

Although the 'Tinker' was first 'doodled' on the back of an envelope some four or five years ago it has taken until now for it to materialise into an actual flying machine. The doodle itself resulted from the successful test flying of the 'Tyro' S/C design and the thoughts that, with some modifications, it would adapt to a biplane.

Fortunately the wait proved well worthwhile as the 'Tinker' has proved itself to have the same pleasant flying characteristics as its forerunner. It is equally suitable for S/C or two/three function lightweight multi radio equipment or, with its inherent stability, would be satisfactory as a free-flight model (if it is permissible to mention

modeller I will deal with the construction in detail. One of these days I am going to design a 'typical' multi aerobatic model and then I shall be able to state quite simply—construct in accordance with the drawings. But, until then:

Familiarise yourself with the drawing and instructions and cut out all sheet parts ready for assembly. P.V.A., white glue is recommended for all the construction except for plywood to hardwood engine bearer joints and these are better made with an epoxy glue. Take care in choosing spars, longerons, fuselage sides, wing trailing edges etc. of equal hardness and density etc. when they are paired.

**A 45 inch span sport  
for single channel or  
2-3 function propeller  
radio control and 1.3**

**By DAVID BODDING**

# TINKER

such things in this magazine). With single channel radio fitted the 'Tinker' has a very low wing loading and is slow flying with a very 'floaty' glide ideal for those calm summer evenings when you want a little relaxed easy flying. However, when a stronger wind has to be contended with it will be necessary to modify the trim of the 'Tinker' by introducing a little down elevator and/or increasing the wing loading by adding weight under the *balance* point. This is a technique used a lot in slope soaring but it can be equally effective for other forms of radio control flying.

The 'Tinker' has the ability to hold a very tight turn, particularly to the left, without losing height provided that some up elevator can also be introduced. It will perform manoeuvres in the looping plane with very low power but it is difficult to get it to roll except for barrel rolls. Surprisingly, inverted can be held quite easily when two function (rudder and elevator) radio is fitted. I have no doubt that by reducing the dihedral, adding ailerons, increasing the power and 'beefing up' here and there the model could be made much more aerobatic. This, though, is not the object of the exercise and the 'Tinker' would lose its easy relaxing flying characteristics and that would be a pity. There are enough of the 'hot rod, ton-up' type models about and we all need to 'do our own thing' in a quiet way occasionally.

## Construction

Because the 'Tinker' will I hope, be built by the relatively inexperienced

## Fuselage

Glue to the 1/16 in. sheet sides the 3/16 in. square longerons and uprights, the 3/8 in. nose doubler and 3/16 in. lower fuselage and cabin area doublers. When the sides are thoroughly set, mark out the positions and glue on the engine bearers, pre-drilled to receive engine plate, making sure that these line up with one another. Glue in position the 1/4 in. cabin sides on to the 1/16 in. sides and the 3/16 in. sq. longerons.

Glue the 1/8 in. plywood undercarriage leg positioners to each side noting that the left and right hand positioners differ slightly. The 1/8 in. plywood undercarriage plate can also be drilled at this stage, the staggered holes matching the slots in the positioners.

Make up formers F4 and F5 from balsa strip as shown on the plan. Glue the formers F1, 2, 3, 4 and 5 in position to both sides of the fuselage, ensure that all formers are square and leave aside until set. Bring together the rear ends of the fuselage sides and glue, making sure that both sides have an equal curvature. Add the top and bottom 1/8 in. ply, 1/8 and 1/16 in. balsa sheeting. Glue in position the sub fin R4.

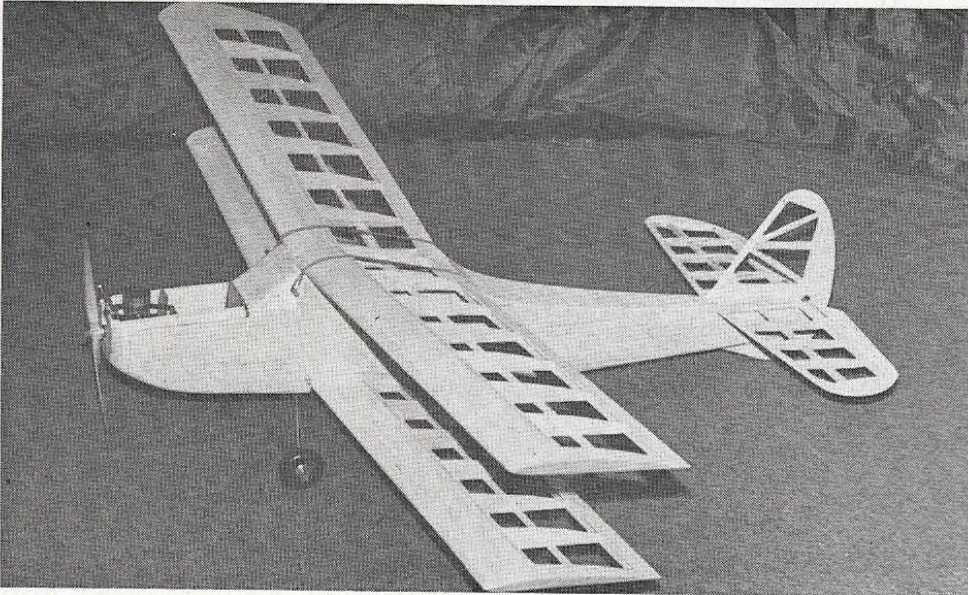
Fit the scrap of T.E. stock to the top of the cabin area and the 1/2 in. sheet to the cabin front. Sand the whole fuselage thoroughly and apply sanding sealer, sanding between coats until a perfectly smooth finish is obtained.

If single channel radio is fitted, with torque rod rudder operation, a 1/2 in. block can be used to replace the lower part of the rudder and the tailplane can

Full-size copies of this plan, shown here at 1/5th scale reduction, are available from R.C.M.&E. PLANS SERVICE, 13/35 Bridge Street, Hemel Hempstead, Herts, price 50p. Please quote plan RC/1147 when ordering.







be removable for access to the escape motor.

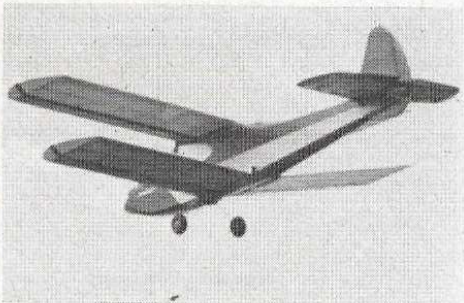
### Wings

Upper and Lower wings are constructed in two sections and joined together with dihedral braces. After soaping the drawing, pin down a piece of 1 in. x 1/16 in. trailing edge. Cut 3/16 in. square hard lower spars to length and pin in position.

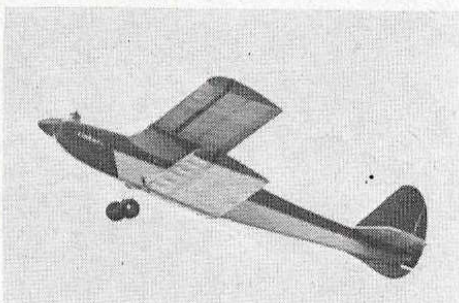
Glue 1/8 in. and 3/32 in. wing ribs in

balsa tips and sand together with the leading edge to smooth contour.

Construct the second upper and lower panels in a similar manner. Note that the lower wings are slightly shorter in span than the upper wings. When both panels are set, cut slots in the first three ribs to receive the dihedral braces. Check these for accurate fit and then glue into position on one wing panel. When dry, add the second wing panel to the projecting dihedral brace, glue



positions shown and check that all are vertical except for the root rib which should be angled from the root rib template. Glue the top spar in position. Fix the top trailing edge in position and glue the leading edge in place. When dry, remove from the plan and add 1/16 in. sheet vertical webbing from top to lower spar. Sheet in the upper surface of the wing from the rear of the top spar to the leading edge and from root rib to tip. Add 1 in. triangular soft



thoroughly and pin down. Prop up the opposite wing tip to 5 in. and 4 5/8 in. to obtain the correct dihedral angle. Hold firmly in position until dry, pinning the two root ribs together. Sand and prepare for covering and glue trailing edge stock reinforcement. Interplane struts can be fitted if desired but the form of wing fixings should allow the wings to 'knock off' without risk of damage. The struts are not required structurally.



### Tailplane

Construct the basic frame from 3/16 in. x 1/4 in. and 3/16 in. x 3/8 in. or 3/16 in. x 3/8 in. or 3/16 in. T.E. stock as shown on plan, remembering to prop up T.E. to allow for symmetrical section. When dry remove from plan and add 1/8 in. square to rib position and 1/8 in. sheet to centre section on airfoil section.

### Fin and Rudder

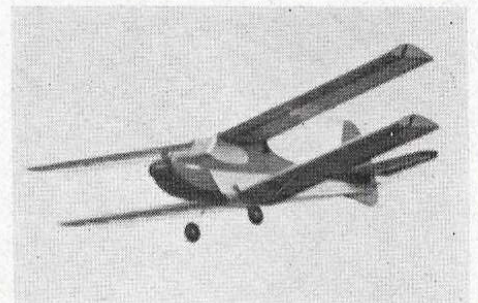
This is straightforward construction of 3/16 in. stock and 3/16 in. sheet parts sanded to slightly tapering T.E. and rounded L.E.

### Covering and Finishing

The model should be covered in lightweight nylon for maximum strength although heavyweight tissue or Solar film is satisfactory. Pin down all flying surfaces when doping to prevent warps. Colour dope should be kept to a minimum as this represents wasted weight, but the model should be thoroughly fuel-proofed to avoid seepage of fuel into the structure, particularly in the fuel bay.

### Test Flying

Once the engine and radio equipment



has been installed and everything tested and operating 100 per cent it is time to consider flying.

Provided the C.G. is correct, there are no warps and the incidences are as shown, there should be little to worry about. There should be no need to test glide. Have the engine running at least at three-quarter power and launch straight and fairly fast. Rudder and elevator movements should be restricted to about 1/4 in. turn either way. Trim out turning tendencies on the glide with rudder and turn under power with side thrust. With larger engines it may be necessary to increase the amount of down and side thrust. Adjust elevator trim according to wind conditions and penetration required, adding additional ballast also, if required, to the ballast point.

Your 'Tinker' should give you many hours of enjoyable and trouble-free flying provided you always check thoroughly your model, equipment and flying area before each flying session.