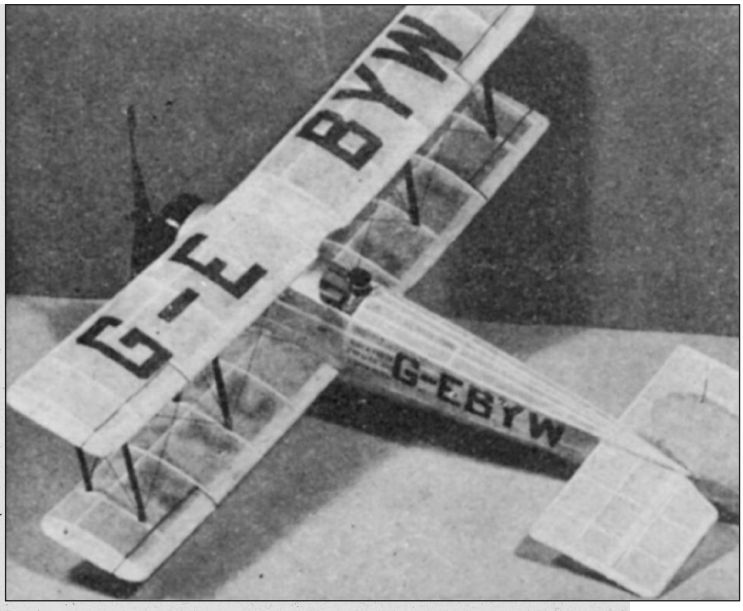
AVRO 504 K



Ray Malmstrom brings one of Aviation's Immortals to life again

ALL DEDICATED aeromodellers know that every once in a while they build a model that has just that *extra* bit of appeal, that *additional* thrill some of their other models do not possess. The rubber-powered Avro 504K (full-size plans on following pages) proved to be just such a model. Test flying this little biplane and seeing it airborne silhouetted against the evening sky recalled a day when the author watched the real Avro 504K, G-EBYW of Aviation Tours Ltd., at an air display in the early 1930's giving air-minded enthusiasts their aerial baptism.

Begin by constructing two basic fuselage sides from 3/32 sq. in. strip, and 3/32 in. sheet, join with 3/32 sq. in. cross members. Add the $\frac{1}{16}$ in. sheet formers, and finally the 3/32 sq. in. and $\frac{1}{16}$ sq. in. stringers. Check at each stage for accuracy of construction. Firmly cement in place the pieces holding the rear dowel peg, and sheet piece taking the tail-skid wire. Before adding the thin card front decking bend the 20 s.w.g. wire centre section front and rear struts. Cement these accurately to the inside of the nose sheeting where indicated. The paper strut fairings can now be added. Reinforce strut attachments with silk or linen tape pieces. Add the tail-skid unit. Fill in the underneath of the nose with 3/32 in. sheet. Build engine cowling from laminated sheet, sanding carefully to shape. Cement front formers M and N to fuselage, and complete by assembling engine cowling complete with dummy cylinders to former M. Before covering, sandpaper completed fuselage, rearwards of the dowel peg. Keep rear of fuselage as light as possible. Fit $\frac{1}{16}$ in. sheet pieces A between formers E, F, G (see front view on plan). Cover with lightweight tissue leaving slot at rear of fuselage for front of tailplane. Watershrink the tissue and give one coat of clear dope. Give engine cowl four coats of clear dope. Add windshields, cutting them from cellophane or very thin acelate sheet. To improve appearance, carve pilot and passenger from soft blocks. When rough carved, cut down the centre and hollow out. Re-cement together and paint with powder or poster colours, used thickly. Build four wing panels, and join at centre ribs. Check for $\frac{3}{4}$ in. dihedral under all wing tips. Cement pieces H, J, K, L to wing ribs at positions indicated. The interplane struts slot into these pieces. Cover wings, except centre section of lower wing and beneath centre section of upper wing, with lightweight tissue. Watershrink and give one coat of clear dope.

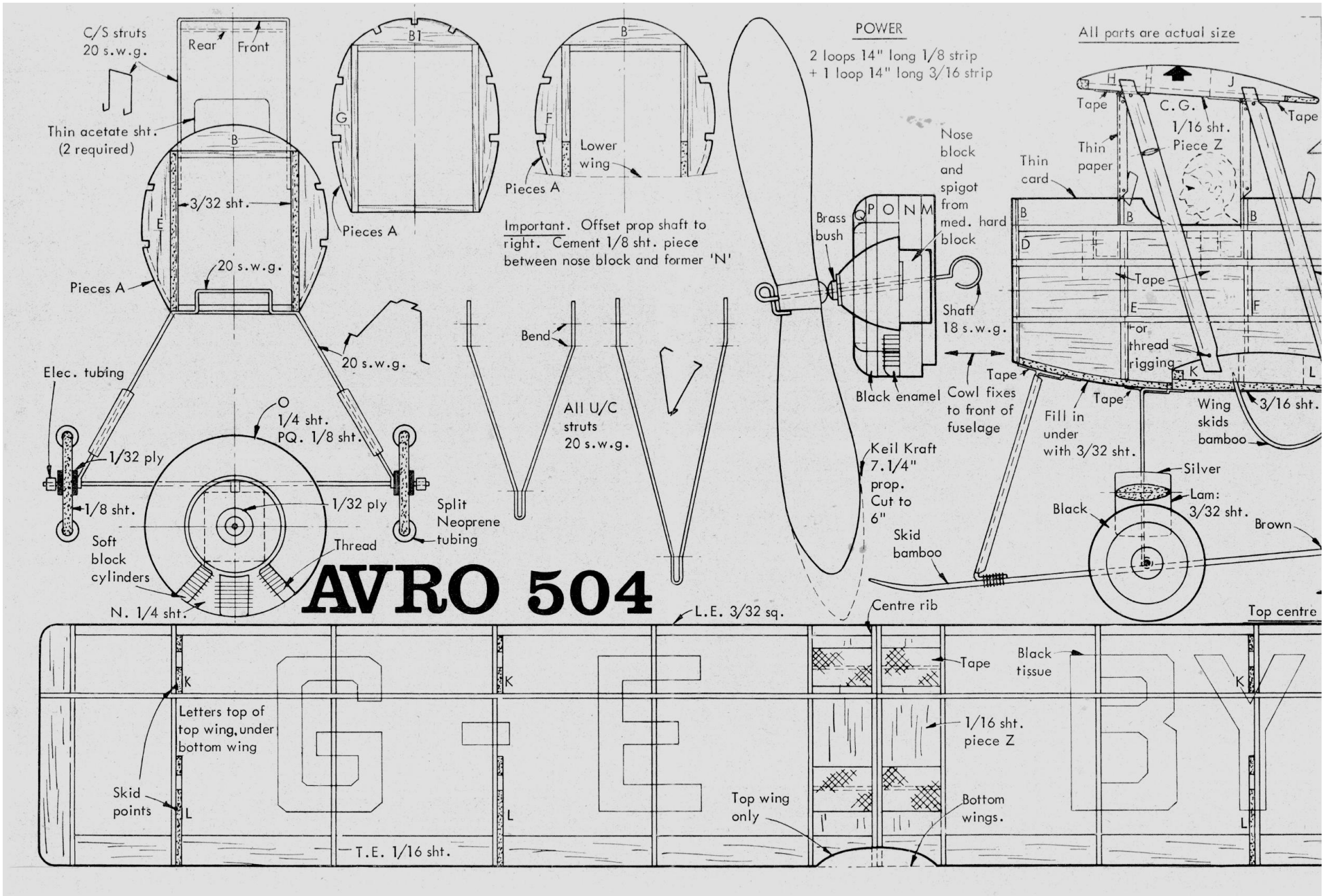
Registration lettering is cut from black tissue and doped on. Assemble lower wing to fuselage, checking for correct incidence and equal dihedral on the wing panels. Cement $\frac{3}{16}$ in. sheet correctly chamfered under centre section of lower wing. Form the three undercarriage struts, cement in place and reinforce with squares of silk or line tape well cemented on. Attach bamboo skid to front and rear struts only by binding and cementing. Steam bend front of skid to curved shape, before assembly. Assemble wheels when completed as plan, to the 20 s.w.g. wire axle. Add bamboo wing tip skids. Assemble upper wing on to centre section piece Z. Piece Z is held to the centre section struts by pieces of silk or linen tape, and is cemented in place *before* fitting the upper wing. Check wing for correct alignment from top, side and front views. Take care with this part of the assembly Cut struts from 3/32 in. sheet, sand to section, give one coat dope and slot ends into pieces H, J, K, L. Build fin over plan, sand edges round, cover, watershrink and give one coat of *thin* dope. Cement in place, build tailplane in *three* pieces; cover and dope as for fin. Assemble front section through slot in rear of fuselage and then add elevators to either side. Add tailplane struts.

Paint two dashboards on thin paper, cut out and cement to formers B. Build noseblock from laminated sheet, also noseblock spigot. Carefully drill noseblock to accept an 18 s.w.g. brass bush. Note the angle of the bush, giving correct downthrust. This is important. Give four coats of clear dope and enamel noseblock and engine cowling block. Cut the tips off a $7\frac{1}{4}$ in. diameter K.K. plastic propeller, to give a 6 in. diameter propeller. Use 18 s.w.g. wire for driving shaft and assemble propeller and shaft to noseblock as shown. Paint all struts brown. Rigging is optional. Add registration lettering in black tissue to fuselage and the words AVIATION TOURS LTD. CROYDON in fibre pen.

Front of fuselage and front top decking is painted silver, shock absorbers are made from laminated 3/32 in. sheet, fitted to centre undercarriage legs, given one coat of clear dope and painted silver. Centre of wheels are silver, and tyres painted grey. Propeller should be painted brown. Aileron lines are put in with fibre pen in black. Lines on engine cowling are with a fine pen and Indian ink.

Flying

Balance your AVRO 504K very carefully before any flight tests. Suspend it from the balance point (C.G.), it should hang level, both from side and front views. Some noseweight (sheet lead or folded cement tube) will be needed. Glide test over long grass on a calm day, with the rubber motor (made up as indicated on the plan and well lubricated) installed. Obtain a straight, and as shallow a glide as possible. When glide tests are satisfactory, offset the noseblock by cementing a $\frac{1}{8}$ in. strip approximately down the *left*-hand side of the noseblock (model viewed from rear); you can then try a "power-on" flight. A "run-in" motor will take 160 safe turns on a $3\frac{1}{2}$: 1 standard geared winder made from a hand drill. Our own AVRO 504K, using only the commercial plastic propeller turned in most steady and consistent flights of 20 secs.



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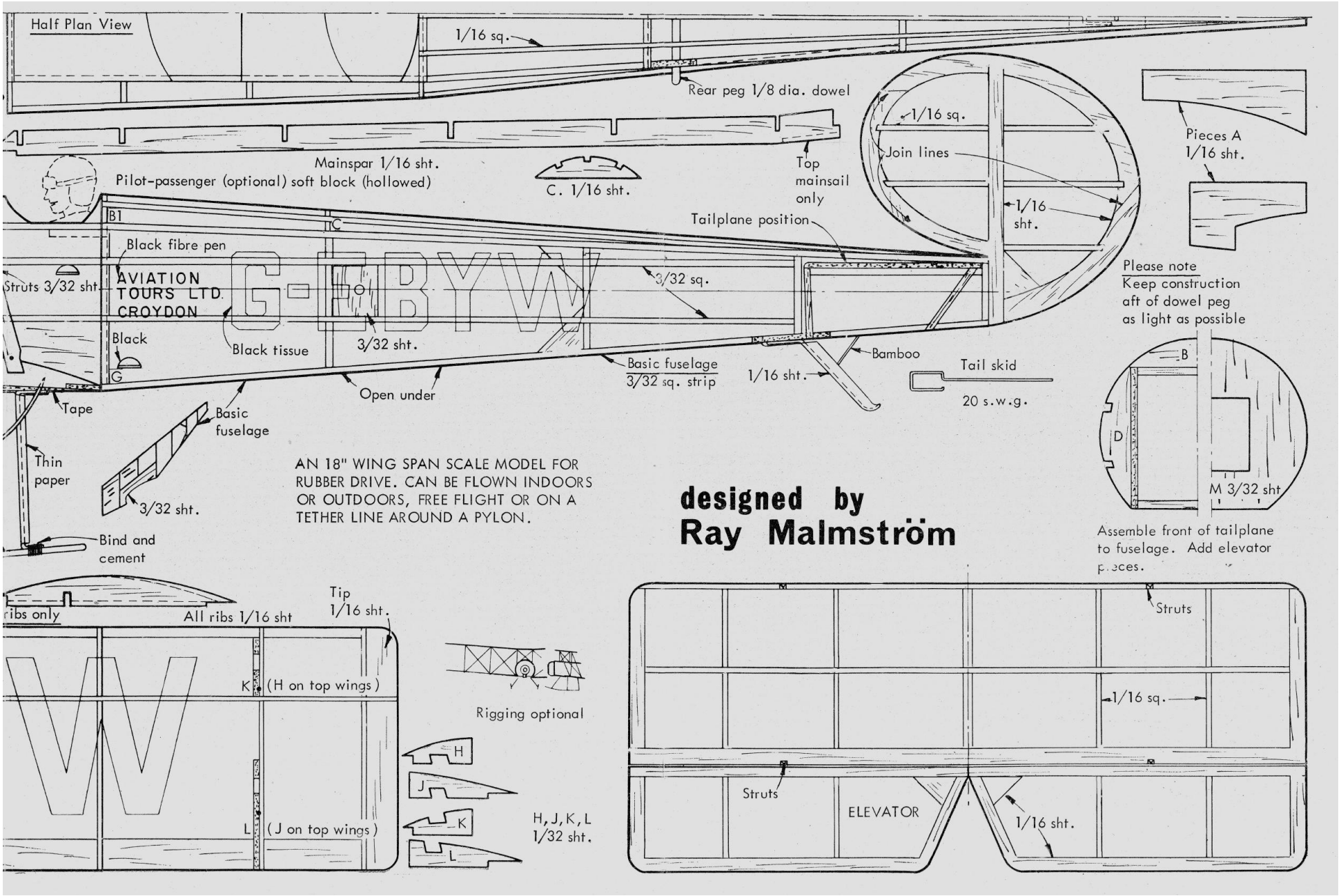

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