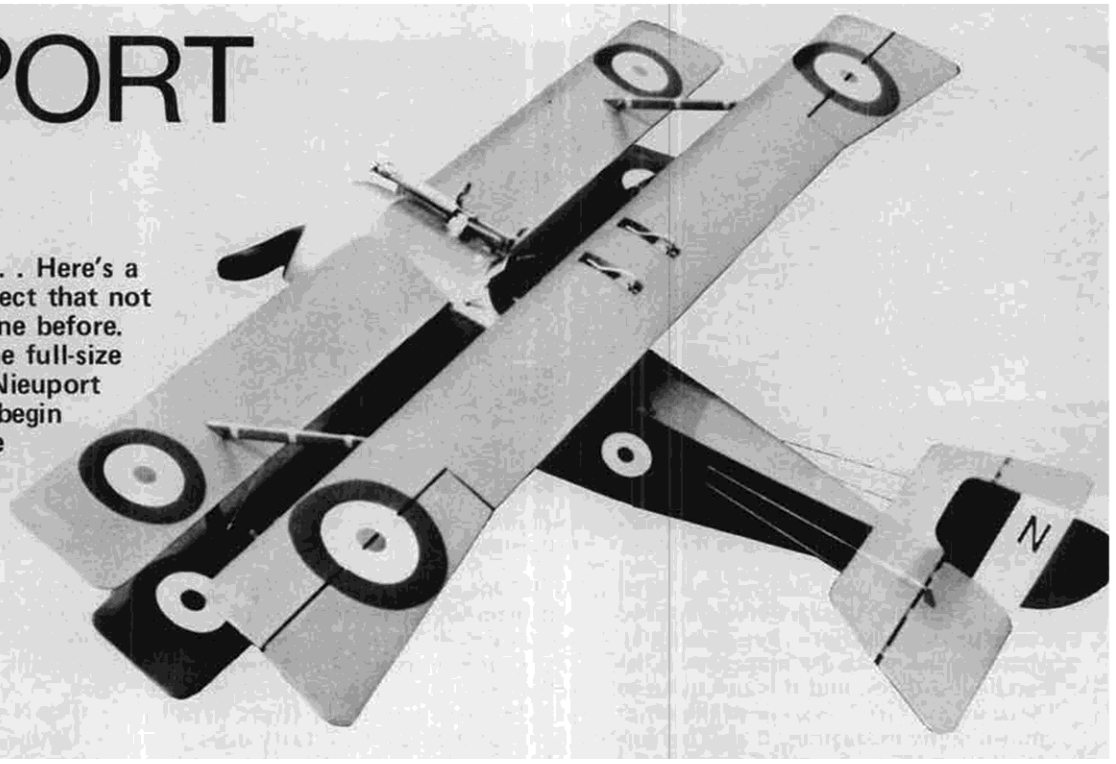
NIEUPORT 11-C

By FRANK HOFFER . . . Here's a neat WW-I era scale subject that not everyone has already done before. As only about five of the full-size aircraft were built, the Nieuport 11-C was a rare bird to begin with. Don't let the three wings deter you . . . as only the top one has ailerons!



ABOUT THE AIRCRAFT

The Nieuport 11-C Triplane was an offshoot of the standard Model 17. Dozens of experimental aircraft were built during the war years in a mad scramble to outdo the other side, but most were abandoned after brief testing. This one was no exception. It, too, fell by the wayside because test pilots felt its maneuverability left something to be desired. Also, it landed like a rock.

To the best of my knowledge, only a total of about five of these aircraft were ever built . . . all in 1916. They were of three different types, some with other wing configurations. The type I chose to model has been in the back of my modeling mind since the mid 1940s.

My research information came from the following sources:

Aircraft of the 1914-1918 War, Thetford (basic Model 17 three-views and photos).

Air Progress magazine, 1965 (three-views).

Airplanes and Flyers of the First World War, Phelan (color three-views).

The Fighting Triplanes, Hadingham (photos and flight information).

Fighter Aircraft of the 1914-1918 War, Lamberton (photos).

I received technical assistance on airfoils, etc., from Merritt Zimmerman, and flying by "Ace" Harwell.

FUSELAGE CONSTRUCTION

Start by making two 3/32 sheet balsa sides (use bottom view of the drawing to get the true fuselage length); taper the rear of the fuselage sheeting per the drawing.

Tape the two sides together. Then, with a fine-line marker pen, lay out all positions for longerons and cross members. Make sure both sides are alike.

For now add the 3/32 x 1/4 framing only up to the point where the fuselage tapers.

Make the firewall and cockpit floor per the drawing. Lay out cross section markings on the rear of the firewall.

Cement the fuselage sides to the firewall, making sure everything is in alignment. Let the cement dry; then add the cockpit floor. This will give you a solid start for the balance of the fuselage construction.

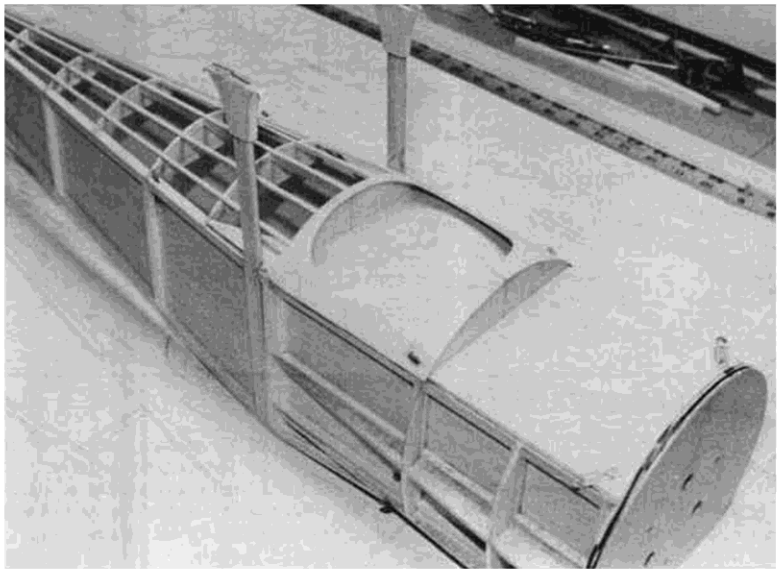
At this point, I would recommend making the 1/8 in. ply former, horn assembly and all, and also the rudder post plate.

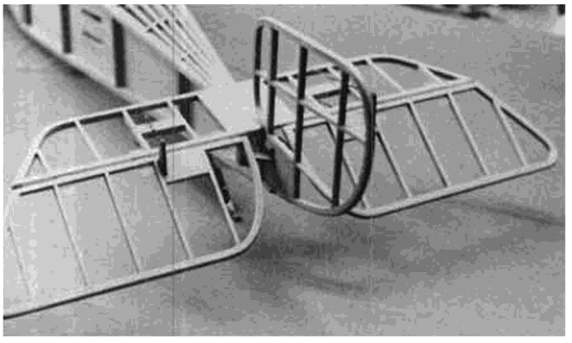
Cement the former assembly in place now. Using an X-acto saw, cut the fuselage sides halfway through at the point of taper, draw them together at the rear, and add the rudder post plate.

Now you can add the balance of the longerons and all cross bracing.

Make the cabane strut assemblies per the drawing. (Notice the taper where strut meets sheeting.) When completed, cement it to the fuselage. Double-check alignment and the critical dimension for the top wing (4-5/8 in.).

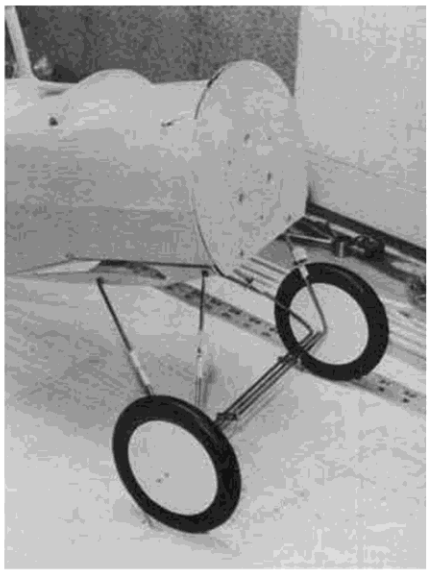
Make all the top formers per the drawing and cement them in place.



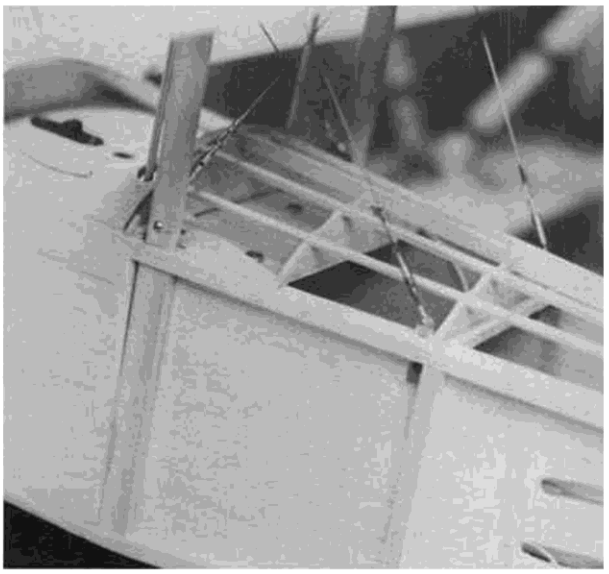


Tail structure is light and simple. Both rudder and elevator are actuated via scale-like pull-pull cables (above).

Fuselage structure is really very simple (left) as it is basically a box with formers and stringers. Forward platform is where middle wing mounts.



The fuselage's side planking is now in place, as is the landing gear and lower wing pod. Note triple-wire LG between the Williams Bros wheels.



Cabane struts and wires are detailed in the photo at the right. Holes in the side of the fuselage are for the elevator control cables.

(Notice that only the notches for the main stringer are cut now.)

Add the main stringer and cockpit sheeting.

Make all side formers and sub-formers and cement them in place. Add the hardwood mid and lower wing mounting blocks.

Apply the 1/16 balsa sheeting; 1/8 inch covers the firewall. the rear of the sheeting covers the break in the fuselage sides (at the point of taper).

Make the 1/8 ply cabane braces and install them.

The balance of the stringers are added now. Lay out, notch, and cement them individually. Add all 1/16 x 1/4 hard balsa capping and plywood cockpit combing. I also added a 1/16 sheet balsa doubler to the inside of the cockpit for additional strength.

Cut the cable entrance slots and sand the fuselage.

Make all fuselage fittings and apply per the drawing.

The optional lower access hatch is recommended.

The author has made arrangements with a plastics manufacturing firm to make cowls for this project. If you wish to order a cowl for your Nieuport Triplane, send $12.00 (in the U.S., postage is paid, outside the U.S. add $2.00), check or money order (no C.O.D.s), to Aurora National, 400 W. Bagley Rd., Cleveland, OH 44017. (The owner of Aurora National is a modeler.)

LOWER WING POD AND LANDING GEAR ASSEMBLY

Make two 1/8-inch plywood sides. Cut out wing entrance holes. I suggest making the top of the cutout 1/16 in. higher for ease of assembly, but the bottom of the cutout should be exact as it will give the two degrees positive incidence automatically.

Make all hardwood blocks per the drawing and assemble the basic pod.

The landing gear is made in an unconventional manner, but is much stronger than normal. Form the front and rear pieces. Make brass fittings; slide them on in proper sequence. Add the brass tubing over the butt ends and solder. Set the landing gear in hardwood blocks and hold it in place temporarily with pins or tape. Move the brass spreader bars in place. Add the axel. Tape the assembly together after alignment and solder. Epoxy to the hardwood blocks.

Add 1/16 ply bottom (grain crosswise).

The sides of the pod are to be completed after the wing is aligned and cemented in place.

CENTER WING POD

Make pod base from 1/8 ply. Taper the sides so that the final sheeting will match fuselage contour.

Add Former 1 and Former 3.

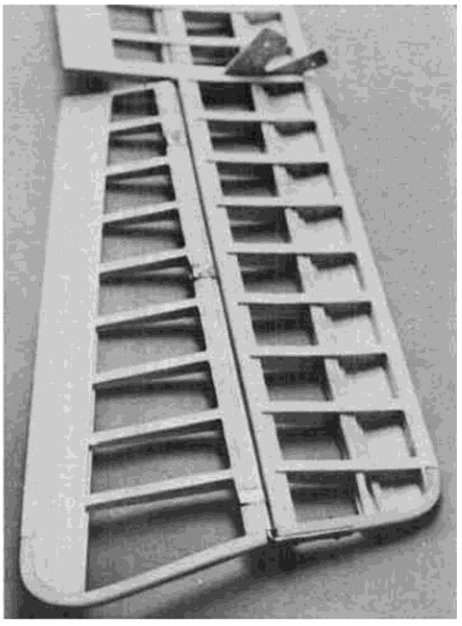
The balance is to be completed in alignment.

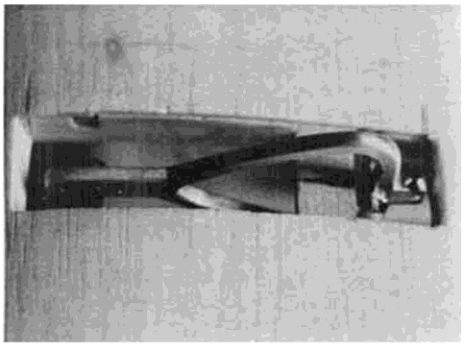
TAIL SURFACES

The rudder, stabilizer, and elevators are made in a more or less conventional manner.

Make 3/16 ply forms for the laminated outlines. Notice that the stabilizer is made in one continuous piece.

The removeable, optional, tail wheel assembly is recommended for better ground handling. Remove the scale tail skid when flying





The aileron torque tube is 3/32 o.d. brass tubing. It is Hot Stuffed to 1/8 o.d. tubing in aileron. A 3/32 pivot pin is inserted into tip end of 1/8 tubing (pivot is removable). Copper straps and Hot Stuff secure 1/8 tube to aileron. Aluminum horn clamps onto torque rod by set screw.

BUILDING THE WINGS (GENERAL)

Make a rib template from aluminum sheet at least 1/16 inch thick. Cut the ribs from 3/32 balsa (1/16 ply where noted). Notch the ribs for spars. Saturate each rib in the front spar area with Hot Stuff and set aside.

On the top wing only, and on the plywood ribs only, drill 1/8 in. pilot holes for the torque rod in advance of assembly.

Make the wing tips prior to starting the rest of the assembly.

LOWER WING

Pin the leading and trailing edges, main spar, and lower front spar to the drawing, blocking up as necessary.

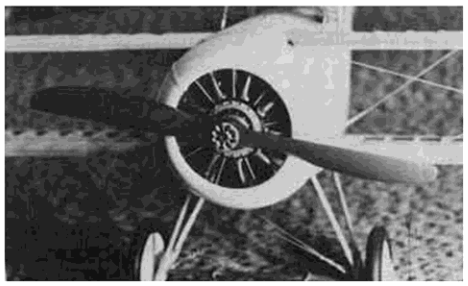
Add all ribs, making sure that the ribs which locate strut plates are exact. (This applies to all wings.) Double-check the measurement to the center of the wing before cementing in place.

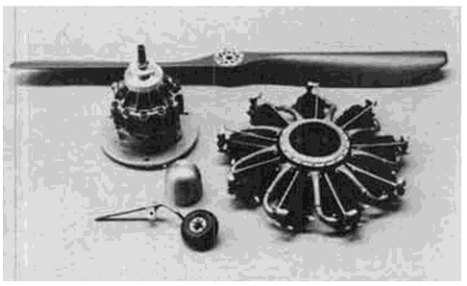
Add the top half of the trailing edges and the top front spar.

Add the wing tips next.

Cement the leading edge sheeting, center section sheeting, and the top cap strips in place (except over ply ribs).

Turn the wing over and add the 1/8 in. shear plates, lower caps, and center section sheeting.

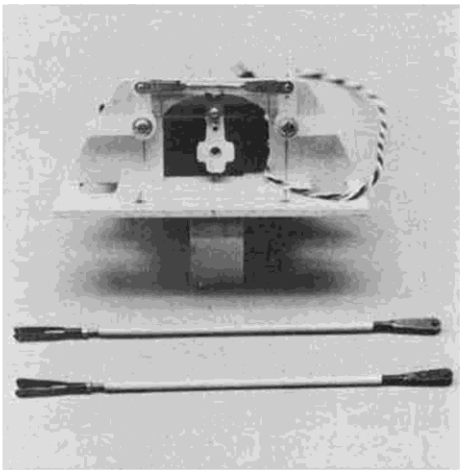


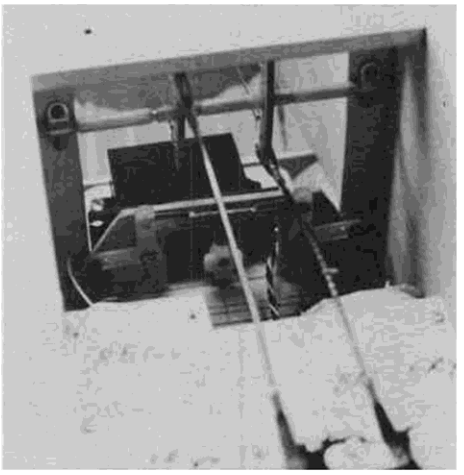


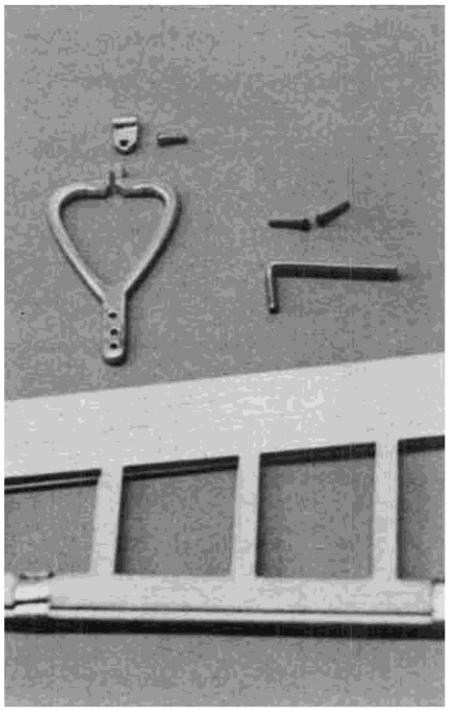
The so-called "business end" of the Nieuport triplane has a dual personality. On the left we see the static display front end with its dummy engine and prop. On the right we see the O.S. "Wankel" rotary engine that makes the Nieuport go as well as the dummy radial engine, prop spinner and tail wheel. The tail wheel replaces the tail skid for flying.

RIGHT:

Roll control is managed by the aileron system (near photo) which is shown upside down. The servo assembly is removable. At far right is the rudder and elevator system consisting of push-rods, 180° bellcranks, and control cables for pull-pull actuation.







The aluminum control horn (which resembles a wishbone) is machined from 1/8 in. stock. Outer pivot pin is held on with screws.

At this time, it would be good to make all the aluminum strut plates. Follow outlines carefully.

Add the plates to the lower wing and finish capping per the drawing.

If you prefer, you can sand the wing first, then add the plates and caps.

CENTER WING

This is built exactly as the lower wing with the following exception: Add the center section solid balsa fill before adding the lower center section sheeting. The cutout is made after sanding, and at the time of assembly to center the pod.

TOP WING

Whereas the bottom and center wing trailing edges had to be spliced in the center, top wings can be made in one piece.

Pin parts in place as before. Add ribs and cement. (Note: ailerons are made later.)

Add the top trailing edge, tips, leading edge and center section sheeting, and capping (all ribs).

Make cutouts for the aileron horns at this time.

Turn the wing over; add the bottom capping except over the ply ribs.

Now make the torque rod holes (this is not as difficult as it looks). Take a 3/16 in. drill, grind the shank down to fit into a piece of 3/16 O.D. nylon tubing (the same tubing as used for the torque rod bearing surface), and Hot Stuff it to the tubing. (Note: Use the nylon tubing from a Nyrod pack or Du Bro Kwik Rod kit.) This, along with a fine rattail file with 3/16 in. maximum diameter will do the job. Carefully make the holes from each end toward the center of the wing. Make sure the front of the hole is right up against the rear spar.

After this is done, the balance of the horn area can be completed.

Add the slip fittings per the drawing.

Add the nylon tubing (three pieces), and cabane fittings.

Now add the bottom center section sheeting. Complete the cutout for the horns.

Sand the wing, add the outer strut fittings, add the remaining cap strips, and finish sanding.

AILERONS

Pin the leading and trailing edges to the plan. Add the lower cap strips now. Make the ribs per the drawing and cement in place. Add the upper trailing edge and top. Add the upper capping. Sand to fit wing.

Groove the leading edge per the detail on drawing. Cut the torque rods to length. Make straps from thin copper shim stock. Hot Stuff the 1/8 in. rod in groove. Put the straps in place. Solder to the tubing and at the rear overlap. Add the inner rod (3/32 in.), leaving room on the outer end for the hinge. Hot Stuff each end.

AILERON HORNS

Make the aileron horns from 1/8 in. aluminum per the drawing. The horns are made so that the ailerons can be removed at anytime.

When assembling the ailerons to the wing, slip the horn in place by gently opening up the split end and pushing it over the spar.

Slide the aileron rod through wing, slip the clamp in place, set the horn in place over the clamp, align the aileron, and tighten the lock screw. Screw the outer hinge in place. (Remove in reverse order.)

ASSEMBLY AND ALIGNMENT

I'll not get into the alignment method which I used in very much detail because I haven't yet seen a good builder who didn't have his own personal method of achieving this.

Slide the lower wing into the pod assembly. Make sure the wing is centered properly. Tack cement the wing only enough to hold it in place. If the pod was made correctly, incidence will be two degrees. The space around top of the wing can be filled in later.

Bolt the assembly in place on fuselage. Check for horizontal alignment first, then sit the fuselage up on end on its firewall. Check for the proper 90-degree wing leading edge to fuselage center line alignment.

Tack cement the center pod to the fuselage (or tape it in place).

Set the center wing in place (make leading edge cutout at this time).

Block up the leading edge to achieve the two-degree incidence. Tack cement in place. Align with the lower wing.

Set the upper wing in place. If the cabane struts were made per the drawing, the incidence should be close to correct. Double-check for the correct incidence.

Drill a mounting bolt hole (one strut only). Assemble with a bolt and nut.

Set the fuselage on its firewall. Block up to clear center wing and make a final check. Clamp or tape the upper wing to hold it in place, and drill a hole in the other strut. Add the bolt and nut.

The outer struts should *not* be made in advance. Instead, make mock-up struts from 1/8 balsa. Make one part at a time (left and right together) and fit until correct. Then drill and bolt in place. It is not necessary to slot; just bolt to the inside of the strut plates for now.

After each piece is in place, cement or clamp the mock-ups together so that when they are removed, you will have a perfect pattern for making the final strut assemblies.

ALIGNMENT AND STRUT ASSEMBLY

Make the final strut assemblies now. Slot them just deeply enough to clear fittings, but don't drill holes yet. Set the struts in place on the inside of the mounting plates. Clamp them in place. Now drill the holes. Check for final fit and bolt.

After making sure the holes are in the correct place, you can now add cable fittings. Make cables per the drawing. All cabane and landing gear bracing is made from .025 music wire. All flying and landing cables are made from 30-pound test steel leader, plastic covered. All control cables are 15-pound test.

FINISHING

After final sanding, the model was given two coats of Balsarite and sanded again. The covering used is Super Coverite. Use dope or epoxy paint of your choice.

The color scheme on the French aircraft was: upper surface and sides, dark green; underside, natural or beige.

The color scheme on the English aircraft was all silver.

My roundels, etc., were sprayed on, one color at a time, using patterns cut from contact shelf paper. (Works great!)

FLYING

I wish to ease the minds of potential builders. Unlike the prototype, the *model* flies great, is fully maneuverable, and doesn't land any harder than many other models I've seen around.

The complete model weighed 6 lbs., plus 4 oz. for the brass spinner which brought the model into correct balance.

It flew right off the board, so to speak. The only problem we had (on about the third flight) was a broken torque rod. Luckily, I had a real expert at the stick (Dee Harwell), and he landed it with very minor damage. Since I charged the torque rods from aluminum to brass, everything is just fine.

This aircraft is a real beauty in the air and on the ground. In all my 55 years as a builder, I haven't seen any model more realistic in the air. It is a project well worth the time and effort. So what's holding you back?! •