

TRU-FLITE

TIGER-MOTH

BUILDING INSTRUCTIONS

This series of "VERON" Flying Scale Models of popular and world-famous planes are the essence of simplicity and make ideal beginners' models giving initial experience in construction and assembly. You need only a "VERON" balsa knife, balsa wood cement, small half-inch pins (called "Lillipins" in the shops) and a pair of small round-nose or side-cutting pliers, thread and fine garnet paper. A tube of tissue paste, a small jar of shrinking dope and a soft brush will complete your requirements.

Study the plan carefully and identify all the parts on the printed sheets of balsa. Familiarize yourself with the sequence and method of construction. Cut out all the balsa parts, taking great care when cutting out the $\frac{1}{8}$ " notches in the formers. Cover the plan with waxed or greaseproof paper and pin both to a flat building board. The fuselage is built by constructing two lower sides of $\frac{1}{8}$ " square balsa directly over the plan, these being joined by five basic formers. This system of construction by inserting formers of a pre-determined width obviates the necessity for a fuselage top view as the alignment can be checked by sighting along the structure. The wings and tail plane are similarly constructed over the plan on the flat.

FUSELAGE.

Pin the lower member K.1 in place directly over the plan, then build up one complete side of $\frac{1}{8}$ " \times $\frac{1}{8}$ " as in Diagram 1, inserting stern gusset K.2 and dowel securing plate K.3. Make neat joints, double coating with cement, the first coat being allowed to dry into the wood before applying the second. Secure all struts in place with pins either side of the wood, never through it. When quite set, move from the board and build a second identical side, where possible using the same pin holes to locate strips. The two sides when complete are joined together by basic formers F.6, 8 and 10. Partially incise longerons fore and aft of F.6 and 10, filling incisions with cement and drawing front and rear together with F.4 at front and two K.2's chamfered at rear. Insert gussets 'Y' and two 'Z's to strengthen longerons at these incisions. Then insert remaining formers F.5, 7, 9, 11 and 12 with chamfered F.14 under nose. Cut lower cross-pieces A, B and C to lengths indicated on plan and insert BUT DO NOT ADD F.15's to diagonal struts yet. For all this, see Diagram 2. At all times check the structure for warps and squareness.

Add laminated formers F.1, 2 and 3 to create nose block and when dry, carve and sand to shape. Note that plastic nose button will recess into F.1 and 2 to permit spinner to fair nicely into nose. Next add all $\frac{1}{8}$ " \times $\frac{1}{8}$ " stringers to top and nose of fuselage, checking the alignment. Between tops of F.7 and 8 and between F.9 and 10 the stringers are omitted to create two cockpits. A coaming of thin post card is prepared from template given on plan and cemented in place. Similarly prepare two nose side cowlings to template BUT DO NOT LOCATE UNTIL AFTER positioning the undercarriage and centre section of the wing and COVERING.

UNDERCARRIAGE.

Bend undercarriage wires to shape as indicated on the plan. Locate the rear struts first by binding with thread coated with cement to strut U.1 leaving $\frac{1}{8}$ " of its ends free to permit slotting and cementing into K.1. Front undercarriage struts are bound to longerons where indicated. Bind the two sets of struts together with thread and cement or with fuse-wire touched with solder. Add strips of rolled gummed paper tape to thicken main struts and add wrapped fairings of post card to template given. The wheels are retained by blobs of cement, soldered washers or pieces of rubber tubing off single strand radio wire. Bend tail skid and bind to underside of tail bay.

WING CENTRE SECTION.

Construct the centre section from three ribs C.S.1 with two strips of $\frac{1}{8}$ " \times $\frac{1}{8}$ " and one of $\frac{1}{8}$ " \times $\frac{3}{8}$ ". Bend two 'N' shaped struts from 20 s.w.g. wire using fuselage side view as template with extensions for binding to front top longerons and trailing edge — see Diagram 3. ACCURACY IN BENDING THESE STRUTS TO CORRECT LENGTH IS ESSENTIAL. Bind the centre section in place as indicated. The wire struts may be braced with strips of $\frac{1}{8}$ " \times $\frac{1}{8}$ " sanded to streamline and secured by wrapping with gummed paper tape. Finally add gusset 'X' to fuselage both sides. If desired the whole centre section may be covered with thin card for rigidity.

WINGS.

Pin leading edges of $\frac{1}{8}$ " \times $\frac{1}{8}$ ", spars of $\frac{1}{8}$ " \times $\frac{1}{8}$ " and trailing edges of $\frac{1}{8}$ " \times $\frac{1}{8}$ " in place over the plan. Naturally the spar is set on its edge and the other two members flat. Then add tip pieces W.1, with extra pieces W.2 for the upper wing panels only. Erect all ribs R.1, 2 and 3 where indicated. Base ribs R.1 and R.3 must be set at slight angle to allow for 1" dihedral on each panel. Spars have their ends tapered from $\frac{1}{8}$ " to $\frac{1}{16}$ " at W.1. The lower wing panels have the trailing edge chamfered to R.3 as shown on plan. Only when quite dry, raise from the building board and sand all edges smooth. Do not join to fuselage and centre section until after covering.

TAILPLANE.

Good clean and neat butt joints are essential on the tailplane structure to prevent warps. Pin the spar T.1 in place first then the jointed leading edge T.2 and 3 with centre piece T.4. Next the rear parts T.5 and 6. All ribs are then added cut from spare $\frac{1}{8}$ " \times $\frac{1}{8}$ " or trimmed $\frac{1}{8}$ " \times $\frac{1}{8}$ ". Do not omit to save four $3\frac{1}{2}$ " lengths of $\frac{1}{8}$ " \times $\frac{1}{8}$ " for the interplane struts. Only when quite set should the tail be raised from the board and sanded smooth. Do not cement the fin in place yet.

COVERING AND ASSEMBLY.

Cut tissue into strips about $\frac{3}{8}$ " wider all round than the part to be covered. Use tissue paste or photo mountant paste as the adhesive. Apply paste only to the outer edges of the part being covered — the fuselage sides and bottom in lengthwise strips and small panels over the stringers. Do not adhere tissue to individual ribs on wings and tail but only around the edges. When all these parts are dry, water-shrink to initially shrink out the covering wrinkles. Use a modellist's spray (or old scent spray) — never brush the water on. Allow all to dry naturally — not in front of a fire.

Cement firstly the two lower wings in location with R.3 against K.1 with stub leading edge and spar in slots. Rest the wing roots upon the edge of a table so that the fuselage lower longeron at K.2 is 1" above the table and with a 1" block under each wing tip to give 1" dihedral each side. This set-up will create the correct incidence. Now cement the upper wing panels to the centre section with R.1's flush against C.S.1, leading and trailing edges level with each other. Note that the sweep-back angle of the top wing is slightly greater than the lower wing. Check the length of the interplane struts (as shown in plan side view) and cement firmly in place between wings against upper and lower wing surfaces so giving same dihedral to upper wing as the lower.

Cement tailplane in position checking it for warps and symmetry with the fuselage, then the fin upright and straight on the centre line of the fuselage, also fin fairings F.F. When quite set, give the whole model a coat of clear wing shrinking dope then an extra coat to the fuselage. Now add formers F.15 to fuselage sides above diagonal with card cowlings; dope these, too. Check all flying surfaces for warps whilst drying. Any colour scheme must be very lightly applied. The usual service scheme is all silver or with yellow bands around the fuselage immediately behind the fuselage roundel and just inboard of the roundels on the upper and lower surfaces of the wings. The roundels and fin flashes may be painted on or transfers applied. Cut out two windshields to pattern given and lightly cement in place. Finally, add the two tailplane braces of $\frac{1}{8}$ " \times $\frac{1}{8}$ ". The rigging is now best sewn into position using stout black thread and fine needle. Knot around the top and bottom of the interplane struts, through the base ribs R.3, knot around the centre section struts — covering each knot with cement. The rigging scheme can be judged from the illustration on the plan and the carton.

MOTOR AND NOSE ASSEMBLY.

The motor is made up of one 9" loop of $\frac{1}{8}$ " wide rubber strip (18" length) with the ends securely tied with a double knot. The shaft is prepared as shown, ensuring the loop is small enough to pass through the $\frac{1}{8}$ " hole in the nose. Thread on the plastic bush, cup-washer and propeller then bend the shaft end to engage in the slot in the nose of the propeller boss. Add the rubber motor and secure by closing the wire loop with tightly tied thread. Lubricate the motor (available in tubes from your local model shop). Insert the rubber loop down through the fuselage or pull through with thread on a hairpin and engage it with the $\frac{1}{8}$ " dowel through F.18. This can be aided by cutting away a small panel of tissue on the underside of the fuselage below the anchor dowel. The dowel is not cemented in place but made a close fit to permit motor replacement.

FLYING.

The model should balance level when supported upon the fingers at the point of the wing tips. If not, add plasticine to nose or tail as required.

Test glide over grass in calm windless conditions. Launch forward, slightly nose down at normal gliding speed. If the model dives, add $\frac{1}{4}$ " wide gummed paper tape trim tabs to the trailing edge of the tail and bend up slightly. If the model stalls (noses up, then dives), add tabs, but bend down slightly. Try to achieve a nice even glide. Turns can be similarly achieved. Wind on 50 turns to motor and launch; if satisfactory, increase the turns by 50's to maximum of 350. As power increases, add small pieces of balsa or card above nose bush to give "down thrust."

When you have completed this model, ask your dealer to show you the others in the "VERON" range of Flying Models and for our latest free illustrated folder.