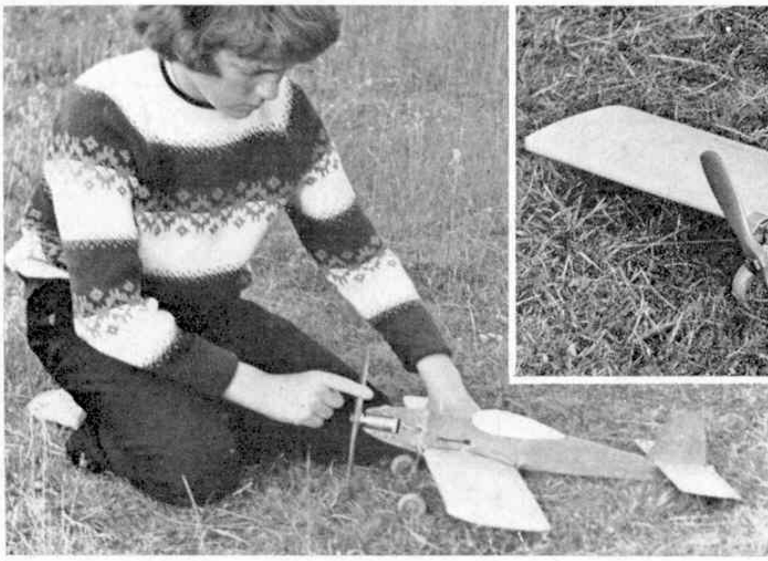


Full-size Plans for

CLIPPIE

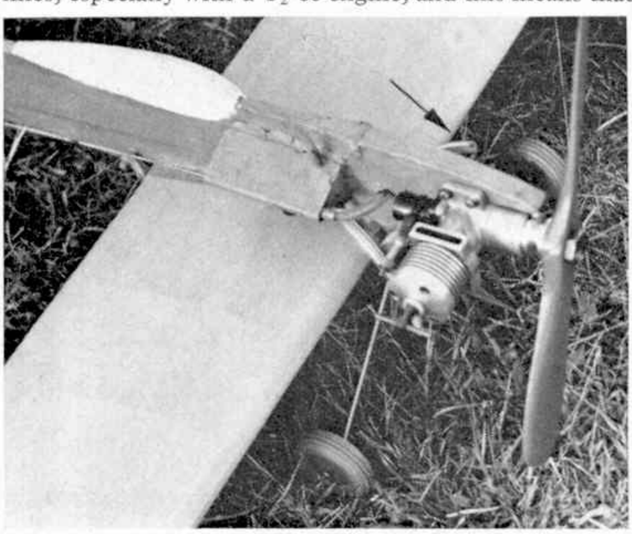
28in. Control-Line Sport Model and Stunt Trainer

Remove magazine centre pages, cut out page 497 and tape together to obtain complete plan.

THIS model is intended to be a suitable trainer for someone wanting a fairly lively but safe design as a step towards learning to stunt. With a 1½ cc engine and an elevator twice the width shown on the drawing, it will perform the simpler manoeuvres quite easily, but for a start it is wise to use the elevator as shown until you can fly the model and are used to its speed; it is quite fast!

The original was built by 12-year old Paul Hodgson and turned out very successfully. He was unlucky on the first flight, when after nine or ten laps the "up" line broke and the model immediately nose-dived straight in. Worse, it picked the only grass-less spot in the flying circle and landed on hard, gravelly ground. Despite this, there was no major damage except for split tissue on the wing.

Most beginners start with a small and underpowered model which can be hard to fly because there is a tendency for the model to slide inwards towards the pilot if it gets much above level flight. Then, if the whole model is a rigid unit, damage is quite normal. With *Clippie*, the model is big enough to pull on the lines, especially with a 1½ cc engine, and this means that if it zooms higher than intended, it will still stay out with reasonably tight lines, enabling the pilot to continue to control it.



The profile fuselage offers the minimum drag, which means higher speed and hence more G force to hold the model out, and it will also flex in a crash, reducing the chance of damage. The wing is detachable, secured with rubber bands, so that it will fly off in a crash, which again helps to reduce the chances of damage. In other words, although this model is bigger and has a tissue-covered wing, it will cope with a lot more rough handling than a smaller model, as well as being easier to fly.

Cost to build is relatively light, and the procedure is simple. A little patience and care in cutting and assembly will pay off in a better and stronger model, so don't rush it!

Construction:

You will need:

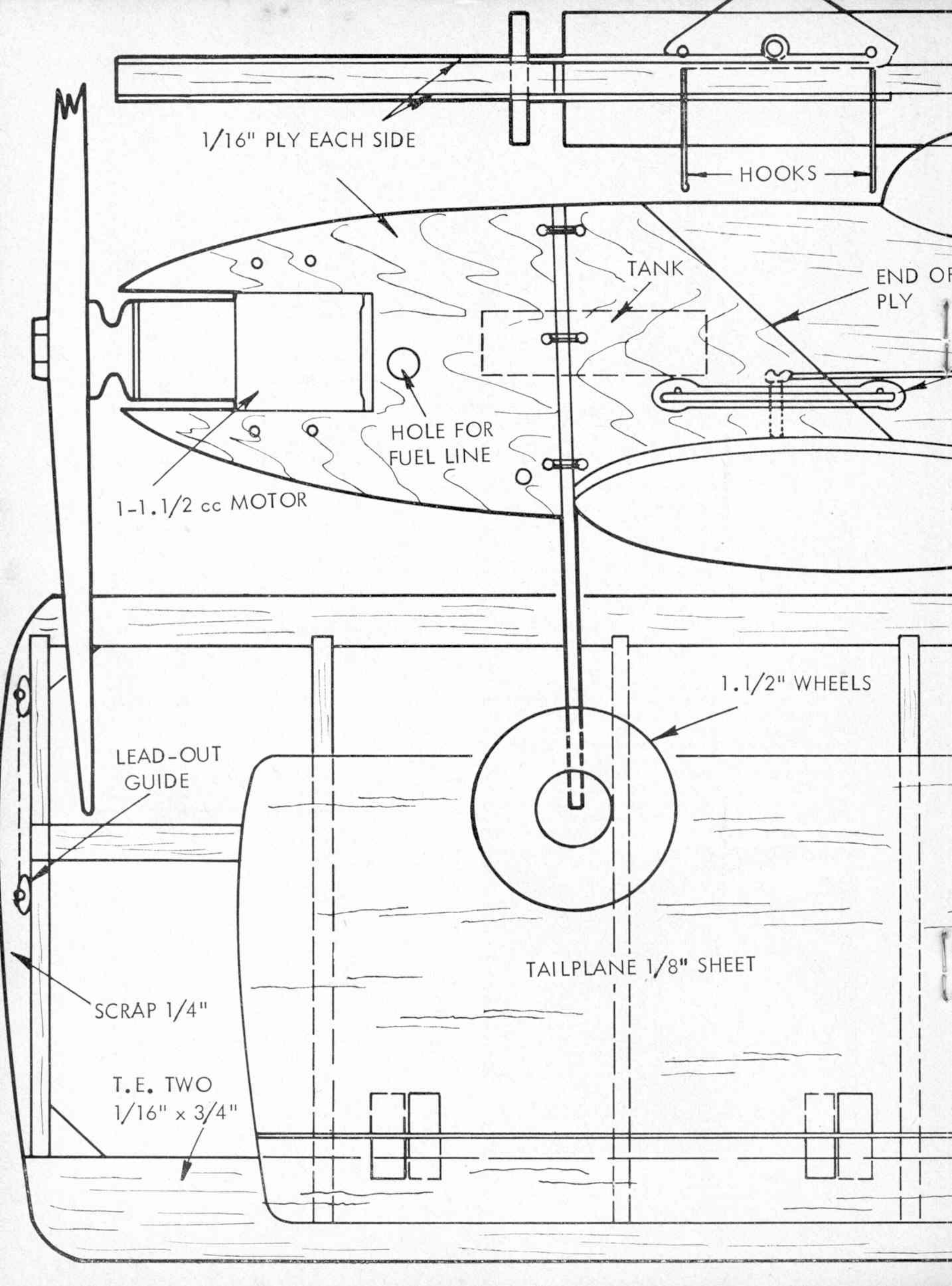
1 sheet—1/8 × 4 × 36 in. med. balsa
1 sheet—1/16 × 3 × 36 in. med. balsa
1 sheet—1/4 × 3 × 36 in. med. balsa
1 strip—3/8 × 1/2 × 36 in. med. balsa
2 strips—1/8 × 1/4 × 36 in. hard balsa
1 length—18 swg piano wire
14-15 ins.—14 swg piano wire

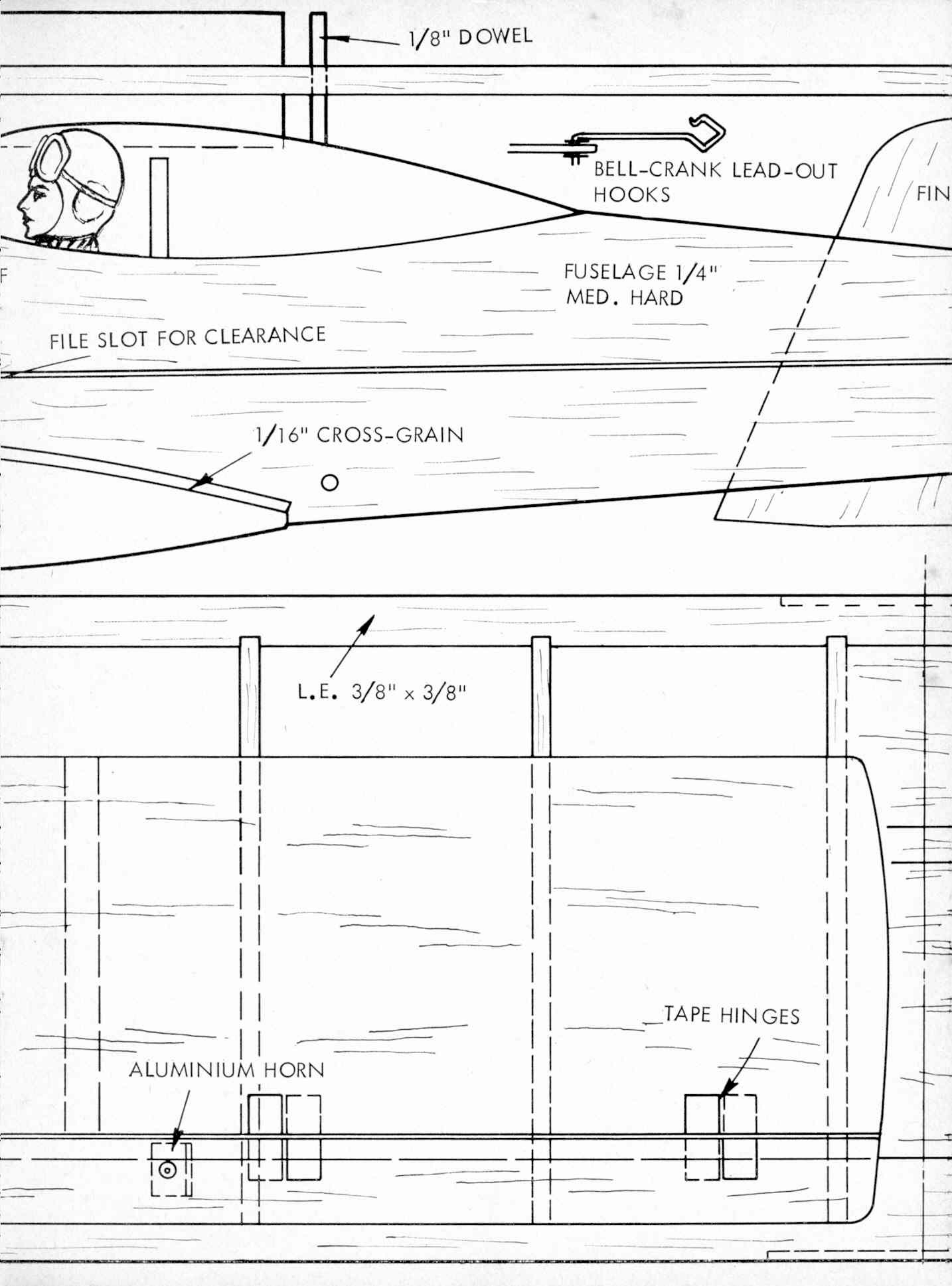
A piece of 1/16 in. ply about 5 × 6 ins.

Two stubs of 1/8 in. dowel, a few inches of tape or nylon ribbon, a bell-crank and elevator horn, a pair of 1½ in. wheels, a little thread, and a couple of small bolts and nuts, plus cement, tissue, dope, etc.

Trace the fuselage side view on to kitchen paper and transfer to the 1/4 in. balsa, either by turning the paper over and going over the lines from the back, or by pin-pricking through and then joining the pin-pricks with a pencil or ball-point pen. Cut out with a modelling knife or fretsaw—the balsa should be hard enough to make cutting with a knife fairly hard work, but not

Arrow shows fuel feed tube which for Super Fury engine passes through fuselage to bottom of needle body. Unclipped here to show clearly. With this engine, the model is pretty fast!


1/16" PLY EACH SIDE
HOOKS
TANK
END OF
PLY
HOLE FOR
FUEL LINE
1-1.1/2 cc MOTOR
1.1/2" WHEELS
LEAD-OUT
GUIDE
TAILPLANE 1/8" SHEET
SCRAP 1/4"
T.E. TWO
1/16" x 3/4"


1/8" DOWEL
BELL-CRANK LEAD-OUT HOOKS
FIN
FUSELAGE 1/4" MED. HARD
FILE SLOT FOR CLEARANCE
1/16" CROSS-GRAIN
L.E. 3/8" x 3/8"
TAPE HINGES
ALUMINIUM HORN

impossible. Take care to get the wing and tailplane seat areas squarely cut.

Now trace off the nose area on to $\frac{1}{16}$ in. ply twice and cut out. Be sure that the cut-out for the engine will fit the motor you intend to use. If you want to use a radial mounted engine, cut the nose off square $1\frac{1}{2}$ ins. back from the tips drawn; later mount a circle of $\frac{1}{8}$ in. ply on the nose and reinforce behind it with scraps of block balsa.

Cement the ply pieces thoroughly and place one each side of the nose, lining up accurately, then place on a flat surface with a weight on top (a couple of heavy books will do) and leave to dry for at least twelve hours.

Trace the outline of the tailplane, elevator, and fin on to $\frac{1}{8}$ in. balsa and cut out. The remainder of the sheet can then be used for wing ribs, except for a scrap for the sub-fin. Trace the rib pattern carefully and cut out; the best method is to cut it from ply and use this as a template to cut around for all the other ribs. If preferred, you can draw the ribs round the template and cut to the drawn lines. Twelve full ribs are needed, plus two reduced by $\frac{1}{16}$ in. top and bottom. Pin the twelve together with long pins from each end and sand the resulting block so that all ribs are identical and all notches and the ends line up.

Take the $\frac{3}{8} \times \frac{1}{2}$ in. strip and lay on the plan in the position of the leading edge and mark the rib positions and the wing centre line. Turn it end for end, align the centre line, and mark the other half with its rib positions. Cut off the surplus at one end, leaving you with a leading edge just under 28 in. long, and cut or file slots on the $\frac{1}{2}$ in. face at each rib position. Each slot should be $\frac{1}{8}$ in. wide and $\frac{1}{16}$ in. deep, and at right-angles to the strip, or the ribs will lean out of true.

Now mark out on the $\frac{1}{16}$ in. balsa two strips $\frac{3}{4}$ in. wide and 28 in. long. Cut out using a straight-edge or steel rule. Pin one piece in the trailing edge position on the plan, then cement and pin (with one vertical pin) half the ribs to it. Before the cement is dry, run cement into half the leading edge slots and position the l.e. on the front ends of the ribs. They will be cocked up in the air, so block the l.e. up with matchboxes or something similar; make sure it is parallel with the t.e., which means an equal height at each end. Pinch the finger and thumb over the l.e. and feel that each rib is central, then skew a pin through each into the l.e. and leave to dry thoroughly.

When dry, remove all pins then pin the "other half" with the t.e. over the l.e. on the plan (this simplifies rib spacing) and add the remaining ribs, again pinning and blocking. When this is dry, cement in the $\frac{1}{8} \times \frac{1}{4}$ in. spars top and bottom and check that the wing is flat and unwarped. Again whey dry, sand along the top surface of the $\frac{1}{16} \times \frac{3}{4}$ in. t.e. strip until the second strip will sit down fairly, then cement rib ends and first strip and pin second strip in place. Again pin down to the building board and check for warps.

Sand the tailplane and elevator, and secure together with narrow tape or nylon ribbon. Four pairs of tapes are needed, and each pair is cemented side by side as shown, but with one tape over and one under the tailplane. When dry, "bend" the tapes so that they are vertical across the edge of the tailplane, pin the elevator in place, and bend the tapes and cement to the elevator. If you haven't done it before, to make it clear, the tape stuck under the tailplane is stuck on top of the elevator, and vice versa. Keep the tapes in the crack between the two surfaces free of cement and dope, to ensure free movement.

Sand the fuselage edges etc. and accurately mark the engine mounting holes, dowel holes, and the position of the undercarriage and bell-crank slot. Drill holes and cut out slot. Make wing seat from 1 in. wide strips of $\frac{1}{16}$ in. balsa, grain the short way, ensuring that the seat is square to the fuselage.

Bend the undercarriage from 14 swg. piano wire, bending the square U first then bending the legs out and finally the axles. Use a heavy pair of pliers and/or a small vice. Slide in place on the fuselage and bore the holes for the binding with a fine bradawl or a fine drill if you have one. Sew several turns of strong thread between each pair of holes and knot off, then rub cement into the thread.

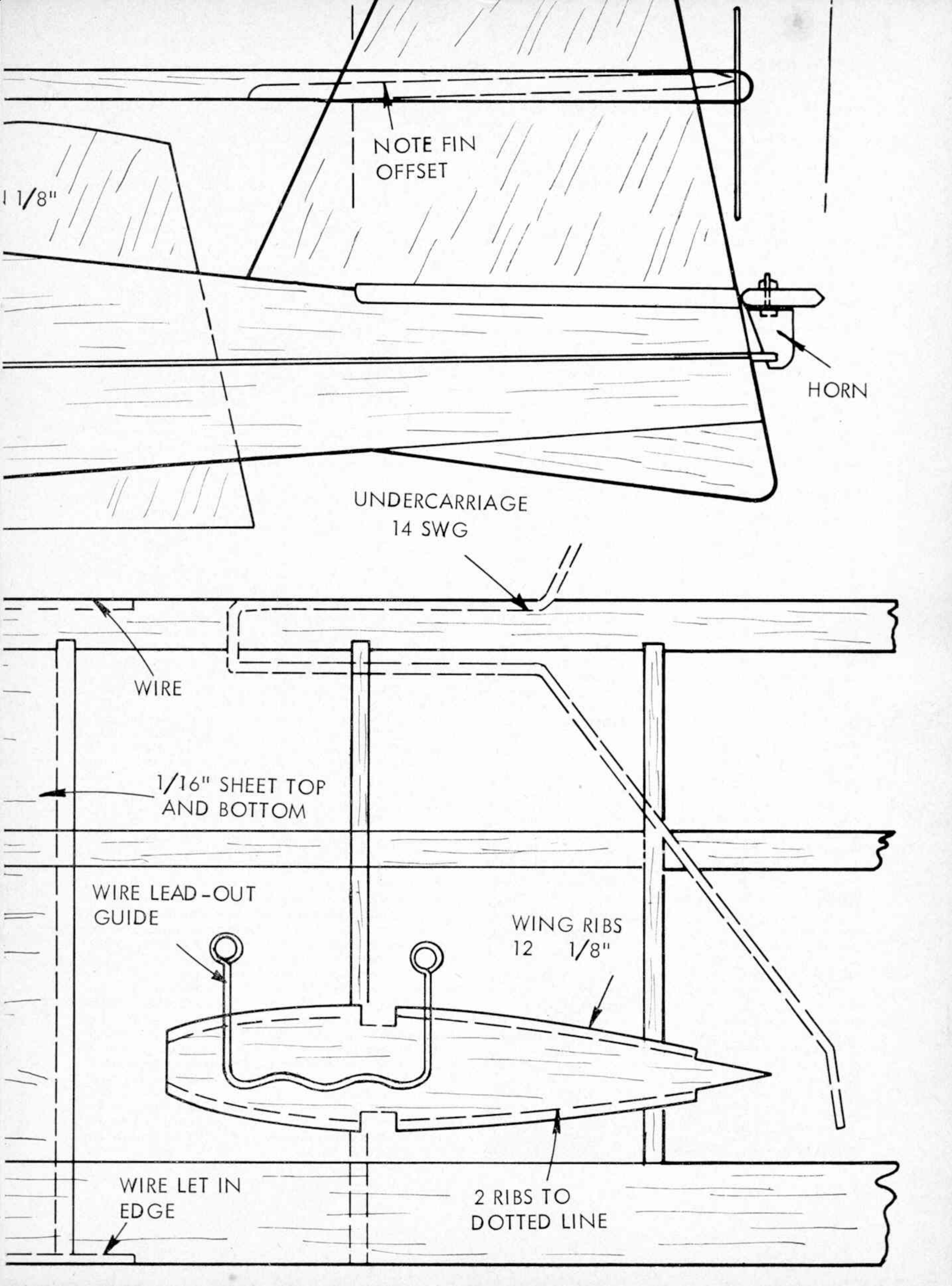
Cement in the two short dowels for the wing retaining bands, then firmly cement the tailplane in place, making certain that it is square to the fuselage from above and from ahead. Leave to dry thoroughly, before cementing the fin and sub-fin in place. Note the angle of the fin, which will tend to turn the model out of the flight circle and thus help keep the lines tight.

Sheet the wing centre-section with $\frac{1}{16}$ in. sheet top and bottom (grain the short way) and cement on two pieces of $\frac{1}{4}$ in. sheet to each tip rib, plus gussets in the tip corners. A wire line guide is needed on the inside (port) wing tip; this can be cemented in before adding the $\frac{1}{4}$ in. sheet or it can be pushed through and the guide eyes bent in situ after covering. Carve and sand the leading edge to shape, then sand the entire wing to produce a smooth framework for covering. Cut a little groove and cement a piece of wire on the l.e. and t.e. in the centre, to prevent the rubber bands cutting into the balsa.

Use heavyweight Modelspan to cover the wing, attaching it with tissue cement, tissue paste, P.V.A. glue, or Gripfix. Only two panels are needed, one top and one bottom. Smooth them evenly in place and allow the adhesive to dry. Lightly dampen the tissue with water to shrink it, and when dry apply two coats of clear dope.

The fuselage and tail are best tissue-covered, using lightweight tissue doped on. If preferred, they can be painted with two or three coats of sanding sealer, sanded well, and colour doped and/or fuel-proofed.

A commercial fibre bell-crank can be bought, or one made from $\frac{1}{16}$ in. ply or thin Paxolin or even Formica. The line hooks are bent from 18 g. wire and are best


NOTE FIN
OFFSET
1/8"
HORN
UNDERCARRIAGE
14 SWG
WIRE
1/16" SHEET TOP
AND BOTTOM
WIRE LEAD-OUT
GUIDE
WING RIBS
12 1/8"
WIRE LET IN
EDGE
2 RIBS TO
DOTTED LINE

secured by a soldered washer above and below the crank; it is difficult to bend the wire back underneath and still get free movement. The crank pivots on a 6BA bolt (nuts can be used above and below it to position it accurately) and the bolt is then secured with a blob of epoxy resin top and bottom, on the starboard side of the fuselage. Make sure it can swing freely without catching on the slot; file clearance if necessary.

Bend the elevator horn from a piece of aluminium etc. or make a ply horn and cement it in a slot cut in the elevator. The pushrod is 18g wire and should be bent to length so that when the bell-crank is central, so is the elevator. Soldered washers are again the best way of securing the ends. Aim for completely free movement of the whole system.

The wheels are also best retained by soldered washers each side; 1½ in. rubber balloon wheels are recommended for easier operation on the average grassed area.

Bolt the motor in place and mount a control-line tank on the starboard side of the nose, keeping the pick-up point as nearly level to the engine's spraybar as possible and the tank close to the engine and clear of the bell-crank. On the prototype model, the tank was just a shade above the engine centre line due to the E.D. Super Fury's rear intake position. This also necessitated bring the neoprene fuel line through the fuselage, as seen in the photos. Secure the wing in place by strong rubber bands stretched diagonally between the dowels (i.e. making a cross under the wing). It should be firm but capable of being knocked off in a crash.

The model should balance roughly on the front line position and a little ballast should be added to the nose if the balance point is more than say ¼ in. behind this line. Use a line length of 30-35 ft. for a 1 cc engine and about 40 ft. for 1½ cc, and use a propeller about 7×5 or 7×6 as recommended by the engine manufacturers.

Test fly on a windless day and keep away from electricity pylons. Lightweight Laystrate steel lines would be normal, but even if you use fishing twine, on a damp day, electricity pylons can be very dangerous.

Always start the model from the point of the circle when it is tail to wind, which means that for the first half-lap the breeze will help hold the lines tight while the model accelerates. Take off the ground if possible, but if hand-launching is unavoidable, the pilot should hold his arm out straight, pointing at the model, with the elevator neutral. Lots of crashes are caused by over-correction from hand-launches—or picking up the control handle upside down, so make sure that "up" really is "up" before signalling release!

DOWN TO EARTH (*continued from page* 501)

rotary hoes have come on to the market in the last twenty years which really mince the ground to bits by brute strength. They all need a tractor which has a power-take-off shaft to power them, and a great deal of power they consume, too. 'L' shaped hoe feet are driven to flail down into the ground to cut it and throw it against a breaker shield. The more stubborn the soil, the faster and harder the powered hoes can be driven to make sure the tilth is obtained on time. As is only to be expected, these machines produce results at the expense of ...... expense. A new set of hoe blades which could wear out after as little as one hard week's work, costs around £20. Rotary hoes require thorough maintenance and cannot cover the areas of ground in a day that the discs or rolls might be expected to.

Look out at the land

If one knows what to watch for, there is plenty of interest in seeing what sort of cultivations are going on in your locality. An expert tractor driver always makes a point of drawing his furrows down a field so straight that 'a bullet could be fired down it'. This is the mark of the good ploughman—along with good furrow slicing and turning, of course. Often a ploughman will set his furrows so that the lines run to the road—and his work has to stand the inspection of passers-by. If the field slopes away to one side, however, he may well set his plough lines to run up-and-down to assist drainage. In the autumn one can see drivers in difficulty working heavy land—perhaps using two tractors in tandem on a specially tricky spot. In the spring you will see plenty of tractors working longer and longer overtime as the sowing season comes to hand.

Knowing the countryside starts with knowing the soil. I never regretted the months I spent as a young man on contract driving. Left to myself miles from anywhere with a tractor and plough or other tackle, I rode my tractor—heaving with power, turning that part of the scenery from green to brown, grey or red. I found soils of all colours and textures. For company I had a thermos flask, lunch tin—and the ubiquitous flight of swooping gulls following my furrow. When I got expert enough to dare my plough lines to the roadside and could pilot the tractor over to the horizon as straight as a die, leaving the earth steaming from being turned and taking the fresh colour of the day's work, I got a satisfaction from the land that is hard to describe. When my work grew to be good enough to earn a few words of gruff appreciation from other country-men I knew I was starting to understand the soil. And the men of the soil.

PADEMELONS (*from opposite page*)

pretty colouring. This pademelon is a favourite pet with people, who like to have wallabies about their grounds.

The famous 19th century naturalist, John Gould, advocated: "that pademelons might be easily naturalised in England where, if in sufficient numbers in suitable forests and estates of the nobility and gentry, the novelty of these animals could not fail to appeal apart from being highly esteemed for the table."

This didn't take place, however, but some White-throated or Parma Pademelons were taken to New Zealand.

These kangaroos were introduced to Kawou Island in Hauraki Gulf off the North Island of New Zealand, thirty miles north of Auckland, in the 1870's. This was arranged by Sir George Grey, once Governor of South Australia, and subsequently Lieutenant-Governor and then Premier of New Zealand.

These pademelons thrive in their new home; in fact, within twenty years . . . "they were so numerous that they could be shot by the hundred by sporting parties without any real dangers of being wiped out."

But it was not so in their homeland, for in Australia they were ruthlessly hunted down to extinction.

In 1966 Dr. W. D. L. Ride, Director of the Western Australian Museum was examining skins of wallabies from New Zealand, when he decided that they belonged to the extinct Parma Pademelon. Subsequent investigation by zoologists of the New Zealand Department of Scientific and Industrial Research finally led to conclusive identification.

Since then the various zoos of Sydney, Adelaide and Perth, as well as the Healesville Sanctuary in Victoria, have all obtained members of the "back from extinction" perky pademelon family.