Doug McHard's last model...

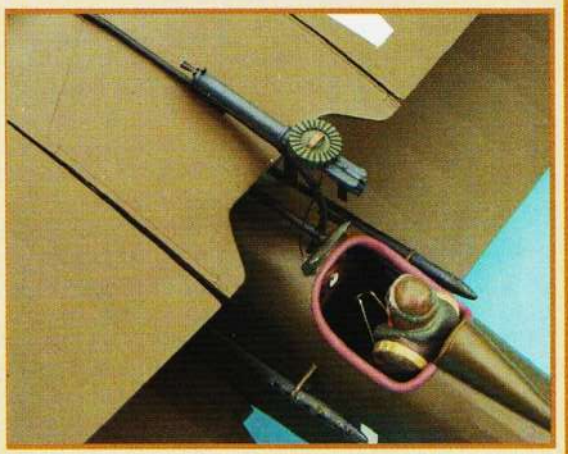
Doug McHard's 1/12th scale free flight scale model first ap
Nearly half a century later, the author built another superb

Before starting any assembly, carefully mark and cut out all fuselage parts. Cement the wire fittings and 3/32" sq. cross pieces to the formers where indicated on the plan.

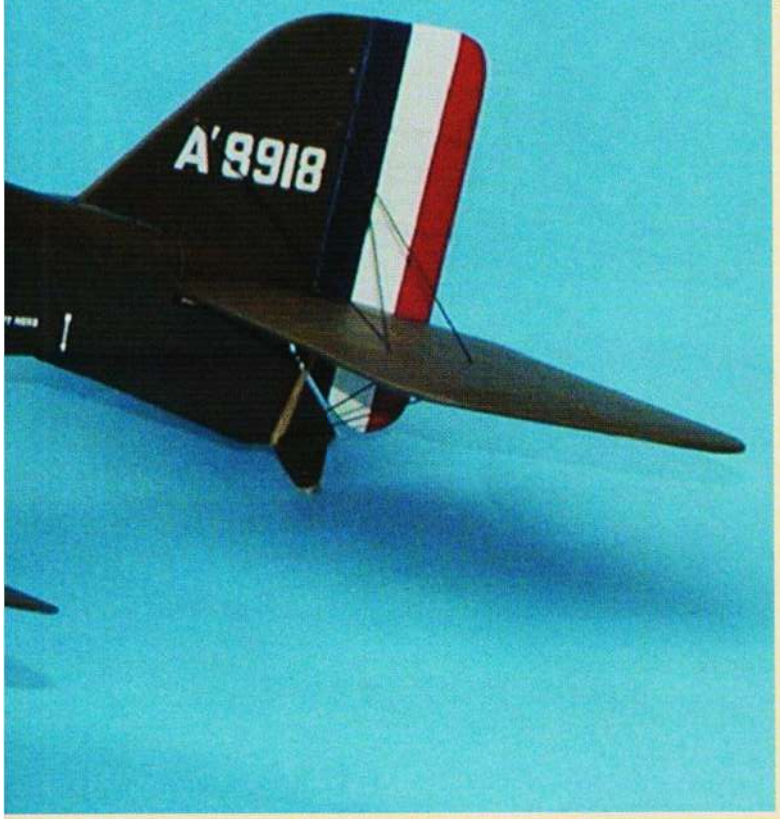
Shape the wire for the struts and undercarriage and then commence assembly of the fuselage by binding and soldering together the undercarriage and front cabane struts using fuse wire binding. This unit is now bound securely to the front (ply) face of bulkhead 3. Coat with thick cyano and block up the binding holes to prevent fuel seepage from the engine bearers, align carefully and glue firmly in place.

Bind the rear cabane struts to the engine bearers (see plan view) and then glue bulkhead 4 in position. This stage of assembly is shown in Fig. 1.

Left: Doug McHard's last model was finished in the colours of A/8918 which initially served with No.56 Sqdn, then went to No.60 Sqdn until it was captured, reasonably intact on September 17th 1917. The pilot, Lt.H.T.Hammond was made prisoner of war and a German photograph recorded the markings.



Right: Three detail pictures of the S.E.5a reveal the cockpit and the Lewis gun. Doug always had a scale pilot in his cockpits, in this case to cover a SNIP shut-off timer to control the power run of the Mills .75 diesel.



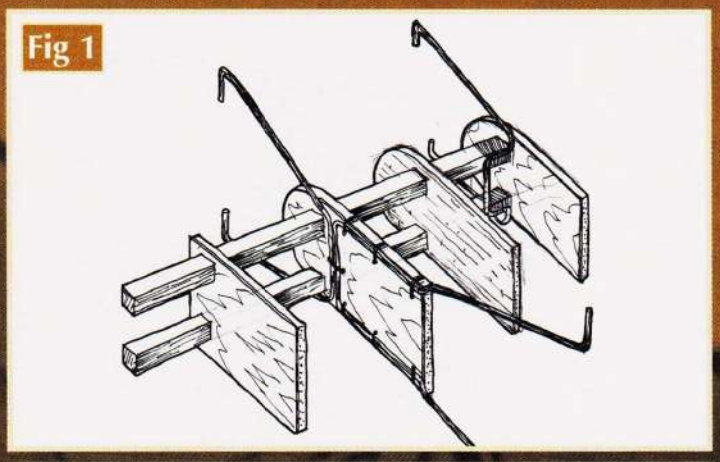
S.E.5a

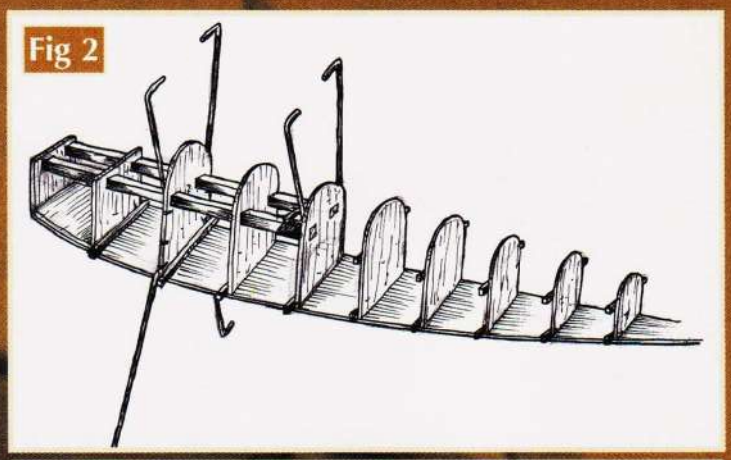
eared in Aeromodeller December 1957 issue. xample - his last

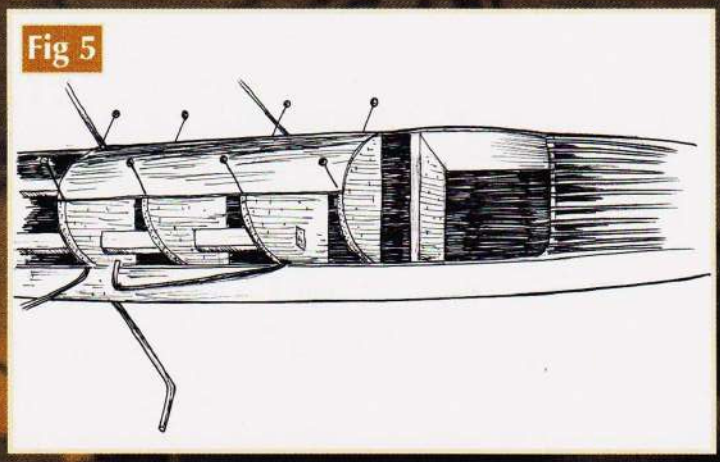
The 3/32" medium grade sheet balsa fuselage sides should be carefully scored at bulkhead station 8 and bent slightly inwards aft of this point (see plan view). Seal the grain at the crack thoroughly with cyano inside and outside and allow to dry before proceeding further.

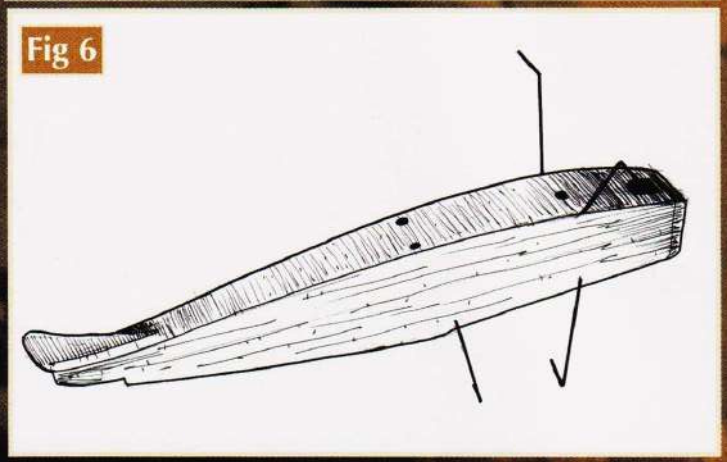
Add the 3/32" sheet doubler reinforcements between bulkhead positions 1 and 2 and at the lower wing attachment point (see side view). Glue the already assembled bulkheads to the starboard fuselage side and affix bulkheads 1 to 12 and the lower wing attachtnent tubes as shown in Fig. 2.

Attach the port fuselage side, the lower nose reinforcement, nose block (lower part), tailblock, tailskid and bulkhead 6. This stage is illustrated in Fig. 3. Now glue the 1/8" x 1/16" stringers to the rear fuselage, (Fig. 4). Cut away the stringers









immediately behind the cockpit so that the rear edge of the 1/16" nose sheeting lies flush with the stringer surface (see side view).

Cover the fuselage decking ahead of cockpit with softish 1/16" sheet balsa one side at a time. Moisten the outside surface of the sheet before cementing it in place, this will pre-curve the balsa and considerably simplify the opertion, see Fig. 5.

Cover the underside of the fuselage with 1/16" soft sheet balsa with grain running across the fuselage, Fig. 6.

Motor Cowl

The removable top of the engine cowling which runs from the nose, back to former F3a is next to be built. Glue the two 1/8" dowels into the top nose block, plug this into the lower nose block. Add the 1/4" balsa bulkhead 1A to the rear of the nose block, position the two 3/32" square hard balsa reinforcing side strips and glue these to bulkhead 1A. Then, glue bulkheads 2A and 3A to the side strips. Bulkhead 2A should have the 20 S.W.G. retaining hooks already fitted and secured in place.

Now, cover the top of the cowling with 1/16" medium sheet balsa, pre-bending as previously described, for the cockpit decking. When dry, remove the top cowling which should now appear as in Fig. 7. This image also shows the engine in position. The original 1957 model used an Albon Merlin, but the final '02 example had a Mills 75 for power. Note the needle valve hole, which must be cut to suit the particular engine chosen. The engine thrust line should be corrected for sidethrust at this stage and the mounting bolt holes drilled in the bearers. After checking, remove motor until the model is complete and fuel proofed.

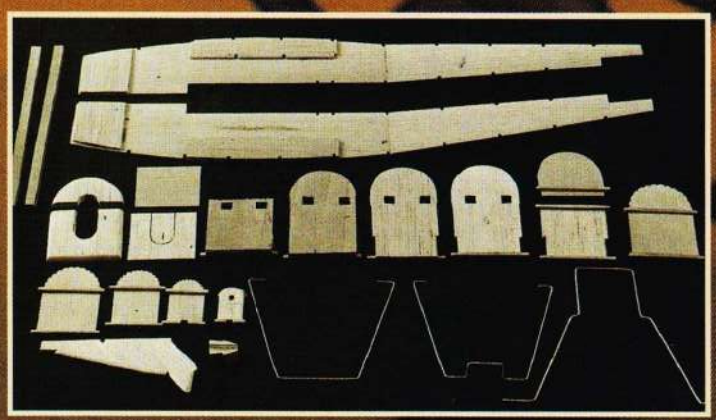
Tailplane

Cut out the tailplane, fin and rudder from soft balsa. The stabiliser is too broad to be cut from the standard 3" wide sheet and the join should be made along the leading edge, using a strip of hard balsa ahead of the joint. Glue former 13 (m/m ply) to the recess in the tailplane leading edge and glue the 1/8" hardwood locating dowel in place.

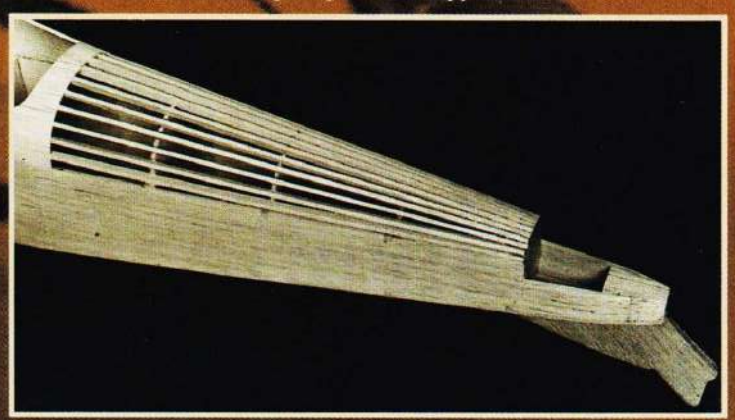
Glue the 20 swg. tail unit fixing hooks to the upper surface of the stabiliser trailing edge (see side view). Glue the fin and rudder unit to the stabiliser upper surface and square up with the soft balsa fairing blocks at each side making certain the fin/rudder is exactly upright. To the underside of the stabiliaer glue the 1/8" sheet balsa locating piece making certain that the rudder is truly straight fore and aft. Cement the celluloid rigging washers to the tailplane in the positions shown. A dotted line on the plan indicatos the true scale stabiliser outline. The model will fly with a true scale stabiliser but is more sensitive and needs very carefull, trimming.

Top wing centre section

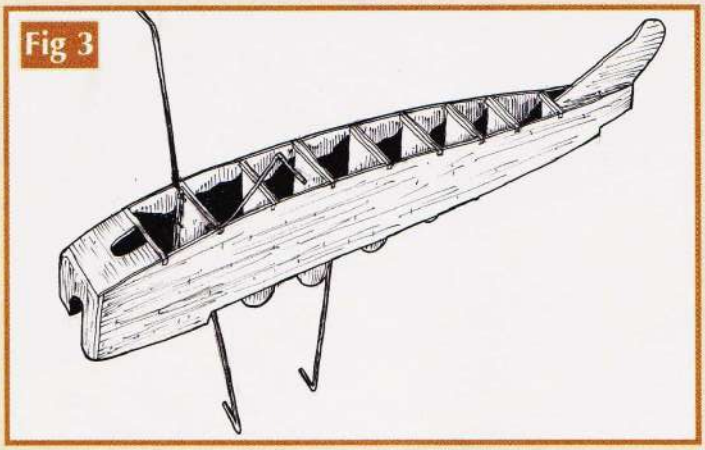
Next, bind with fuse wire and solder, the 18 swg. tubes to the upper ends of the cabano

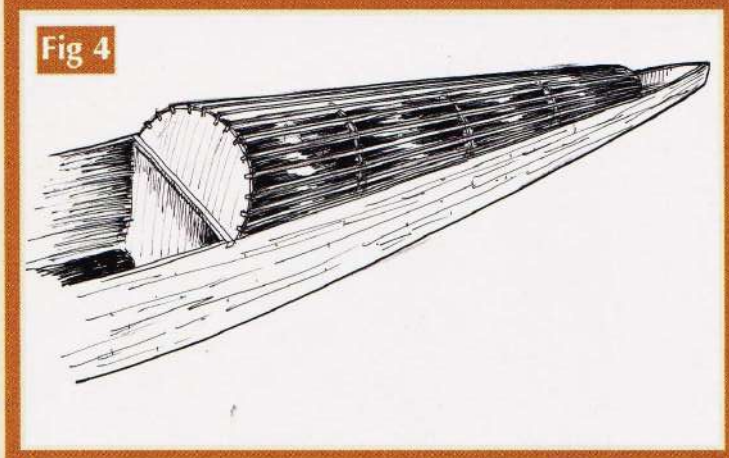


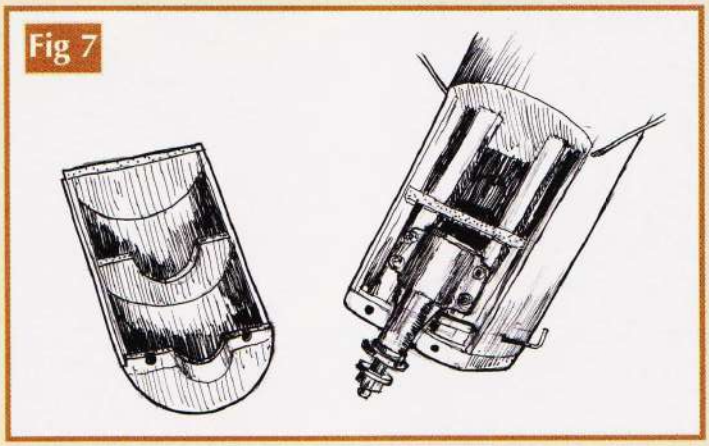
Components of the fuselage ready for assembly, complete with wire cabane struts and undercarriage.

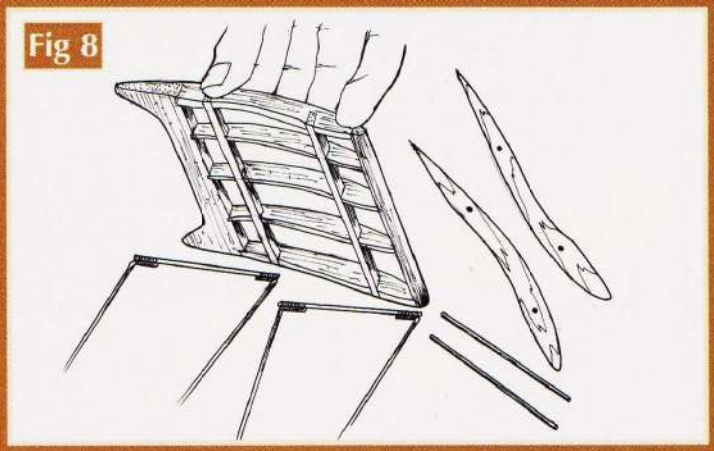


Don't stint on the stringers over the upper rear fuselage to get a realistic effect after covering.









struts. Place the fuselage exactly over the side view on the plan and make certain the ends of the tubes come in the correct position as shown, before proceeding further. Make adjustments if necessary. Sight the tubes from the front to ensure that they are both in line.

The upper wing centre section is now built flat on the plan. Do not glue the 1mm ply facing ribs to the structure at this stage. When dry, remove from the plan and secure to the fuselage cabane struts (see note and exploded view on plan). Glue the rigging hooks firmly in position.

The strut fairings should be sanded to a streamline section and bound and glued in position, the double coverrd with lightweight tissue, glued on (Fig. 8).

Undercarriage

The main undercarraige leg fairings are bound to the leg from top to bottom with strong thread and then covered with tissue. They are not glue to the fuselage at the top end. The rear undercarriage struts are made up, the lower ends threaded over the axles and the top ends allowed to travel freely back and forth in the slots cut in the 1/16" sheet under-fuselage covering. Spring the spreader bar into place.

Wings

The upper and lower wings are identical, except for the roots of the lower panels which have an extra rib and are cut away at the trailing edge. This is clearly shown on the plan. Incidentally, if you are a very strict scale fan, this last rib space should have no dibedral however this is almost unnoticeable in practice and the extra complication involved in contruction was not considered worthwhile on this essentially straight-forward model. The only other differences between the upper and lower wing panels lies in the 20 swg. strut fixings and rigging hooks. The positioning of these is clearly shown on the plan.

Before commencing wing construction, cut all spars to correct size and bind the 18 S.W.G. wing attachment wires in position. Shape the leading and trailing edges to correct sections and cut the rib notches in them where indicated.

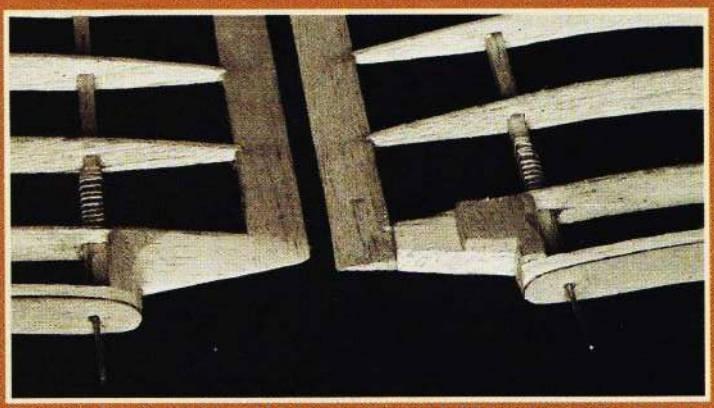
Pin down the trailing edges and hold the spars in the correct position with pins on either side. Now, glue the ribs in place and then attach the leading edge. The soft belsa 1/4" sheet tips should be fitted, but the necessary carving to section should be left until the structure is lifted from the plan. When dry, the remaining wire fittings should be bound in place and the wing sanded smooth with very fine sandpaper.

The wing interplane struts are now made. They should be a sliding fit over the 20 S.W.G. wing fittings.

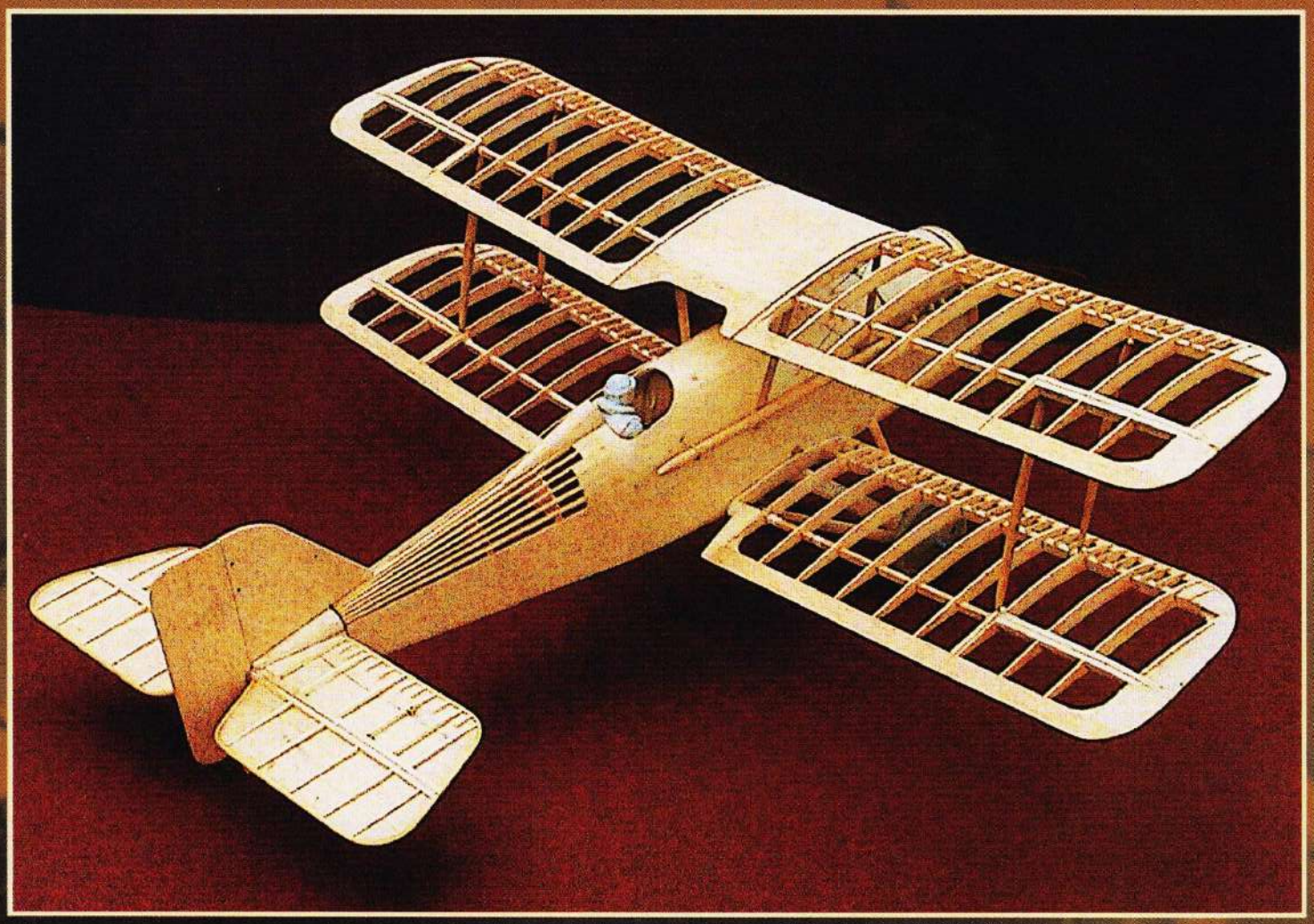
Assembly and rigging

Assemble the wings and struts. The wing root attachment wires should be a smooth sliding fit in their tubes and they should be adjusted to give 1" dihedral under each wing tip. The rigging "wires" are

One each of the wing panels, with near-to-scale aerofoil section and thick tips to take care of ground scrapes.



Piano wire locating pins bound to the spars engage in 18 swg brass tubes in the fuselage for the lower wings as here with one root shaped, the other showing two layers of 1/4in balsa fairing.



reproduced with grey, shirring elastic thread and four pieces are required each 14" long and fitted with small 20 swg. rings at each end.

One length of elastic thread is taken from the front rigging hook 3" out from the root of the upper wing, down and around the top of the main undercarriage leg and up to the top of the front interplane stut. The elastic is taken outside the struts and thus prevents them from falling off. From the top of the front strut, the rigging goes down to the bottom end of the rear strut and terminates at the rigging hook near the rear cabane strut.

The second rigging thread starts at the front cabane strut hook and terminates at the rear rigging hook on the top wing underside, after passing around the interplane strut and over the fuselage rigging hook. This completes the rigging on one side, the reverse procedure is followed for the opposite side.

Cover all surfaces with lightweight tissue, apply one coat of clear and two of colour dope.

Details

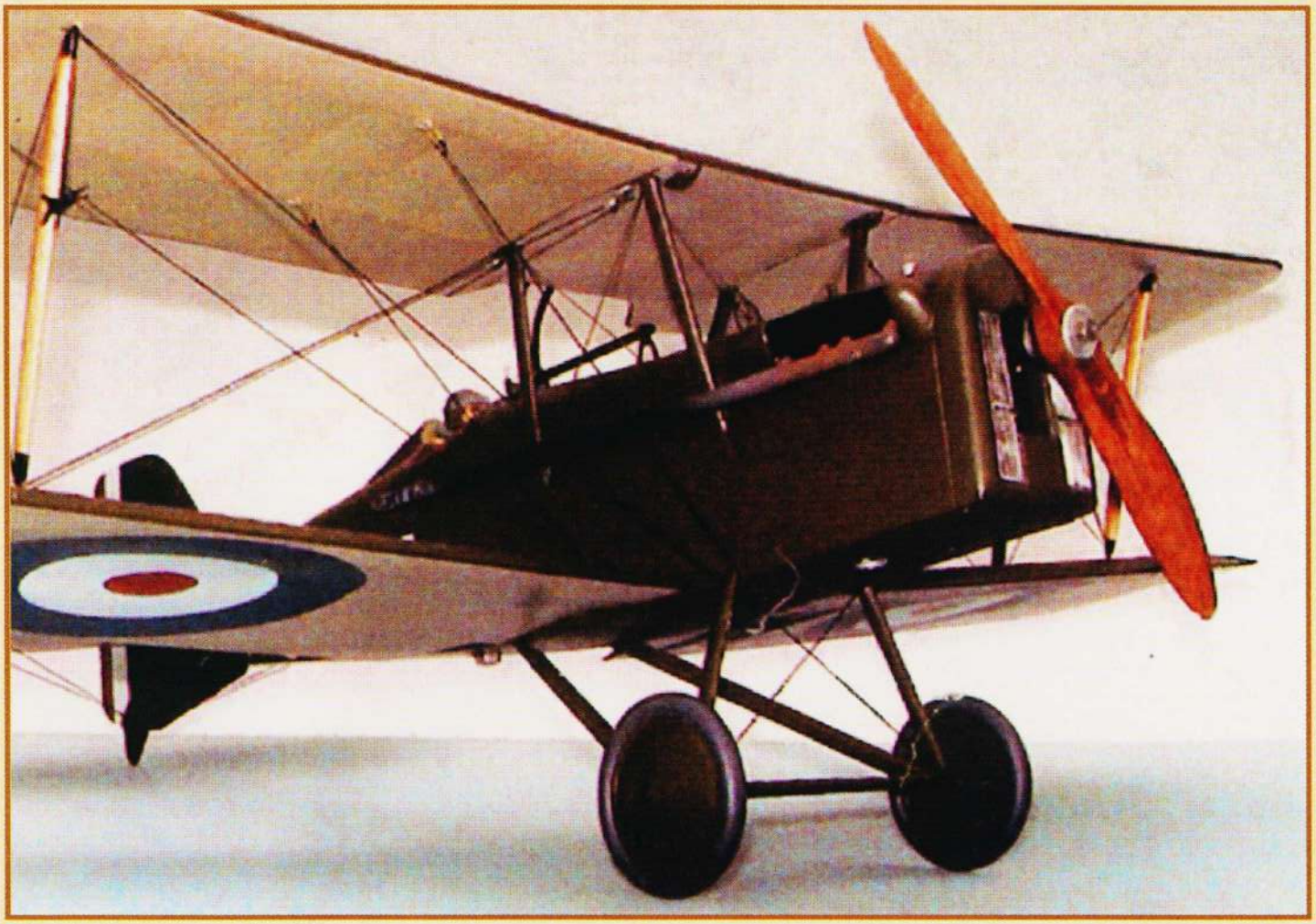
Fit wheels, radiator strips, engine cylinder blocks and gun. Tbe two exhaust pipes are made fram 1/4" dia balsa dowel and covered with tissue. They are attached by gluing and binding to the cabane struts. They are not glued to the engine cylinder block.

Add roundels and insignia and fuel proof the entire aircraft, paying particular attention to the engine compartment and the nose area generally. All-up weight should be between 8 and 9 ounces.

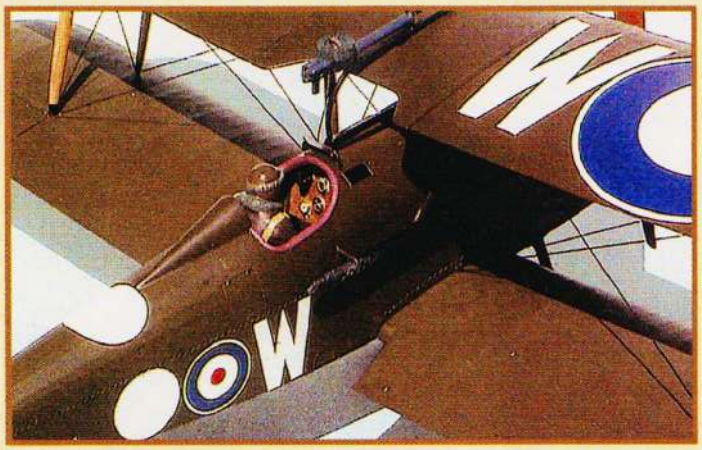
The modol should balance horizontally

Above: the completed airframe ready for covering. Note the method of constructing the tailplane unit over a flat sheet balsa centre plate.

Below left: view, showing the full upper wing surface markings on Doug McHard's model. Note that the wing roundels are each postioned at mid-span on each of the outer wing panels. Below: the rear fuselage and tailplane, showing markings and the dummy tailplane struts. Below right: another rear fuselage detail, showing the simulated fabric inspection panel lacing.



Above: a sight to make you want to clear the building board! Doug McHard's finished model, engined with a Mills .75.



The basic PC10 'Khaki' colour scheme of the S.E.5a presents the scale modeller with a not-too-onerous task in finishing the model. Spray on just enough to evenly cover the surfaces without overdoing it, which will add unnecessary weight.

when supported by finger tips under the top wing centre section at the point shown on the plan. If necessary, add weight to the nose or tail until correct balance is achieved.

Glide test over long grass under calm conditions, launch level at model's flying speed, into wind and note the descent. If the model dives, add weight tothe tail. If it first climbs and then dives, add weight to the nose, until a steady, controlled glide results.

The first power flight should be made with the engine running very slowly. Thereafter, gradually build up revs making any necessary thrust line adjustments on the way, to correct turning or erratic power flight, until the model safely handles full power.

Trim for a large radius left-hand turn under power by adjusting the engine side thrust. The rudder may be warped slightly right to keep the nose up in sharp left turns under power. Never turn the rudder over to the left and DON'T try right-hand circuits under power, until you know the model's characteristics..