

Join up three pages for full-size plans of a sport model

# TITCH

By RON WARRING

DESIGNED FOR ALL BEAM MOUNTED .5 c.c. ENGINES

**T**HE fuselage is built up on the sheet box principle—accurate, rugged and yet extremely simple. Start by cutting two identical sheet sides from 1/16 sheet balsa stock of medium or light medium grade. Now cut accurately a set of formers 8 to 16 inclusive from light 1/4 in. sheet balsa and check that all these are square.

The fuselage is assembled on a 1/16 in. sheet balsa crutch in the inverted position. For the crutch a piece of 1/16 in. sheet 18 1/2 ins. long and at least 1 3/8 ins. wide is required. Mark a centre line on this sheet and then cement on all the formers in their respective positions. Centre lines should be marked on these formers as a guide.

When the formers have set, cement on the two sheet sides, pinning in place to each former until set. Trim down as necessary. Cut the two motor bearers from 3/8 in. x 1/4 in. hardwood, chamfering the top edges at 3 degrees for downthrust, and also cement in place. Then cement on the bottom planking of 1/16 in. sheet.

Cut the vertical keel from 1/16 in. sheet to the exact shape shown on the plan and cement this in place. Support accurately by adding all the other formers, two off each, cemented either side of the vertical keel. The cabin top is cut from a single piece of 1/4 in. sheet and cemented on top of the vertical keel and formers 1 and 2.

Cut the firewall from 1/16 in. ply, bend the undercarriage from 1/16 in. (16 s.w.g.) piano wire and bind in place. This former can then be cemented to the front of the assembled fuselage. Add the soft balsa block immediately behind this former and carve and sand to shape. The fuselage is then virtually complete, ready for covering with tissue. The front or cabin portion is, of course, covered with this celluloid. Note, too, the addition of the dowels to take the wing rubber bands.

Tailplane construction is quite straight-forward. The wing is built in three panels—a starboard panel, a port panel and a small centre section. Ply wing joiners built in with the centre section



Young Michael Warring poses with the prototype Titch during tests.

align the final assembly at ten degrees dihedral angle and also reinforce the dihedral joints. Add small sheet gussets.

The fin is cut from soft 3/32 sheet balsa. Join two pieces to build up the required width and let in a key piece which will both strengthen the assembly and prevent it warping. The grain in the key piece is horizontal; in the main fin sheeting it is vertical. Sand the fin down to a nice streamlined section and shape the base to conform to the aerofoil section of the tailplane. After the tailplane has been covered the fin is cemented in place.

After all the components have been finished and covered and doped, bolt the motor in place on its bearers. The slotted mounting holes of the E.D. "Baby" make sidethrust adjustment easy, but initially set the motor straight. The downthrust angle given by the tapered bearers should be more than sufficient to keep the nose down under power flight and excessive sidethrust may be dangerous during initial tests. As flight tests proceed sidethrust can be added, a little at a time, to turn the model in one direction or another, if desired.

Balance will probably vary with different models owing to the difference in weight of the wood used. Balance point should come out 2 ins. behind the leading edge of the wing. Provided it is in this region you can adjust the glide trim as necessary by increasing the tailplane incidence (positive) to cure any stalling tendency or increasing the wing incidence to cure a dive.

Climb on a powerful motor will be quite spectacular whilst the relatively low weight will ensure a good glide.

If you have built your model well, and chosen good, light wood, you should have weight to spare which can be taken up with more elaborate paint trim. Built normally, the weight, with motor, should not come out at much more than four to four and a half ounces, a figure which could quite easily be increased to six or seven ounces without serious effect on the flying qualities.