

# SORT-A-SCALE



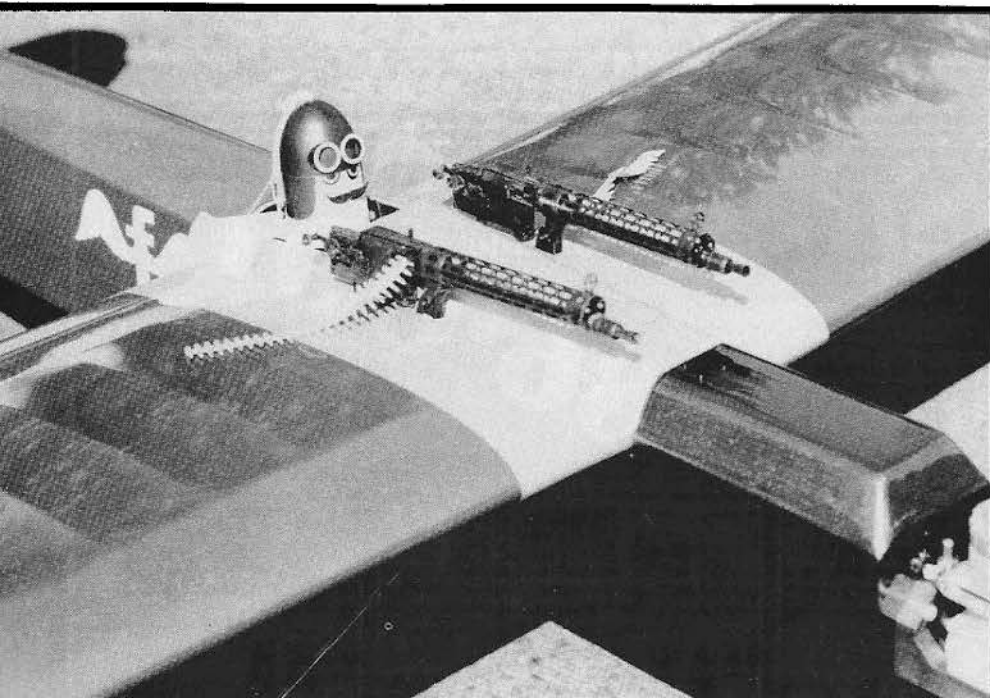
## FOKKER

**A**ll of us in this fun filled sport of R/C model flying have our own preferences as to the type of models we fly. For me, it has always been strictly a love for the old aircraft, particularly of the golden era and WW I periods. I build nothing but scale models of these aircraft. In the past several months, I have been assisting a local hobby shop

owner with training a large group of fledgling model fliers. He usually has a group of three or four modelers who he teaches to fly after they have finished their first R/C models. This season, he was overwhelmed with trainees at these Monday night sessions. He teaches them in a large schoolyard across the street from where I work, and watching them has

become my Monday evening pastime over the past several years. It was fun to see the new pilots making progress from week to week. This year the shop owner needed some help and asked if I would lend a hand.

I have done a lot of teaching in various fields and enjoy helping someone who can benefit from my expertise. I have been a successful



**This model is an excellent flying craft that is very docile at low throttle settings and is an excellent first time trainer. At higher throttle settings, it will do most any maneuver you care to do with it, although not violently. It is a real fun airplane to fly and is much more relaxing than the hotter models a lot of guys like to bore holes in the sky with. This one does everything gently.**

**By Henry A. Haffke**

roller skating teacher for 35 years, having taught many National Champions, as well as many State and Regional Champions. Before that I was an instructor in the Navy in Aviation Ordnance. I have, also in the past, taught a friend or two to fly R/C models, so felt comfortable in taking a new pilot up on his first attempt.

Every Monday evening we fly until it is too dark and I get to fly all types of trainer type aircraft. We each help four or five modelers and, in the time we have, get to take each of them up two, three, or four times. No one has crashed their models seriously and a few of them are now flying by themselves, with others getting close to that stage. It has been a very enjoyable experience for me, and when that new pilot is coaxed down on his first landing, it gives me real satisfaction.

In the course of teaching these new

pilots to fly, I get to fly their models a lot since they get shaky and want you to take the model back frequently. Flying these trainer type models a lot reminded me of how much fun they are; they are so much more relaxing than flying a heavy scale model.

I thought it would be nice if I had one of these gentle flying aircraft just for the fun of it. In flying the various trainers the modelers had chosen to build, I found that some of them fly real well, and others, in my estimation, simply are lousy flying models. There are a lot of trainers on the market and I have flown most all of them. I have my personal preference as a teaching tool and prefer the models that are very gentle to fly, but at the same time are capable of performing most of the basic aerobatic maneuvers so that a pilot can learn to do a few things when he has mastered the basics. Without mentioning any specific names, there are a few trainers that are superb at low throttle settings for a new pilot, and yet can be opened up to higher throttle settings and perform very good maneuvers. Most new modelers want to see you do a loop or a roll with their creation after they have had a try at the controls and you are ready to land it for them. It gives them a real kick when they see the model they have built, doing aerobatic maneuvers. Certain trainers do this extremely well while others are nearly impossible to do anything with but a loop.

So when it came time to build a fun airplane, I decided I would design my own and also give it some character. It had to be very easy to build as my building time is nearly non-existent, and it had to be an excellent flying model capable of doing gentle aerobatic maneuvers.

I am sure that many of you

experienced modelers get your ideas for color schemes from various drawings, or photos that you come across in scanning through the many aviation and model aviation publications that are available. Well, my inspiration for the Fokker came from an artist's drawing of a Fokker D VII in the Time Life Epic of Flight Series. The drawing was of a very unusually colored aircraft that was done in red, white, and blue. I thought this would make a very attractive model if done similar to these colors. The aircraft pictured was the personal Fokker of Ace Rudolph Berthold, and sported his personal "Winged Sword" emblem on the sides of the aircraft. My mind was made up and I got out my drafting tools and went to work.

The Fokker took shape on paper and now it was time to whittle some balsa. Being very simple to build, made short time of the construction process and in just a couple of weeks of spare time the model was ready to fly. The test flights were made on a fairly windy day, but it proved to be no problem for the new creation. The model was great on the very first flight and needed no changes. It took off in a short time and after just a bit of aileron and rudder trim, flew hands off as straight as an arrow. At low throttle settings it was, as I wanted, a real pussy cat. At full throttle on the O.S. .40 it would do most anything you wanted, but did nothing violently --- just what I had hoped for. It spins nicely both ways and is a real pleasure to fly. I seem to enjoy it more and more each time I take it out, and several of our other club members have enjoyed flying it also. So if you like to build a good sport model with some WW I character, get out the balsa and tools and do it.

#### CONSTRUCTION

##### Wing:

The wing is very easy to build and

#### SORT-A-SCALE FOKKER

Designed By:

Henry A. Haffke

TYPE AIRCRAFT

Sport/Trainer

WINGSPAN

56 Inches

WING CHORD

10 1/2 Inches

TOTAL WING AREA

800 Sq. In.

WING LOCATION

Shoulder Wing

AIRFOIL

Modified Flat Bottom

WING PLANFORM

Constant Chord

DIHEDRAL EACH TIP

1 1/2 Inches

O.A. FUSELAGE LENGTH

44 Inches

RADIO COMPARTMENT SIZE

(L) 10" x (W) 2 1/2" x (H) 2 3/4"

STABILIZER SPAN

20 Inches

STABILIZER CHORD

6 Inches (Avg.)

STABILIZER AREA

156 Sq. In.

STAB AIRFOIL SECTION

Flat

STABILIZER LOCATION

Mid-Fuselage

VERTICAL FIN HEIGHT

7 1/2 Inches

VERTICAL FIN WIDTH (incl. rud.)

7 1/2 Inches (Max.)

REC. ENGINE SIZE

40 2-stroke or 46 4-stroke

FUEL TANK SIZE

8 Oz.

LANDING GEAR

Tricycle or Conventional

REC. NO. OF CHANNELS

4

CONTROL FUNCTIONS

Elev., Rud., Ail., Throt.

#### BASIC MATERIALS USED IN CONSTRUCTION

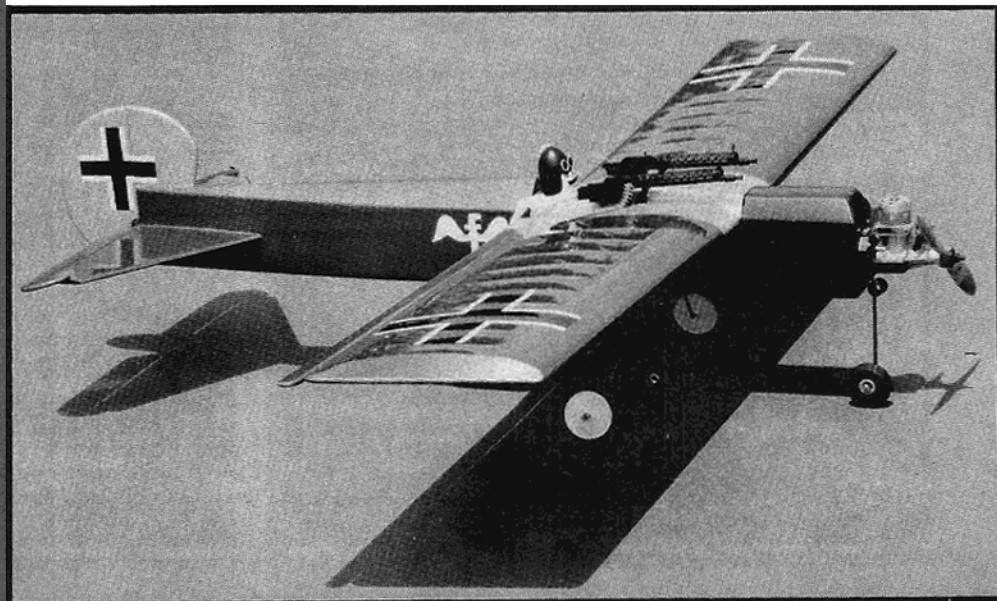
Fuselage ..... Balsa, Ply & Spruce

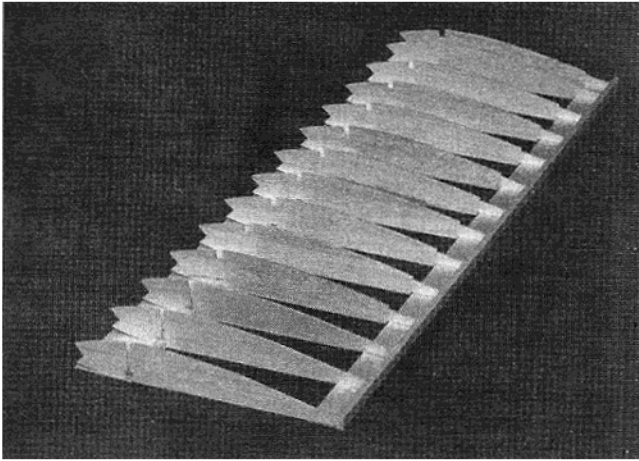
Wing ..... Balsa, Ply

Empennage ..... Balsa

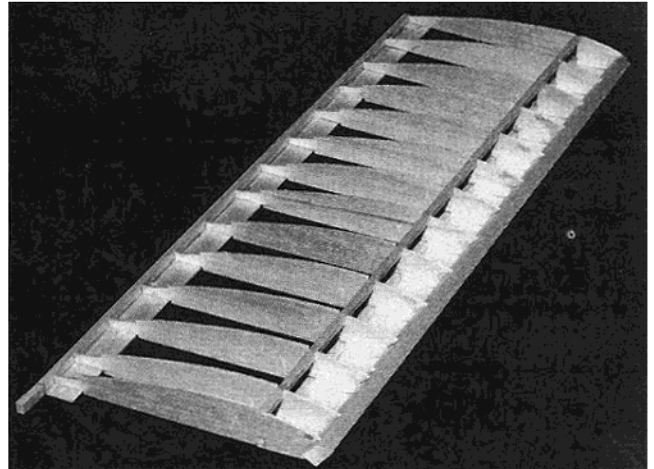
Wt. Ready To Fly ..... 80 Oz.

Wing Loading ..... 15 Oz./Sq. Ft.

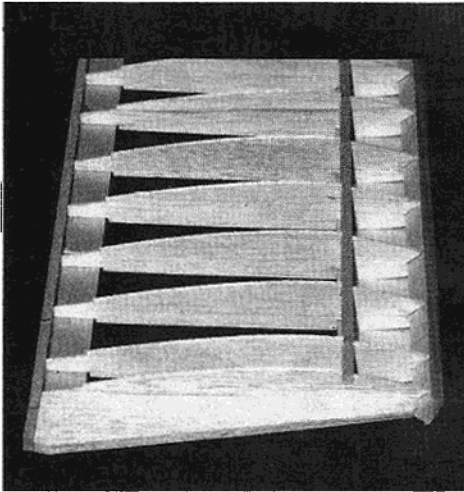




*Initial wing structure, ribs glued to leading and trailing edge sheeting assemblies.*



*Top spar and leading edge have been added to basic structure.*



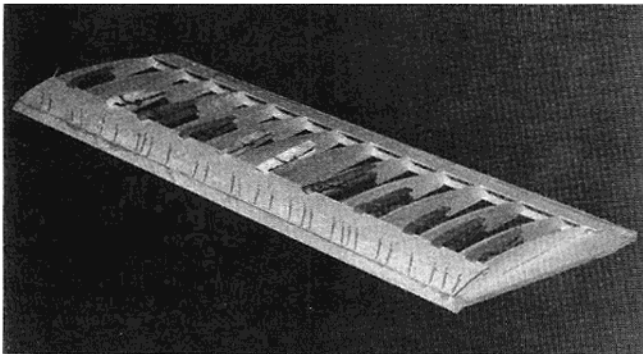
*Installation of wing tip. Note groove at leading edge joint.*

will go together very quickly using mostly CA glue. Start by making the leading and trailing edge sheeting and spar assemblies. Cut two lengths of 1/16" x 2" sheets of balsa to a length of 26 3/4". Cut two lengths of 1/4" sq. balsa to a length of 26 3/4". Use a sheet of waxpaper or plastic film under your work and lay a sheet of the 1/16" x 2" balsa on your work area. Lay a length of the 1/4" sq. flush with one edge of the sheet and glue with cyanoacrylate. Repeat this with the other two pieces. These are the leading edge sheeting and spar assemblies.

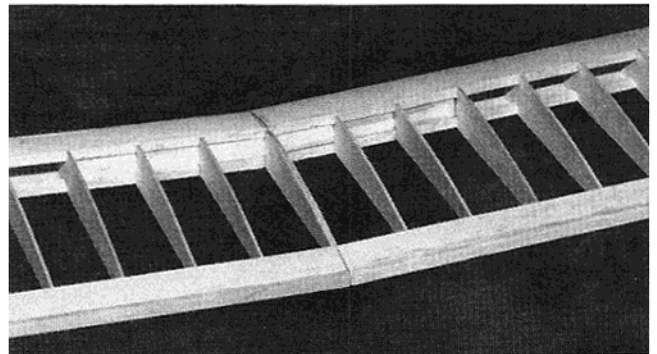
Cut two lengths of 1/16" x 1" balsa 26 3/4" long. Cut two pieces of 1/4" x 3/8" balsa to length of 26 3/4". Lay a sheet of the 1/16" x 1" balsa on your work area. Butt a length of the

1/4" x 3/8" material against one edge of this sheet with the 1/4" width against your work area and glue together with cyanoacrylate. Make a second such assembly. These assemblies are the trailing edge sheeting and trailing edge assemblies.

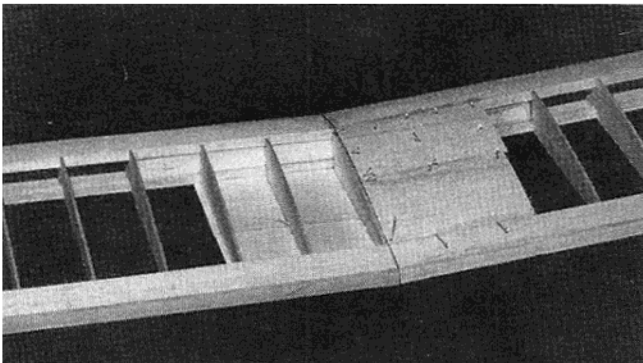
Lay the leading edge and trailing edge assemblies over your plans. Connect these with an A rib at the tip, and an A rib at the innermost A — rib location. Glue these in place, making sure they are properly seated with the rear sheeting tight against the cutout in the bottom of the rib. Glue the front of the rib to the spar only. Don't glue to the sheeting at this time. Glue the remaining A ribs in place, making sure each is properly seated on the trailing edge sheeting. Glue the rear



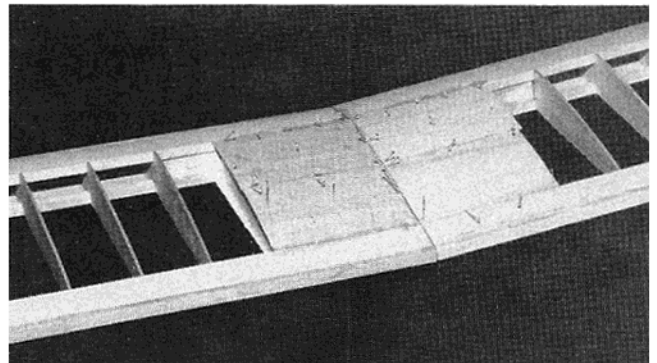
*Top sheeting pinned and clamped in place while glue dries.*



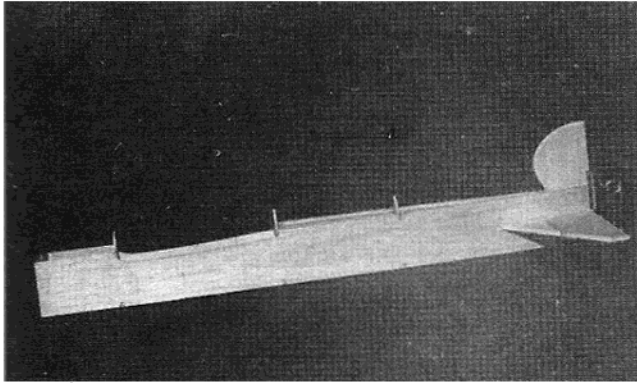
*Dihedral brace used in joining right and left panels.*



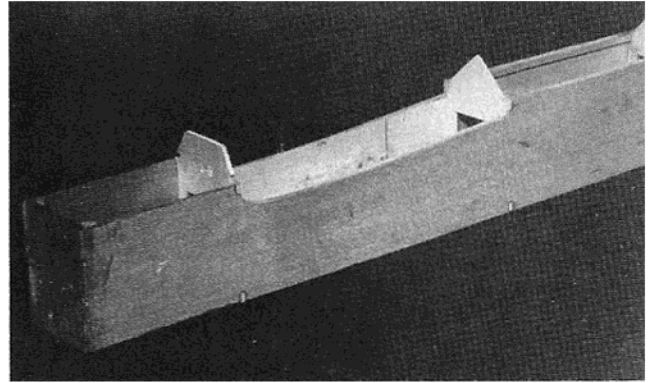
*Center section sheeting partially installed.*



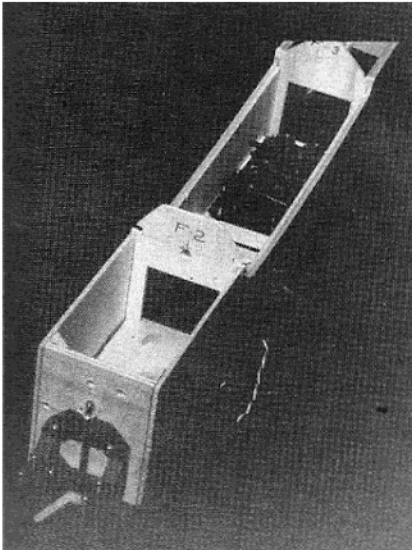
*Center section sheeting pinned in place while glue dries.*



*Simple fuselage structure shows firewall and only three bulkheads.*

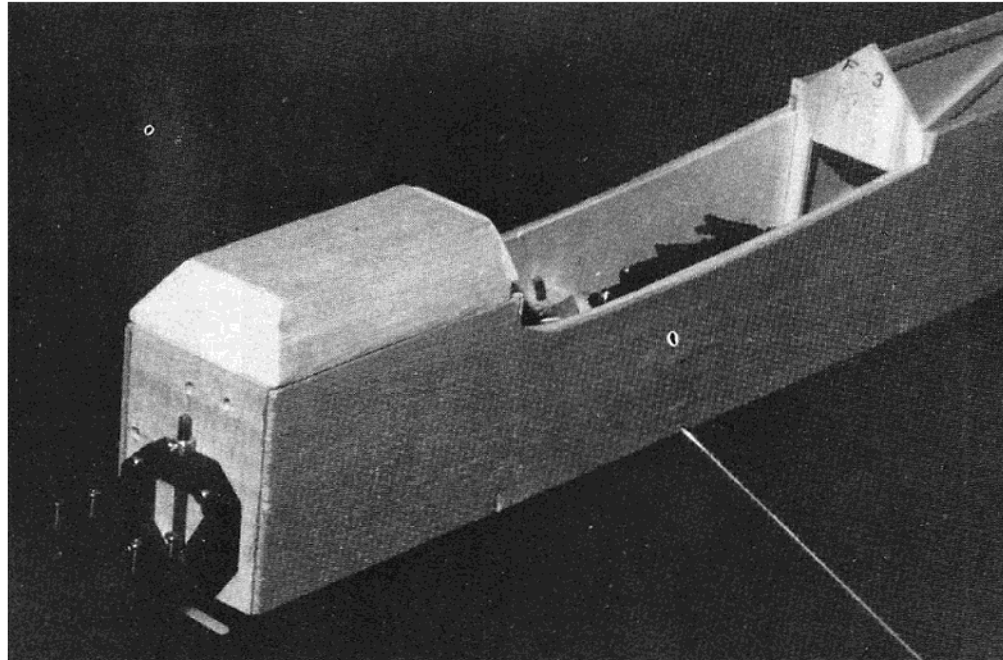


*Forward end of fuselage structure shows notched bulkheads.*



*Firewall bracing can be seen here, and servo mounting as well as tank compartment floor.*

part of the B ribs in place. The center B rib should be glued at a slight angle to allow for the dihedral when the two wing panels are joined. If you have cut the ribs accurately and made good fitting joints, this entire structure should have taken only a few minutes. Add the 1/4" sq. top spar and the 1/2" sq. leading edge with cyanoacrylate. Fit the front part of the B ribs in place, gluing the center one at a slight angle as you did with the rear part. Pick the

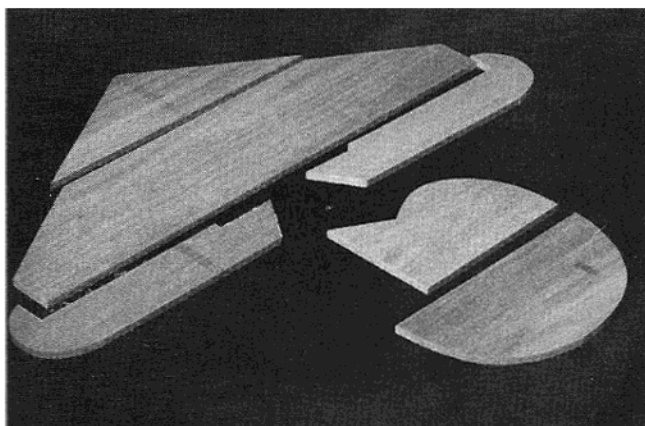


*Rear stiffeners can be seen between F-3 and F-4. Engine mount and landing gear installed. Tank hatch in place.*

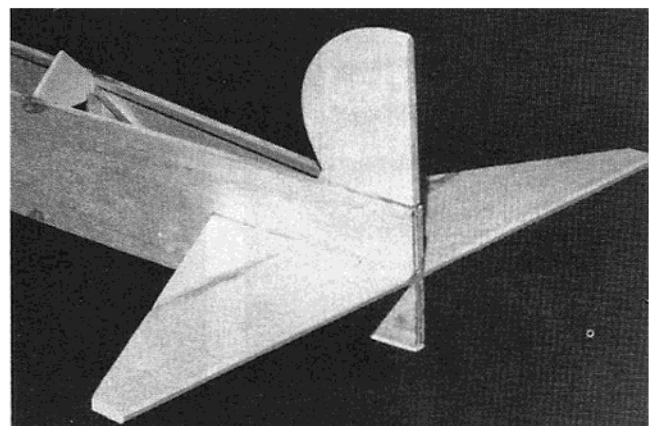
structure up from the work surface and, starting at one end, hold the bottom sheeting against a rib and leading edge and glue with cyanoacrylate. The panel should now be complete except for the top sheeting which is added next.

Build the opposite wing panel in the same manner as the first, but make

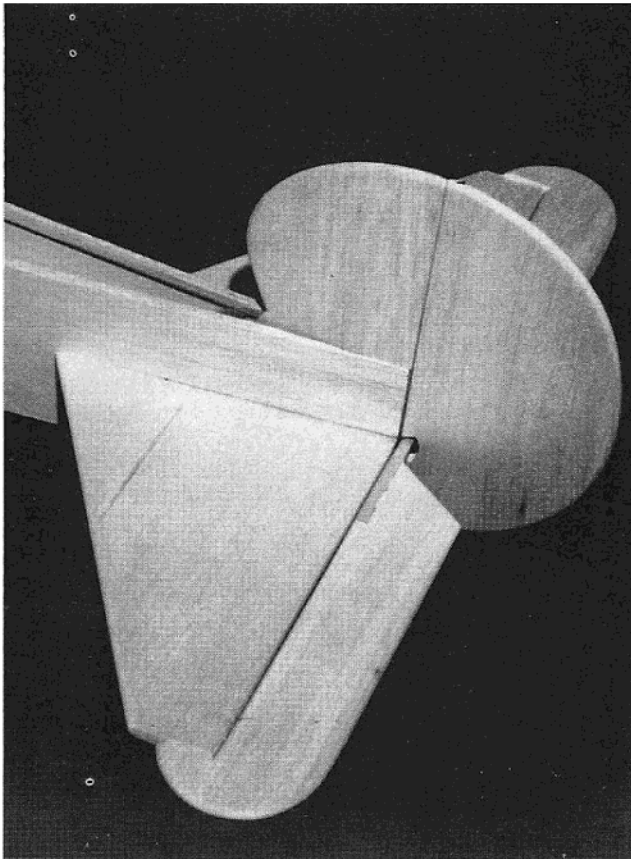
sure you build the opposite panel. In my haste to get things done I started to build another left panel after finishing the first. Fortunately, I realized my mistake before I went too far and corrected the situation. When the two panels have been completed, slide the dihedral brace between the fronts and backs of the B ribs in one panel and



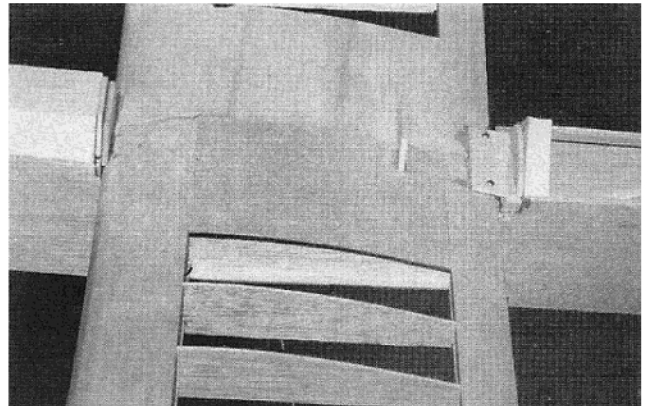
*Simple, 1/4 inch balsa tail surfaces before assembly.*



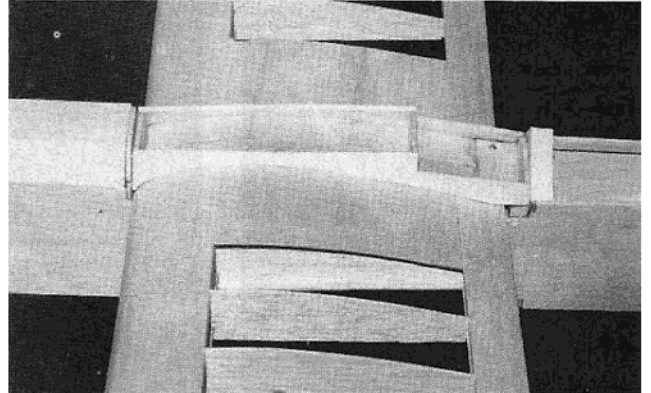
*Stabilizer and fin have been installed in fuselage.*



*Completed tail surfaces installed.*



*Start of cockpit fairing addition. CF-1, CF-2, and CF-3 are glued in place.*



*Cockpit fairing sides have been added to bulkheads.*

check for proper fit. Slide the other panel on the other end of the dihedral brace and check for proper fit. Some sanding and trimming will probably be necessary to get a good mating of the panels. When satisfied with the fit,

glue the dihedral brace into one of the panels. Recheck the fit of the other panel and then glue it in place against the first panel. Block the wing tips up to keep everything square while the center joint glue sets up. Cut out the tip parts and bevel the front edge before gluing the two tip parts together so that the tip fits properly against the back of the leading edge. Trim the rear of the tip to fit snugly against the trailing edge. Repeat for the other tip.

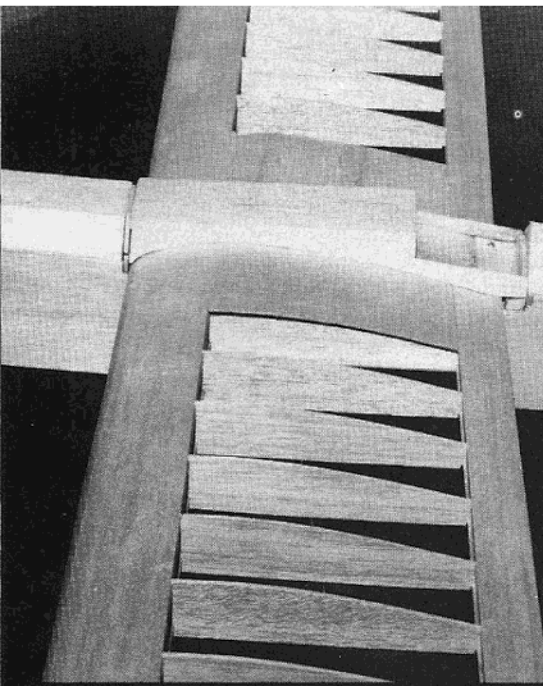
Install the 1/4" dowel in the leading edge at this time. Drill a 1/4" hole through the leading edge and the two

center ribs as deep as the dihedral brace, but don't drill through the dihedral brace. Epoxy the dowel in place. Add the center section sheeting on the top and bottom of the wing and add provisions for mounting the aileron servo. The wing can now be sanded to final shape. Round the front of the leading edge to a blunt radius for a docile flying model. A sharper radius will result in a quicker reacting model that should only be flown by an experienced pilot.

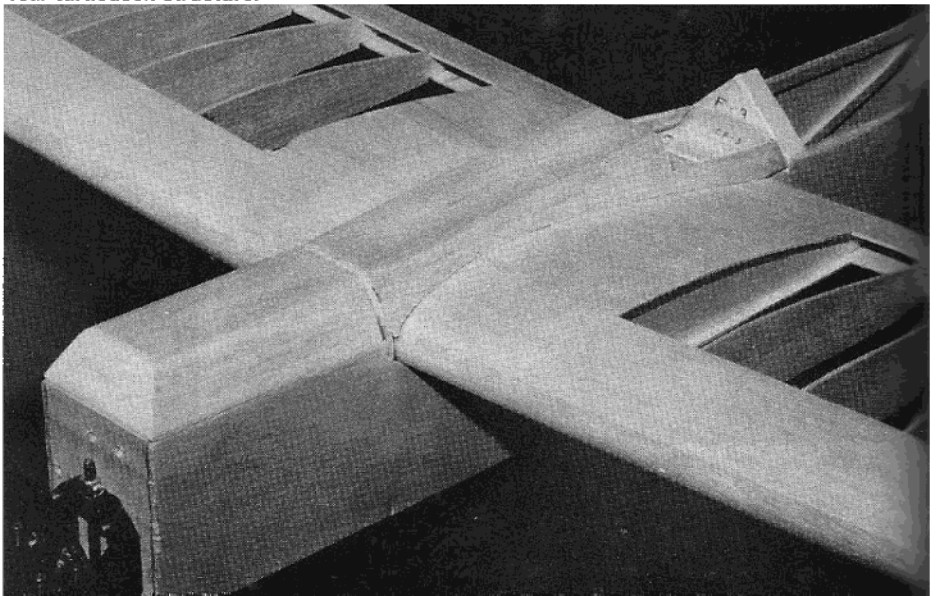
#### **Fuselage:**

Cut the fuselage sides from 1/8" balsa. Outlines for the sides are shown

*Final shaping of cockpit fairing which has been sanded to blend in fuel tank hatch and rear turtledeck structure.*



*1/4 inch top block completes cockpit fairing build-up.*



by small arrows around its edges. Be sure to mark the notches that are cut out where the three bulkheads are located, and cut these out. This makes the assembly of the fuselage foolproof. Cut the firewall of 1/4" ply. Drill the holes for your engine mount, the fuel lines, and throttle linkage. The most important thing in getting the fuselage structure started is to get it square. Lay one side down on your work surface and epoxy the firewall in place flush with the forward edge. Use a square to keep the firewall where it belongs while the epoxy is curing. Add the ply F-2 and F-3 bulkheads also using the square to keep them right while the epoxy cures. Epoxy the second side to the structure making sure everything is square. Clamp the tail end together while this sets up. The remaining fuselage bulkhead can now be added. Refer to the fuselage drawings and prepare the 1/8" x 1/4" rear fuselage stiffeners and glue them in place. Install the triangle shaped firewall braces and the 1/4" x 3/8" pieces at the bottom corners of the fuel tank compartment. Glue the ply fuselage doublers in place against the insides of the fuselage sides between F-2 and F-3. Glue L.G. mount blocks in place. This completes the basic fuselage structure. The bottom and top sheeting will be done later.

#### **Tail Surfaces:**

The tail surfaces are simply cut from 1/4" balsa. Join the two elevator halves with a length of 1/4" sq. bass or spruce and allow to dry. Round the edges of the other tail surface parts, but leave the bottom and rear of the fin part unrounded. Round the edges of the elevator when the joined parts have set up. Mark a line on the trailing edge of the fin 1/8" up from the bottom. Make a cut in this line sufficient so that you can bevel the area below the line to fit between the fuselage sides when brought together against the fin. Mark the center of the top of the stabilizer and glue the fin on this centerline using a square to keep it straight while the glue sets up. Slide the fin-stab assembly into the slot at the rear of the fuselage and glue in place. Glue the fuselage sides together below the stab and against the fin above it. Some trimming of the rear fuselage stiffeners will be necessary to assure proper fit of the fuselage sides coming together. Glue the tailskid plate to the bottom of the fuselage and install the tailskid with epoxy. Hinge the elevators to the stab. Cut a clearance notch in the rudder to clear the elevator joiner. Hinge the rudder to the fin and lower fuselage.

It is a good time to install the radio system at this point before closing in the top and bottom of the fuselage. The prototype used a Futaba radio with



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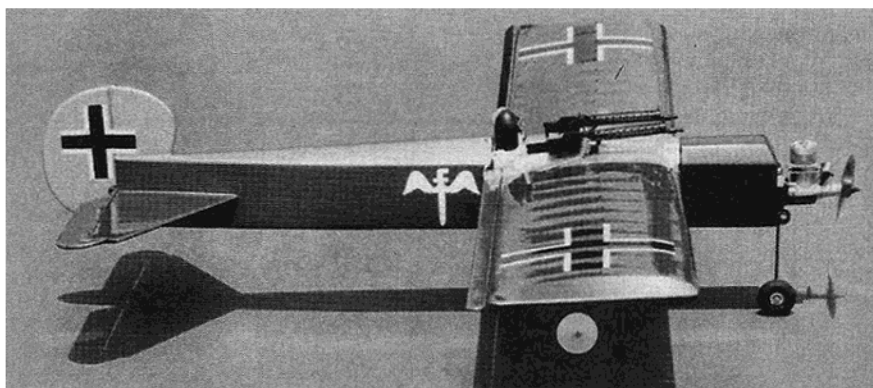
S-28 servos as shown on the plans. If you are using a different system, make the necessary adjustments in the installation as you proceed. S-28 servos are mounted in a servo tray for easy installation. NyRods were used to connect the servos to their corresponding surfaces. You can take measurements directly from the plans for your installation if using this system. If using NyRods, be sure to stiffen them with supports at F-3 and F-4 as shown on the plans. After finishing the radio installation, the bottom sheeting can be completed. The 1/8" bottom sheeting is installed with the grain of the wood crosswise to the fuselage bottom. The top turtledeck sheets are cut from 1/8" balsa. Trim and fit these to the bulkheads and against the fin. Glue in place when proper fit has been achieved. Trim the top of the first piece to be flush with the edges of the bulkheads. The second half of the turtledeck is now fitted to the first and glued in place when proper fit has been achieved. The tank hatch is made from a 1" block of balsa, or two 1/2" pieces can be glued together to form the hatch.

Join the wing and fuselage together after gluing the wing mount blocks in place against the fuselage sides and F-3. Drill a 1/4" hole in F-2 for the wing dowel. Fit the wing to the saddle and carefully line it up squarely. Measure from one tip to tailpost and repeat from other tip. Adjust the wing until it is perfectly square with the fuselage. When proper alignment has been assured, drill through the trailing edge and the mount block with a #25 bit. Enlarge the holes through the wing after installing the ply cockpit fairing base to the trailing edge. Enlarge holes with a #7 bit. Tap wing mount blocks for a 10-24 bolt and secure wing with 1" nylon bolts.

#### Cockpit Fairings:

With the wing mounted on the fuselage, glue CF-1 in place against F-2. Glue to the wing and not to F-2. Glue CF-3 in place on the CF-Base. Position the cockpit fairing sides against CF-1 and CF-3 and locate CF-2. Glue CF-2 to the wing when proper location has been determined. Glue the sides to the wing and fairing bulkheads. Trim the top of the sides as necessary and glue the top 1/4" block in place. When everything has set up, the top of the fuselage can be sanded to final shape. Fair the cockpit fairing smoothly with the tank hatch and the rear fuselage structure.

Remove the wing from the fuselage and fit the ailerons to the wing. Hinge the ailerons and install torque rods, hooking the ailerons up to servo mounted in wing. Bend the landing gear to shape and install landing gear



as shown on plans. Gear is retained in slot in landing gear mount block with nylon strap and small screws. The nose gear is mounted in engine mount as shown. Do all final sanding to prepare structure for covering.

#### Covering:

Remove all removable parts of model to prepare for covering. My prototype was covered with Coverite's new Black Baron Film. This new film is easier to work with than other films I have used over the years. It goes on very easily and is applied at lower temperatures than required by other coverings. Setting my iron at 225° worked great and I found the material went around compound curves very easily. I chose to use the new metallflake colors that had just been released, to duplicate the color scheme on Rudolph Bertold's aircraft. The available colors of red, blue, and silver, were right and these new colors are fantastic looking. They are the best metallic colors I have ever seen and when you look at them in the direct sunlight, the finish looks about a foot deep. The wing was done in blue with a center section of silver, and the fuselage was covered with the red in front of the cockpit and blue behind it with a silver fin and rudder.

The trim was applied from shapes cut from Coverite's Trimsheet material. This material is available in blank sheets and any desired shape can be cut from it with a sharp X-Acto blade. I cut the black crosses for the

wing and rudder trim and after applying the crosses to the wing and rudder surfaces, I outlined them with 1/4" white pinstripes also available from Coverite's graphics line of trim materials. The Winged Sword emblem of Berthold was cut from blank Trimsheet in white. As an added touch of character, I obtained a pair of Williams Bros. machine guns and installed them beside the cockpit. This really finishes the character of my Sort-A-Scale Fokker.

The plans for the model show the modification necessary if you use a 4-stroke engine; also, if you wish to fly your model with conventional landing gear set-up instead of a tricycle gear, this modification is also shown on the plans.

So here is a real fun model to fly, with some real character that I call Sort-A-Scale. Only the color scheme is really scale. The real thing about the model is the way it flies. It is a real joy to fly and is very relaxing for those who don't have the reflexes they used to.

If you would like to build a Fokker, but don't enjoy making your own kit, I have good news for you. Coverite is working on a kit of this model and there is a very good chance that it will be available soon. I am sure that whether you order a set of plans to scratch build the model, or wait for the Coverite kit, that you will enjoy the model as much as I have. It still seems to be more fun, every time I fly it. □

