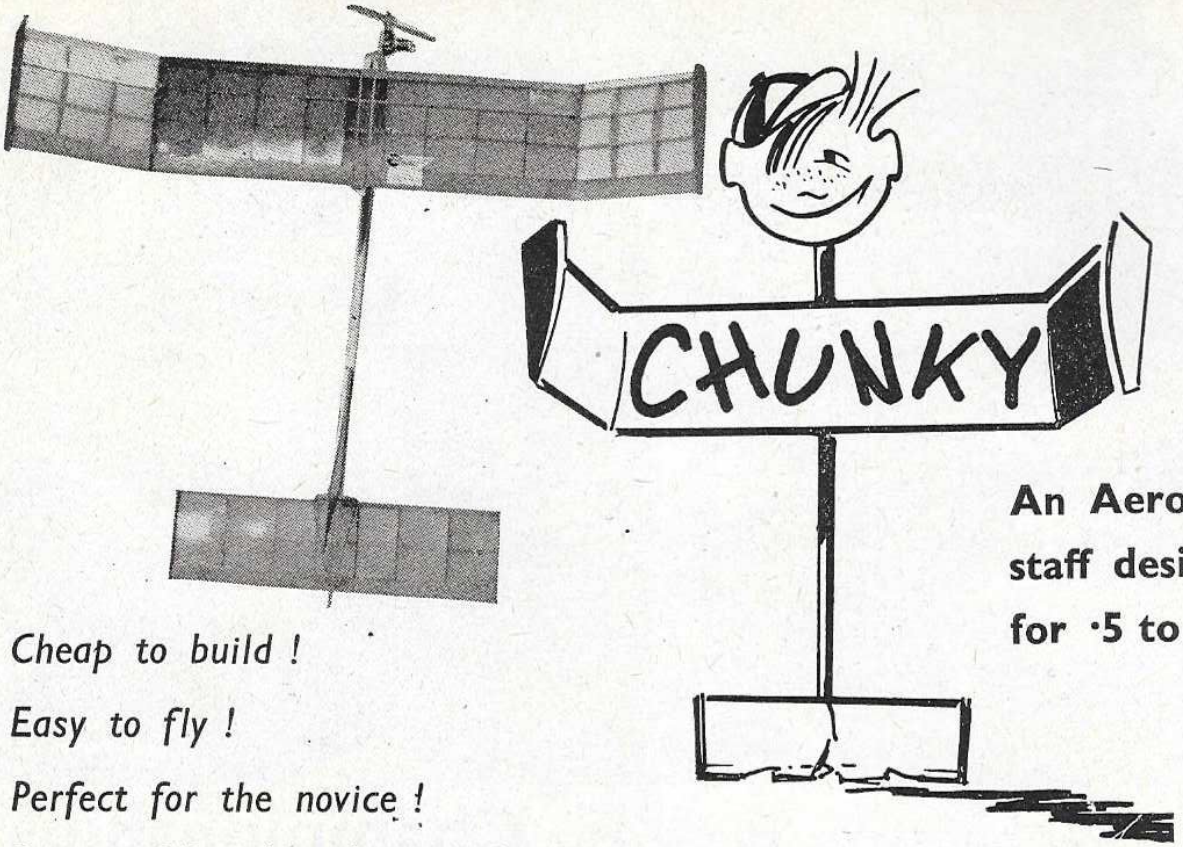


An Aeromodeller staff design for ·5 to ·8 c.c.

Cheap to build !

Easy to fly !

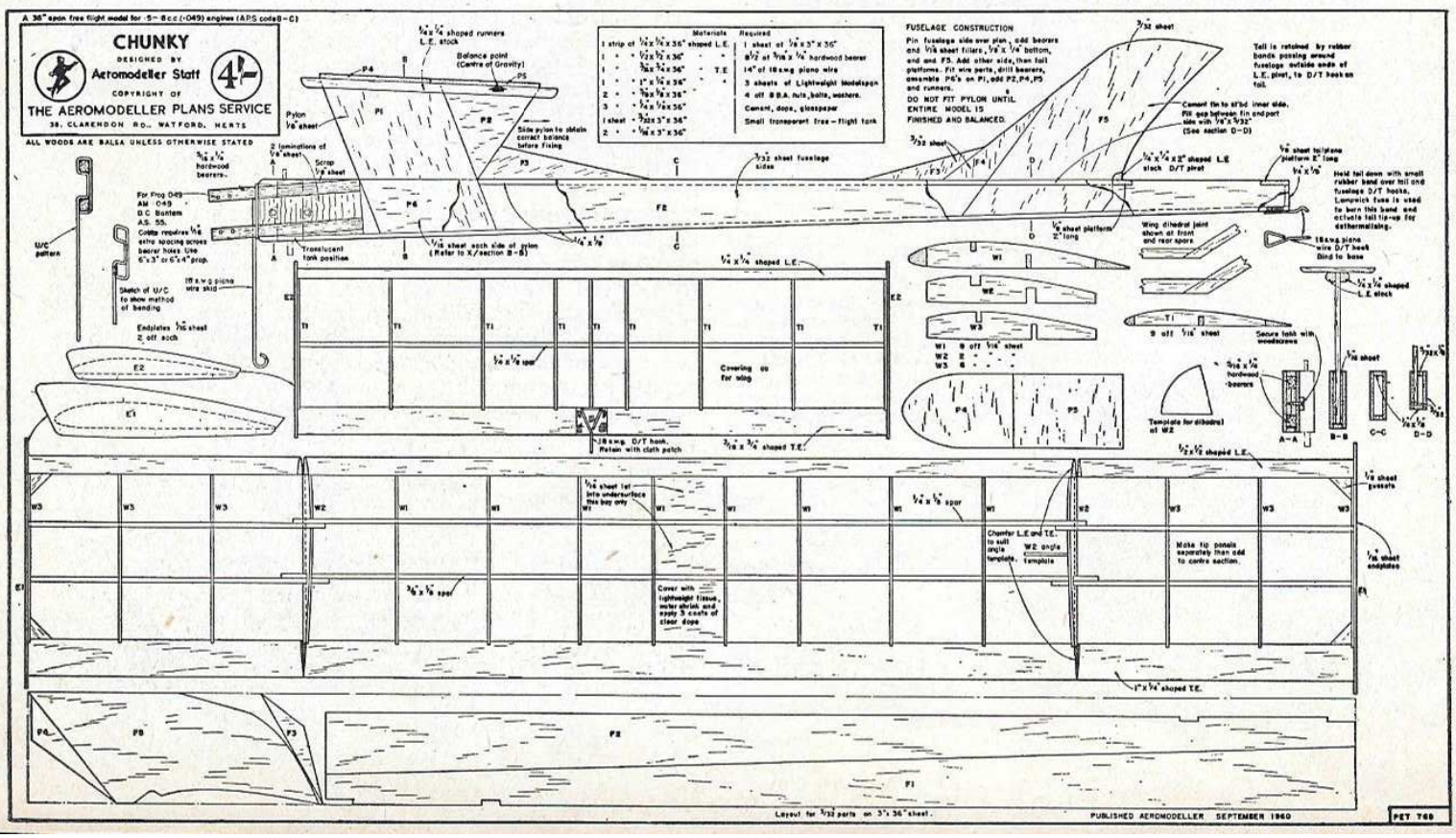
Perfect for the novice !

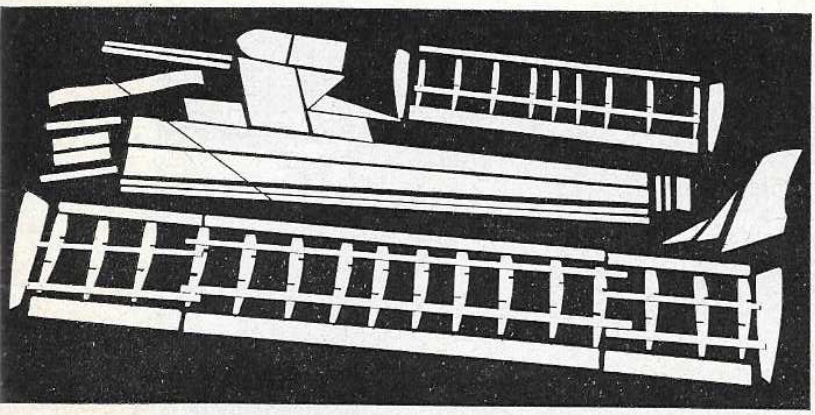
THE NEW .049 cu. in. engines are rapidly becoming popular with newcomers to our hobby, and many such novices have requested that we provide them with a special design to suit the new power units.

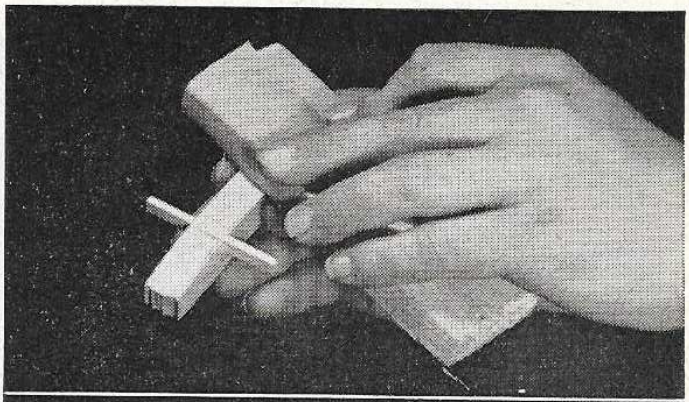
We realise that for real contest performance, any .049 powered model should weigh around 4-5 ounces, have light wings, and be trimmed for a near vertical climb. Let us state right at the beginning that *Chunky* is not of such a breed. Here we have a "toughie", easy to build very easy to fly, and still having good performance. We checked the prototype with the weakest of the .049's (no names—no pack drill!!!) and at a total weight of 8 ounces. By selecting such extremes we know that *Chunky* will fly well. The careful modeller can whittle the weight down to 6 oz. through use of medium/soft balsa and a "hot" motor will give best performances.

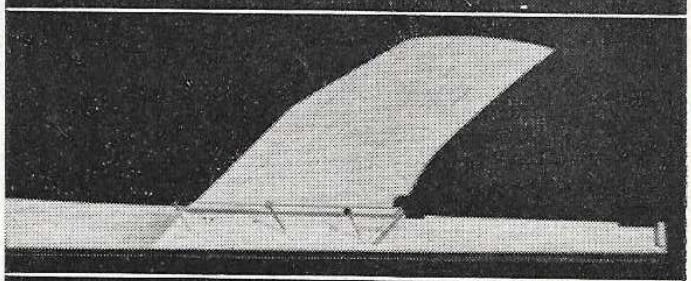
One must first study the plan thoroughly, with reference to these instructions to completely understand the method and sequence of construction. The model has been designed to be built on a standard schoolboy budget, so if you want to keep cost to a minimum follow the parts layout given on the plan. Fuselage sides F1., F2. are traced from the drawing using a straight steel edge and soft pencil. The tracing is turned over and placed on the 3/32 in. sheet and with a hard pencil this time, the outlines are followed, reproducing the fuselage sides on the wood. F1 and F2. are now cut out, again using the straight edge. Engine bearers should be cut to length from 5/16 in. x $\frac{1}{4}$ in. hardwood. The right hand fuselage side is pinned over the plan and the bearers double cemented over this in their angled down position. Two layers of $\frac{1}{8}$ in. sheet fill in the space between bearers, the outline for these being traced from the plan. Note that the wood grain here must be vertical. Once cemented the whole should be held in place with pins until quite dry. A length of $\frac{1}{4}$ in. x $\frac{1}{8}$ in. strip forms the bottom of the fuselage side, pins being placed either side to hold it vertical. The fin F5, should be traced and carefully drawn onto the 3/32nd. sheet as in the layout drawing, to economise on wood. F5. is cemented directly onto the *right hand* fuselage side, the bottom of the fin touching bottom of fuselage. A small length of $\frac{1}{4}$ in. x $\frac{1}{8}$ in.

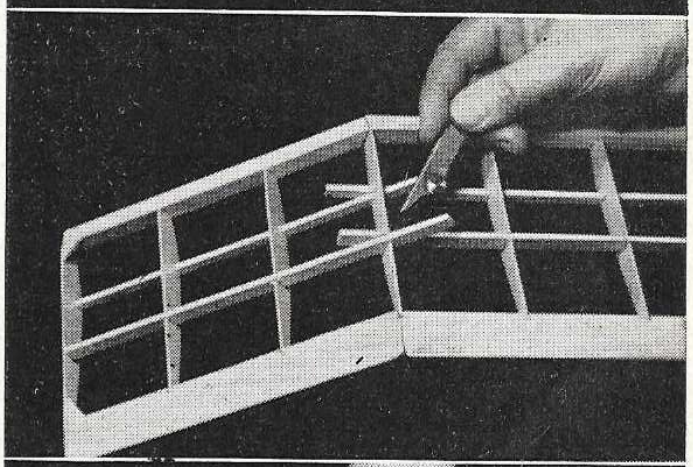
FULL SIZE COPIES OF THIS 1/6th SCALE REPRODUCTION ARE AVAILABLE AS PLAN PET 768, PRICE 4s. PLUS 6d. POST FROM PLANS SERVICE.

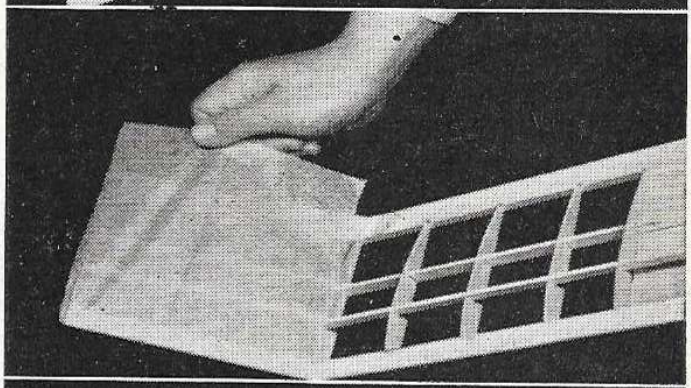


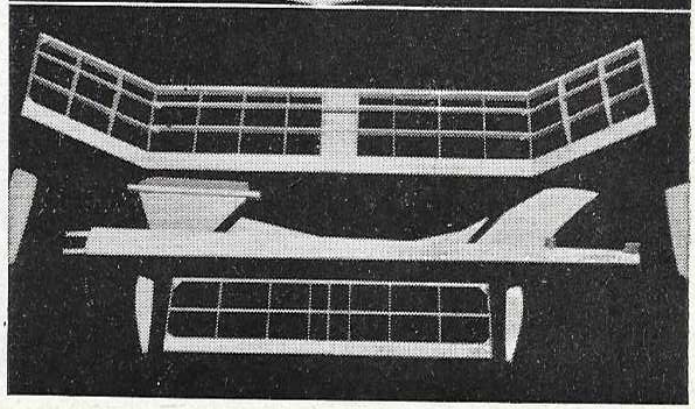












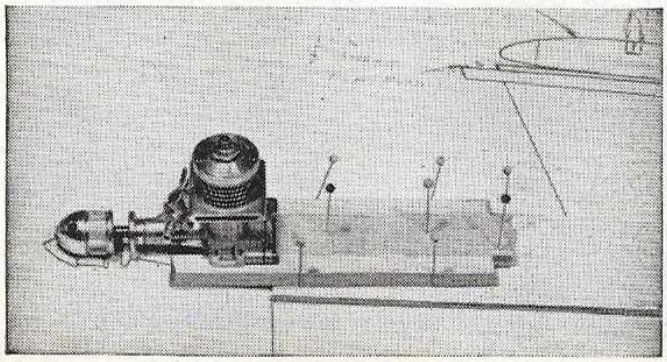
Above, the layout of all parts required to make Chunky. Right, top—glasspapering the wing ribs with abrasive wrapped around balsa block, and a length of $\frac{1}{8}$ by $\frac{1}{4}$ strip in spar slot to keep ribs in position. Next, fin being cemented onto starboard fuselage side and held until dry by pins. Base and stern pieces are already in position.

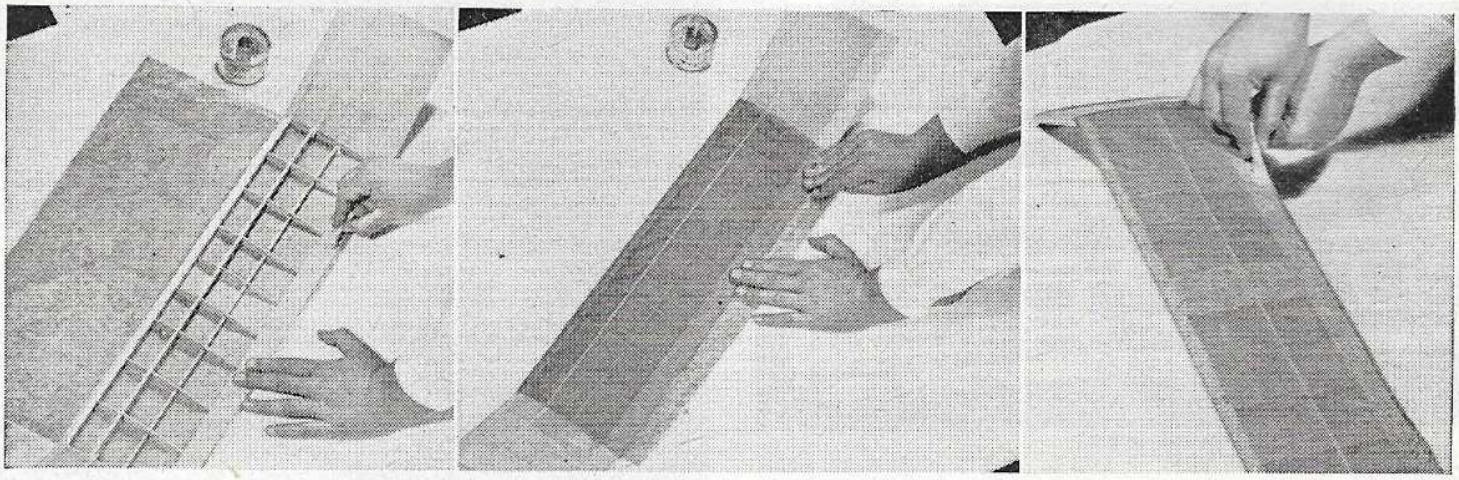
strip fits vertically at the extreme end of the fuselage. The left hand fuselage side can now be cemented in place. A $6\frac{3}{4}$ in. length of $\frac{1}{4}$ in. x $\frac{1}{8}$ in. strip is cemented between fuselage sides alongside and in front of the fin (trimmed to 5/32 x $\frac{1}{8}$ at this part) providing a support for parts F3., F4. which are duly traced, cut, and cemented in place. The two platforms for the tailplane can be cut from scrap strip or $\frac{1}{8}$ in. sheet. They fit into two cutouts aft of the fin, and must be at right angles to the fuselage side. A short length of 18 s.w.g. piano wire is bent into the hook shape shown at the rear end of fuselage drawing, and then attached to fuselage with strips of thin cloth and plenty of cement.

It should be mentioned here that the pylon and fuselage top are *not* cemented in place until the centre of gravity has been accurately positioned and the pylon is slid along to correct this to that of the drawing. To build the pylon, all parts P.1-P.6 are traced and cut out. P.3 can be put to one side as this will not be needed yet. P.1 and P.2 are cemented together absolutely flat over the plan. Two pieces of 1/16 in. sheet P.6 fit, one either side, at the bottom of the pylon. Pieces P.5 and P.6 are similarly cemented together flat over the plan. When dry, a centre line is drawn lengthwise down the pylon top (P.4 and P.5) and this is cemented to the pylon upright with a match box on either side, until dry. Wing band retaining strips are cut from $\frac{1}{4}$ in. shaped excess tailplane leading edge stock and cemented in place either side of the pylon upright/top junction, with about $\frac{1}{2}$ in. extending at each end. While the $\frac{1}{4}$ in. shaped strip is being used another 2 in. length can be cut to fit in the cut-out at fin base and act as a tailplane stop and pivot. The fuselage and pylon are now complete but for a few details such as the wire skid which is made from 18 s.w.g. (or 16 s.w.g. if you have any) and requires a little skill in bending. It is held in place by strips of cloth and plenty of cement as before. The drilling of the engine bearers entails placing the engine squarely on the bearers with rear of crankcase just forward of landing skid. With a friend holding the engine and model firmly, two holes can be drilled and then bolts inserted to hold the engine while other holes are located. Forward of the pylon and above the upper bearer, can be filled in with scrap $\frac{1}{8}$ in. sheet, and sanded down to follow fuselage contours. A small free-flight tank of the Warneford or M.S. type can be fitted to the port side of fuselage nose, being held by small screws.

Before commencing wing construction, plywood wing rib templates must be made, three for the main wing. W1, W2, W3, are traced onto ply and cut out with a sharp modelling knife. The templates are sanded accurately to correspond with the outlines given on the plan, and are then cut or drawn round, on 1/16 in. sheet. Eight W1 ribs

Right, centre, cutting away excess spar at dihedral joint. Next, wrapping over tissue on one wing tip and pulling down onto pasted TE if tips are covered first. Bottom, completed parts before covering; note endplates, attached after covering. Below, bearers cemented in place, the space between is filled in with two layers of $\frac{1}{8}$ in sheet





Above, left, after covering lower wing surface, uppersurface TE/LE and outer ribs are pasted and tissue pulled down, centre. Far right shows pasting down of overlap

are required, two W2, and six W3. The ribs are cut out, and pinned together as shown in photo, making sure that bottoms of all ribs are level and the ends are lined up. A short length of ¼ in. x ⅜ in. strip is placed in the spar slots to keep ribs in position; then with glasspaper wrapped around a block of balsa or matchbox, abrase to make all ribs identical with each other and one of the ply templates. The pieces of strip balsa are removed and an ⅛ in. flat file inserted to square up slots.

The 1 in. x ¼ in. shaped trailing edge strip can now be cut to length for the centre section and notched to take ten ribs. Shaped ½ in. x ½ in. leading edge can also be cut to length. Greaseproof or tracing paper should be laid over the wing plan if it is wished to preserve this. Leading and trailing edges are pinned down together with a length of ⅜ in. x ⅛ in. strip, in the rear spar position; note here that both spars are longer than LE/TE and pins are placed *either side* of spar and *not* through. Eight ribs W1. fit over spar and must be vertical; a try-square or matchbox can be used to check this. Upper ¼ in. x ⅛ in. spar cements into front slots. When quite dry the structure is removed from plan to make way for an outer panel. This follows the same procedure of cutting LE's, TE's and notching the latter. Spars are again longer than LE/TE to make dihedral joint. LE, TE and rear spar are pinned down and three W3 ribs cemented in position. Upper spar and two ⅛ in. sheet gussets (to strengthen outermost rib) are added. The other wing panel is made in exactly the same way.

The Dihedral joints need an explanation for those not having experience of this type, and are illustrated well in the photo. Innermost ends of the outer wing panel TE's, LE's must first be chamfered to the dihedral angle, a template for which is given on the plan and can be cut out and pasted onto a piece of sheet balsa. Chamfering is best done with a modelling knife or razor blade rather than glasspaper, to obtain a flat edge. One of the outer wing panels is mated up to the centre section at 4 in. dihedral, and the excess spar is carefully trimmed away as shown in photo and drawing beneath rib outlines on plan. This is repeated for the other panel, and then centre section is pinned down and outer panels cemented permanently at 4 in. dihedral, using matchboxes to prop up panels. When completely dry, wing is removed from plan and undersurface between middle two ribs of the centre section is covered with 1/16 in. sheet; note grain direction.

Tailplane ribs are made in the same way as those of the main wing, except that the template is made from T1 outline, and there is only one spar slot.

Its construction is also the same as that of wing (centre section) but for the lack of an upper spar. When complete and removed from plan, an 18 s.w.g. wire hook of the type used on the fuselage is bent and held onto the trailing edge by cloth strips and plenty of cement.

Endplate outlines E.1, E.2 for wing and tailplane are traced onto 1/16 in. sheet and cut out, there being two off of each. The dotted lines indicate position of endplates on wing and tailplane ribs. Note that endplates are *not* attached until model has been covered. Before covering any surfaces they must all be lightly smoothed down with glasspaper.

Covering can be accomplished very quickly by "wrapping over" tissue on all flying surfaces. Lightweight Modelspan was used on our original model; colours are red centre section/pylon/fin/tailplane, and yellow fus./wing tips/endplates, for easy sighting in the air and on ground. Centre section is dealt with first; cut a piece of tissue that will cover the undersurface and wrap over the uppersurface with a small overlap all round. The undersurface of the trailing edge is "Gripfixed" first and the tissue laid onto this with a ⅛ in. overlap; if tissue has a dead straight edge, no overlap is necessary. The outermost centre section ribs and the leading edge are now pasted and tissue pulled down and wrinkles smoothed out. Uppersurface of trailing edge and outermost ribs are pasted and tissue pulled over and down as shown in photos. Again, wrinkles are smoothed out with spanwise and chordwise pulls of the overlapping tissue. This overlap is then trimmed down to ¼ in. width and the extreme edge of T.E. pasted. Overlap folds over onto pasted area. Overlapping tissue at outermost ribs is completely trimmed away. The wing tips and tailplane can be covered in exactly the same manner as all are parallel chord structures. Endplate outlines are cut out of tissue ⅛ in. oversize all round and nicked at ½ in. intervals, doped directly onto the endplates. Now fit the endplates in place with cement. Water spray all covering lightly to shrink the tissue before clear doping.

Fuselage outlines are cut from tissue with similar overlap to that of endplates, and doped on directly. Bottom of fus. covering does not have overlap, excess if any, being trimmed away with a very sharp razor blade. Each side of pylon can be covered with one piece of tissue, with ⅛ in. overlap at front, back, and top. The extreme ends of wing rubber band retaining strips are not worth covering due to their odd shape, but brushed over with sanding sealer, as are the top of pylon platform, tailplane platform and engine bearers. Fin is covered with two pieces of tissue, and the overlap should be nicked to dope down round the curved outline.

When wing and tail are doped to satisfaction (about 3 coats) and the fuselage, fin and pylon are also finished, fit the engine and tank, then assemble the model by push fitting the pylon in place. Balance the model by suspending it on the finger tips at the point indicated as the Centre of Gravity.

Slide the pylon back and forth until the model will balance with the fuselage level. Then mark the pylon position and dismantle the model so that the pylon can be firmly cemented in place. Now fill the fuselage top with ⅛ in. x ¼ in. and fit P.4 tissue cover and dope to finish the model.

We used 6 x 4 and 6 x 3 nylon props to test *Chunky* and following glide tests which called for no other alternations, made the first test flight in blustery conditions. The immediate impression is that chunky lives up to its intentions of being an all-weather flier. Itwill roll out of trouble, withstand a tumble into the ground or hawthorne bushes (our's is a rough ground) and with any .049 it will turn right (better) or left depending on your warps and rudder trim.

No claims are made for this design as a contest winner—but for for the novice wanting to learn how to fly pylon type models, it's the ideal. Moreover, the cost of construction is only 8s. 5d. for *all* parts including nuts, bolts and tissue *less* dope, cement and tank. So for about 13s. (current British prices) plus your engine, you can get hours of fun flying *Chunky* on the local field.

Below, left, Chunky with A.S.55 and Warneford fuel tank. Centre, don't forget to light the dethermaliser fuse, otherwise you will not see the tailplane tip-up, or perhaps the model, ever again ! ! !