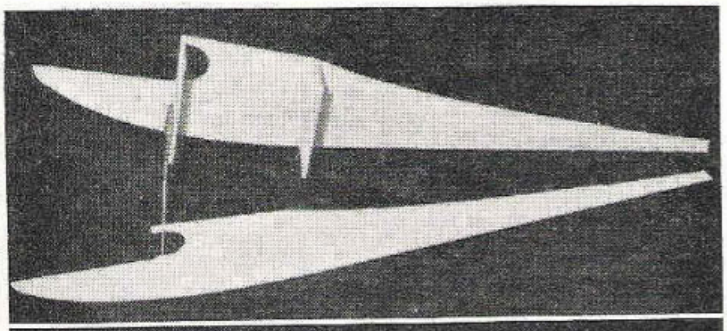
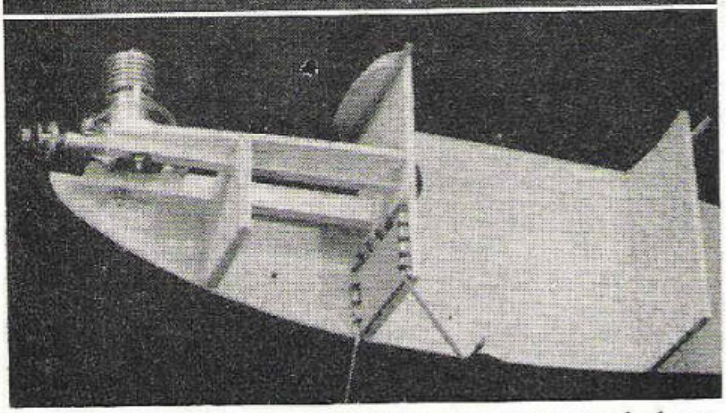




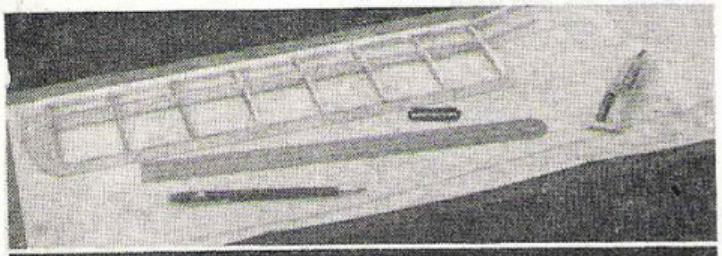
POPPET

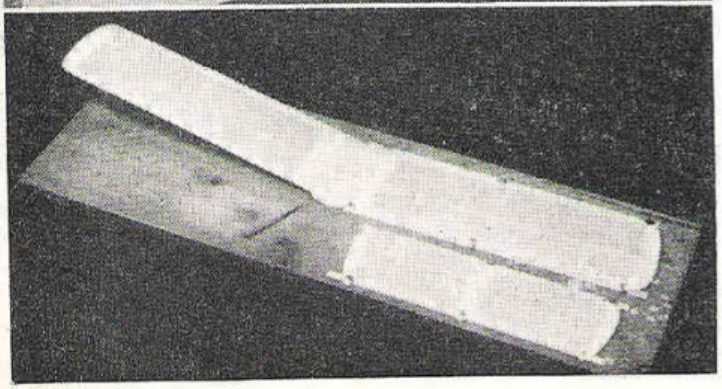
by Vic Smeed

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

THERE IS NOTHING particularly new or unusual about this little model—it follows what might be termed traditional design layout, shape, and construction. What does put it in a class of its own is its performance, for its size. When we checked out the first prototype it was a frosty, absolutely windless day with bright sunshine and just a little haze in the sky—in other words, ideal conditions. Glide tests showed a smooth glide which, with a shim under the tail trailing edge, became a floating descent. Banging on hard right tab, we launched with the engine at reduced revs and the model turned tight right and flew into the long grass. With "half" left tab and the same engine setting, we got 50 ft. diameter circles to the left, without climbing. Having thus established the turn characteristics in each direction, we set the tab about ten degrees right, adjusted the motor to maximum revs., and launched with what static ground tests (it was a new motor) had shown would be about a 15 sec. motor run. Forty-five seconds later we *saw* the motor cut, just; the model had climbed in one wide right circle and was a minute speck almost overhead, out of earshot, so that the only indication of engine cutting was a sudden change into about 50 ft. glide circles. Several minutes passed before we realised that it wasn't 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 $2\frac{1}{2}$ 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 $6\frac{1}{4}$ ozs.

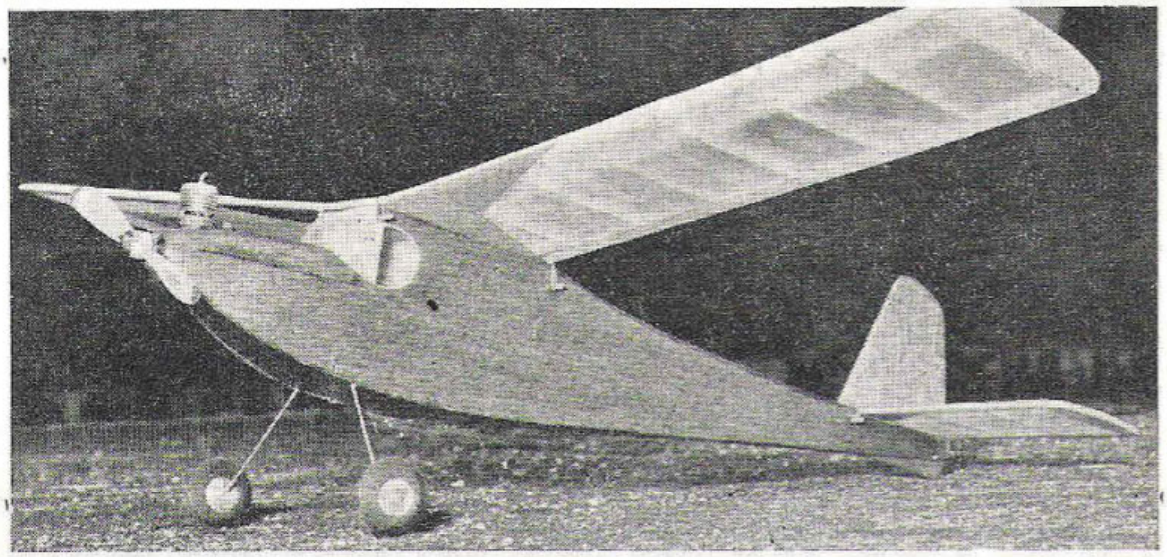
Select stiff but light 1/16 in. sheet for the fuselage sides, trace and cut out and sand to ensure that both sides are identical. Cut bulkheads, bend undercarriage (this is "flat" to make accurate bending and axle line-up easier) and bind to F2 as shown. Small nicks in the sides of F2 will allow the 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 $\frac{1}{8}$ 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. Carve block to shape, cutting to suit motor. Add $\frac{1}{8}$ 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. At left 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 raised slightly from the board by balsa runners at leading and trailing edges

At right is a close-up shot of Poppet with E.D. Baby power, and below, covered and uncovered views. Note S.M.A.E. insurance number on right hand wing. Do not forget to add your name and address to the model!



block, add tailskid, and sand all over. Dope on tissue, then cut a paper template for the windshield, 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 $\frac{1}{8}$ 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 l.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 $4\frac{1}{4}$ 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.

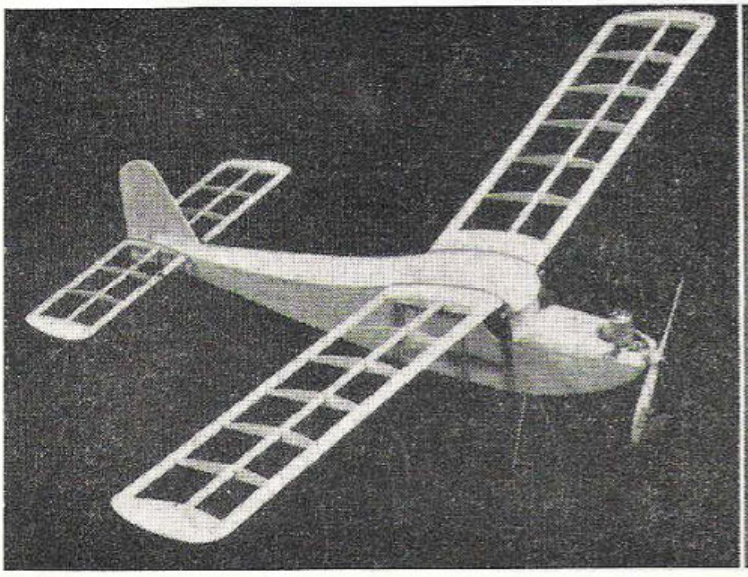
The tailplane is a straightforward job, taking care to avoid warps, and the fin is simply cut from $\frac{1}{8}$ in. sheet and the edges sanded round. Note trim tab. Cement fin squarely in centre of tailplane after covering and doping. Do not forget to fuel-proof inside nose. When doping and colour trim 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 mainspar. 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 l.e. so that the whole tail can tip to —30 degrees; fit a dowel in the fin t.e. $\frac{1}{2}$ in. above the fuselage dowel and connect up the rubber bands in the usual way.

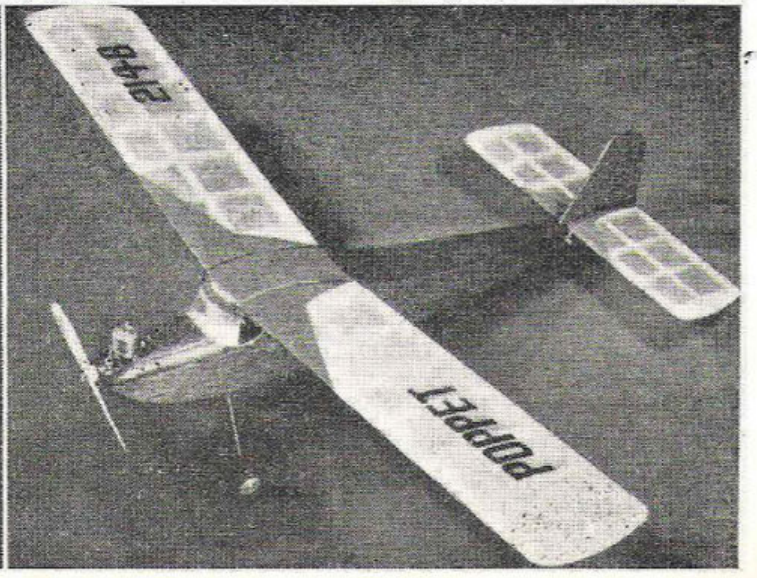
Materials

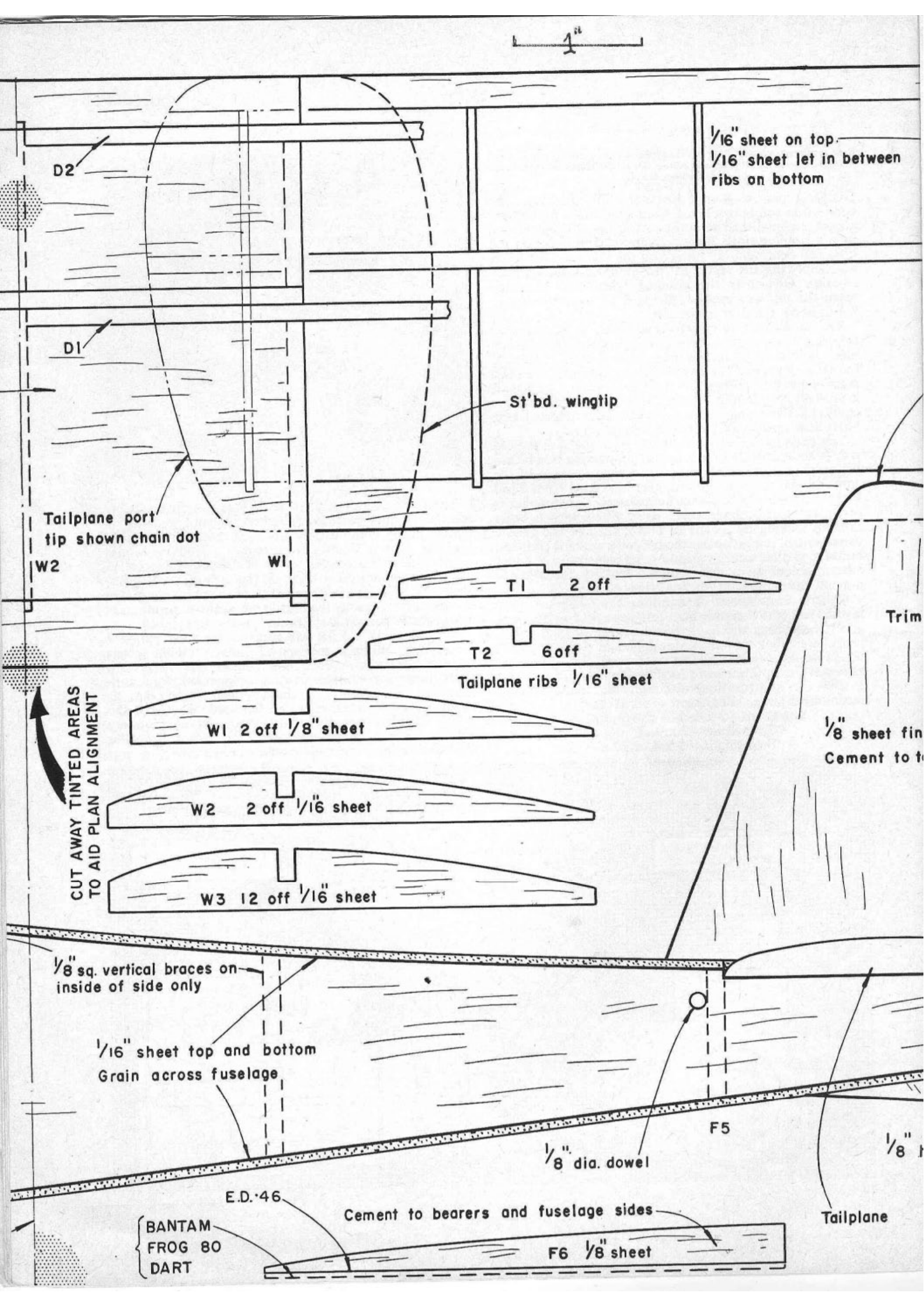
1 Strip	$\frac{1}{8}$ in. × $\frac{1}{8}$ in. × 36 in.	Balsa
1 Strip	$\frac{1}{8}$ in. × $\frac{1}{4}$ in. × 36 in.	Moulded Trailing edge
1 Strip	$\frac{1}{8}$ in. × $\frac{1}{2}$ in. × 36 in.	Moulded Trailing edge
1 Strip	$\frac{1}{8}$ in. × $\frac{1}{2}$ in. × 36 in.	Moulded Trailing edge
1 Strip	$\frac{3}{16}$ in. × $\frac{1}{4}$ in. × 36 in.	Balsa
1 Strip	$\frac{1}{4}$ in. × $\frac{3}{8}$ in. × 36 in.	Balsa
2 Sheets	$\frac{1}{16}$ in. × 4 in. × 36 in.	Balsa
1 Sheet	$\frac{1}{8}$ in. × 2 in. × 36 in.	Balsa
1 length	$\frac{1}{4}$ in. × $\frac{5}{16}$ in.	Hardwood engine bearer
1 length	$\frac{1}{8}$ in. dowel	
1 length	16 s.w.g. wire	

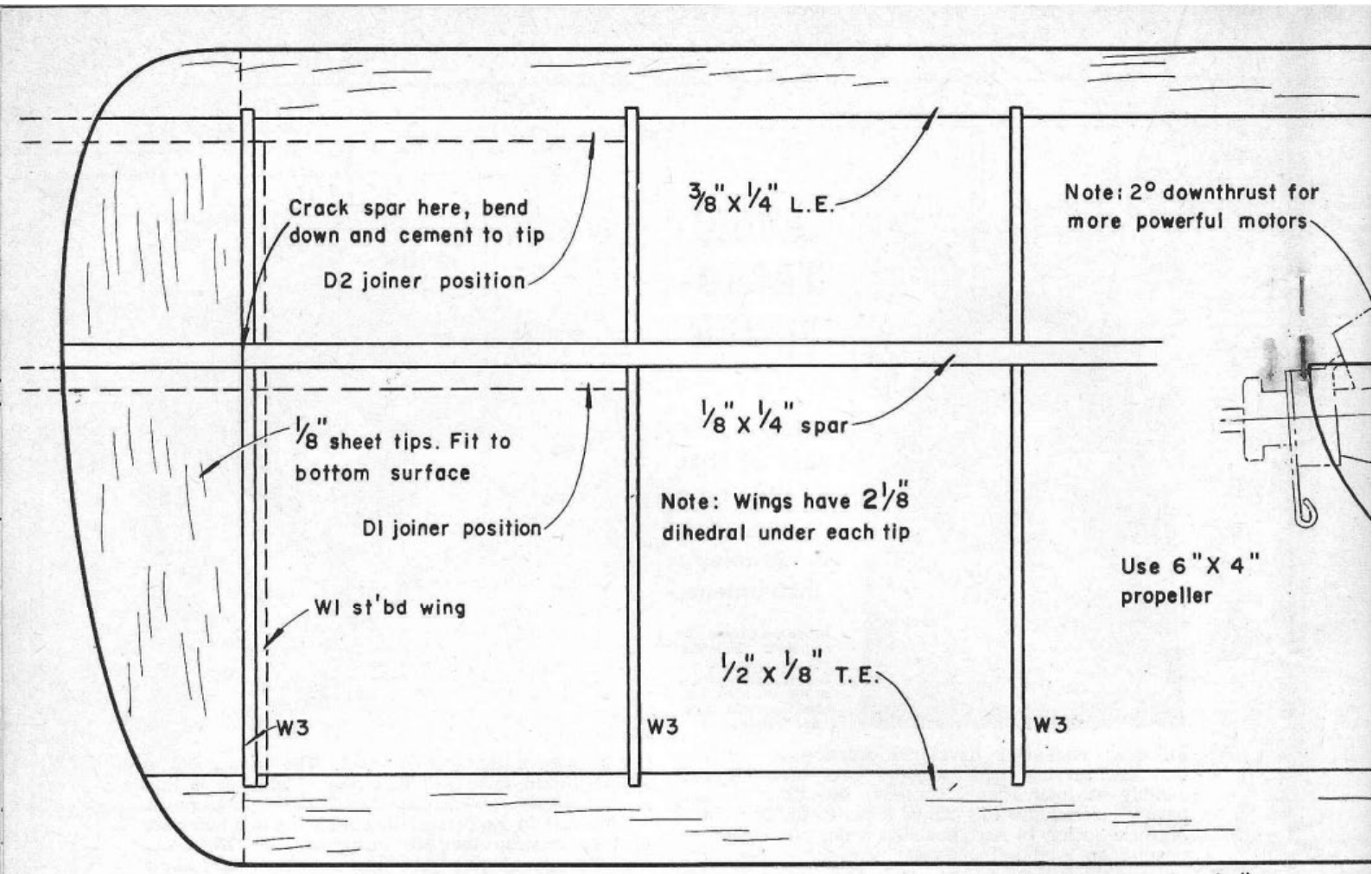
Soft Block $\frac{3}{4}$ in. by 2 in. by 5 in.
Scrap $\frac{1}{16}$ in. and $\frac{1}{8}$ in. ply, Celluloid, Tissue.

Turn to page 232 for full-size pull-out plans of Poppet

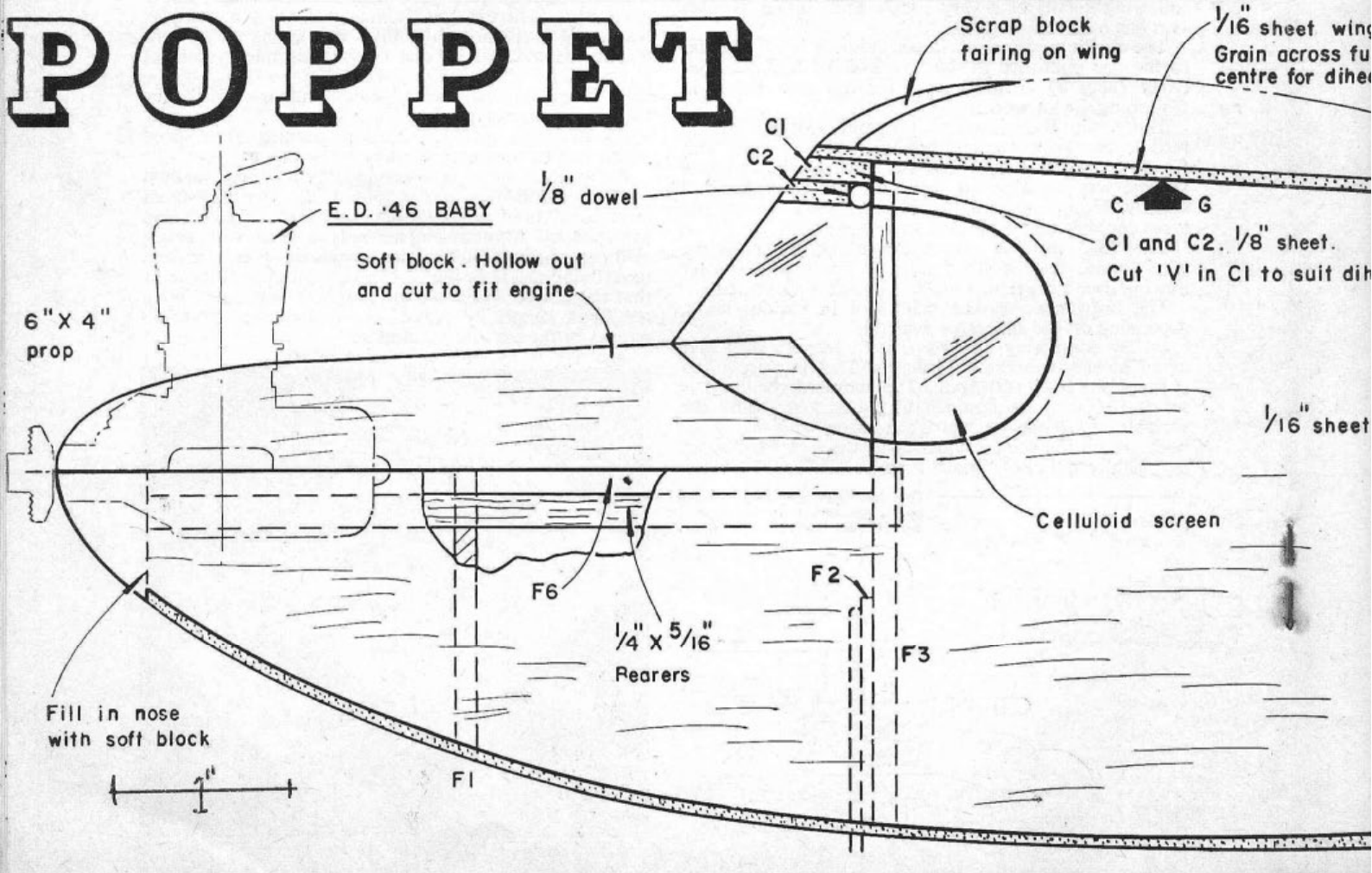





1"
1/16" sheet on top
1/16" sheet let in between ribs on bottom
D2
D1
St'bd. wingtip
Tailplane port tip shown chain dot
W2
W1
T1 2 off
T2 6off
Tailplane ribs 1/16" sheet
W1 2 off 1/8" sheet
W2 2 off 1/16 sheet
W3 12 off 1/16" sheet
CUT AWAY TINTED AREAS TO AID PLAN ALIGNMENT
Trim
1/8" sheet fin
Cement to t
1/8" sq. vertical braces on inside of side only
1/16" sheet top and bottom
Grain across fuselage
F5
1/8" dia. dowel
1/8"
Tailplane
E.D.·46
Cement to bearers and fuselage sides
BANTAM
FROG 80
DART
F6 1/8" sheet


Crack spar here, bend down and cement to tip
D2 joiner position
3/8" x 1/4" L.E.
Note: 2° downthrust for more powerful motors
1/8" sheet tips. Fit to bottom surface
D1 joiner position
1/8" x 1/4" spar
Note: Wings have 2 1/8" dihedral under each tip
Use 6" X 4" propeller
W1 st'bd wing
1/2" x 1/8" T.E.
W3
W3
W3

POPPET


Scrap block fairing on wing
1/16" sheet wing
Grain across fu
centre for dihe
C1
C2
1/8" dowel
C
G
C1 and C2. 1/8" sheet.
Cut 'V' in C1 to suit dih
E.D. ·46 BABY
Soft block. Hollow out and cut to fit engine
6" X 4" prop
1/16" sheet
Celluloid screen
F6
F2
F3
1/4" x 5/16" Rearers
Fill in nose with soft block
F1
1"

thrust for
l motors

FIA

DAVIES-CHARLTON
BANTAM DE-LUXE
INSTALLATION

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

x 4"

W3

W3

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

D2
D1

1/8" dowel

Dihedral keepers 1/8" hard sheet

C2
C1

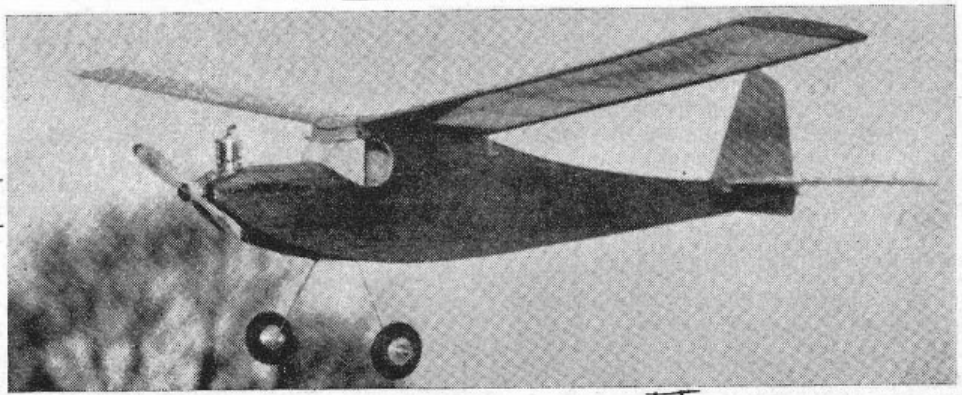
L.E. shape of
wing seat

2. 1/8" sheet.
n C1 to suit dihedral

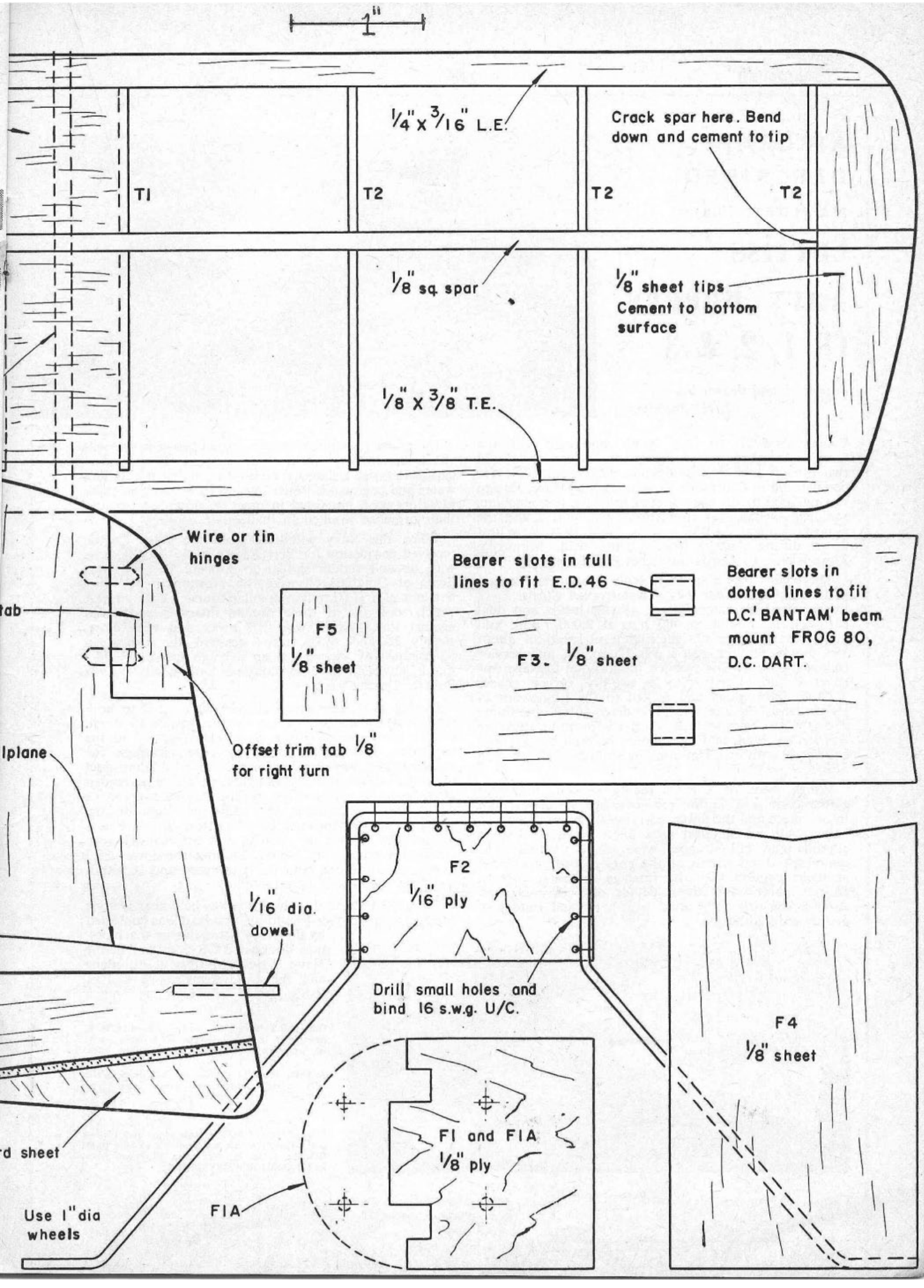
1/16" sheet sides

n

F4



Note: Remove plans from magazine
and join on this line


1"
1/4" x 3/16" L.E.
Crack spar here. Bend down and cement to tip
T1
T2
T2
T2
1/8" sq. spar
1/8" sheet tips
Cement to bottom surface
1/8" x 3/8" T.E.
Wire or tin hinges
tab
F5
1/8" sheet
Offset trim tab 1/8" for right turn
Bearer slots in full lines to fit E.D. 46
Bearer slots in dotted lines to fit D.C.' BANTAM' beam mount FROG 80, D.C. DART.
F3. 1/8" sheet
lplane
F2
1/16" ply
1/16" dia. dowel
Drill small holes and bind 16 s.w.g. U/C.
F4
1/8" sheet
F1 and F1A
1/8" ply
F1A
Use 1" dia wheels