

Hanriot prototype in colors of Italian fighter 80
Squadriglia Caccia, XIII Gruppo Aeroplani,
Aeronautica Militare, Marcon,
Italy, Summer 1918.



Propeller positioned to cover carburetor. Dummy engine
made from balsa, string, cardboard
and plenty of filler.



This article is not meant to be a complete and comprehensive set of building instructions but, rather, simply a few notes that might help anyone thinking of building this model, or for that matter, those who are simply interested in it as a future scale project.

Let's begin by saying that this is not really a difficult model to construct, but it is definitely not for beginners either. But, if you have built models before you should be able to manage this one. It will take a bit of time, but it is well worth it, as you will see when the project is finished.

I originally chose the Hanriot since it was not very well known as a full scale aircraft, yet it had all the necessary moments and areas to make it fly well as a model. I think the small elevators with enclosed controls and the top wing dihedral really captured my eye. The model is as perfect in scale outline as I could make it from available information, and I've tried to keep as near as possible to scale construction and material sizes so that it looks right when covered. Profile Publications No. 109 will give you additional details and color scheme information. Other information on the Hanriot H.D.I. can be obtained from R.A.F. Flying Review Volume XVI, No. 4, available in England.

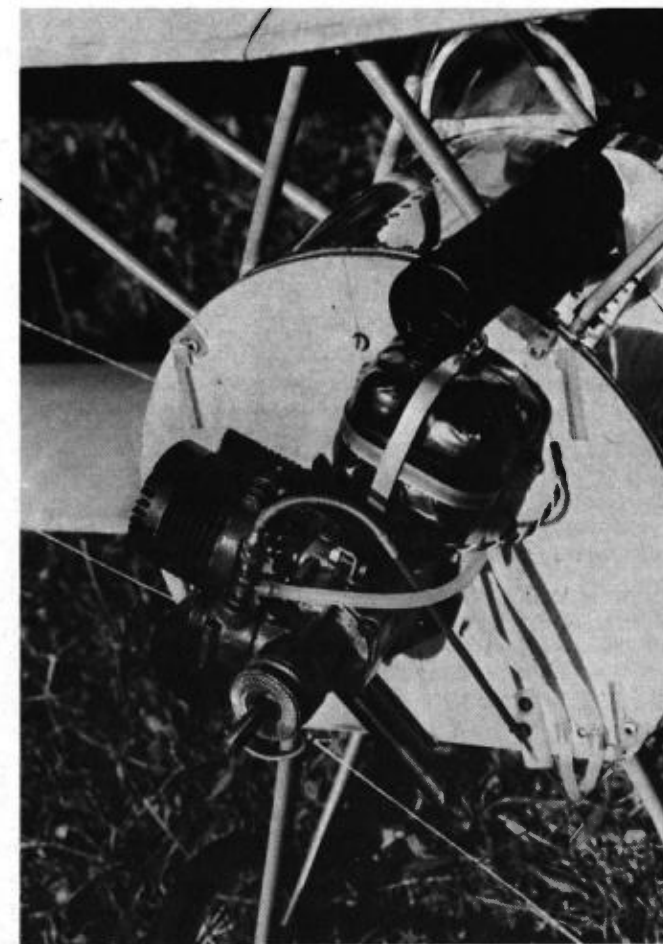
I have built this particular model in two sizes - 2" to the foot, and the one presented here, in 2½" to the foot scale. The former flies very well but a bit fast, thus the larger one was the one chosen for publication. I know transportation can be a problem, but the model can be dismantled for traveling in 10 minutes. Simply remove the 4 screws from the engine cowling, four 8 B.A.'s that hold the struts, and the two 6 B.A.'s that hold the section with the cabane struts in the fuselage. But then, do not expect to get it in a Volkswagen with your wife and two children!

As far as price goes, I think you will find this type of model quite economical to build. I do not think that mine cost more than about a third of the price of the average large scale kit. As far as the full scale prototype is concerned, the H.D.I. was a Belgian designed airplane of WW I vintage and used extensively by the Italians. From what I can find out, it was a splendid aircraft and should have been more popular but, for political reasons, it never gained its well deserved popularity. The Profile Publications, mentioned earlier, details a full background on the original aircraft.

CONSTRUCTION

I will give a few pointers on building the model although most of it can be readily understood from studying the plans. The construction is mostly made up of spruce, none of which is over 3' in length, in order to keep the sizes of wood down and the strength up. The main construction was done with Titebond glue since it is much better for hardwood, provides a nice

Nickel cadmium pack on front bulkhead.
Needle valve and filler tubes extend out bottom
where they don't show.



BY P. NEATE

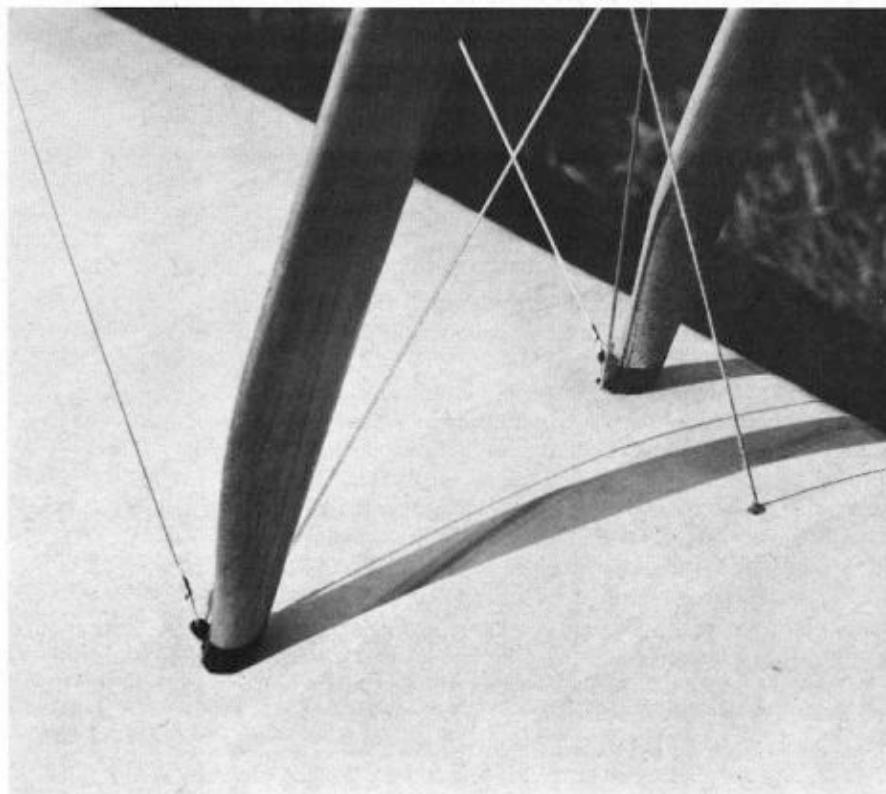
flexible airframe, and although it takes somewhat longer to dry than the fast drying epoxies, you can always find enough to do for one day at a time while leaving another section to dry overnight.

I would suggest, although I did not do it myself, that the top wing be built on a wing board so that it will be exactly true. First, make up the spars for it, then glue and clamp them up with clothespins. It takes a lot of clothespins for two spars, so it's suggested that you don't do this on your wife's washing day! Make sure that the spars each have exactly the same dihedral. Also, at this stage, you should mark and cut the slots for the aileron hinges in the rear spar. I did not, and had a devil of a job getting through that hardwood when the wing was completed.

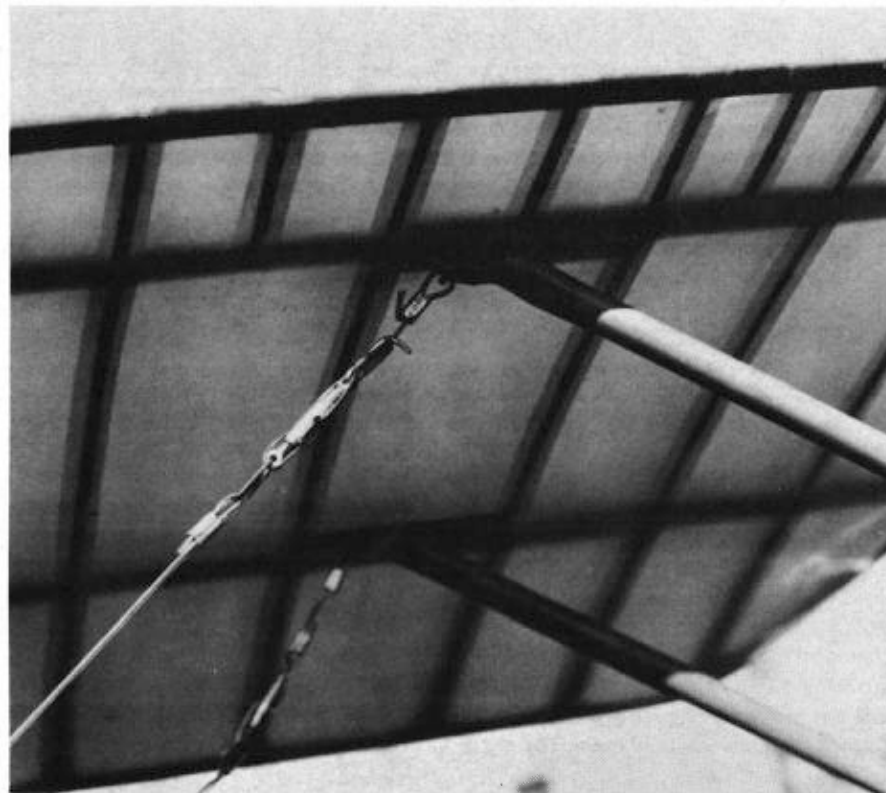
Now, either build the wing on the wing board, set at the dihedral of the spars (8½ degrees), or build on a flat board with half of the spars sticking over the end. When that half is dry, remove it from the board, pin out the other half of the wing plan and build that half of the wing onto the spars with the first half of the wing sticking over the edge. Make sure it lines up though, since you do not want swept back wings! If you use the wing board the plans have been drawn so that the end with half the top wing on it can be cut off and joined to make a complete wing plan. The leading and trailing edges are pinned to the board but the spars and ribs are packed up.

When the wing is removed from the board, cap strips are put on the bottom of each rib, which is much easier and stronger than threading ribs onto spars, and gussets are applied at the trailing edge. The latter provides more strength and makes its scale shape show through the covering. Ailerons are cut out and completed when the wing is built.

The lower wings are constructed in the same fashion but are very simple since they consist of separate panels. Wing tips, as well as the tailplane fin and rudder, are laminated from 1/16" spruce. The accepted and easy way to do this is to make a template from hard balsa or plywood. Then soak the spruce, bend and clamp around the template, and allow to dry, or, if you prefer, bake it in your wife's oven. When dry, remove from the template and then glue together and replace on the templates until the glue has dried. Then it is removed, once again, and built onto your model. By the way, do



ABOVE: Dummy aileron control made from silver sheering elastic glued to main spar. **BELOW:** View of turnbuckles to adjust landing wires. Note shear points. Ring of wire lightly soft soldered to open up in case of a hard knick, which is better than ripping the mounting points out!



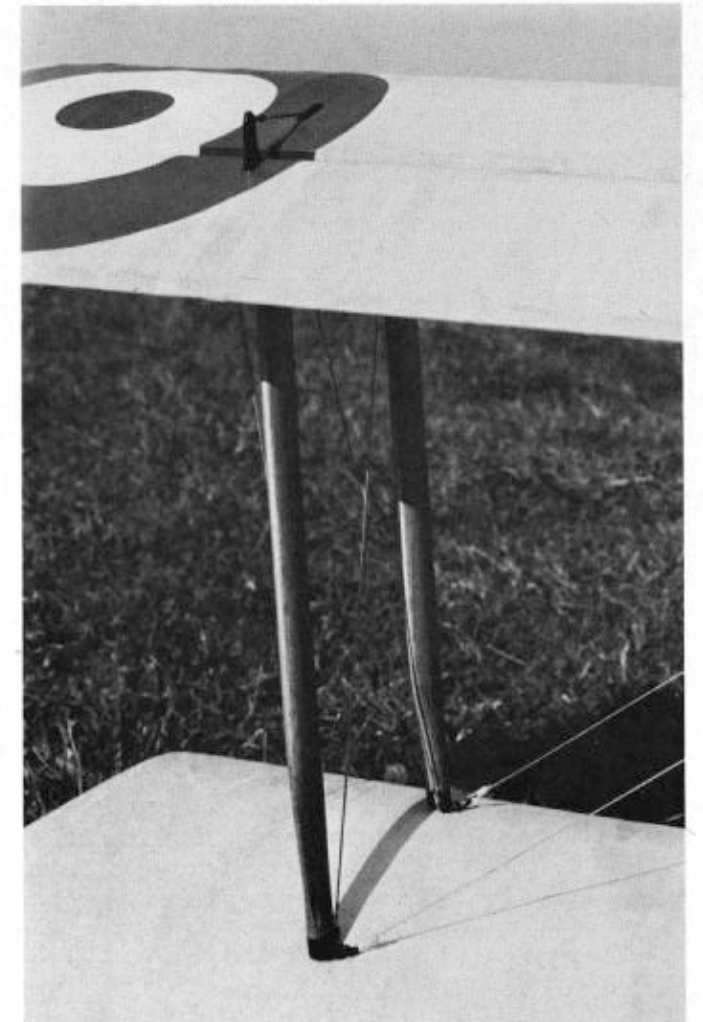
not forget that the wing tips have undercamber and have to be bent in two directions when clamping up. It would also be wise to remember not to use pins that will rust or you will stain the wood which will show through the

covering if the model is to have a natural fabric finish.

The fuselage is just a normal "slab-sider" with a turtle deck and front sides which are added after basic construction. The front of my prototype

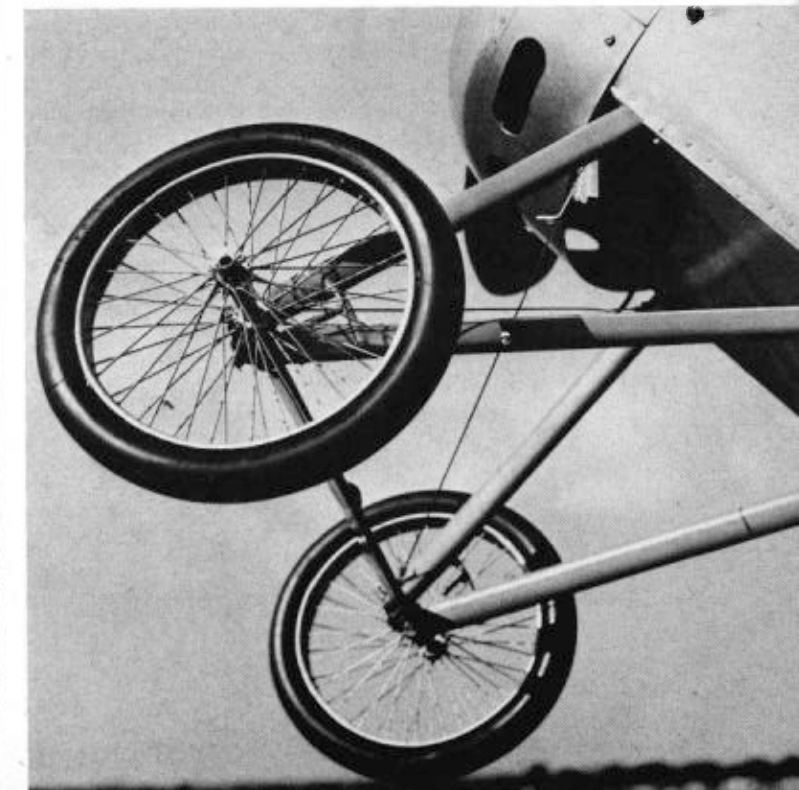


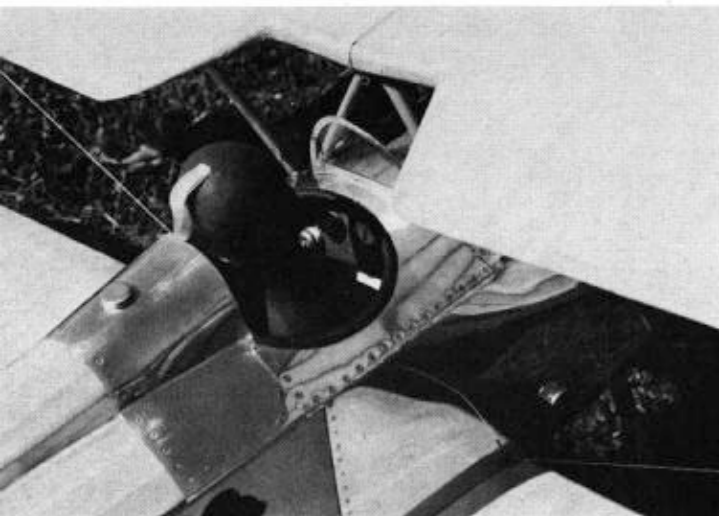
ABOVE: Undercarriage and spring with bungee rubber. **BELOW:** View of radio installation. Aileron servo, switch access from inside cockpit. Servo access through belly hatch.



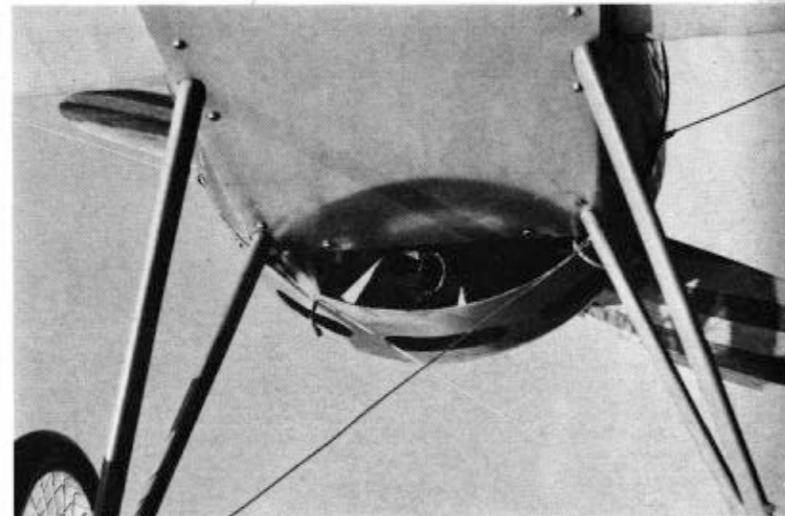
Close-up view of wing strut and wire fittings. Rib tapes are nylon, doped to grease proof paper before cutting into strips. Then peeled off as required.

For wheel construction see RCM, August 1969. Note needle valve and filler tubes.





View of cockpit and auxiliary fuel tank behind pilot.



Exhaust outlet and access panel to servos.

is covered with .010" aluminum over the balsa sheeting, using contact adhesive. This is added after the fuselage is nylon covered from the balsa sheet back. If you don't follow this procedure you will find that you have nothing to which to stick the nylon! If the aluminum is not going to be fitted, cover the sheeting with nylon, then add a few coats of sanding sealer and it will look very much like metal paneling.

The cabane struts are made up by silver soldering together steel tubing and 1/8" piano wire. Don't forget to solder the wing mounting plates on top of them. The front and rear outer struts have been temporarily bolted to the wing and the cross bar and center mounting points are soft soldered in place. These are drilled and temporarily bolted. Next, bolt the fuselage fixing points into the part of the fuselage that lifts out. This is before it

is sheeted. Fix the fuselage down to a flat board and fit in the removable part with the wing and take measurements to obtain the correct angle of incidence. This is important, so keep fiddling with it until it is right before you clamp up those fuselage fixing bolts. Now remove the wing from the top of the struts. Cover the lower surface and sheet in the detachable fuselage piece. Clad the rear and center struts in balsa to match the oval hollow front ones, then bolt the wing back on the struts permanently. Fit the aileron controls in place through the struts.

Fit the lower wing while the fuselage is still on the board, and then make up the inter-plane struts. Simply soft solder lengths of 18 SWG wire between the metal fixing plates bolted to the upper and lower wings. That is basically the construction of the struts — just unbolt and remove them,

clad them in hardwood, and the job is done.

It can be seen, now, how easy it is to strip this model down for transportation. If the lower end of the flying wires are unhooked off the spring loaded fuselage attach points (use a pin or a piece of wire to stop the wires from disappearing into the fuselage), the lower strut bolts removed, and the two bolts holding the cabin section removed; the upper wing, flying and landing wires, struts and cabane section with aileron servo, can all be lifted off as one piece and the lower wings can then be unplugged. The lower wings will stay in place with just the landing wires holding them. By the way, it goes without saying that this plane cannot be flown without flying and landing wires!

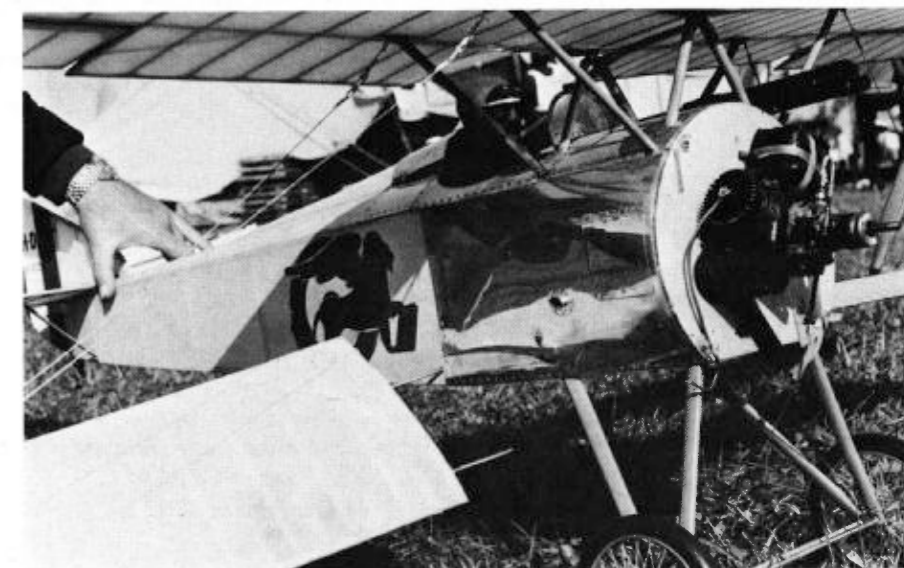
The engine cowling and dummy engine is up to you — you might be lucky and be able to obtain the former

spun in aluminum or, alternately, you could make one from fiberglass. You will have to make a mock-up first, though, from which to obtain a mold. I made mine from two aluminum kettles. I had to use two as I could not find a single one that was 8 1/2" in diameter. It took some time to find one that was the right contour and then it was only 8" in diameter so I cut two of them into segments between the spout and the handle and, using 3 of these segments, managed to rivet them into an 8 1/2" diameter cowling. The dummy engine is made primarily of balsa with string wound cylinders and lots of sanding sealer. The whole mess is then epoxied into position on the cowling and cut away to clear whatever engine you plan to use. I would not recommend anything less than a .60 even though it will fly happily on 3/4 power, but you do want full power to get off the ground properly. By the way, I used approximately 1 1/2 degrees side and down thrust.

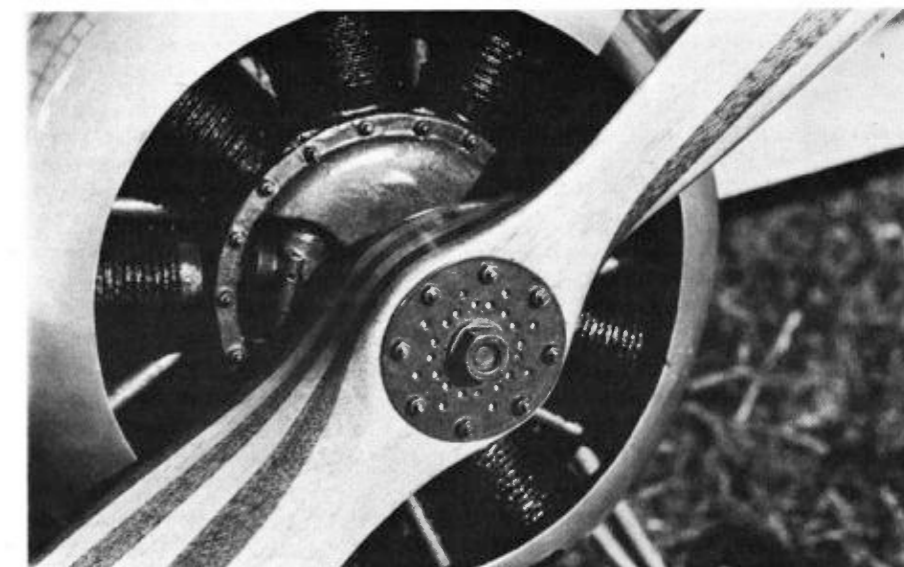
When it comes to radio installation, your radio gear must be installed as far forward as possible with your nickel cadmium pack alongside the engine under the cowling and your servos and receiver directly behind the front bulkhead and under the fuel tank. Be sure to use a good fuel tank that will not leak! I used a square Kodak developer bottle, stuck to the fuselage with plenty of servo tape.

FLYING

This model is one of the easiest that I have ever flown. On its first flight it flew perfectly straight, needing only a little right trim (I should have built the wings on a wing board). I will say, however, when you take off, that you should let the tail come up first, otherwise it will mush off the ground with too much elevator and its nose up, as it did for me at the British Nationals. If this happens it is a job to keep flying speed up in order to climb away. Aileron control can be a bit sluggish, especially in a maneuver like an Immelman when you have lost speed at the top of the loop. But all in all, the model is a pure joy to fly. I think its size has a lot to do with it since you can certainly see it easily at altitude and it seems to give you more time to think. I hope that any of you who build a Hanriot have as much fun and success with the model as I have had and, if you need any advice on building or flying it, drop me a letter c/o R/C Modeler Magazine. □

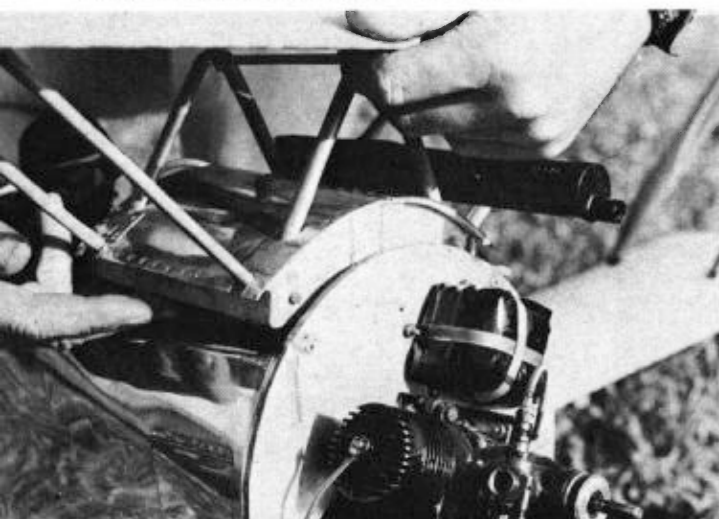


The lower wing just plugs in and is held in place by the landing wires.

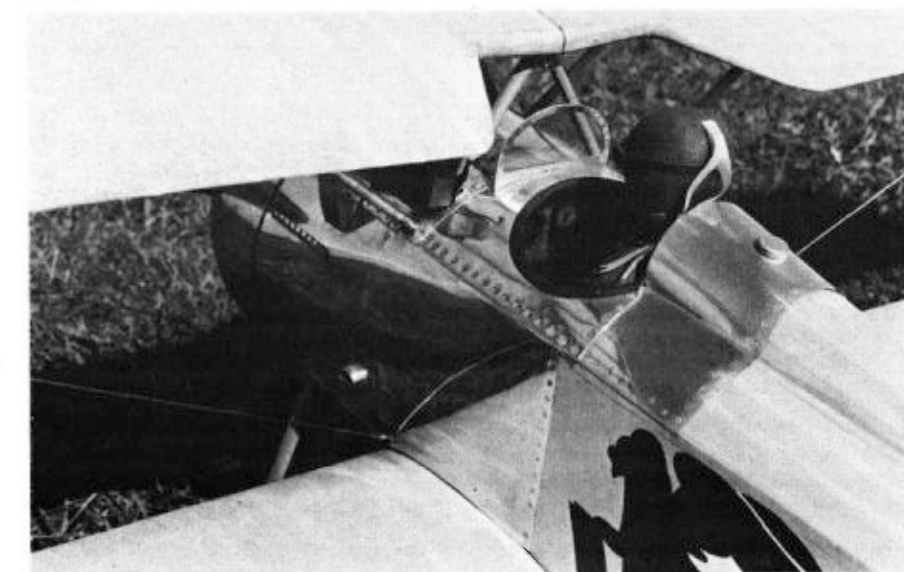
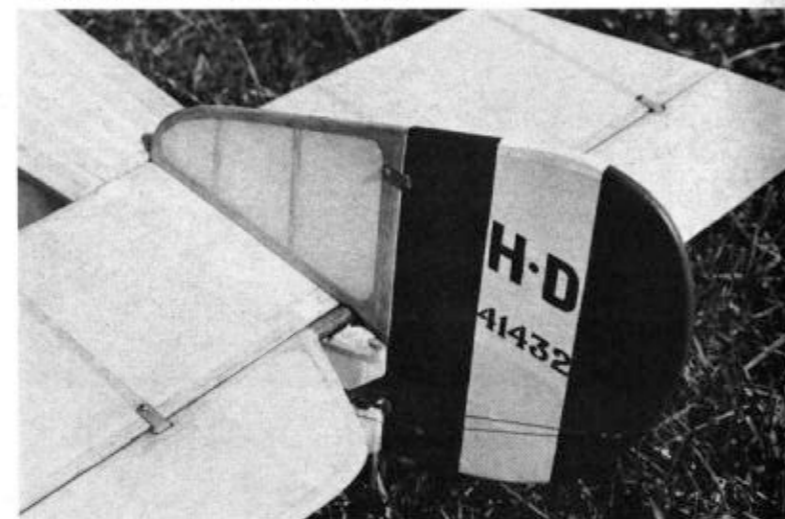


To eliminate sight of R/C carb, rear induction engine could be used if a priming tube was fitted.

Wing mounting section being set into position.



Photographic view of empennage assembly.



The fuselage must be covered before the aluminum is fitted in place.

