POPPET

by Vic Smeed

- A trim free-flier of
- 32 ins. span
- for .5 c.c. to
- .8 c.c. engines

coming down, but drifting along in a weak thermal. We followed for about twenty minutes, towards the end catching only an occasional glint in the sun, until eventually we were forced to concede that it had gone—still at a dizzy height and flying well. The following day we learned that it had been seen to land on a golf course some 2½ miles away just over an hour after launching.

A second model is now under way, mainly because it is hoped to make a radio conversion. This is not recommended except to reasonably experienced R/C fliers, and no details are therefore shown on the plan. In passing, we should perhaps point out that wing section and dihedral tend towards a compromise for R/C use, and if you are building the model purely for free flight, make sure you do not have less dihedral than shown; a little more makes no odds.

Construction

Decide first what motor is to be installed, i.e. whether beam or radial mount is required. A wide range of motors are suitable, from the Pee Wee .010 or .020—which would probably call for ballast in the nose—to any of the standard .049 or .8 c.c. engines. The prototype used an E.D. Baby .46 c.c. and flew very happily at an all-up weight of 6¼ ozs.

Select stiff but light 1/16 in. sheet for the fuselage sides, trace and cut out and sand to ensure that both sides are identical. Cut bulkheads, bend undercarriage (this is “flat” to make accurate bending and axle line-up easier) and bind to F2 as shown. Small nicks in the sides of F2 will allow the thread to sit flush. Now cement F2 to F3 thoroughly, and allow to dry under a weight. Place one fuselage side near the edge of the building board, which in turn should be near the edge of the bench, and cement F3 and F4 in place, ensuring that they are at right-angles to the fuselage side. This is a convenient time to add the scrap ½ in. sq. stiffeners inside the fuselage sides. When dry, cement the other fuselage side in place, lining up carefully.

Before any further steps are taken, sheet across the fuselage bottom between F3 and 4 and fit the wing seat. Now draw the tail ends together and add F5, checking for symmetry. Cement the tail ends together and when dry drill for dowels and fit. The top and bottom may now be sheeted.

At the nose, install the bearers, F1, and the F6 pieces. Draw the sides together, add top block and bottom sheeting after drilling bearers. Curve block to shape, cutting to suit motor. Add ½ in. sheet pieces for fore end of wing seat, plus dowel, fill in at nose with scrap

At head of page are two views of fuselage structure showing internal assembly and engine bearers. Above is the wing under construction, the lower picture illustrating how the wing is held to the board with drawing pins during tissue shrinking and doping operations. Note that both wing and tailplane are raked slightly from the board by delta runners at leading and trailing edges.
block, add tailskid, and sand all over. Dope on tissue, then cut a paper template for the wind-
shield, cut out of celluloid or acetate, and cement in place before completing doping of fuselage.

If a radial-mount motor is to be fitted, construction procedure is identical except that the bearers can be omitted and F1 is cut as a complete bulkhead to include F1A. This bulkhead is now glued between the fuselage sides and the top block fitted up to it. To improve appearance the sides can be left extending forward as drawn. A strip of ½ in. sq. can be added each side, in front of and behind the bulkhead, for additional strength if required. As drawn, a small amount of downthrust is incorporated, for larger motors, though final adjustment of the angle will depend on flight tests.

The wing is a simple two-piece structure without a centre-section. Build one panel flat on the board; the i.e. and t.e. are notched with a file or razor to locate the ribs firmly and accurately. Fit the dihedral keepers in this panel; note that the root rib should be angled slightly. The wingtip can be fitted before removing from the board, cutting the spar at a separate gusset to continue the spar line down to the tip. Use a hard balsa spar. When thoroughly dry, remove and build the other panel over the plan, fitting the dihedral keepers into it by blocking the completed half at the correct angle. Measure to check that the raised tip is not less than 4½ ins. above the board. When dry, remove and sheet centre-section, then sand all over. Cover with lightweight Modelspan and put a tiny drop of castor oil in the dope; pin down to avoid warps while drying.

The tailplane is a straightforward job, taking care to avoid warps, and the fin is simply cut from ½ in. sheet and the edges sanded round. Note trim tab. Cement fin squarely in centre of tailplane after covering and doping. Do not forget to fuel-proof inside nose. When doping and colour trim etc. is complete bolt motor in place and fit prop. Check that the model is squarely assembled and unwarped, and that it balances on the main spar. Add ballast if necessary. Glide into tall grass, watching that the glide is straight. Use a little right tab for power flights, running the motor at low speed until all is obviously well, then open up. Make sure the motor run is short and that you have your name and address on the model. To fit a D/T, cut a small triangle from the fin t.e. so that the whole tail can tip to —30 degrees; fit a dowel in the fin t.e. ½ in. above the fuselage dowel and connect up the rubber bands in the usual way.

**Materials**

- 1 Strip ¼ in. × ½ in. × 36 in. Balsa
- 1 Strip ¼ in. × ½ in. × 36 in. Moulded Trailing edge
- 1 Strip ¼ in. × ½ in. × 36 in. Balsa
- 1 Strip ¼ in. × ½ in. × 36 in. Balsa
- 2 Sheets ¼ in. × 4 in. × 36 in. Balsa
- 1 Sheet ¼ in. × 2 in. × 36 in. Balsa
- 1 length ¼ in. × ½ in.
- 1 length ½ in. dowel
- 1 length 16 s.w.g. wire
- Soft Block ¾ in. by 2 in. by 5 in.
- Scrap ¾ in. and ½ in. ply, Celluloid, Tissue.

**Turn to page 232 for full-size pull-out plans of Poppet**
$\frac{1}{16}$ sheet on top
$\frac{1}{16}$ sheet let in between ribs on bottom

St'bd. wingtip

Tailplane port

Tip shown chain dot

W1

W2

W3 12 off $\frac{1}{16}$ sheet

Tailplane ribs $\frac{1}{16}$ sheet

W1 2 off $\frac{1}{8}$ sheet

W2 2 off $\frac{1}{16}$ sheet

$\frac{1}{8}$ sq. vertical braces on inside of side only

$\frac{1}{16}$ sheet top and bottom Grain across fuselage

$\frac{1}{8}$ dia. dowel

Cement to bearers and fuselage sides

BANTAM
FROG 80
DART

E.D.-46

F5

F6 $\frac{1}{8}$ sheet

Tailplane
Crack spar here, bend down and cement to tip
D2 joiner position

$\frac{1}{8}$" sheet tips. Fit to bottom surface
D1 joiner position
W1 st'bd wing

$\frac{1}{8}$ x $\frac{1}{4}$" spar
Note: Wings have 2$\frac{1}{8}$ dihedral under each tip

$\frac{1}{2}$ x $\frac{1}{8}$" T.E.

Note: 2° downthrust for more powerful motors

Use 6" x 4" propeller

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POPPET

E.D. '46 BABY

$\frac{1}{8}$" dowel

Soft block. Hollow out and cut to fit engine

6" x 4" prop

Scrap block fairing on wing

$\frac{1}{16}$ sheet wing. Grain across fus. centre for dih.

C1 and C2. $\frac{1}{8}$" sheet. Cut 'V' in C1 to suit dih.

Celluloid screen

Fill in nose with soft block

F6
$\frac{1}{4}$" x $\frac{5}{16}$" Rearers

F2
F3

F1
1/16" sheet on top 1/16" sheet let in between ribs on bottom

1/16" sheet wing seat.
Grain across fuselage, crack centre for dihedral

1/8" dowel

Dihedral keepers 1/8" hard sheet
L.E. shape of wing seat

1/16" sheet sides

Note: Remove plans from magazine and join on this line