

Sort of "New Rulerish" looking sheet balsa sport free-flight that can be built in a couple of evenings. Make up your own kit and have at it!

the FORTY-NINER

By Dave Thornburg

A great little all-sheet-balsa sport free flight. A perfect trainer for that potential FAI team member. A quick and easy-built one-design for club competition . . . or just an evening's pleasure at the school playground.

● Taking a shortcut through an empty ballpark this afternoon, I paused near second base and surveyed the open spaces around me. What a surprising amount of uncluttered air, and right in the middle of town! I ached for an old Jim Walker "Hornet", or some similar rubber-powered stick model. No, a Hornet would climb right out of a field this size . . . what's needed is something with just a bit less performance. A rubber scale job? Those light poles look deadly. Say! What about the Forty-Niner?!

I rush home and dig through the Crash Club, a huge pasteboard box in the garage. Sure enough — it's still whole! I gently extricate the old girl from a dozen other models, and put the eyeball to it. Time and the river have warped her up a bit, but warps have a way of counteracting each other in Forty-Niners. The 8 inch Paulowina wood prop is shattered, but I quickly pirate a 7 inch plastic one from a retired North Pacific "Star Flyer". Stuffing a winder into one pocket and a bottle of Sig rubber lube into another, I grab the Forty-Niner and head for the hobby

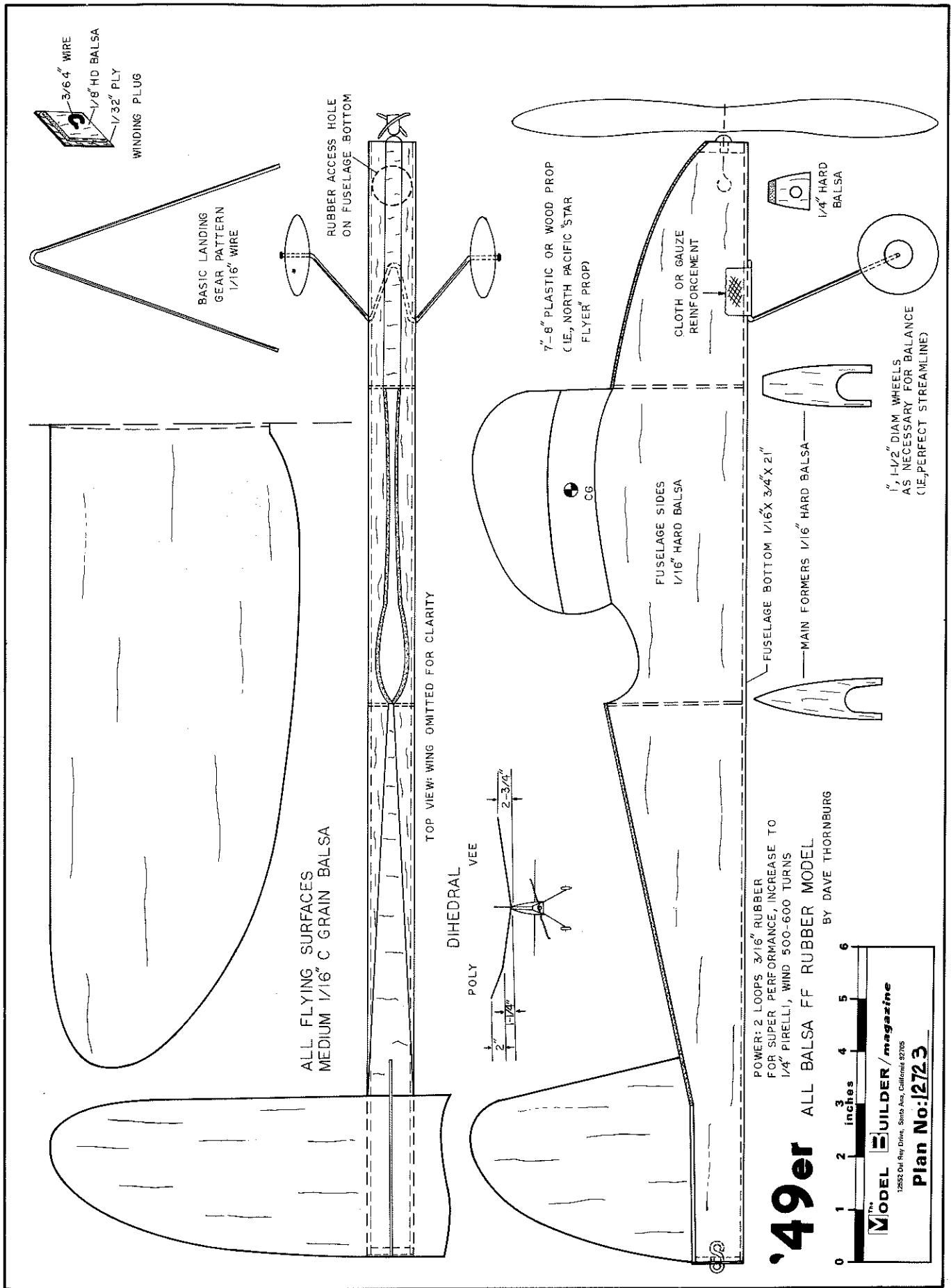
shop. The dealer eyes my plane as I lope in the door. "No returns on used merchandise," he quips. Ignoring his humor, I sprint out with six-and-one-half feet of 3/16 inch rubber, knotting it on the run. Slopping some lube into one palm, I work it into the rubber for two full blocks, arriving at the ballpark with a motor ready for installation.

A scrap of baling wire materializes beneath my lucky feet, and I use it to fish the double-looped motor down through the ancient, lube-soaked fuselage. With prop and tail plug in place, I try a gentle test glide. Hmm . . . the warps have done her in: she wants to turn right. Left turns are safer under power for these high-pylon types. I breathe on the rudder trailing edge, bending it gently to the left. The next glide is better: shallow left turn. Since the prop has zero sidethrust, that should do it.

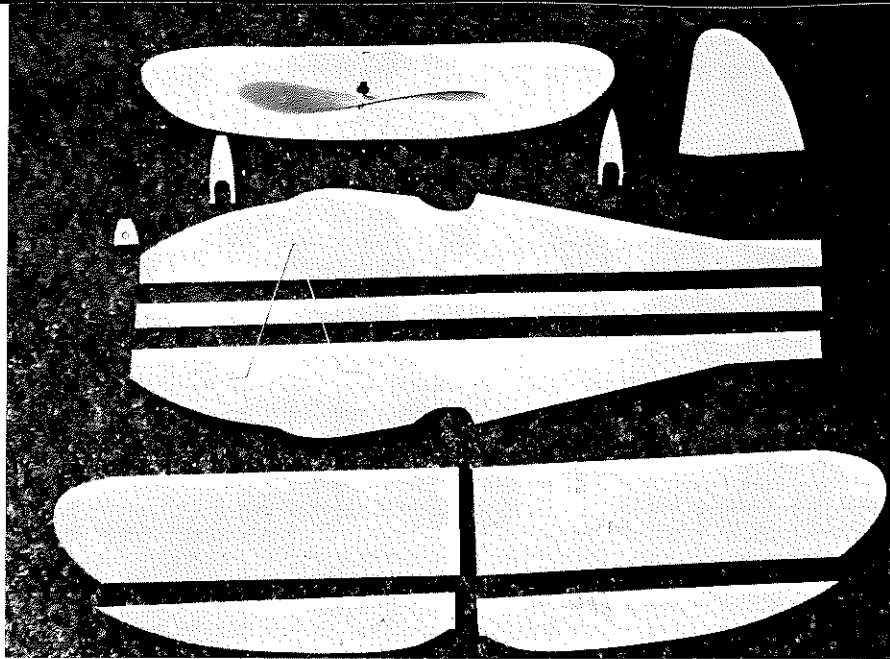
With the prop held delicately between the arches of my shoes and the plane standing giddily on its nose, I stretch the motor a foot or so and crank in 80 turns for a test hop. Launched into a



Try THIS on your Wakefield! Can you imagine a non-modeler seeing this from a distance?



FULL SIZE PLANS AVAILABLE - SEE PAGE 64



What an excellent project for getting a youngster interested in building models! Patterns could be made out of cardboard and passed around. One-design club contests? Hey, no folders allowed!!

slight left bank, the Forty-Niner climbs out gently, with a fairly smooth transition from power to glide. It is dead calm, and the little plane makes one slow circle before dropping into a bouncy three-point landing near home plate. I retrieve it, increase the winds to 150, toss it up again. A bit more left rudder should cure that slight tendency to hang on a prop near the end of the power run. This adjustment made, I crank in 500

turns and let her rip: up, up into the calm July afternoon, its propeller whirring fiercely. . . . then the long glide, as gentle and silent as its shadow, into the warm outfield grass. She will take as much as 600-700 turns, and the park is hardly large enough to contain her on these full-power flights. Over and over I toss the Forty-Niner up into the quiet air, over and over it glides back to me on silent wings. Such pure pleasure a

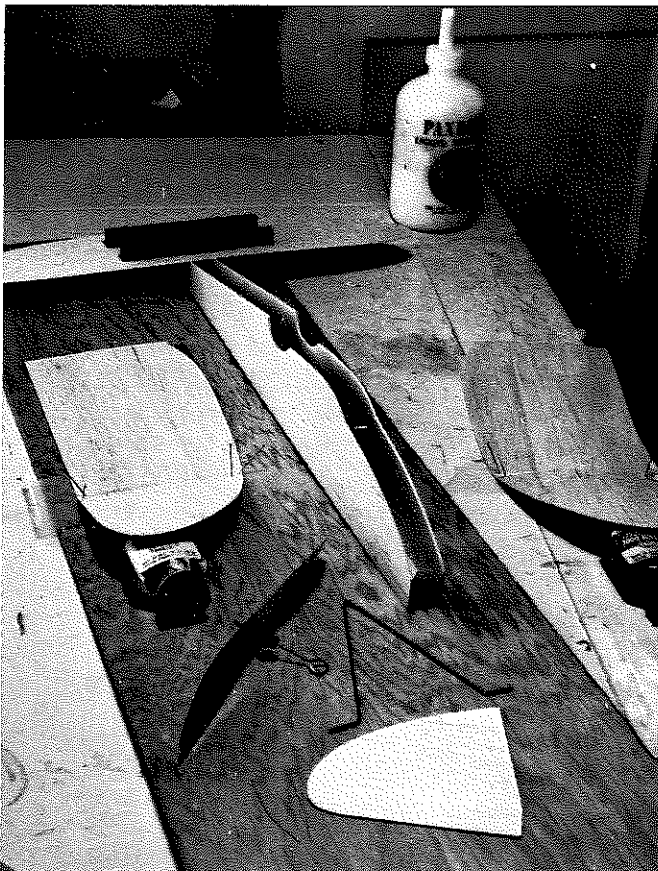
screaming engine can never deliver, and all for a single evening's building time.

You can have this enjoyment, too. Here's how.

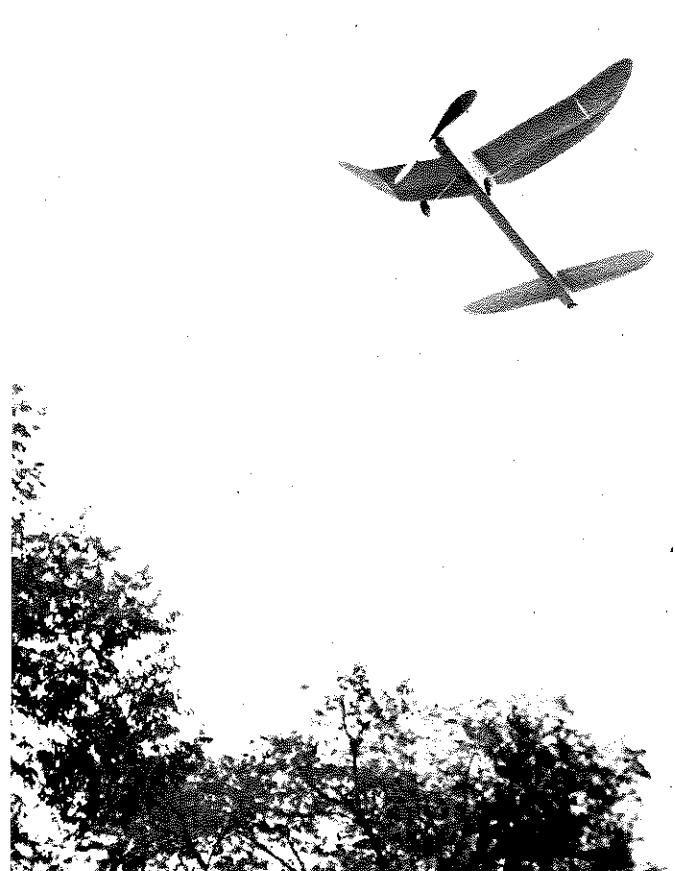
Begin with two pieces of hard C-grain balsa, 1/16 x 3 x 36. From one cut the two fuselage sides and the two large formers. From the second piece cut the fuselage bottom, a simple rectangle 3/4 x 21. Mark the former positions on this piece and glue the large formers in place, using a dope bottle or strategically placed pin to insure that they remain vertical until dry. Cut the nose former from 1/4 or 3/8 hard balsa, first drilling the hole for the thrust washer and then drawing the former around the hole (this keeps the wood from splitting out during the drilling operation). Glue this former in place with no down or side thrust. Downthrust is automatic due to the positive incidence in both wing and stab; if more is needed, the nose former is thick enough so that it can be added by sanding or cutting right out on the flying field.

When the formers are sufficiently dry, run a bead of cement down one edge of the fuselage bottom and maybe a 1/2 inch up each of the large formers. Put one fuselage side flat on the workbench and lay the bottom carefully in place. Pin it into correct alignment.

Continued on page 63



On second thought, maybe we better call the 49er a one-evening project. Please pass the 5-minute epoxy!



Posed or not, it sure looks good "coming in over the fence." Plastic props are available, also semi-finished balsa . . . or carve your own.

model plans for a total of 16. Price is \$5.00, first class postage and California sales tax paid. Order direct from Walt Mooney, 2912 Cabrillo Mesa Dr., San Diego, CA 92123. Please send check or Money Order.

Just received a new doodad from Kraft Systems, Inc. Developed by Joe Martin, the 6-piece molded nylon assembly is a non-interacting devise for operating elevons, flaperons or ruddervators from the Kraft 2-channel brick or from two KPS-12 servos. Main feature, of course, is the fact that the device avoids the necessity of sliding one servo, or in the case of the brick, having one output push or pull against a fixed rod, thus moving the whole brick for pitch control. Available in a few weeks, the price will be \$3.49. ●

49er Continued from page 45

Now bead the other edge of the fuselage bottom and add the second side. Pin or weight it and set the whole business aside to dry.

Cut the wing and empennage pieces from medium-weight C-grain 1/16 inch sheet, butt-joining pieces if necessary to get the appropriate widths. Round leading edges and feather trailing edges, using a block and fine sandpaper. Don't lavish hours on this particular operation, because the Forty-Niner has far too much frontal area drag to glide like a contest model anyway: just make everything round and smooth enough to show that you care.

Now for the dihedral breaks. Pin the inner wing panels to the workbench, with a common lead pencil under them at the high point of the airfoil (i.e., parallel to the leading edge and about 2 inches back from it.) Be sure that part of the pencil protrudes out past the outer end of each panel, so that the tip panel, when pinned in place, will rest on it at its high point also. Now fit both tips, getting as close to 2 inches of dihedral in them as possible. The dotted lines on the plans should insure a pretty close fit, but these are strange times we live in, and you may have to cut and trim the pieces a bit for a really neat joint. When the joint looks good, pin and glue the tip panel in place. You'll probably glue the dihedral joint to both the pencil and the workbench in this process, and wish you had put waxed paper or handi-wrap beneath it before you began. I do this every time, and that's why I didn't warn you beforehand. (Unless your workbench is small, you'll want to cut it loose from the plans be-

fore test glides. Do so.)

When the tip dihedral joints are dry, join the wing panels directly upon the fuselage, using blocks and bottles and what-have-you to jig the whole plane into proper alignment. My center wing joints are invariable the worst in the county; it's easier to hold a finger over this joint when showing the model to anyone than to make it properly to begin with. However, you ought to do better. Oh, yes: glue the stabilizer in place so that it can be drying along with the wing.

While these are drying, tackle the details. Put together a prop shaft, thrust bottom and washers. This is not as easy as it used to be; few hobby shops stock these items anymore. (*Marlow Engineering, see advertisement, has all of this stuff. Contact Len Marlow or get your dealer on the stick.*) Piano wire makes a good prop shaft; a necklace bead epoxied into a large washer makes a satisfactory thrust button; and ordinary dress sequins (available at craft or sewing shops) will pass for washers. Attach the shaft firmly to the prop with a half loop in front. The Star Flyer plastic prop has a built-in freewheeling arrangement, but it is questionable whether it is worth the trouble to make the prop freewheel. The gain in efficiency is negligible.

Build up the rear winding plug from 1/32 ply and 1/8 balsa. Use a reworked paper clip for the rubber hook, and glue or epoxy it firmly in place. DON'T FAIL to slip a piece of spaghetti tubing over both this hook and the section of the prop shaft where the rubber touches it. This simple precaution will double the life of your rubber motors. Incidentally, wire insulation, stripped off care-

fully in 1 inch lengths, makes great spaghetti tubing.

(Editor's Note: As a young modeler in the 1930's we used to read about spaghetti tubing in the magazines, but the only variety we were familiar with came in a box from the grocery store! Tried unsuccessfully to force the stiff, brittle stuff onto a hook. Even softened some in hot water, put it on the hook, and waited 'till it hardened again. No dice! Gave up and wrapped strips of adhesive tape around the wire.)

Bend the landing gear from 1/16 inch piano wire, making the center bend first and the wheel bend last. Add the wheels and secure them with a drop of solder. (Bending the tip of the wire sharply works almost as well as solder, but takes a little more wire.) When the plane is dry, cover the top of the fuselage with 1/16 inch balsa, glue or epoxy the landing gear in place, and cover it with a patch of gauze for extra strength. Install your rubber motor and you're in business.

HOP-UP DEP'T. The 3/16 inch rubber makes for slow, gentle climbs, especially at less-than-maximum winds. For really spectacular corkscrew climbs, go to 1/4 inch rubber. Try to get genuine Pirelli; it outlasts other rubbers by a wide margin. Sig is a good source for both rubber and propellers. The landing gear is great for R.O.G.'s, but it's really a lot of drag. Take it off to improve the glide. You may have to add compensating weight, but it will at least be more streamlined. (Try a washer glued to the bottom of the fuselage right at the nose.) About now you'll begin to have to worry about thermals, and here you're on your own — I prefer the low-and-slow sport version, myself. Good luck! ●



Quarter Midget - Stand Off Scale - Sport



Features
Glass Spar Wing
All Balsa Construction
Formed Canopy
Fiberglass Cowling
Detailed Instructions
Plans, Three Views
Decals

Fuselage
Height 5-1/8 in.
Width 3 in.

Total Weight
2-1/2 lbs.

Engine
0.15 R/C

Fred Reese's
Shoestring

Wing
Area 302 or 310 in. sq.
Span 35 or 37 in.
Thickness 10% — 1 in. Root

Price \$32.95

See your local dealer first. Distributor and dealer inquiries invited. California residents add 5% tax. Sorry, no C.O.D.



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