or by press-studs according to your choice.

The Mainplane

The mainplane is made in two halves joined together by 14 s.w.g. piano-wire dowels bent to give the required dihedral angle.

Their construction is quite straightforward and employs nose planking and rib capping on the upper surface with a single main spar slotted into the underside of the ribs. As the wing is of constant chord over

the greater part of the span, all the ribs are alike with the exception of the tip-rib.

The rib section is N.A.C.A. 6409, but the designer recommends those who do not wish to tackle the covering of wings with a pronounced under camber to keep the under-surface flat, thus producing a section which closely resembles Clarke "Y."

Brass or aluminium tubes are bound and glued to the inner ends of the main spars and trailing edges to take the 14 s.w.g. coupling dowels, and wire hooks are cemented to the leading edges and trailing edges for rubber bands, which serve to keep the two halves of the wing together.

The wing should be built by placing the main spar in position on the plan and cementing the ribs in the correct positions followed by the trailing edge, leading edge, and the wing-tip, which is built up in segments from $\frac{1}{8}$ -in. hard balsa sheet.

The leading edge should now be planked on the upper side with $\frac{1}{8}$ -in. balsa sheet and the ribs capped, not forgetting that the capping for the two inner ribs bridges them both to form a box.

Finally, the wing structure should be carefully rounded to give a smooth contour and the wing-tip sanded to a knife-edge.

The Tailplane

The tailplane is of oval outline and approximately symmetrical section.

The leading edge, trailing edge and wing-tips are cut from two laminations of $\frac{1}{8}$ -in. hard balsa or $\frac{1}{8}$ -in. poplar and sanded to a triangular section to conform with the tailplane section.

A single spar 5/32 in. square is fitted in slots on the underside of the ribs. It may be made from hard balsa or poplar.

A fairing continuing the lines of the tail portion of

the fuselage is built on to the centre of the tailplane consisting of $\frac{1}{8}$ -in. hard balsa planks with 5/32-in. square supporting spars, which form the seating for the tailplane on the underside of the fuselage.

The underfin is permanently built-in to the tailplane and the whole assembly is held to the fuselage with rubber bands passing over the hooks and pegs provided, in the usual way.

Note that the tailplane should be set at a 2-deg. positive incidence to the fuselage datum line.

The Power Unit

As we have already pointed out, the machine was designed for use in conjunction with diesel-type engines used in the inverted position.

The installation details and the spacing of the engine bearers will, of course, be governed by the make of the engine fitted, and this should be decided on before the engine bearers are fitted and the nose of the machine completed, as slight modifications are obviously necessary with different makes of engine.

The machine can be modified for use with petrol engines if the battery coil and time weights are evenly distributed on each side of the centre of gravity, the position of which is clearly shown in the plan.

Covering

Before covering the fuselage the entire structure should be given a coat of cellulose paint as a protection against saturation by the fuel weeping from the engine. It can then be covered by stout paper, such as thin "kraft" paper, or silk and given two coats of dope and one of varnish or gloss finish.

The wings and tail surfaces should also be covered in a strong paper or silk and given two coats of dope and one of varnish or gloss finish.