

BRYCE PETERSEN'S NIEUPOORT II

"Without any signs of emotion Slater climbed into the little Nieuport and seemed to leave the ground like a bird. All eyes were on him. What followed was the most consummate exhibition of aerial acrobatics I have ever seen, performed a few yards off the ground and back and forth between hedges of the tall trees, where a single false move would have meant a ghastly smash. He zoomed almost vertically over the poplars at the far end of the field, turned in a beautiful immelmann - half a loop, upside down, and half a barrel, came roaring back, nose down just over our heads and did a loop from which he emerged with his wheels brushing the grass. His two spins one right and one left, were done so close to the earth that they brought even the languid instructor to his feet and each time when he straightened out, the landing gear of the plane was no higher than a man's head. Marvelous flying, but he's mad - a lunatic."

Falcons of France by Nordhoff & Hall.

From the eyes of a witness at a French training school in 1916.

Designed as a French answer to the Fokker E-1, the Nieuport 11 was officially designated as Nie. 11C-1. The first in a series of highly successful

single seat fighters used up to the end of WWI.

How can the true modeler resist the glamour and cuteness of this famous old design?

FLYING SCALE

... is a title listed on the program at most major contests, but often at the bottom of the list. If time allows, a few brave souls risk hundreds of hours of super detail with nervous thumbs and, much too often, the result is a controlled crash. One might say that the **Flying** is not matching the **Scaling!**

Most scale buffs that I know will cringe at the idea of deviating from scale in the slightest to improve performance. In their minds it must be exact or it's not scale. For a model that is to rest on a shelf in the living room, I would agree, but one must remember that this is **Flying Scale** and the **Flying** is as important as the **Scale**. If a ship is unstable in the air, is it **Flying Scale**? I think not. Common sense will tell you that if you don't match the stability of its big brother it's **Flying out-of-Scale!** Some designs will scale down and retain proper proportion for stable flight and the Nieuport 11 is one of these designs. However, slight changes, barely noticeable, will improve its performance 100 percent. Such changes have

been made with this model but only the best trained eye can find them. In the air the ship is as stable as a rock and easy to fly. Even the most critical will admit it looks **real**. Technically, I will have to call my model a semi-scale design but I would rather use the word **Flying Scale** where the **Flying** matches the **Scale**.

CONSTRUCTION

An all out effort was made to prove to myself that just because it IS a scale design it **DOESN'T** have to be difficult to build. Usually, a scale bi-plane takes a whole building season to complete when you consider the problem areas like the wing struts, stringers, etc. A quick look at the plans and you will see how simple this can be with pleasing final results.

If I could claim any breakthrough





with this airplane it would surely be the continuity of construction. You will find that keeping track of the tools represents a bigger problem than the construction itself. To bear this out, the fuselage and wing were completed in one day and the model in eleven days.

FUSELAGE

First, make a trip to the local building supply for a slab of styro-foam, (the type used for wall insulation) 12 inches wide, 4 inches thick, 8 feet long and white in color. One slab is more than enough. Next, a few scraps of 1/8 inch masonite are necessary for cutting patterns. Two wooden yardsticks are drilled to fit toothpicks and these are used to make the straight cuts for your oversized stock.

Step 1.

Cut from stock a rectangular block of foam slightly larger than the side

view of the plane, 28 inches long, six inches deep, and four inches wide. Lay the masonite top inside pattern on the top and bottom, making sure it is centered exactly and HOT WIRE cut the inside cut. Be sure to save the inside piece for later use.

Step 2.

With the inside back in place, lay the side pattern in position and make the bottom cut.

Step 3.

Replace all cuts with toothpicks for squareness and make the top cuts, one side at a time, using one of the top patterns on the bottom.

Step 4.

Cut four 1/4 inch fiberglass tubes (sometimes used for pushrods) to length and epoxy to the foam. Using 3M contact cement, spray the inside of the fuselage, then sheet with 1/32 inch balsa. This adds stiffness to the foam.

Step 5.

With contact cement, sheet the outside of the fuselage and trim the nose and tail. Spread slightly and epoxy the pre-cut firewall and nose-block in place and allow to dry (the

warm air of a hair dryer will set Hobbyoxy No. 1 in 20 minutes).

Step 6.

From 1/16 inch plywood cut two F1 patterns and hot wire the top front portion. Using F1 and F2, hot wire the top rear portion and contact cement in place.

Step 7.

With 1/32 inch plywood, cut and secure the cockpit pattern and sheet the fuselage top. Trim and round the noseblock to shape. The bottom portion of the fuselage is left open for equipment and pushrod detail later on.

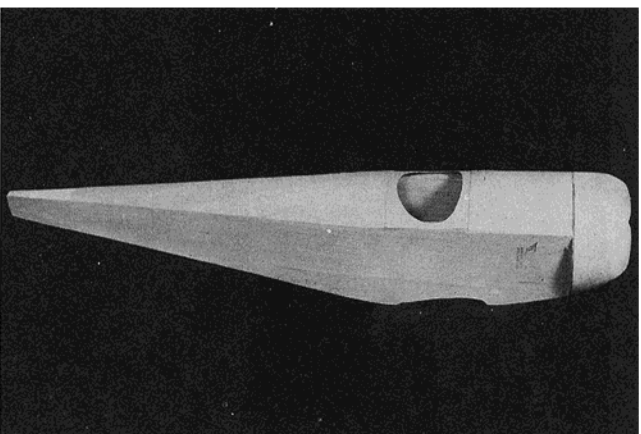
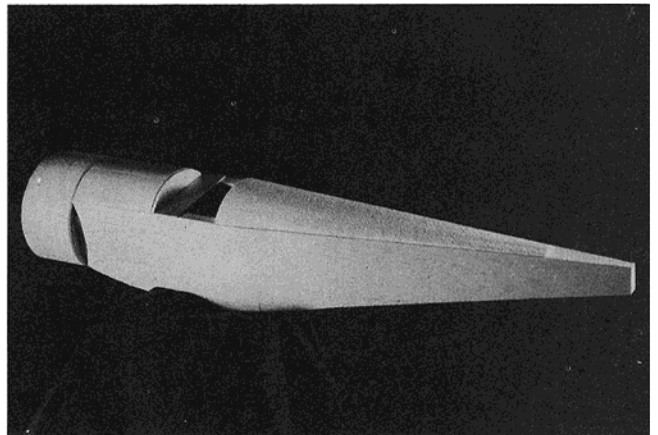
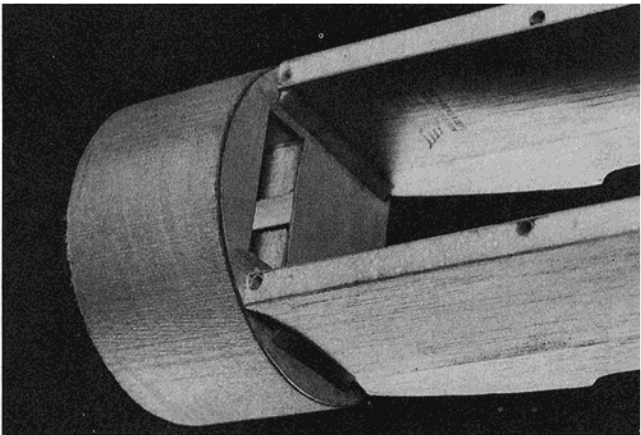
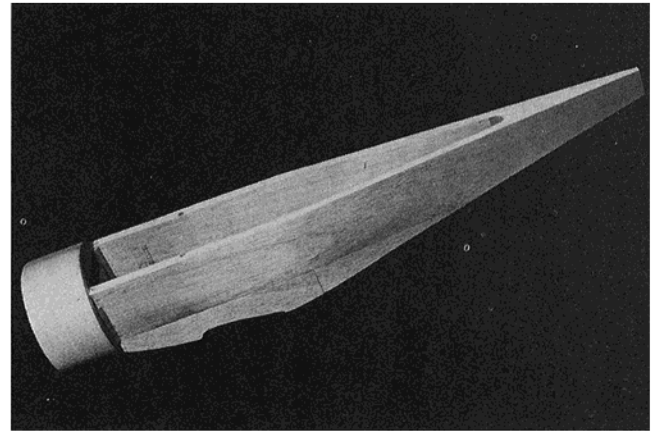
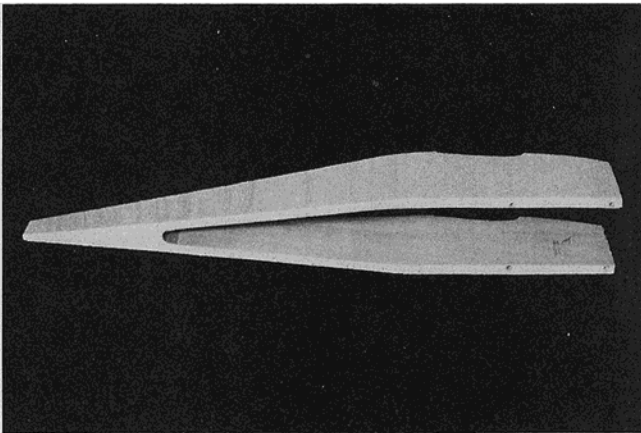
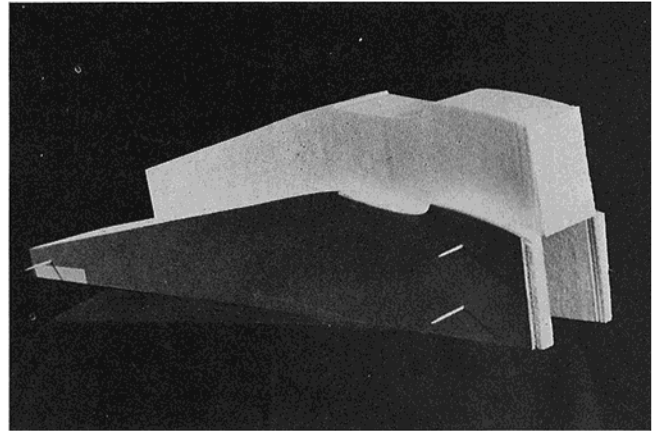
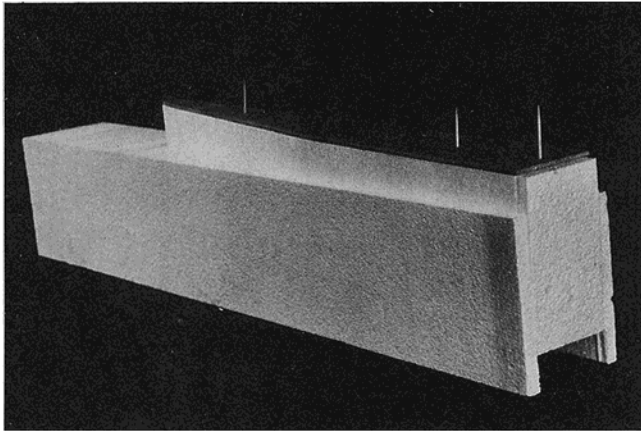
TAIL

How can 1/8 inch balsa be used for this size tail surface? The answer is that when Coverite covering material is used on both sides, it stiffens the wood like a piece of plywood and is found to be warp free. Coverite was used throughout the model and I highly recommend it. Select a good grade of 1/8 inch balsa and cut to shape. Be sure the grain of the wood is according to plan and add 1/32 inch plywood doublers where noted. Stitch with elastic thread (See Wing-Rib Detail) and cover both sides with Coverite. Add the wire connector to the elevator and finish with mylar hinges. The tail is secured to the fuselage with epoxy at this time.

WINGS

Step 1.

For the top wing cut two blocks of foam 23" by 7" by 1". For the bottom wing cut two blocks 4" by 20" by 1". Use a yardstick for these cuts and make sure the panels are perfect. If a



Top row, left: First cut on fuselage. Right: Second fuselage cut. Second row, left: Third fuselage cut. Right: Fuselage ready for top cuts. Third row, left: View of fuselage with cowl in place. Right: Fuselage top cuts. Left: Completed fuselage.

warped panel is cut here it will be transferred into the finished wing.

Step 2.

With contact cement, sheet the bottom of all four panels with 1/32 inch balsa, leaving a 1/4 inch overhang. Contact cement the 1/4 inch square leading edge on the front and secure the rib patterns at both ends for hot wire cutting. (All four wings are cut square on both ends at this time. The center and tip cuts are made later.)

Step 3.

Hot wire cut the airfoil on all four panels starting at the trailing edge and advancing to the leading edge. The bottom wing is joined at the center section and 1 inch dihedral is added to each wing tip. The top of the bottom wing is covered with 1/32 inch balsa at this time. Use a small ribbon of glass cloth around the center joint. With a

razor blade, shave the foam at the wing tip, then sheet.

Top wing - Cut the aileron and center section on each panel separately. Be sure to reverse the pattern for the second cut. Add the tips and join together at the center section on a **FLAT TABLE**. With a razor blade, groove out the foam for the center spar and aileron tubing. Add the aileron detail as well as the center spar at this time using epoxy. Add the wood center section and sheet the top of the wing. Sand to shape.

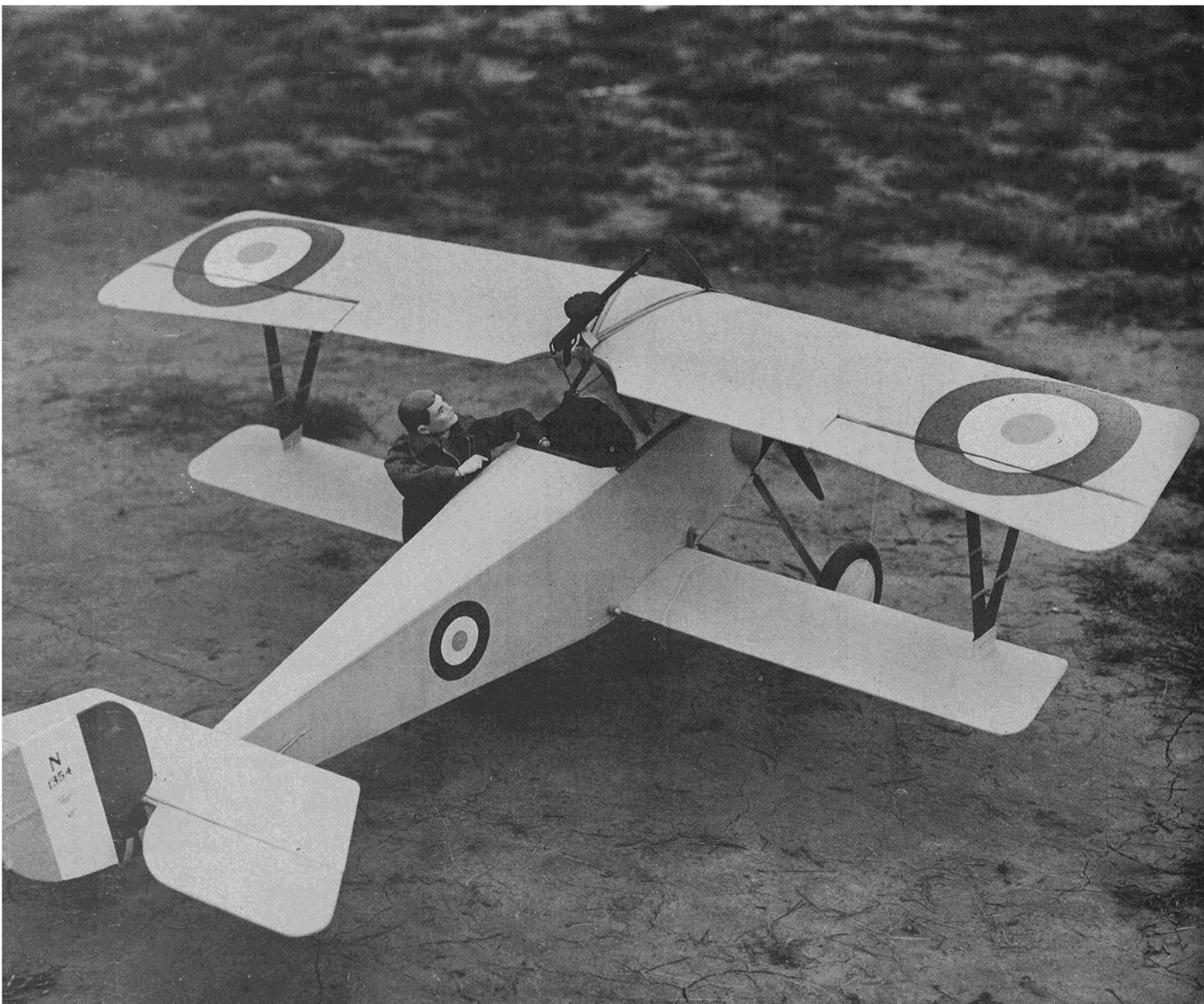
RIB STITCHING

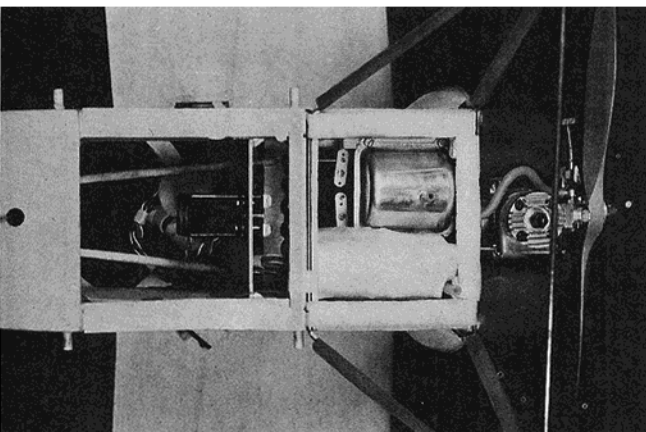
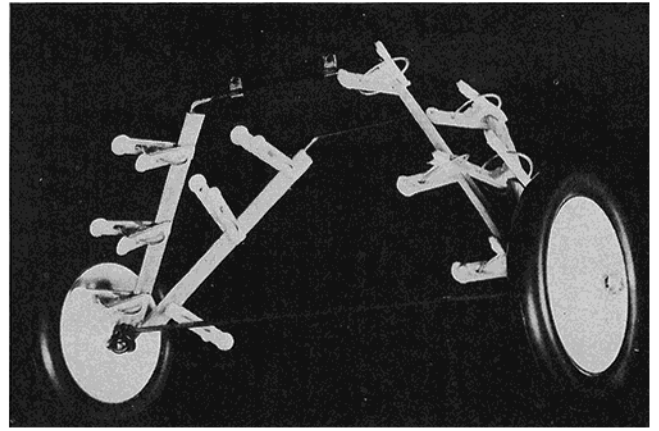
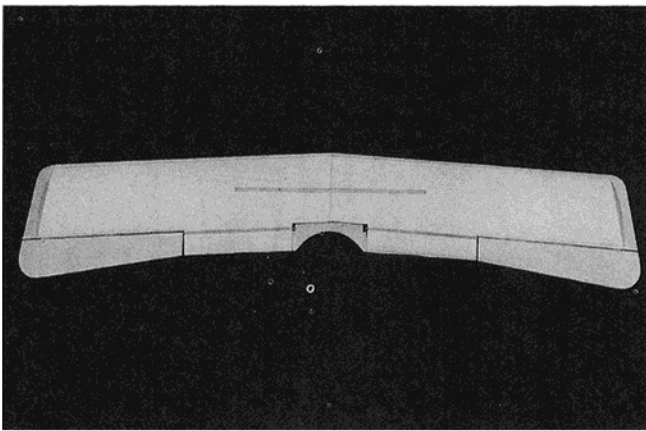
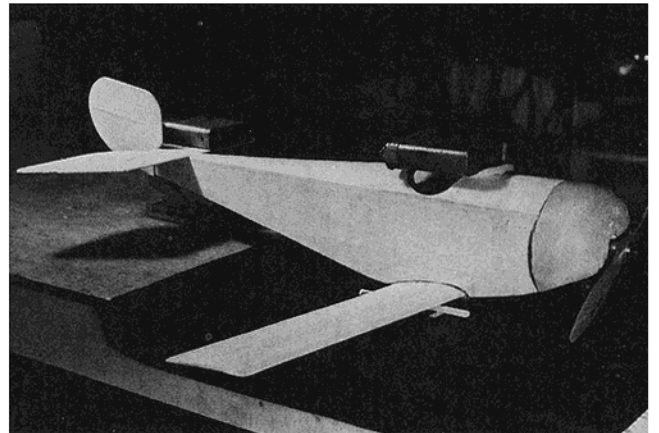
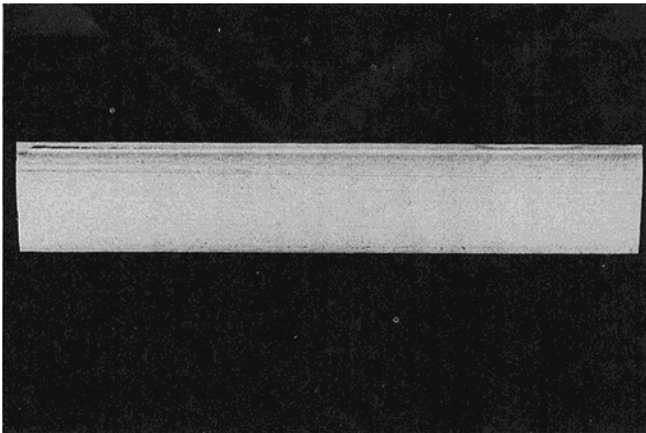
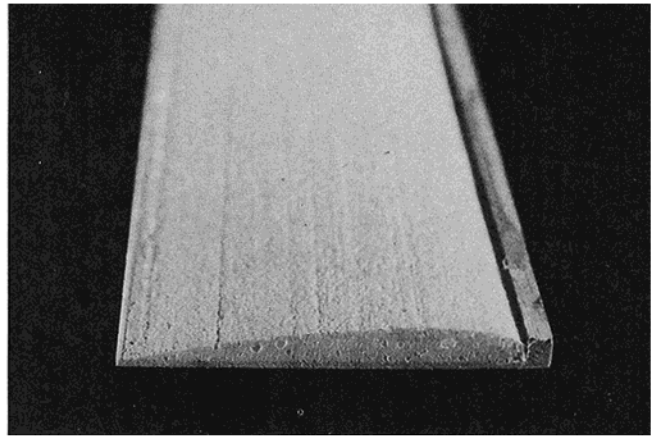
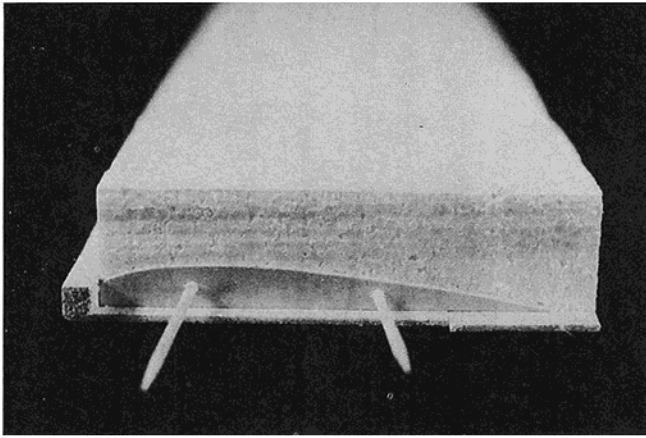
Using elastic thread and a large needle, start from the top leading edge down through and back to the trailing edge. Go up through and back to the top hole. Go back through and around the leading edge and pull tight and tie in a knot. Tack glue on both sides and leave to dry. Cut off all excess at the

leading edge and you are left with a stitched and glued rib. After covering with Coverite and heat is applied, the fabric pulls down around the string and a scale-like rib appears. (I have actually argued with friends that they were not built up wings.)

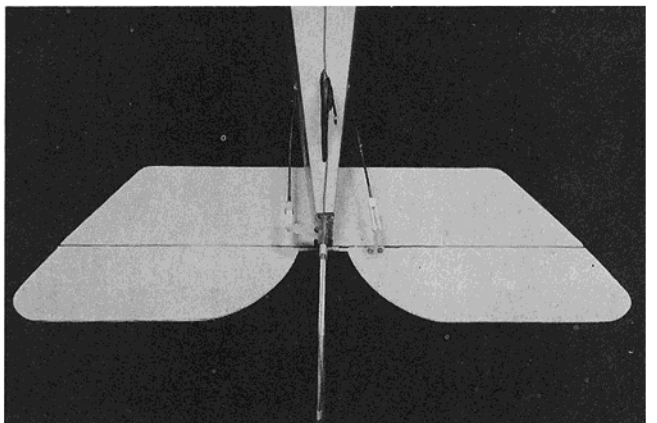
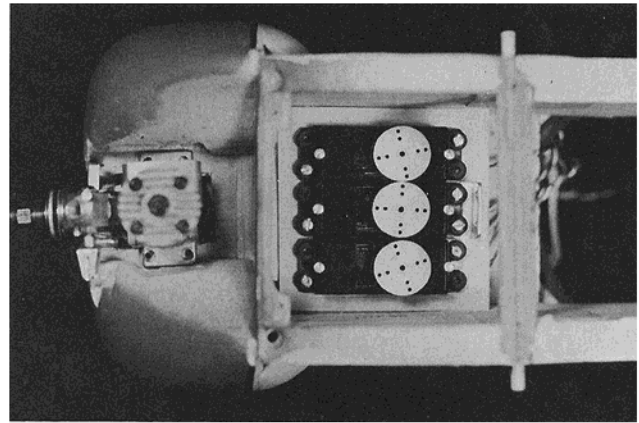
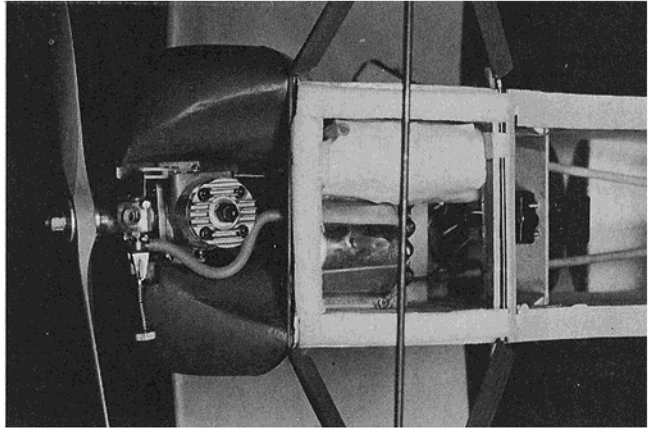
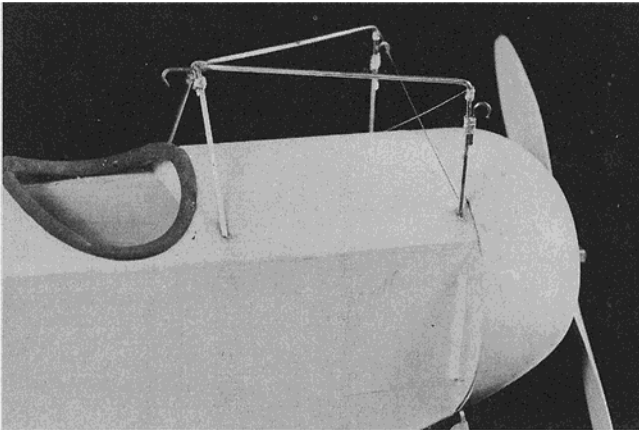
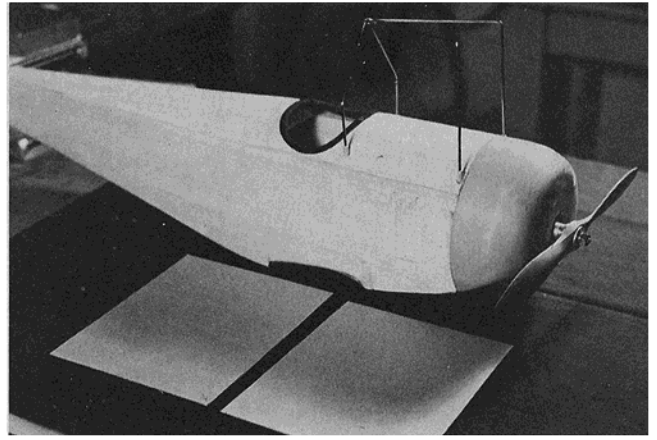
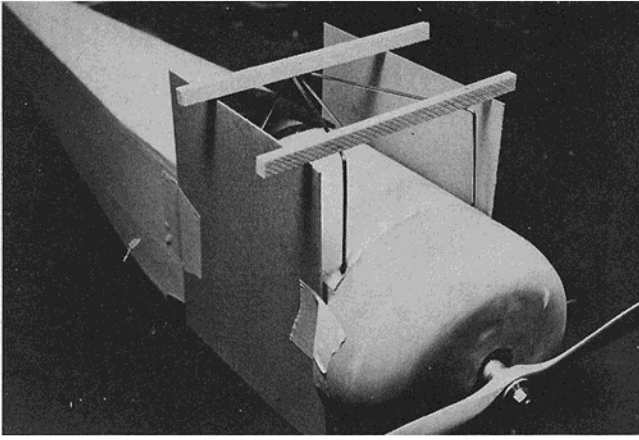
WING STRUTS

Remember the four fiberglass tubes in the fuselage? They have probably been covered over on top so, with a piece of piano wire, shove up through the bottom and through the top and, with a rat tail file, file out the holes on top. Using 3/32" inch piano wire, bend the wire struts to shape and solder together at the rear connection to form a frame with four legs. Set the fuselage on a flat table and jig the stabilizer exactly horizontal to the table by measuring from the leading and trailing edge to the table. Prepare two cardboard templates to match the

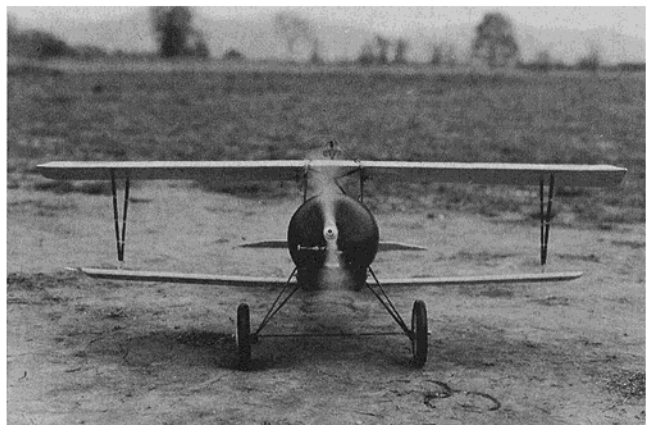




Top row, left: Lower wing stock ready for cutting. Right: Lower wing airfoil cut. Second row, left: One lower wing panel. Right: Alignment of lower wing. Third row, left: Upper wing ready for sheeting. Right: Landing gear assembly. Left: Bottom view of completed landing gear.



Top, left: Wing bracing being jugged for epoxy set.
Right: Ready for top wing brace placement, showing cardboard jigs. Second row, left: Finished cabane brace. Right: Underside of fuselage showing fuel tank, battery. Third row, left: Orbit servos in place. Right: View of tail linkages. Left: The Nieuport, ready for take-off.





exact height and wing incidence to the table (see photo). Tape these to the fuselage sides. Set the wing on the templates and check to be sure everything is square and true. Fill the tubes with epoxy and lower the four wire legs down into the tubes until the top matches the cardboard (see photo). When dry, you have perfect wing alignment that is there to stay.

The landing gear and V-struts, with a natural wood finish, will add greatly to the looks of your airplane. This system is simple and strong and one of the best features of the project. From your lumber company obtain a few scraps of wood veneer about 1/64 inch thick that has a paper backing. Cut to length for the different struts with a little extra width. Smear a glob of epoxy in the center and bend around the piano wire to form an airfoil and clamp about 1 inch apart with spring loaded clothes pins. Jiggle around until in good alignment. After the epoxy sets, sand the trailing edge straight and lightly sand the entire area. A little wood stain is added and, presto, a natural wood strut!

LANDING GEAR and SHOCK ABSORPTION

Careful planning went into the design of this landing gear. Correct landing procedure is a semi-stall attitude. A flexible landing gear is desirable, especially in the vertical mode. If both wheels turn on a common shaft the take off run is more stable. One inch OD hard rubber ('O' Rings) are used for this purpose. The horizontal shaft will seem stiff until oil from the engine lubricates the 'O' Rings. Sitting on the ground you should be able to hold down on one

wing tip and when released the ship should oscillate two times due to the flex in the landing gear. When this is achieved both landing and taxiing is improved.

SELECTION OF POWER

My Nieuport is powered with an Enya .19 RC which provides sufficient power plus a little to spare. A good healthy .15 should fly the little model in a scale-like manner. After the engine is selected, prepare a hardwood mount according to plan, and cut out the noseblock to fit and epoxy in place.

RADIO GEAR

My eyeballs were bulging when I picked up the little Orbit servo at Toledo last winter. I thought to myself, "Open the door, Richard," to a new age of construction, size, etc. Then the people at the Orbit booth showed me an even smaller servo that would easily fit in my watch pocket, but they said I would have to wait a while for this one. I certainly admire these people that work so hard and even gamble their future to give us a better product. After the Orbit gear was installed, the total weight of the ship came to 3 pounds, nine ounces, full house.

FINISH

Acrylic lacquer was chosen because of its wide range of colors and its coverability. Two coats with a brush will do the job nicely because the Coverite doesn't need to be sealed. I brushed it on at full strength after heating lukewarm. The final result is a canvas-like appearance and most realistic.

ROUNDELS (Insignia)

For that finishing touch the quali-

ty of your roundels will add the color and appeal you are hoping for. First, you pre-paint lightweight silkspan red, white and blue. Attach a piece of razor blade to a compass and cut out the different circles. Locate the center of the circles by the little hole the compass made and dope to the surface. After drying add a few brush strokes in a circular motion and you have a beautiful scale-like insignia. It will also look like they were painted on.

FLYING

Take off - Apply power and hold a little right rudder. This will cause a slight right turn. Ease off of the rudder and the ship will straighten itself with torque. By this time the tail should be up and it will lift itself into the air. If you are one of those that cannot help holding back on the elevator, I suggest you feed in down trim in advance and then a little back pressure will be required for normal flight. The flight characteristics are of the self-neutralizing nature and should trim out hands off. A slow glide is desirable on the final approach since no wing drop off tendencies have been experienced due to the high center of lift which gives a pendulum effect.

A Word of Thanks

First, to my dear wife, who flies co-pilot with the budget and typewriter. Second, to those at RCM for a constant atmosphere of adventure with contests and heads-up leadership for the modeler and his future. Next, my brother, Joe, for his slip-stick and helpful suggestions. Last, the Orbit organization that produces for us the reliable radio gear that makes it all possible. ●