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Whynott

Build this FF Sport model

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I've dabbled in Free Flight (FF) for many years, but as time marched on, modeling endeavors gave way to Control Line and eventually RC. During those pursuits, FF fell by the wayside, although I never lost my desire to chase those little rubber-powered models, hopping from one thermal to the next across the prairie. After years of inactivity, the bug bit again and I decided to have another go at FF.

My goal was to design a simple Sport model that would be quick and easy to build, could deliver flight durations of a minute or so in calm air, and could be flown at smaller fields. With no preconceived notions of what the new design should look like, I simply sat down and laid out a three-view outline that "looked about right."

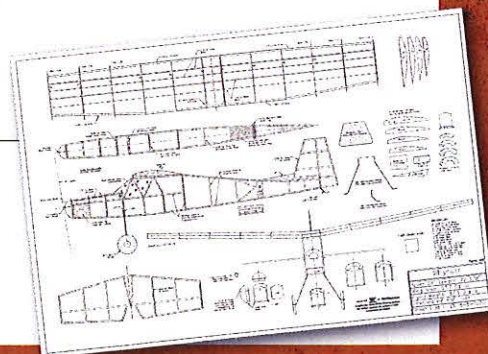
When the tweaking was done, the structure was filled in and it was time to build. The result was Whynott.

Construction is simple, incorporating only a small number of shaped parts to keep building quick and easy. Basic construction is from bits of 1/16-, 1/20- (optional), 3/32-, and 3/16-inch sheet and 3/32-inch square balsa with a few standard sizes sprinkled in where needed. Covering and trim was done with Japanese tissue and dope. The result is a worthy little Sport flyer with a ton of potential for those with larger flying venues.



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WHYNOTT

01. In flight, the Whynott is solid and stable and flies in a nice, gentle circle. With 1,000 winds on a 20-inch loop of 3/16-inch Tan rubber, the model makes consistent, 40-plus-second flights in calm air.

02. The built-up fuselage and tail group are primarily from 3/32-square-inch balsa.

Framing the Model

Begin by cutting out the parts from the appropriate wood sizes using the provided patterns. In an attempt to keep the flying weight to a minimum, ribs R2, R3, and R4 were cut from 1/20-inch balsa, although 1/16-inch balsa could be substituted with no ill effects.

Construction begins with the vertical and horizontal stabilizers. The frames are built directly over the plans using part DF and 3/32-inch square balsa. When completed, lift the frames from the board and sand to shape. Bend the tailskid from .025-inch steel wire, fit it into the rudder, and glue it in place.

The fuselage side frames are also built directly over the plans. Pin MPS in place and build the right-side frame around it. Fit the 1/16-inch balsa fill at the front, flush against the building board. The left-side frame is built the same way, but with the balsa fill flush with the top edge of the frame.

To join the frames, pin the 3/32 x 3/16-inch balsa

header in place over the plans along with the two 3/32-inch square balsa crosspieces at the wing saddle. Pin the side frames upside down over the plans, align them vertically, and glue the crosspieces in place. Add the bottom crosspieces in the cabin area. Pull the tail post together, glue it, then add the remaining crosspieces aft of the cabin.

Moving forward, fit and glue the bottom front crosspieces in place. Remove the frame from the board and add formers 1 through 4 and the 1/16-square-inch balsa stringers. Bend the landing gear to shape from .032-inch steel wire. Sandwich the landing gear between the two landing gear mounts. Dry-align and glue the assembly into the fuselage frame. Sand the completed frame to its final shape.

The outer wing panels are built directly over the plans. Begin by pinning the 1/32-, 1/16-, and 3/32-inch balsa shims in place over the plans at the locations shown. Pin the 1/16-square-inch balsa bottom span-



At a Glance



Specifications

Wingspan: 26 inches

Length: 22-3/8 inches

Wing area: 97.7 square inches

Wing loading: 1.9 ounces per square foot

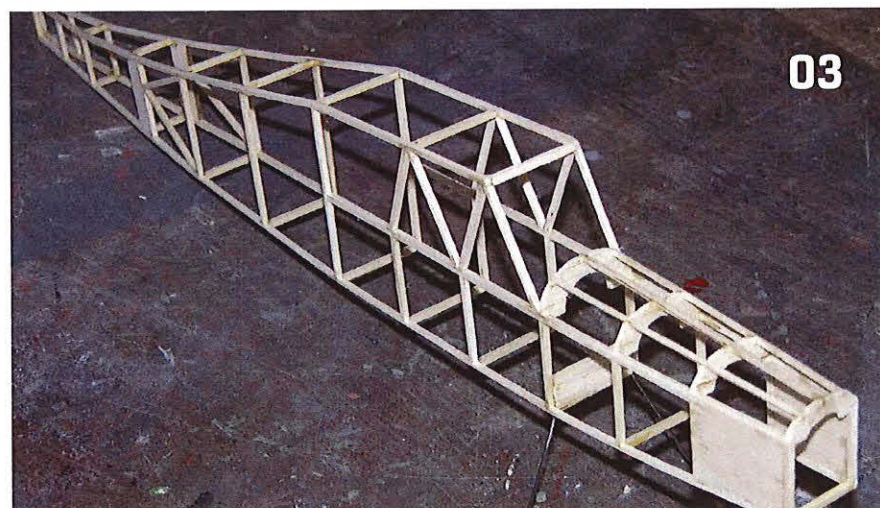
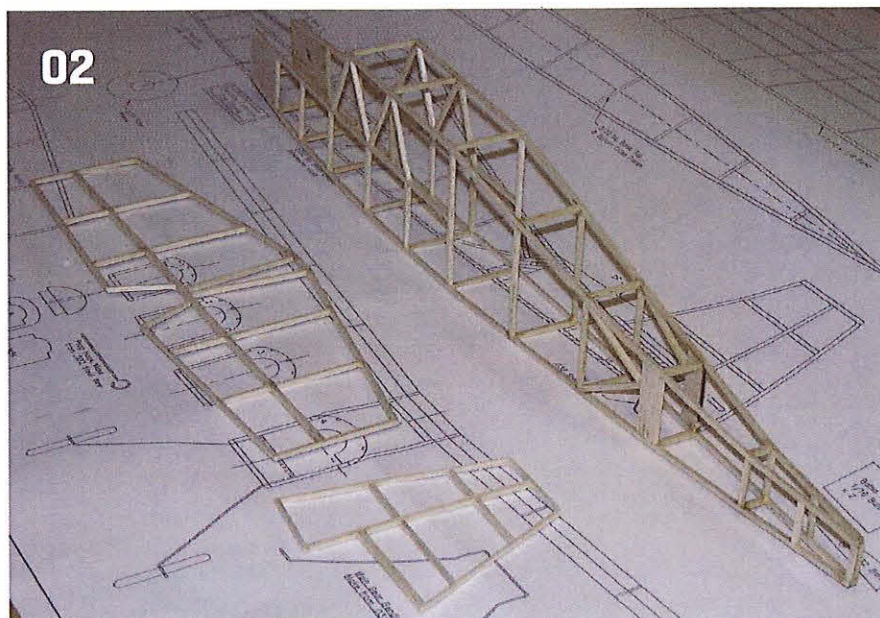
Flying weight: 1.3 ounces

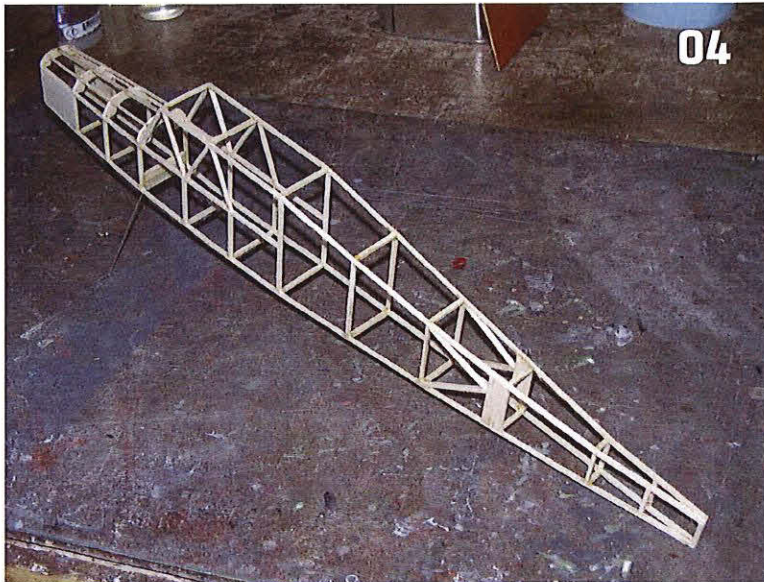
Power: One 20-inch loop of 3/16 Tan rubber



Materials List:

- (4) 1/16 x 1/16 x 36-inch balsa
- (1) 1/16 x 1/8 x 36-inch balsa
- (6) 3/32 x 3/32 x 36-inch balsa
- (1) 3/32 x 3/16 x 3-inch balsa
- (1) 1/8 x 1/4 x 36-inch balsa
- (1) 1/20 x 3 x 6-inch balsa sheet
- (1) 1/16 x 3 x 6-inch balsa sheet
- (1) 3/32 x 3 x 6-inch balsa sheet
- (1) 3/16 x 3 x 6-inch balsa sheet
- (1) 1/2 x 1-1/4 x 1-1/2-inch balsa block
- (1) .025 diameter x 3-inch steel wire
- (1) .032 diameter x 12-inch steel wire
- (1) 1/16 OD x 7/8-inch brass tube
- (2) 1/16 OD x 7/32-inch aluminum tube
- (1) 5/32 OD x 1-1/4-inch aluminum tube
- (1) Peck-Polymers 8-inch propeller





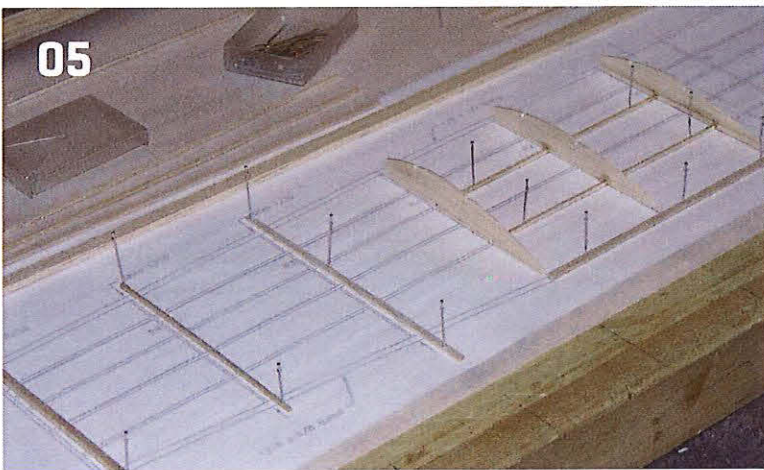
wise spars in place then align and glue the ribs in place on the spars. Align and glue the 1/8 x 1/4-inch balsa leading edge (LE) and the 1/16 x 1/8-inch balsa trailing edge (TE) in place followed by the top span-wise spars.

Unpin the wing panels, prop the wingtips up 1-1/4 inches from the board, and pin it back in place. Add the 1/16-square-inch balsa top and bottom spars and LEs and TEs at the center section and glue them in place. Finally, add the 1/16-inch balsa gussets at the TE then sand the wing to final shape.

03. With the frames joined, the front formers and stringers are glued in place to complete the fuselage frame.

04. When the fuselage assembly is completed, the frame is sanded to final shape and set aside to await the covering.

05. Because of the tapered wing, platform shims under the three outboard end ribs are required to build in the slight angle at the bottom of the outer wing panel.



Covering the Model

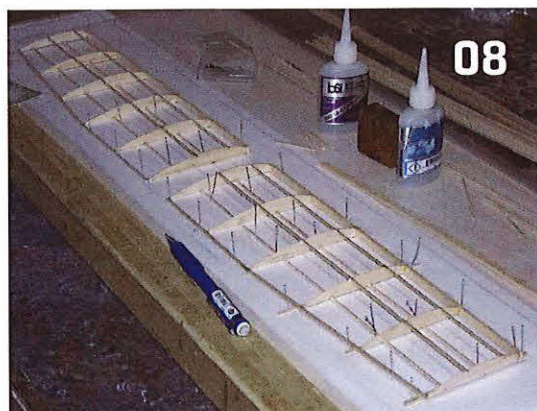
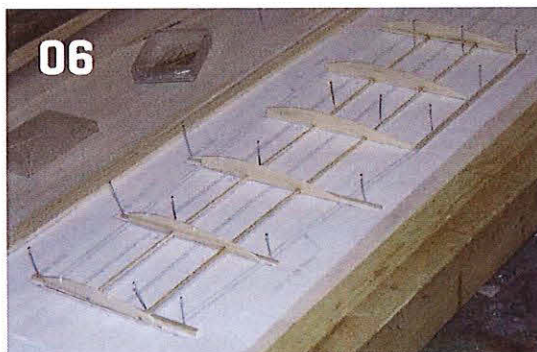
Perform a final detail sanding to remove any remaining bumps and boo-boos then give the frame three coats of nitrate dope. Cover the model with Japanese tissue, mist water on it to shrink it, and give it a brushed coat of thinned nitrate dope to seal the tissue. Add trim tissue followed by a

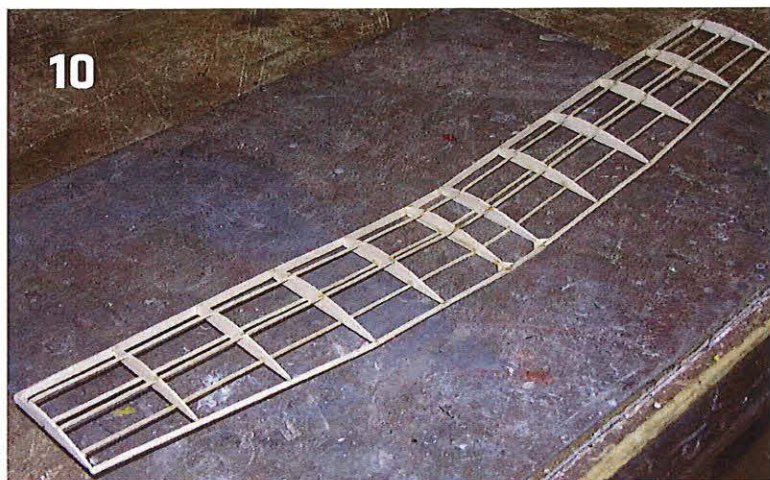
06. The bottom spars are pinned in place on the shims then the ribs are glued in place.

07. After adding the LE, TE, and top spars, the wing panel is complete and ready to be joined at the center section.

08. The second wing panel is built up and the panels are ready to be joined.

09. The wing panels are joined at the center by blocking up the wingtips and gluing in sections of the upper and lower spars and the addition of the LEs and TEs.





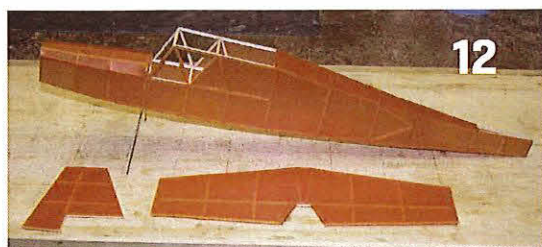
10. The completed wing assembly has been sanded to shape and is ready for covering.

11. The Japanese tissue covering is applied using three coats of nitrate dope on the frame to attach it. The tissue is shrunk taut by applying a light mist of water sprayed from an airbrush.

12. The fuselage is covered using the same techniques as the wing and tail section.

13. With all of the covering in place on the wing, the tissue was sprayed with water to shrink the covering. To prevent warping, the panels were pinned to the board using shims until the shrinking process was complete.

14. The nose block was built-up according to the assembly drawings then hand-fitted to insert snugly into the fuselage frame.



second coat of dope.

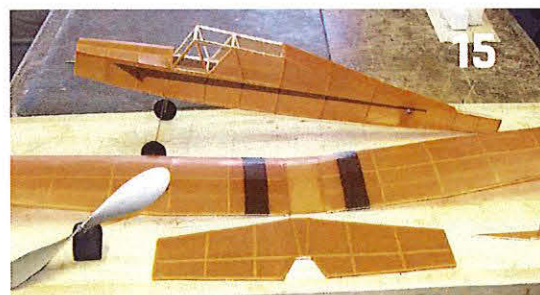
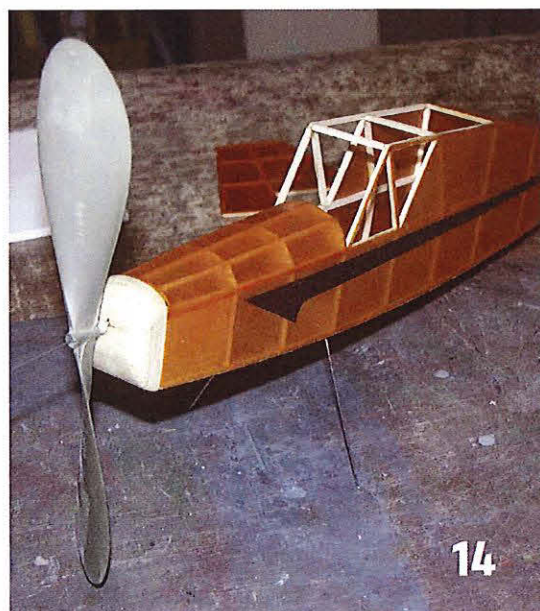
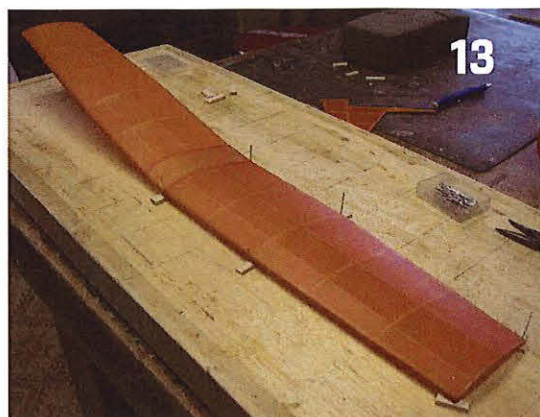
The nose block is built up according to the provided detail drawings. The block was drilled for 3° down and 1° of right thrust and fitted into the fuselage. The wheels are cut from 3/16-inch balsa, and a 1/16-inch outside-diameter (OD) aluminum tube axle bushing is glued in place. To mount the wheels, I slipped them onto the axle. The axle needs to be pinched with a side cutter to distort it enough that the wheels won't slide off.

The windshield and side windows are cut from a .004-inch acetate sheet and glued in place. Align and glue the wing in place. Using the wing for reference, align and glue the tail section in place. Finally, make up the 20-inch rubber loop from 3/16-inch Tan rubber and secure it in the fuselage at the rear with the 5/32-inch OD aluminum tube. With that, the model is complete.

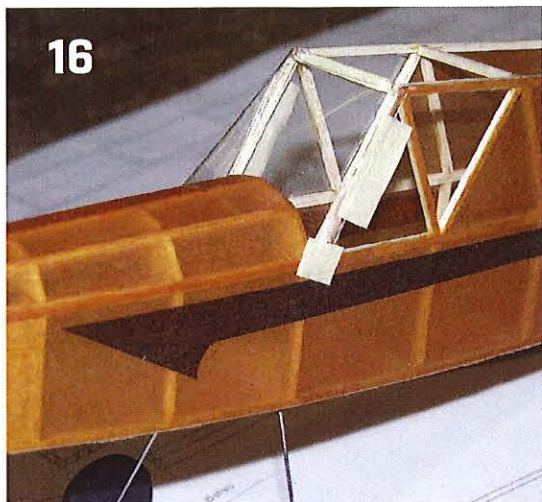
Trimming the Model

I flight-trimmed my model using the 20-inch single loop of 3/16-inch Tan rubber. The rubber was wound 200 turns and allowed to unwind completely. I trimmed the model for glide, which required only a small amount of clay on the tail. The center of gravity turned out to be 2-3/8 inches (60%) from the LE (at the root). The first two powered flights were made with 400 and 600 turns.

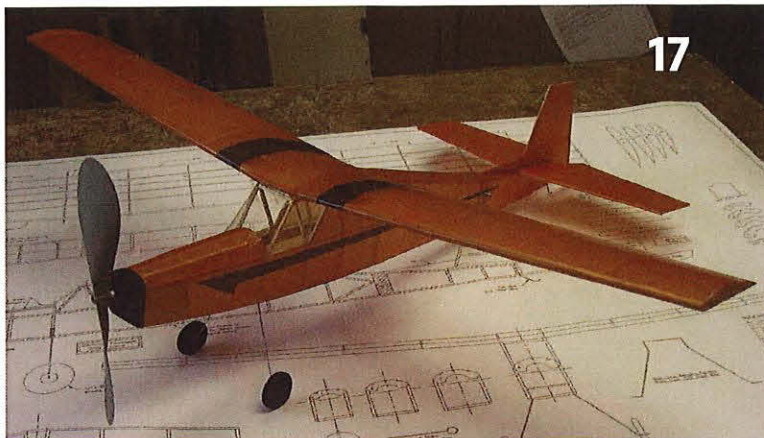
I usually trim my models for a left turn in power, but Whynott *really* wanted to turn right. The initial circle was too wide for such a small flying field, so I added a small drag tab made from Scotch Brand tape to the right wing.



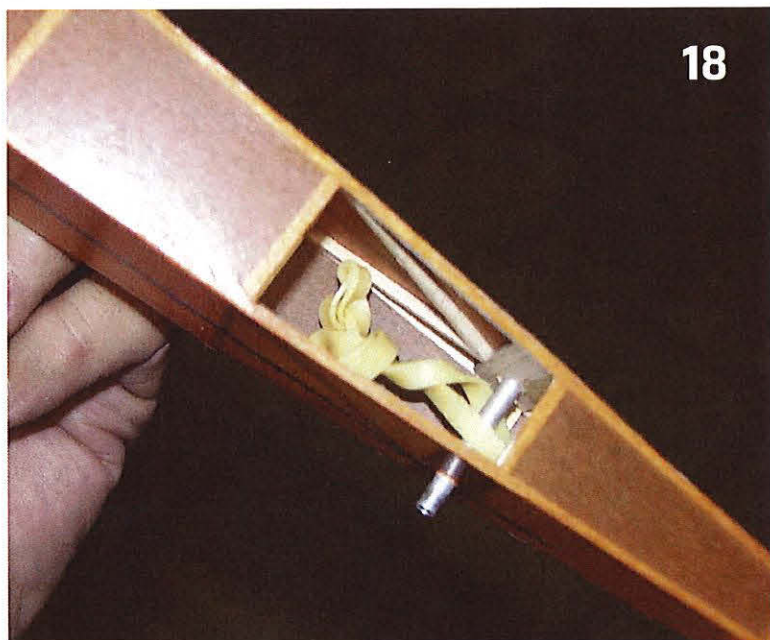
The third and fourth flights were made with 600 turns, which produced a nice, shallow climb and a good right-hand circling pattern. From there, I wound



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the rubber to 800 turns, producing solid 30-plus-second flights. With 1,000 turns, 45- to 50-second flights became the norm.

And with that, the model is ready for some good, old-fashioned sport flying on calm summer days. I know the Whynott has a lot more potential, but most flying sites are limited in size and there isn't room to go much beyond a flight duration of more than a minute or so.

For a model designed for small fields, Whynott is easy to build, easy to trim, and a worthy little flyer. 

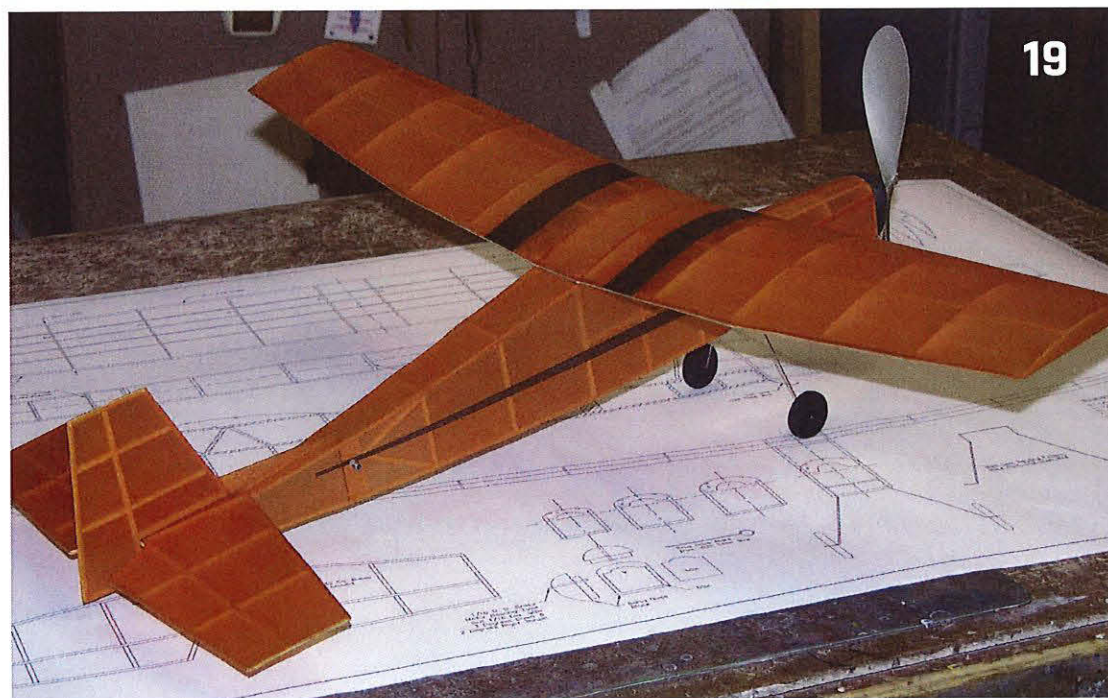
15. The entire model was given a brushed coat of thinned nitrate dope. The trim was doped in place then a second coat of nitrate dope was applied.

16. The side windows were glued in place. When they were dry, the windshield was attached. Masking tape held the windshield in place while the glue dried.

17. With all of the covering and trim in place and doped, the wing and tail section was glued in place and the finishing touches were added to complete the model.

18. The covering was removed from the bottom of the fuselage at the motor peg. The open panel has no effect on the model's performance and makes installing the rubber motor much easier.

19. From the rear, you can see the relatively long tail moment and generous vertical and horizontal stabilizers that contribute to the model's overall stability.



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