

# FUN-3

**T**HIS MODEL is the third in a series that I have built to fulfill certain requirements, namely to be as economical to build as possible, and to be easy to transport. I also wanted to use a rear-induction HP.40 for the powerplant, as I had recently acquired one of these. The wing is an all built-up structure for lightness. (A foam wing has been used on some of the prototypes, and was about  $\frac{1}{4}$  lb. heavier—though not having any significant effect on the model's flying characteristics). Lastly, wingtip plates were added mainly for appearance, although they may have helped the low speed characteristics somewhat.

Anyone who has built and flown an r/c model before should have no difficulty in building or flying *Fun-3*, but it is not at all suitable for complete beginners. As a first low-winger it should be quite okay, provided an experienced pilot is on hand, ready to take over in an emergency, for the first few flights.

*Fun-3* came well up to what was expected of it, having been built very cheaply, and can be transported in one piece on the back seat of my Mini saloon. I have even managed to win one competition and place 3rd. in two others with it during the past season, so it must have something to commend it. The real

point, though, is that it's a really grand *fun* model—build a couple of 'em during the winter months and enjoy yourself no end next flying season!

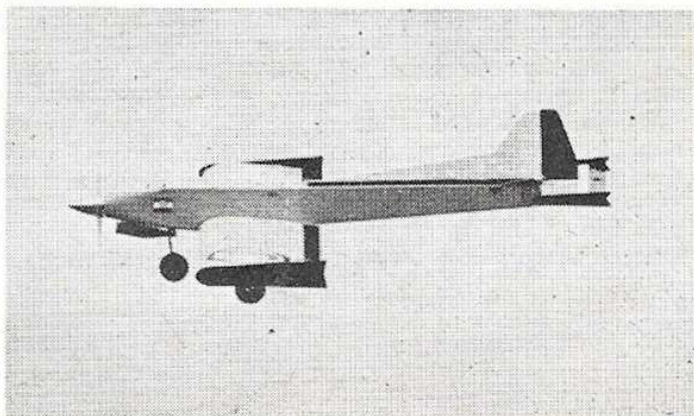
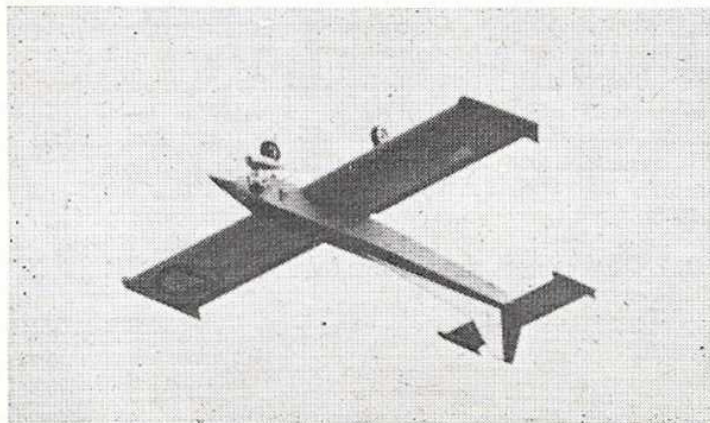
## CONSTRUCTION

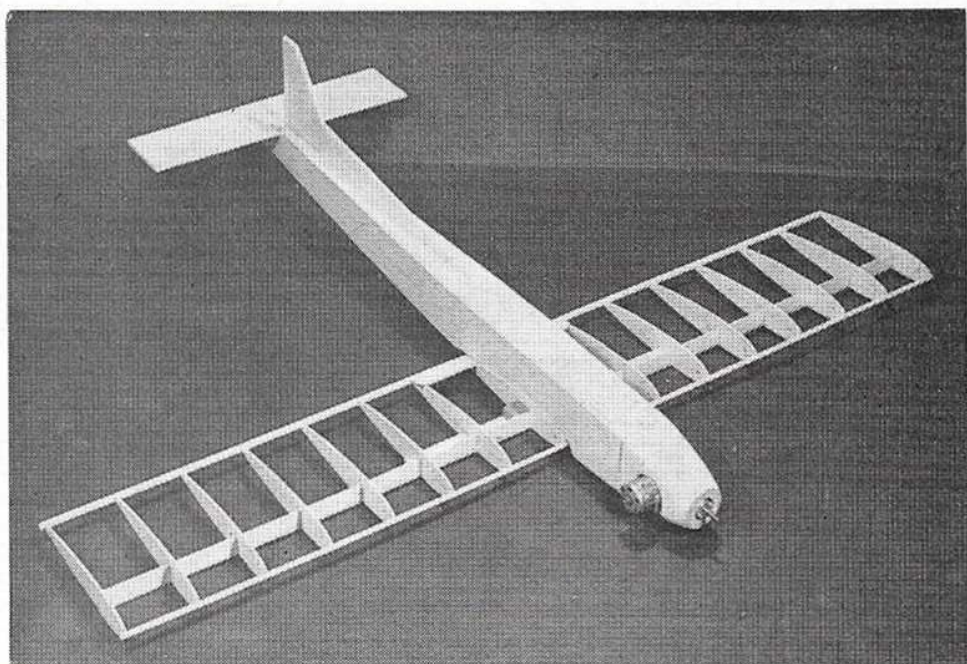
### Wing

It is best to build the wing first, so that it can be used to align the fuselage with later on. It is constructed on the egg-crate principle, with the ribs all slotting onto a single main-spar. First cut out the mainspar from one edge of a 48in. long sheet of  $\frac{1}{8}$ in. balsa and notch it for the ribs. Epoxy the one-piece undercarriage block to the spar

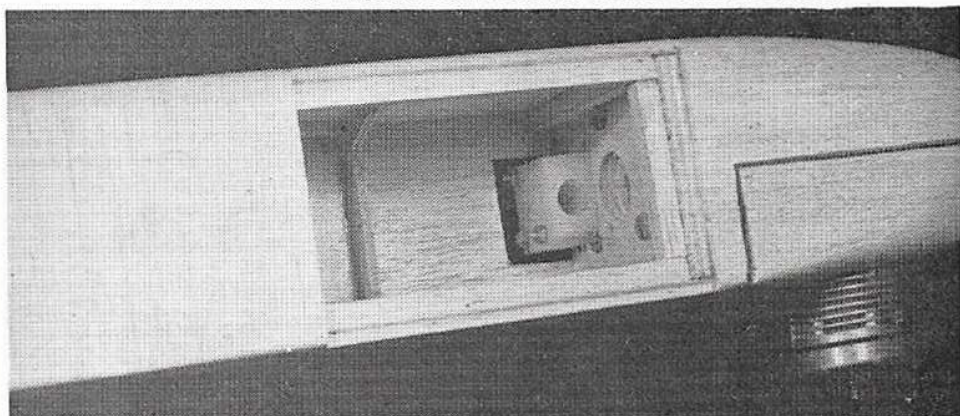
● an exciting, easy-to-build sportster, for .40 power and full-house control

by STEVE ALLANACH

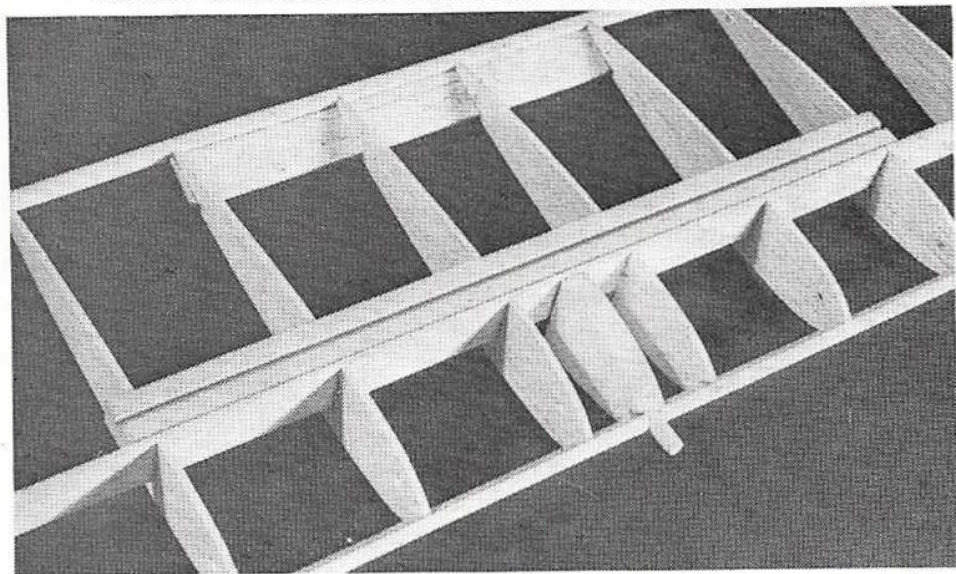




Airframe, showing wing before sheeting, and without control surfaces.



Below: looking into tank compartment, noseleg bracket may be seen; also hole for tank neck, and removable cowling. Below: wing centre section, inverted to show one-piece undercarriage leg block. Note ply bolt-plate butting onto trailing edge, fixing dowel at l.e.



first of all. The wing ribs are produced by the sandwich method, sanding and carving to identical section. The centre rib, which carries the wing fixing dowel, is made up from a  $\frac{1}{4}$  in. sheet rib with a  $\frac{1}{8}$  in. one each side and extends from the main-spar to the leading

edge only. The ribs and main-spar are now assembled, over the plan, using a piece of  $\frac{1}{2}$  in. sq. balsa to keep the trailing edges of the ribs at the same height from the board. If all is well, the leading edges of the ribs should now also be all at the same height from the board.

When satisfied with the dry run, glue the ribs onto the main-spar and then add the  $\frac{1}{4}$  in. sq. leading and trailing edges. When this has dried, add the centre wing rib, with its dowel already in place, and the ply reinforcement for the wing bolts. Next add the torque blocks for the undercarriage legs and drill  $\frac{5}{32}$  in. to take the 8g. wire.

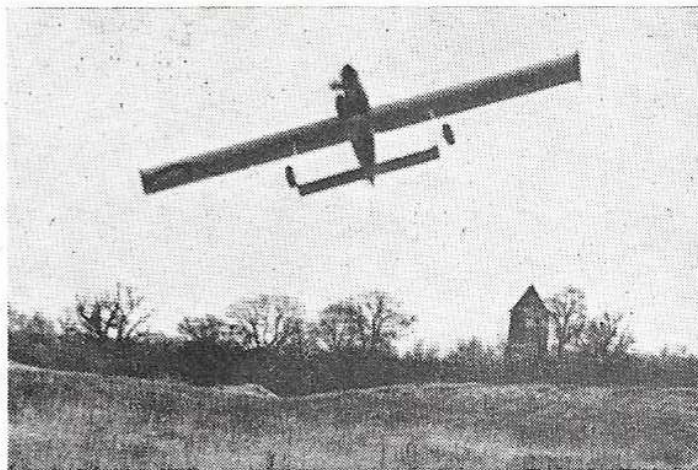
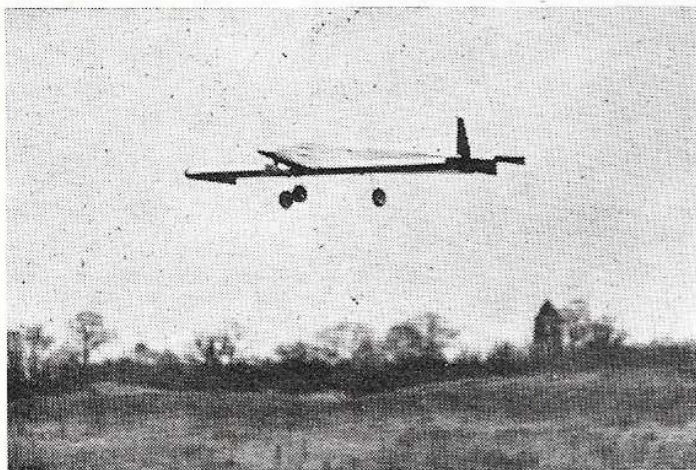
Top and bottom balsa sheeting, of  $\frac{1}{16}$  in., may now be added, using 48 in. stock, contact-cemented into place. Epoxy the aileron horns to the trailing edge and slot a piece of aileron stock to fit over them. Then bandage over the centre section with fibreglass cloth and resin. Drill holes for 4BA nylon wing bolts in the required position, and open the holes in the bottom wing sheeting to  $\frac{5}{8}$  in. approximately. Epoxy two plastic tubes into these holes and against the ply reinforcement plate. This allows the wing-bolt heads to bed direct onto the plate, instead of simply on the balsa skin. Wing-tip plates are laminated from  $\frac{3}{32}$  in. ply and  $\frac{1}{16}$  in. balsa, and are best added after the wing is covered and finished.

### Fuselage

For owners of the smallest types of radio gear, with KPS.12 size servos, the fuselage is built as per the plan. Those with the larger type of servo should make formers F2, F3 and F4 correspondingly wider to accommodate three servos abreast.

Cut out the fuselage sides from straight-grained medium  $\frac{1}{8}$  in. sheet and fix the ply doublers in place with contact cement. Do not forget the tail doublers, at this point. Next add the  $\frac{1}{4}$  in. sq. longerons and then assemble the fuselage upside-down on the building board, epoxying formers F2, F3 and F4 into place. Drill former F1 as required, for motor mount and steerable noseleg bearing bracket, epoxy it into place and draw the fuselage sides together at the rear, ensuring accurate alignment.

The top and bottom sheeting can now be added, not forgetting the tank hatch. Mount the motor-mount and noseleg bracket, and bolt the motor in place, with spinner backplate fitted. It is now possible to build up the cowl from  $\frac{1}{2}$  in. soft sheet, and match the contours to the spinner. Finally, add the ply nose-ring and give a general sanding overall. Make one half of the cowl removable for easy access to the carburettor. After the cowl has been completed to your satisfaction, the engine may be removed until the model is ready for it.



Assemble the wing to the fuselage, and make the bolt attachments, ensuring that the wing is accurately aligned before final fixing. With the wing still in place, cut out the tailplane, from medium  $\frac{1}{4}$  in. sheet balsa and glue it to the fuselage—making sure that it is accurately aligned with the wing, laterally, and the fuselage, fore-and-aft. The fin is added next, and this has  $\frac{1}{4}$  in. triangular fillets for extra support, which extend the entire length of the dorsal fin. The elevator and ailerons are standard trailing edge stock, and the rudder is from  $\frac{1}{4}$  in. soft balsa sheet.

The entire model is now sanded, filled, and covered, as required. Everyone has his own preferences in this respect, but the prototypes were all covered in iron-on film material. The control surfaces are covered separately, before hinging into position, using mylar strip hinges, and pegging through with cocktail sticks or  $\frac{1}{16}$  in. dowel.

**Installation**

The three servos in the fuselage (rudder, elevator and throttle) should be mounted as far back as possible. Right up against former F4, in fact, as may be seen from the plan. The receiver and battery go ahead of the servos, behind former F3. The aileron servo may be mounted vertically or horizontally, depending upon what type is used.

A Kavan 6oz. tank fits just nicely into the cradle formed by former F2, and, incidentally, gives some 10-12 minutes' running, with my H.P.40.

The prototype models weighed between 4lb. and 4 $\frac{1}{2}$ lb., and this can therefore be taken as a pretty average figure, for all-up flying weight. Control movements should be set up as suggested on the plan, for the first half dozen flights, only increasing them once you have got to know the model—if you think

Highly manoeuvrable, yet can be brought almost to a hover in a little breeze. Cuts through high winds when given the gun, however! You'll really have fun with Steve Allanach's exciting brainchild!



you can extend the fun you're getting, this way. The c.g. positioning is not critical, and the approximate range for this is shown on the plan.

**Flight characteristics**

Performance of the *Fun-3* on full throttle is really exhilarating, vertical rolls being possible for as long as required, yet she will fly really slowly on tickover and, in a breeze,

can be made to hover—either way up—by applying up or down elevator. This being so, the approach is easy, with no tendency whatever to tip-stalling. *Fun-3* is really good on a windy day, when all other machines are grounded; the high speed cuts through the wind with no trouble at all, and the most fantastic full throttle flick manoeuvres can be performed, by putting on full movements of everything together!

