PLANE ON THE COVER STORY

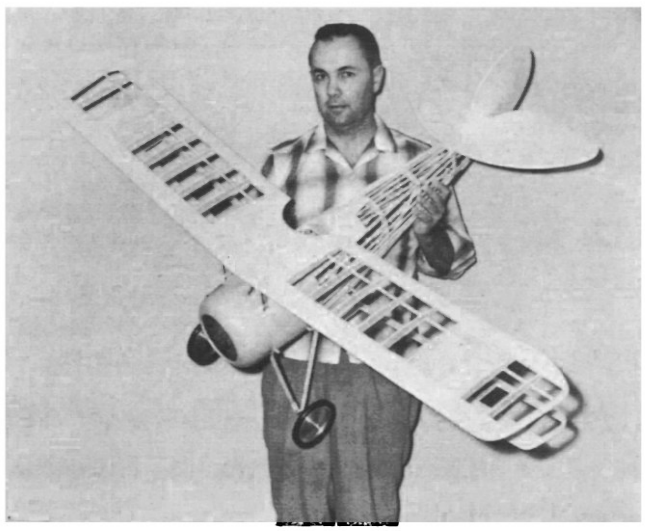
Even in black and white, our two models generate considerable interest. Our Nieuport holds its own with the full-scale biplane in the background.

R/C NIEUPORT 27

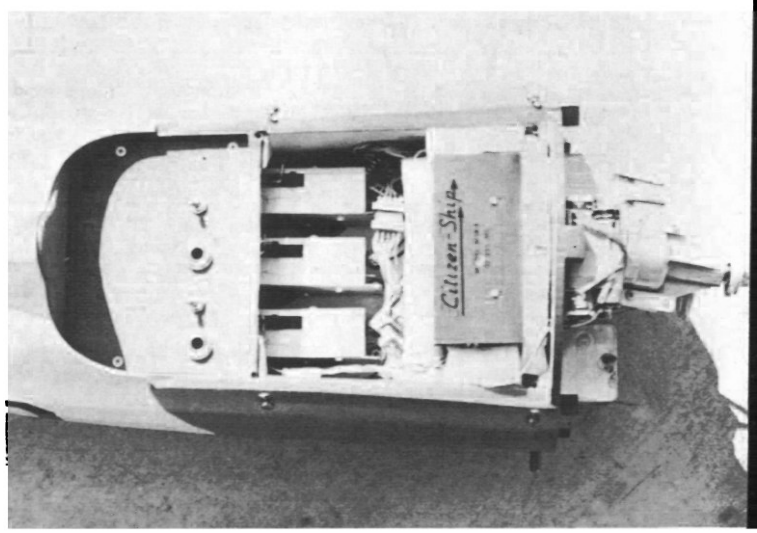
WHAT EVERY SCALE FAN HAS BEEN WAITING FOR IN MULTI—A FINE FLYING WORLD WAR I BIPLANE. DESIGNED TO PERFORM WITH THE BEST, IT SHOULD BE A WINNER.

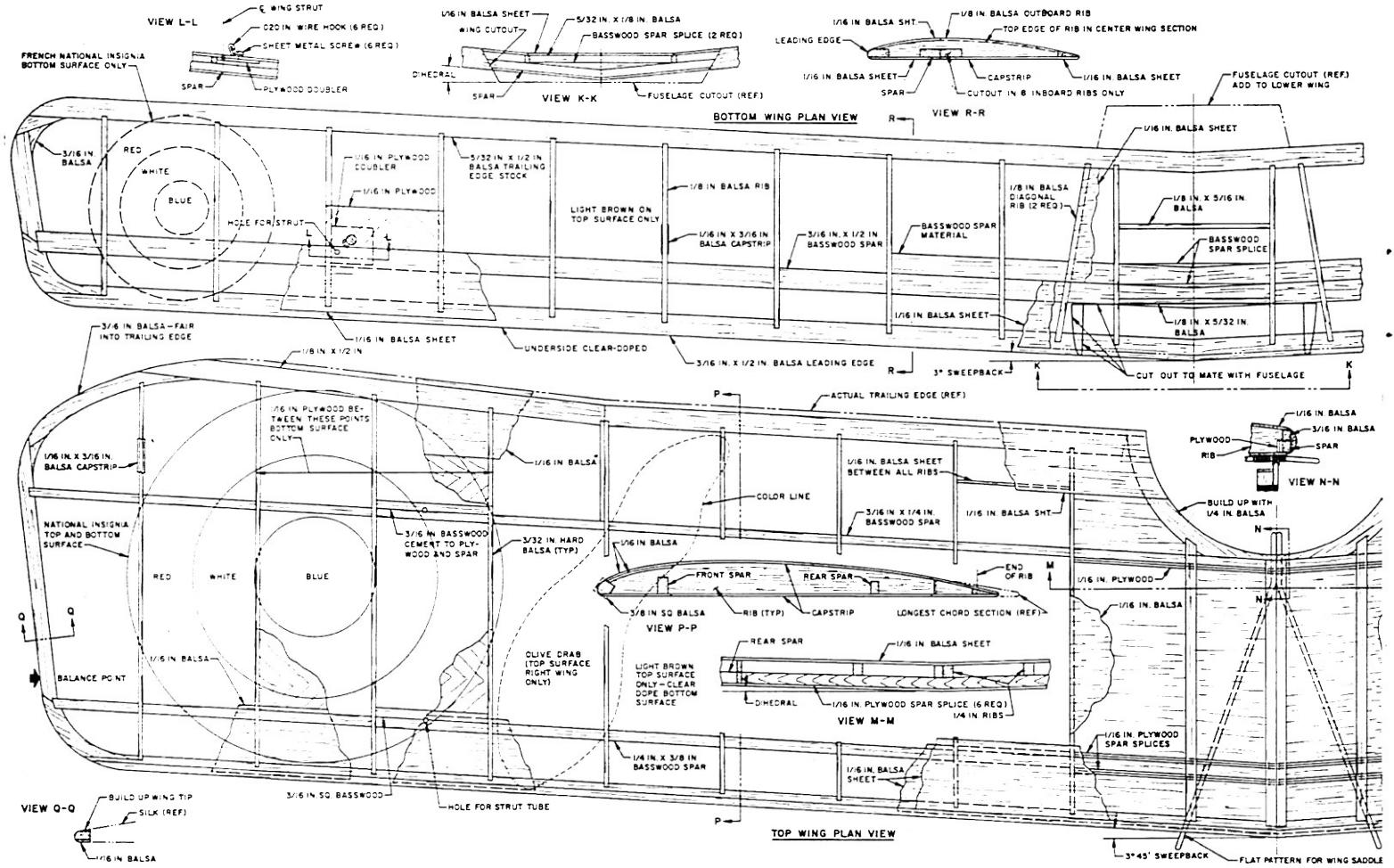
► IF YOU'RE ONE of the many fans of World War I aircraft or just an old biplane lover, here's a scale project that will give you real satisfaction. The sturdiest of a long line of famed French fighter aircraft of the 1914-18 era, the Nieuport 27 makes an eye-catching as well as a true performing R/C model. It has been difficult to identify Nieuports because of the many model numbers and different engines; the number designations of Nieuports in World War 1 ran to 83. The popular Nieuport 27 flew not only with the LeRhoné 120 but also with the Clerget 200 and the Gnome 160. As a result the pilots referred to their ships as a "LeRhone Nieuport" or a "Gnome Nieuport". The Nieuports had the same family profile, and the pilots had difficulty in determining from a distance whether the aircraft were single-seater or two-seater. The United States bought 287 of the Nieuport 27's. Flown by many of the leading allied aces, the feature distinguishing it most from earlier models was the rounded (*Continued on next page*)

Author with the uncovered model—designed for reliability of scale, it still had to fly well; therefore, weight was held to a safe minimum.



Short nose moment arm required that weight be concentrated in the nose area—note dual fuel tanks and batteries on front of the firewall.





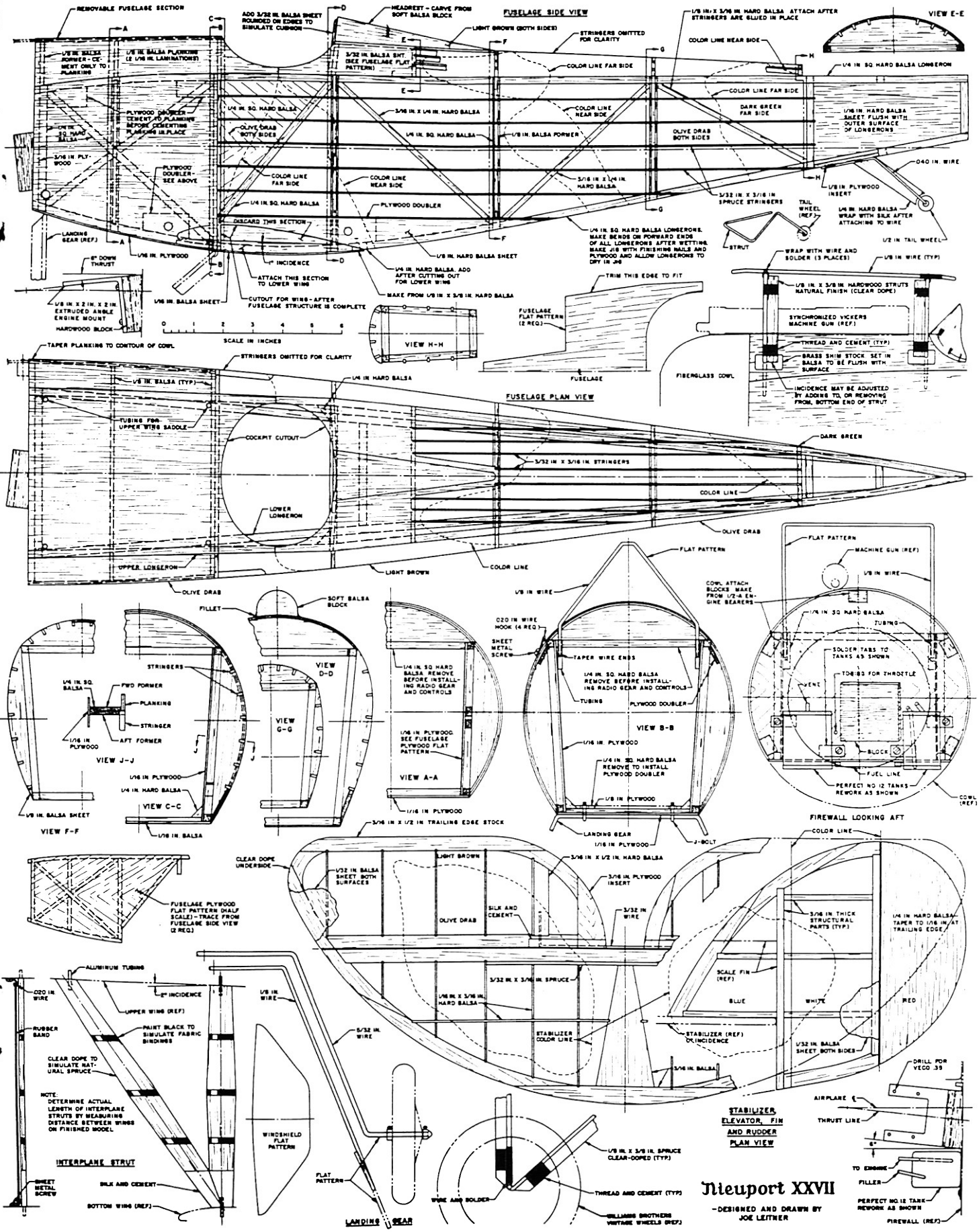
R/C NIEUPORT 27 CONTINUED

vertical tail surfaces. Nieuport specialized in designing maneuverable ships; however, because they were not as heavy as other planes, they were criticized as being "frail", but Nieuport added structural strength to the 27 without sacrificing performance. The Le-Rhone 120-powered Nieuport climbed to 6500 feet in 5½ minutes and to 10,000 feet in 10 minutes. It had a speed of 110 mph in level flight with a ceiling of 22,700 feet. Its span was 26 feet, 11 inches; length 18 feet, 10 inches; and height 7 feet, 9 inches.

The prototype for this 60-inch span, 8-channel beauty was a smaller (48-inch span) single-channel version with rudder and engine control finished in 1959. It was an excellent performer after some trim problems were ironed out. As to its eye-catching qualities, when I first displayed it at a club meeting the general comment was, "You're not *really* going to fly it, are you?" Having been built to fly, it accumulated 60 flights before a hung escapement wiped out the forward fuselage. Two larger versions of the prototype were already started, and being eager to get them into the air, I concentrated on one of them. I put the single-channel aside, because I felt I had learned from that version enough about the flight characteristics of the Nieuport 27 as an R/C model as well as all I could about its structural weaknesses.

Front leading gear strut is attached with rubber bands and offers excellent shock absorption.

In the design of the larger model there were few minor structural deficiencies, and these were eliminated. Basically the structure of the larger model was sound and was proven in early "rough landings." The model Nieuport 27 was designed by converting the plans for the full-size airplane which appeared in Model Airplane News issues (December 1956 and January 1957) to standard model aircraft type structure and by retaining fidelity to scale in as many areas as possible without sacrificing performance. For example, all four longerons, all fuselage formers and stringers, wing ribs and spars, as well as all wing and cabanne struts are to scale in the same location. Every alternate fuselage former aft of the cockpit in the full-size airplane has been eliminated to help reduce the tail-heavy tendency prevalent in most (*Continued on page* 38)



FULL SCALE PLANS AVAILABLE—SEE PAGE 55.

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(*Continued from page* 12)

World War I fighters. With the exception of the solid rudder, the entire tail group is built up and covered with 1/32-inch balsa sheet to simulate the veneer on the real 27. The molded fiberglass cowl is scale, as are the airfoils, although the undercamber of the top wing was eliminated for better performance. The firewall is located exactly as in the full-size airplane.

The deviations from scale are (1) a slight bit of dihedral was added to the top wing but it is not readily noticed owing to the sweepback and can be eliminated without seriously affecting the lateral stability; (2) the area of both the vertical and horizontal tail surfaces has been increased by approximately 10 percent for added stability in the landing attitude; (3) a slightly wider tread was designed into the landing gear for easier control during the take-off and landing roll; (4) the straight-through axle, typical of World War I fighter planes, was eliminated to help prevent nose-overs in tall grass if the landing strip was missed (it could be incorporated if you are flying from a field with a large paved surface or runway).

The built-up fuselage has a basic structure of ¼-inch square hard balsa; the formers are made from ⅛-inch balsa sheet; the planking is two thicknesses of 1/16-inch balsa or could be one thickness of ⅛-inch, and the stringers are 3/32 x 3/16-inch spruce. The 3/16-inch plywood firewall is cut out to accept the four longerons. In the removable fuselage section the formers are tacked only to the upper longerons to facilitate the cutting out of the section after the planking is complete. The forward former is not centered to the firewall as this would not allow the section to be removed after planking. In some areas the stringers must be undercut to avoid weakening the structural members, as shown in View H-H in the plans. The bottom of the forward fuselage is 1/16-inch plywood beefed up at the landing gear rear attach points with a piece of ⅛-inch plywood and ¼-inch hard balsa gussets. The bottom of the fuselage section, which is cut out and a portion of which is attached to the bottom surface of the bottom wing, is 1/16-inch balsa. The model was designed with as much weight forward as possible because of the inherent tail-heaviness caused by the short nose moment. The entire tail section is built-up (except the rudder which is solid balsa) and covered with 1/32-inch balsa sheet. The landing gear is attached at the forward points by rubber bands to a ¼-inch dowel and at the rear attach points by two J-bolts and uses 5-inch Williams Brothers vintage wheels. The tail skid, which looks like a true skid in the air, has a ½-inch wheel in it to help avoid loss of control on take-off (in this design it is not steerable). The wheel is painted light brown (as is the skid) to make it less noticeable. The cowl is molded fiberglass, and these cowls are available from the author.

The top wing has basswood spars and 3/32-inch hard balsa ribs and 1/16-inch plywood sheet in the interplane strut area to avoid holes being punched in the wing from the struts which have aluminum tubing inserts. In addition to providing extra "looks" the interplane struts stabilize the bottom wing and allow for slight warping of the top wing when minor trim changes are required. The leading edge is ⅜-inch square hard balsa and ⅛ x ½-inch trailing edge stock is used. There are four ¼-inch ribs in the wing center section and 1/16 x 3/16-inch capstrips on both top and bottom surfaces of the wing. The spar splices are made from 1/16-inch plywood—there are two splices on both sides of the front spar and on the forward side of the rear spar, making a total of six.

The bottom wing has a single extra-large basswood spar to give strength to the unusually small wing. It is beefed up in the center section wing to compensate for the cutout in the leading edge for the landing gear struts. This cutout has not been a structural weakness—the only damage so far to the bottom wing has been scraped tips. The beefing up consists of reinforcing the spar with an additional piece of the 3/16 x ½-inch spar material and two spar splices made from the same basswood material. There is a 1/16-inch plywood piece in the interplane strut area along with a 1/16-inch plywood doubler to accept the sheet metal screw and to beef up the hole for the interplane strut. Capstrips are used only on the bottom surface.

The wing saddle fits through the removable forward fuselage panel into brass tubing and is held in place by rubber bands. The fuselage panel is reinforced around the holes with brass shim stock set into the balsa before covering with silk to insure a smooth finish. The antenna is installed at this point, before covering. Another problem is avoided by covering the fuselage before adding the streamlined headrest. This prevents the silk from "shrinking up" in the headrest fillet area and allows the fuselage to be more easily covered with one piece of silk. The bottom of the fuselage is left uncovered at this time to gain access to the aft fuselage while installing the controls.

Interconnected fuel tanks, reworked Perfect No. 12's, and radio batteries are installed on the forward side of the firewall, and the receiver and servos are placed as far forward as possible aft of the firewall. The servo nicads are located directly beneath the receiver. Scale wing incidence in both wings has been reduced by 1/3 and elevator trim employed. Because each model balances differently, to eliminate excessive down trim lead may be added in the cowl. In this model not much up trim is necessary and so the trim can be rigged to put the elevator a few degrees above neutral with full up trim; this makes plenty of down trim available. The camouflage paint job is authentic and a gun may be added for more scale detail. The Veco .35 engine is inverted for good cooling and has not been a problem to start in this position. With the Veco .35 the model weighs exactly seven pounds. A Veco .45 is being installed for added nose weight and the .35 will then go into ship No. 2 which will be a single channel project. Remote battery leads are installed because of the difficulty of getting into the cowl from the rear, and a needle-valve extension is used to facilitate adjustment through the large cowl.