

*build it for the spring . . .*

# 'CRACKERJACK'

by **BRIAN PECKHAM**

**C**RACKERJACK started out as just another aeroplane, as I had not built anything for weeks! In fact, however, it turned out to be virtually a smaller version of my *Something Special* (featured in the December 1974 issue, as RM 137). If you spend as much time as I do leaning over a drawing board, it is only natural to doodle aeroplanes—especially if one is bored or has a problem. In doing this, I find that occasionally a shape will appear that I really like, and one of these was *Crackerjack*.

If you like your models to be fast, fun and easy on the eye, then this is for you. The following notes are more a sequence of events than complete building instructions, as I reckon you will have built a few models if you are going to build this one . . .

## CONSTRUCTION

### Wings 'n things

The wing is built in one piece, inverted, on the building board. The top surface being flat, dihedral is formed by the wing taper.

Fit the top spar, (of  $\frac{1}{2}$  x  $\frac{1}{8}$  in. spruce, spliced up from two pieces,) to the board, packed up on the line shown with scrap  $\frac{3}{8}$  in. strip. Add the ribs, checking their alignment by their centre lines, noting that the section varies, giving built-in

washout. Fit the bottom spar, leading edge, false leading edge at the centre section, gussets and riblets.

Making up the four wing skins from 3 in. plus 4 in. wide  $\frac{1}{16}$  in. sheet, shaping then to the line shown. Sand them well before fitting, glue in place and leave to dry well, before removing the wing from the building board.

After removing from the board, add the following:  $\frac{1}{4}$  in. hardwood dowel, servo box sides,  $\frac{1}{8}$  in. sheet fillers at bolt positions,  $\frac{3}{4}$  in. sheet reinforcement at cable exit points, as well as outer cable. Fit the  $\frac{1}{16}$  in. ply brace at the centre section after cutting away the centre of centre-rib W1 to clear the servo. Now fit the upper skins. Shape the leading edge, fit the tip blocks and sand them to final shape. Cut out the ailerons, trim back the aileron leading edges, fit  $\frac{1}{2}$  in. blocks for the horn. Face the wing trailing edges and aileron leading edges with  $\frac{3}{32}$  in. sheet.

My ailerons are film-hinged; if you prefer to use mylar or similar standard hinges, soft blocks should be fitted to ailerons and wing at the hinge positions. The aileron horns have to be made from paxolin or Formica, as commercial horns of

this shape seem to be unobtainable, so far as I have been able to ascertain. The shape is, of course, required to provide the requisite movement with top hinging.

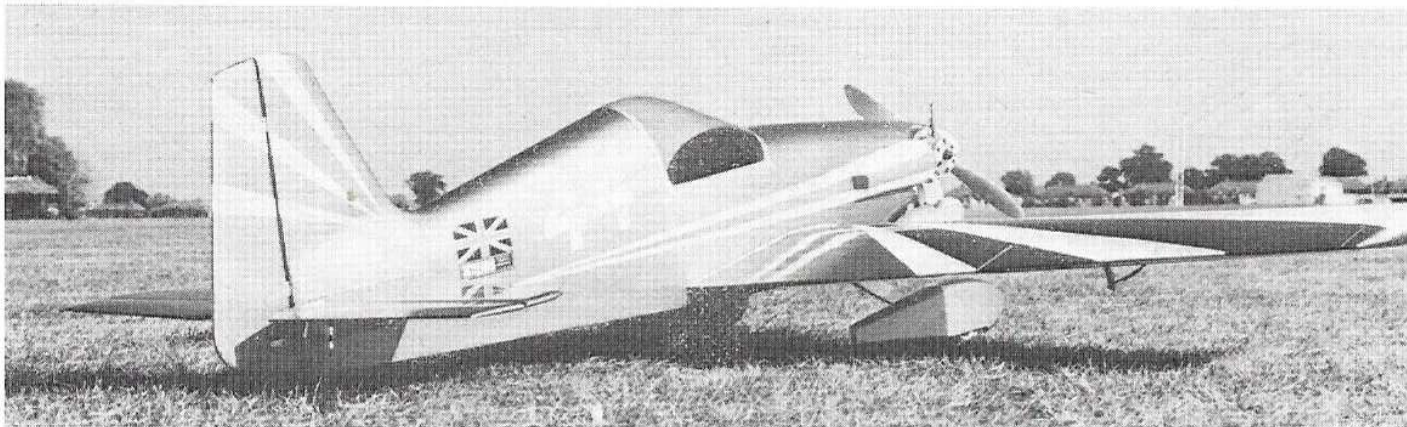
### Fuselage and tail bits . . .

One left and one right hand side of the fuselage are made up from  $\frac{3}{16}$  in. medium grade sheet, with  $\frac{1}{16}$  in. ply doublers attached using contact-adhesive, forming the curve in the sides (plan view) at the same time by rolling the doublers on. Fit the  $\frac{1}{2}$  x  $\frac{3}{8}$  in. triangular reinforcement to the lower sides and  $\frac{3}{8}$  x  $\frac{1}{8}$  in. longeron to the upper sides.

Cut the formers from ply and balsa as indicated—it is a good idea to cut F1 oversize to allow for final shaping. Bolt the engine mount to the firewall F2 and assemble the fuselage, commencing with formers F2, F3 and F4, and checking thoroughly for correct alignment. Fit the  $\frac{1}{4}$  in. spines between F2 and F5, and F6 to F9. Add the  $\frac{3}{4}$  in. triangular pieces between F3 and F4, followed by the  $\frac{1}{4}$  in. ply undercarriage mounting plate, with blind nuts in position. Next add the  $\frac{1}{2}$  in. sheet to the engine bay and forward fuselage, and the  $\frac{1}{4}$  in. sheet (cross grain) to the cockpit floor between F5 and F6, sanding it flush with the formers.

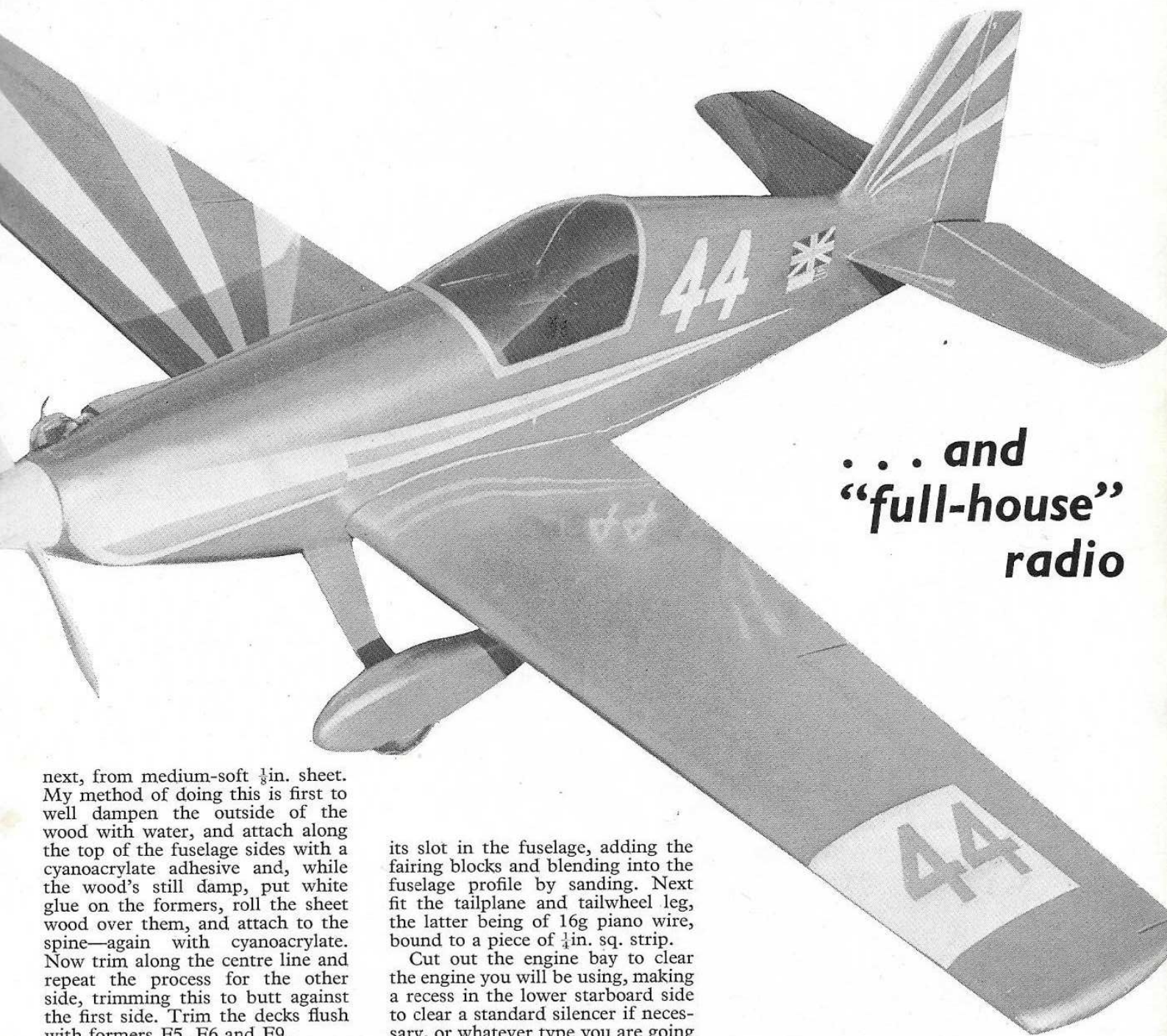
Add the front and rear decking

This pilot's-eye view displays the somewhat Goodyear Racerish lines of *Crackerjack*—through the model was designed for pure sport flying rather than racing!



# ACK'

52" span super-sports  
model for .40 power . . .



. . . and  
“full-house”  
radio

next, from medium-soft  $\frac{1}{8}$  in. sheet. My method of doing this is first to well dampen the outside of the wood with water, and attach along the top of the fuselage sides with a cyanoacrylate adhesive and, while the wood's still damp, put white glue on the formers, roll the sheet wood over them, and attach to the spine—again with cyanoacrylate. Now trim along the centre line and repeat the process for the other side, trimming this to butt against the first side. Trim the decks flush with formers F5, F6 and F9.

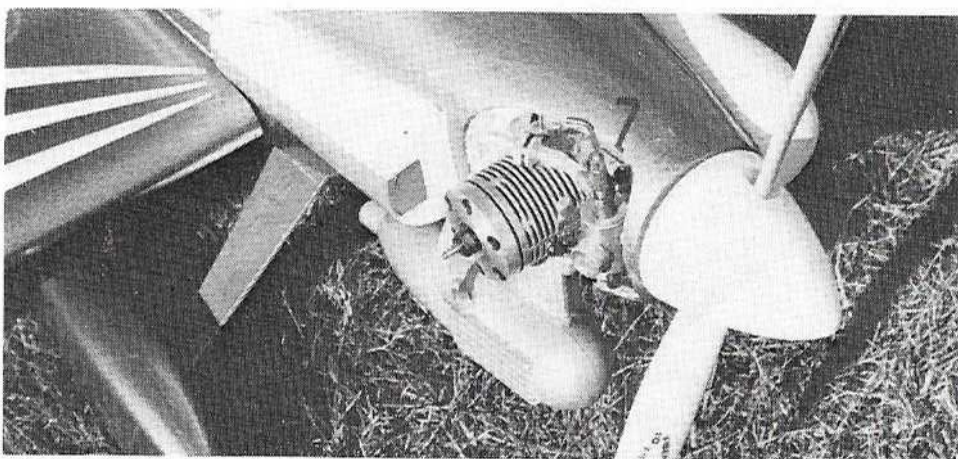
Now cut a slot for the tailplane and a  $\frac{1}{4}$  in. slot for the tailwheel mounting, then plane and sand the fuselage to its final shape. Cut the fin from  $\frac{1}{4}$  in. sheet and glue it into

its slot in the fuselage, adding the fairing blocks and blending into the fuselage profile by sanding. Next fit the tailplane and tailwheel leg, the latter being of 16g piano wire, bound to a piece of  $\frac{1}{4}$  in. sq. strip.

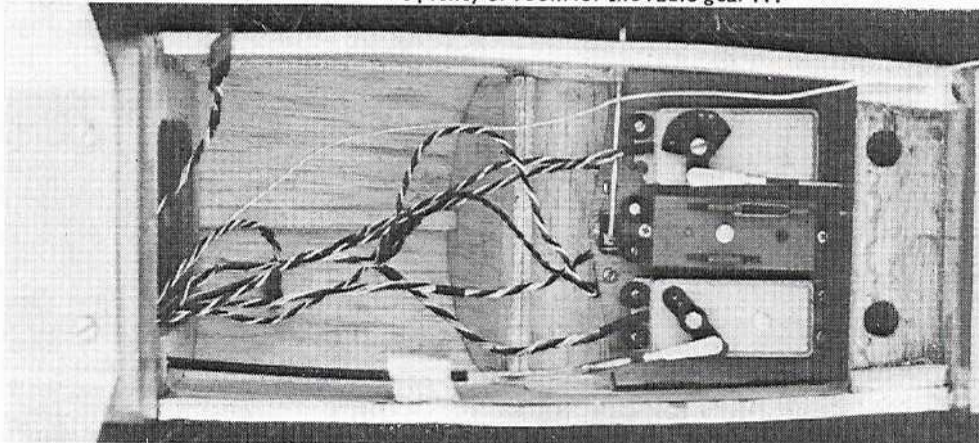
Cut out the engine bay to clear the engine you will be using, making a recess in the lower starboard side to clear a standard silencer if necessary, or whatever type you are going to use. (If a dustbin type of muffler were to be used it would probably be contained within the cowl, without needing a cut-out).

Fit the  $\frac{1}{4}$  in. ply plate with blind

nuts for wing mounting, onto the  $\frac{1}{4}$  in. balsa supports, as shown in the side view. Trim off the wing trailing edge at the centre section, and fit the



The 'installation' bits—Brian's HP 40 mounted sidewinder fashion, blends in well with the general lines. Below: there's plenty of room for the radio gear . . .



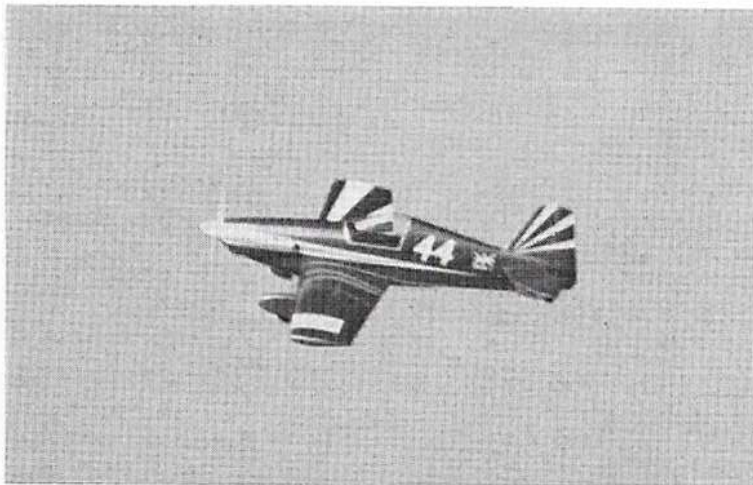
$\frac{1}{4}$  in. sheet riblets to give a snug fit to the fuselage. Now drill the wing for the fixing bolts, and add the  $\frac{1}{16}$  in. ply washers to reinforce the hole edges. Bolt the wing in position, checking alignment; make allowance for the use of wing-seating tape by using soft scraps of  $\frac{1}{16}$  in. balsa. Fit the soft blocks of  $\frac{1}{2}$  in. wood to the underside of the wing after cutting the holes for the wing bolts, and sand them to blend into the fuselage profile.

Make up the "cheeks" from three pieces of  $\frac{1}{2}$  in. balsa, shaping them to section, and carving them to fit the fuselage sides. When satisfied, these may be glued into place.

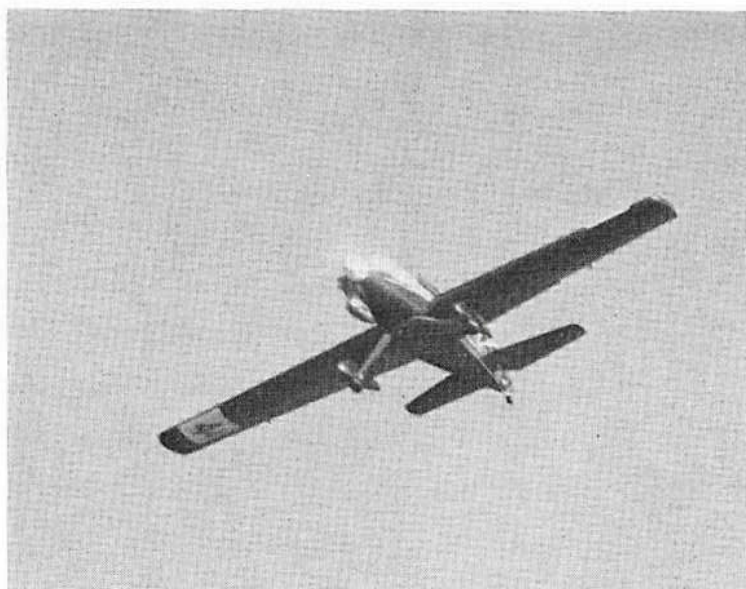
Join up the elevators with the 14g wire joiner indicated and hinge them in place, followed by the rudder. Attach these only temporarily, until after covering.

#### Fancy bits . . .

The spats are made up with a  $\frac{1}{16}$  in. ply centre core, hard  $\frac{1}{2}$  in. blocks either side, shaped to plan profile, and then the  $\frac{1}{16}$  in. ply outer skins, with additional  $\frac{1}{16}$  in. ply reinforcing plates on the inner faces. The completed spats are finally shaped to section and sanded



The original's metallic silver-blue finish, with racing numbers and semi-sunray in cream, looked a real picture in flight! Here are a couple of typical flight attitudes—though we must admit we were rather carried away and actually took over a dozen. Below: a low pass.



overall. Spats and wheels are attached to the undercarriage legs with 4BA bolts. I used steel bolts, which seem to be O.K., but high tensile steel bolts would obviously be preferable. The spats are each clamped by two nuts to the leg; this is firm enough for takeoff and landing—and the spat is free to move if knocked accidentally, or in a heavy “arrival”.

There are several commercially produced canopies available which will suit this design; mine was a Micro-Mold Rivetts type, but MM also produce two other patterns which are quite suitable.

After finishing by your favourite method, and with engine, silencer, tank, spinner etc. in place, check the model for balance.

**The important bits . . .**

Now fit your radio gear, positioned to adjust the balance point if this should prove necessary. Mine had the servos three-abreast, just forward of former F7, the nicads being between F3 and F4, and the receiver just aft of F4. This gave the c.g. position indicated on the plan, and as flown, with the following movements of the control surfaces: elevators  $\frac{1}{2}$ in. each way, rudder  $\frac{3}{4}$ in. each way, ailerons

$\frac{3}{8}$ in. each way—all measured at the widest point on the centre-lines. For first flights, however, I would recommend reduced throws.

The all-up weight came out at just under 4 $\frac{3}{4}$ lb.

**The exciting bit . . .**

Now for the moment of truth! I know how you feel. Test-flying that new model is always a nerve-racking, and yet fascinatingly exciting time.

Take off with my HP40 is very rapid—needs only a touch of right rudder to counteract torque, and some up elevator for the first few yards, then ease in some more up elevator for lift-off. Once *Crackerjack* is in the air you can have yourself a ball, as they say. All manoeuvres are smooth, positive and very quick. The ailerons are very effective, making the roll rate rapid, to say the least. With any current .40-size motor at full throttle, everything happens quickly, so get some height before experimenting. (And try using something *less* than full throttle occasionally, too!)

Low speed handling is near to perfect—very docile, even on a “dead stick”, making landings smooth, long and flat, but control is

still positive right to the touchdown.

**Over to you . . .**

I enjoyed designing, building and flying *Crackerjack*. Some balsa, ply, bits and pieces, and two or three weeks of your spare time and you, too, could have your own *Crackerjack*. (Of course . . . you will have to buy a plan, as well!! . . .)

