



*Don Stothers'*

# AERONCA CHAMPION

Let's start immediately without frills and get cracking with the fuselage.

Join 3/32 in. medium balsa sheet together to obtain the necessary width and cut the two sides, without the windows. White glue the 1/32 in. ply doublers in place and leave overnight. Cut all ply formers and screw the brass tubing on F3A. Then, solder the joints, glue on wing mount WM2 to F5 and U/C block to F3.

Now mark cabin windows and cut through sides and doublers with a pointed balsa knife and sand window frames, mark F positions, glue in U/C1s. The problem of holding the sides curved round F2 is solved by nailing them in while the glue sets! Make sure they are dead square to F2 and then join together at the tail end, retaining with a paper clip. Fit in all the formers and leave to set.

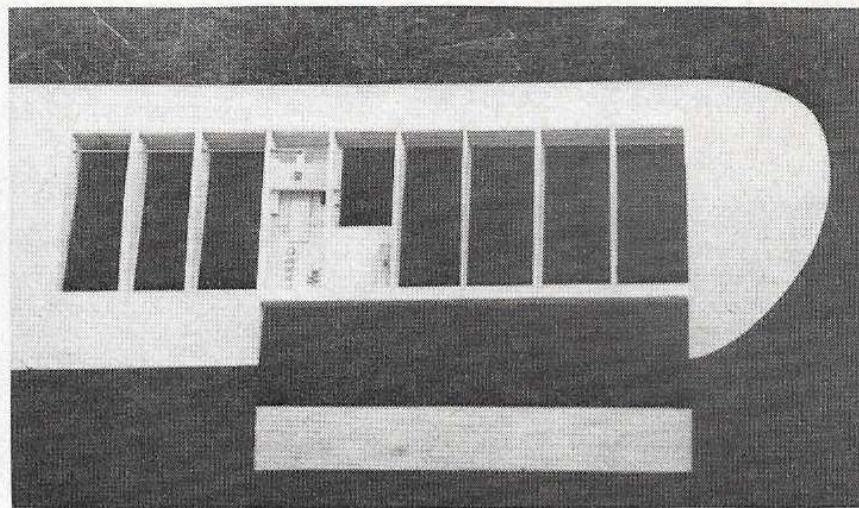
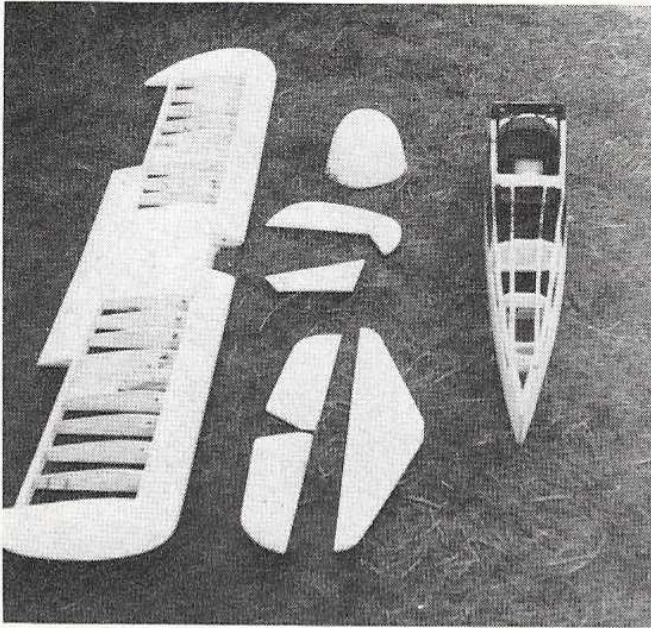
Next job is planking the top and bottom of the nose, using soft

1/8 in. balsa. Fit all the 3/16 in. square stringers and cabin frames and the ply tailwheel mount. Before sanding the planking, brush glass fibre resin inside, all around F2 and F3, after which the fuselage can be finish sanded. It's a good idea at this point to matt black the cabin inside way back to F6, but don't fit the celluloid windows yet.

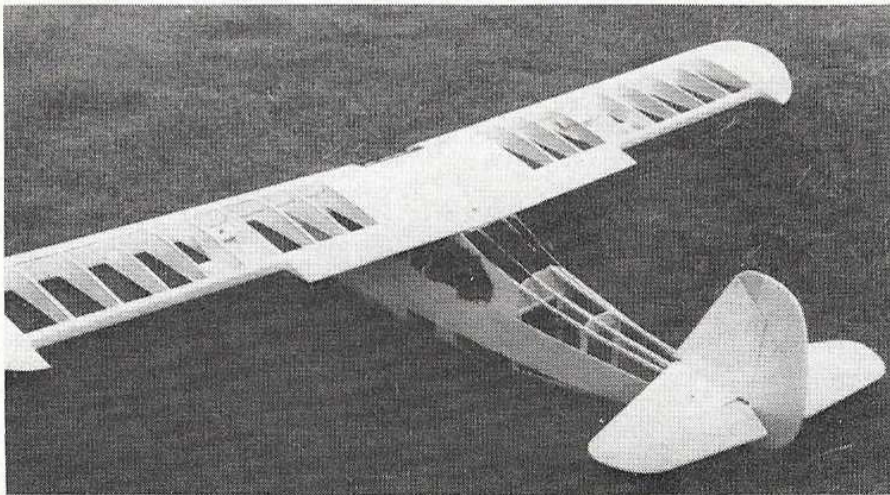
## Wings

Cut all ribs first, using scrap bits of balsa where possible (they can be 1/8 in. or 3/32 in., soft or medium) and drill for the aileron pushrods in appropriate position. Spars are cut next, from 1/8 in. firm balsa. If you wish to build a 'clipped' version as used in Air Shows, etc., cut the spars one or two ribs shorter from the centre, leaving the ailerons and strut fixing points as they were. The dihedral braces are cemented to the spars before building the wing, so that





The bare bones in detail. As you can see, construction is simple, particularly as Scale R/C models go. Conventional construction throughout airframe.



each panel can be built flat on a board, but don't forget the hardwood strut mounts go in before the final sheeting is applied. The ailerons are cut out later and trimmed and faced with 3/16 in. soft balsa.

Bellcrank mounts are slotted in next, then all ribs capped top and bottom with 1/4 in. x 1/16 in. Bellcranks and pushrods are then added and the centre of the wing is sheeted before sanding the whole thing. Offer the wing on to the cabin, and I hope it fits; if not, do something! Drill through WM1 and WM2 and screw the wing on with the nylon screw and nut, then drill through F3A, the wedge and front dihedral brace, to position the dowels, and epoxy the nylon nut under WM2. The wing can be finished now. Drill and thread the strut mounts and finish off the ailerons but don't fit the aileron horns till the wing is covered.

### Tailplane and Rudder

Cut from firm 3/16 in. balsa sheet and round off edges, join elevators with wire before covering and hinging.

### Assembly

Make the motor mount shown or use a cast mount. Screw on to F2 with 6BA brass screws (nuts on the outside). Drill through F2 where required for throttle control and tank feeds. Use a good quality tank, that can be fitted and forgotten thereafter, brush glass fibre resin around tank tubes and throttle guide, and the heads of the motor mount screws.

I would advise fitting the engine temporarily now while trying on the cowling and cutting for exhaust and needle valve openings, etc. You will have to extend the needle, by soldering a piece of curtain rod to it, and if the motor is a rear rotary type also provide

a choke hole in the side. The exhaust manifold can be made of 1/2 in. alloy, or even 5/16 in. or 3/8 in. steel tubing and will reduce the noise level quite a bit, while keeping most of the oil off the aircraft. Cabin windows and winscreen are next, then the fuselage can be covered in tissue and watershrunk if Solarfilm is to be used. Cement the tail and rudder on next, square to the wing seat, please!

The tailwheel assembly is made from brass and spring steel as shown, but if you are not keen, a regular nylon bracket may be used. Undercarriage brackets are fixed with 8BA brass screws and nuts and woodscrews as shown.

### Undercarriage

A properly sprung U/C is essential for grass fields and it's not as difficult as it looks. Steel tubing is used, which must be silver soldered (invest in a Primus 2000 gas blow-torch with the smallest nozzle, it will be worth its weight in R/C gear for all sorts of jobs, in and out of the modelling shop).

When the main legs are made, they are filled in with 3/16 in. balsa and covered in nylon or Solarfilm and pivoted to the side brackets with 6BA brass screws and locknuts. NOTE: the rearmost screws are left long enough to anchor the wing struts.

Wing struts should be made on the job and screwed to the wing with brass or nylon screws, if the alloy tubing used shows any signs of cracking when flattened, heat the ends up with the blowtorch and squash in a vice.

## Aeronca Champion

Tailplane brace wires are made up of piano wire and screwed on with 8BA screws and nuts. At this point, the whole contraption should start to look like a flying machine! Stop admiring it and take it to pieces again to epoxy the aileron horns in place and hinge the ailerons. NOTE: the horns are swept back to give differential movement, very desirable and, in my opinion, essential.

Screw in one of your best proportional outfits, preferably the right way round, and let's off to the flying field. Whoops, we've not tried it for balance yet! Remember, a bit nose heavy is O.K. - tail heavy is disaster.

### Flying

The prototype used a Super Tigre .40 R.R. and 11 in. x 4 in. prop, and weighed just 5 lb., very light for a 6ft. wing.

The second example used a K.B. .40 and weighed 4 lb. 12 oz., but this machine had the wings clipped to 63 inches. Being so lightly loaded, a not-too-blustery day is best for flying, but this doesn't mean you can't fly when there is a gale (due to the downthrust, and negative trim on wing and tail, the penetration and inverted characteristics are excellent), just that the performance is more enjoyable when you don't have to lean on the breeze.

The prototype was airborne in approximately 15 ft. but needed a touch of up trim to fly level on full power with a full tank. It was very easy to fly, my 13-year-old son managed its third flight very well.

Pretty well all aerobatics are possible. Snaps and spins are great and inverted is excellent for a high wing model. No. 2 is a dream on floats and doesn't need water to take off and land, although the 'atmosphere' isn't complete without it!

Colour schemes are unlimited, factory versions were yellow with orange trim and lettering. Army types were all silver with black trim and lettering. Thousands sold as surplus after the war took on any colours the owners desired, whilst Air Show types are generally clipped and spatted with sunbursts and chequers in red and white or red or yellow, one, for example, is re-painted for every show and flies and stunts with only one aileron (see *American Modeler*, July 1970). So what's holding you back? I'd like to hear from all you builders. Any questions?