

# DE HAVILLAND **HERON**

A Model

That is

Different ?

Build This Four

Engined Control

Liner



by **FRANK BUCKLAND**

**START** with wing centre section. Cut out C.S. 2 and bellcrank support from  $\frac{1}{4}$  in. ply and glue together. Add C.S. 1, bellcrank and control rod; fit bolt tubes. Make centre section top from  $\frac{1}{4}$  in. sheet, cutting slots as shown for key pieces, and push rod, and cement to C.S. 1 and 2. Add C.S. 3 and 4 and cover with  $\frac{1}{4}$  in. sheet about 1 in. down each side. Set aside and build wings. These can be built flat on plan. The  $\frac{1}{2}$  in. ply leading edge brace, leading edge and spar must be notched to fit over  $\frac{1}{4}$  in. ply bellcrank and bolt support. Note the angle at which nacelle ribs are placed. When dry, shape trailing and leading edges, leaving  $\frac{1}{16}$  in. proud on latter for wing sheeting to butt against. Do not shape leading edge behind firewalls—leave square, so as to ensure a firmer joint.

*N.B. Drill undercarriage bolt holes in leading edge support and C.S. 2. Offer wings to centre section and cement well all joints. Jig up to ensure accuracy*

whilst setting. Make up main undercarriage legs of 10 g. wire.

### Engine Nacelles

Cut out firewalls and bearers, cement  $\frac{1}{2}$  in. sheet between bearers, place tanks in position and add  $\frac{3}{8}$  in. sheet nacelle sides, cutting slots in latter to key over leading edge. This should form quite a square assembly to fit snugly between the pairs of ribs; final shaping is done after fitting to wing. Ensure that cowlings are vertical and *not* at right angles to wing. Wedges are necessary behind firewalls to take up leading edge sweepback.

When wing nacelle joints are thoroughly dry, bolt on main undercarriage, using tin straps and 6 B.A. bolts (note  $\frac{1}{4}$  in. ply piece behind spars); 8 B.A. bolt on outer engine is not really necessary and can be omitted. Add  $\frac{3}{8}$  in. sheet on top of bearers, cut holes at inboard nacelle for 16 g. lead outs. These can now be fitted to bellcrank. If this is tricky cut a little trap door in centre section above bellcrank and cement back when lead outs are soldered in. *Do not bend line hooks on ends of lead outs yet.* Wings can now be covered with  $\frac{3}{8}$  in. sheet, but don't forget line guide and tip weight. Add rear nacelle blocks and shape up. (A Woolworth shoemaker's rasp is useful to shape bearers.) Fit tip blocks and pairs of fairing blocks under wing at nacelles. Outer engine fairings should be slid over line guides after the holes have been cut. Lead out hooks can now be bent up. Make up and add undercarriage fairings and 2 in. wheels.

### Fuselage

Cut out all formers, side sheets and  $\frac{1}{4}$  in. ply nosewheel support. Jig up wing till centre section is level and place a piece of greaseproof paper over centre section, as basic fuselage is built on here. Lay  $\frac{3}{4}$  in. crutch pieces along centre section and fit formers B, C, D, E, F and G. Fit  $\frac{1}{4}$  in. sheet between E and F, and F and G. Make up  $\frac{1}{2}$  in. ply and brass strip bolt support and solder bolt heads after wiring up. Ensure that bolts slide freely in centre section bolt guides.

When you have cut out windows add side sheets, formers H, J and K and  $\frac{1}{4}$  in. square tailplane supports. Fit nose wheel support and former A, also  $\frac{1}{4}$  in. square rear fuselage bottom longeron. Make up nose wheel gear and when fuselage is thoroughly dry, bolt in position. Tailplane can now be built as per plan using  $\frac{1}{8}$  in. ply dihedral keepers to join the two halves. Tips are movable with elevators. Main push rod can be made with T-end piece soldered on; this pushes into small loops on the end of each control horn. Check for accuracy before finally cementing complete and shaped tailplane to  $\frac{1}{4}$  in. square tailplane supports. The latter should be lightly chamfered on the inside edges to accommodate tailplane dihedral. A Meccano or similar joiner should be soldered securely to main push rod, not to centre section rod.

The fin and rudder is next and this is built up on a  $\frac{3}{16}$  in. base. Cut this component out accurately and check that it fits snugly in former slots and (after chamfering) down well on to tailplane V. When satisfied, pin to plan and build fin and rudder as shown.

### Cabin Windows

A study of the plan will show that these are glazed in one piece. Now add  $3/32$  in. (or  $1/16$ ) square strips vertically to divide windows and also along top and bottom edges. Fit well back to inside face of side sheet, thus leaving a recess for the one piece of celluloid window to fit in. Thickness of your celluloid will of course determine which size of wood you use for window frames. Before adding celluloid, paint frames and all inside surfaces of cabin dark green. (Scale colour is beige, but this does not look so well without all the cabin details, which cannot be fitted with ease as the floor is too high, and just the tops of the seats look odd.) The shaping of individual windows is done with covering material on the central pillars. Finally the cabin roof is made of soft  $\frac{1}{4}$  in. balsa; paint this inside before fitting.

Fin and rudder should now be cemented accurately on—no off-set. Entire fuselage can now be covered with  $\frac{1}{4}$  in. sheet. Use softish wood aft of wing, to keep tail end light. Cement hardwood key pieces under the cabin, so that they slot into centre section top accurately.

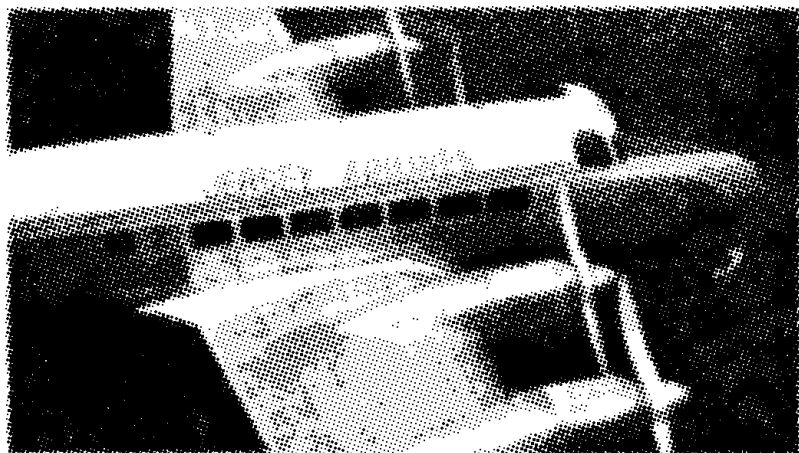
Make cockpit top from a hardish piece of wood, cement on to former C, and add  $\frac{1}{4}$  in. square frames which, when dry, should be carefully rebated to the celluloid depth to allow each cockpit window to be fitted separately. This is simply done by placing a piece of celluloid over the window and marking with a needle (or blade) the shape required; cut out and ease into position on frames to give a flush fit. A floor should be cemented to the crutch and any desired cockpit detail added before building cockpit, of course.

Hoist and fit lower tail block; ensure that the elevators can move freely. Fit elevator fairings and fin fairing blocks. Then cover fin and rudder with  $\frac{1}{16}$  in. sheet and sand to shape. Add wing fairings and all remaining centre section sheeting that is necessary.

### Balance

Roughly shape nose blocks and pin in position. Temporarily mount all engines and screw  $\frac{1}{4}$  in. ply nose pieces on bearer ends with small wood screws. Don't fit props. Now balance model on, or slightly in front of, the front line at the bellcrank. Ballast will probably be needed forward, and this should be of strip lead wrapped over  $\frac{1}{4}$  in. ply above nose wheel, and bolted securely in position.

When all is well, fix nose blocks securely and sand to shape; fair in nose wheel



- This close-up of the original model clearly illustrates the realism possible, with careful lining and lettering.

One roll of silver backed paper was obtained from a newsagents, price 4s. 6d. and was ample for the job. The white parts on top of fuselage and fin and rudder were tissue covered and painted with "Starlon" (two coats). The remainder was sealed with a sanding sealer and rubbed smooth. Silver paper was then applied with thick clear dope, and cemented in places where there are tricky curves. This paper is easy to use and butt jointing is not essential.

Carry paper to just above window line and follow the curve of dark blue paint on nose. The trim line is dark blue and is from the top of the window to the top of the side sheeting. Carry white roof to top of window line,  $\frac{1}{16}$  in. up from here mark a  $\frac{1}{8}$  in. blue line, a  $\frac{1}{16}$  in. white, a  $\frac{1}{16}$  in. blue, a  $\frac{1}{16}$  in. white and  $\frac{1}{8}$  in. blue. These reach to cockpit; the bottom white line curves down and around the edge of the blue nose. The bottom lines also touch the tailplane, but the remainder get shorter in steps till the top one, which is about 2 in. short of tailplane. A matt black (blackboard paint) anti-dazzle panel on the nose comes to a point at the extreme nose and is edged  $\frac{1}{16}$  in. white.

piece with  $\frac{1}{4}$  in. balsa each side. Make sure nosewheel is tracking straight or slightly right to ensure right lines on take-off and landing. Make and fit aerial dome on cockpit as shown. Plastic wood is useful for fairing in smoothly here. If you are familiar with your engines and the settings are about right they can now be permanently mounted. Make and fit nose blocks and thin aluminium cowlings. These are best made with the aid of thin card templates which are first wrapped

round and cut to shape with exhaust stack holes, etc., marked. Secure cowlings with small wood screws. Don't forget to fuel proof liberally before fitting cowl.

### Finishing

Several colour schemes are available for this model but I shall describe the one I used. By permission of Jersey Airlines, Gatwick, I inspected a *Heron 1* and used their colours.