

TRU-FLITE

HARVARD

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 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 in two halves, the port or left hand side first, consisting of a basic keel constructed mainly of standard strip with half semi-circular formers to which the opposite half formers are added after lifting from the board, so obviating the necessity for a fuselage top view. The wings and tailplane are similarly constructed over the plan on the flat.

FUSELAGE.

Pin the lower keel member K.5 in position, then the remaining keel members made of standard $\frac{1}{8}$ " x $\frac{1}{8}$ " and $\frac{1}{8}$ " x $\frac{1}{4}$ " strip where indicated with neatly jointed gussets K.1, K.2, K.3 and K.4; see Diagram 1 on plan. Double coat all joints with cement, the first coat being allowed to dry into the wood before applying the second and completing the joint. Erect the left hand halves of all formers, N.3 and F.1 to F.7, securing erect with pins either side whilst setting. Laminate N.2 to face of N.3. Set $\frac{1}{8}$ " x $\frac{1}{8}$ " stringers in slots from N.3 to rear K.4, chamfering to make neat joint against K.4, except topmost stringers.

SPECIAL NOTE.

There is an abrupt change of section from the rear cowl ring former F.1 to the oval section at F.2. The side stringers should therefore be cracked or butt-jointed at F.1 and F.2.

Only when quite set should the fuselage half be raised from the board and the opposite half formers be added, again laminating N.2 to N.3 and front of cowl ring N.1 to face of N.2. Now add starboard side stringers, checking fuselage for warps and symmetry. Finally insert angled formers F.8 and F.9 to form front and rear of cockpit aperture, chamfering their lower edges to fit against F.3 and F.5 respectively, then add top stringers from N.3 to F.8 and F.9 to F.7. Note that second set of stringers above centre line form cockpit rim between F.3 and F.5.

Add N.4 to centre of N.1, checking that centre $\frac{1}{8}$ " hole is a tight fit on plastic nose bush. Insert dowel anchor pieces K.7 between mid-stringers aft of F.6, coating edge of hole with cement to ensure tight push fit on $\frac{1}{8}$ " dowel for rear rubber anchorage. Add tailplane supports K.6 to rear of F.7. Do not add cellophane to cockpit until after covering.

With fine sandpaper around a hardwood block, sand smooth all the stringers and sand round the front edge of the laminated cowl ring. Cut a strip of post-card or cartridge paper 1" wide and 7" long and cement around cowl between N.2 and F.1.

Bend wire tail wheel loop to shape and bind to rear lower longeron with cemented thread. Fill in the loop with scrap balsa firmly cemented to simulate a tail wheel.

WINGS.

Lay leading edge strips of $\frac{1}{8}$ " x $\frac{1}{8}$ " and trailing edge strips of $\frac{1}{8}$ " x $\frac{1}{4}$ " in place over plan after trimming to correct length, pinning at ends and inserting tip pieces T.1. Check ribs for fit and, if satisfied, cement upright in position, very slightly canting base ribs R.3 to give angle for wing dihedral, using template given mounted on card and cut out. Similarly centre section panel with leading edge of $\frac{1}{8}$ " x $\frac{1}{8}$ "

with wheel fairings W.F.1, trailing edge of $\frac{1}{8}$ " x $\frac{1}{4}$ " with ribs R.1 and R.2 erected in their locations. Finally add top spars in rib slots, tapered at tips T.1 and with $\frac{1}{8}$ " extensions on mid-section. Scrap balsa gussets are added in corners where indicated. Do not lift from the board until perfectly set. The undercart must be added and the wings joined and covered before being added to the fuselage.

TAILPLANE.

The tailplane is made up of $\frac{1}{8}$ " x $\frac{1}{8}$ " balsa strips with T.2, T.3 and T.4 as indicated. Make all joints neatly and cleanly, commencing with leading edge and spar, tips T.2, tips T.3 and T.4 with trailing edge, then strip ribs. Do not remove from the board until quite dry to ensure there are no warps.

UNDERCARRIAGE.

Build the undercarriage main struts to shape and bind to underside of leading edge and spar with thread coated in cement. The wheels may be retained with blobs of cement on the axle or pieces of rubber tubing off single-strand radio wire. Wheel fairings, added after covering, are made from post-card.

COVERING AND ASSEMBLY.

The fuselage is covered with panels of tissue about 1" wide wrapped round each half of the fuselage from top to bottom keel members. Each panel is adhered at top and bottom only and overlaps its neighbour by $\frac{1}{8}$ ". There is no need to adhere the overlap, as eventual doping will achieve this. Use tissue paste or photo mountant paste. Join the wings to form one unit with 1" dihedral at tips. The wings are covered with single panels of tissue about $\frac{1}{8}$ " wider all round than the panel to be covered. Apply paste only to the outer edges of the top and bottom surfaces, not the ribs.

The tailplane is covered both sides. Now water shrink all the tissue covering by moistening with a spray — never by brushing water on. When quite dry, cement the wings in place below K.5. Add fillets of thin card or gummed paper tape between fuselage covering and wing covering.

Now cement the tailplane in its slot, checking for squareness and symmetry, then the fin and fairing F.F. Fillets of tissue will fair the fin into the tail behind F.7 — may be adhered with paste or doped on later.

Give the whole model a coat of dope and, when dry, a second to the fuselage and as many to the nose cowl as are necessary to fill the grain.

Cement in place cellophane top to the cockpit over F.3 and F.5. Cut fore and aft parts to template given and cement in place. If a colour scheme is desired, it must be very lightly applied, as the extra weight and warps incurred are not recommended for flying models. The colour scheme is green and dark earth camouflage on all top surfaces and half way down fuselage with light grey or greeny-grey on undersides.

The undercart wires may be enlarged by wrapping with rolled gummed paper tape and the card fairing applied. Paint the tail wheel black. Transfers of insignia may be applied or painted on.

MOTOR AND NOSE ASSEMBLY.

The motor is made up of one 9" loop of $\frac{1}{8}$ " wide strip rubber (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 for $\frac{1}{8}$ " to engage in the slot in the nose of the propeller boss. Add the rubber loop and secure to the wire hook by closing the loop with tightly-tied thread.

Lubricate the rubber with lubricant (available in tubes from your Model Shop). Insert the rubber loop down the fuselage, or pull through with a thread on a hairpin, and engage with the $\frac{1}{8}$ " dowel through K.7. This may be aided by cutting away a small panel of tissue between the stringers behind and below the anchor dowel.

Do not cement the dowel in place, but leave a tight 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 $\frac{1}{8}$ " wide gummed paper tape trim tabs to trailing edge of 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 by adding a tab to the fin trailing edge. Wind on 50 turns to motor and launch; if satisfactory, increase turns by 50's to maximum of 350. As power increases, add small pieces of balsa packing 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.