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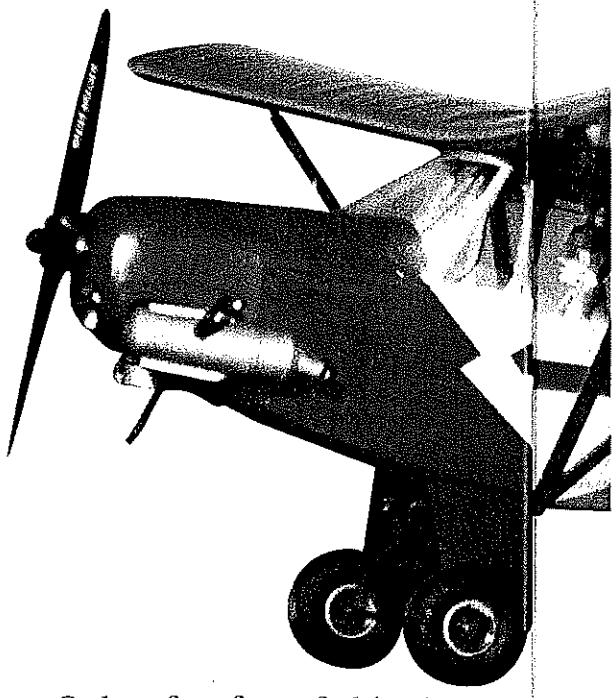
TAYLO



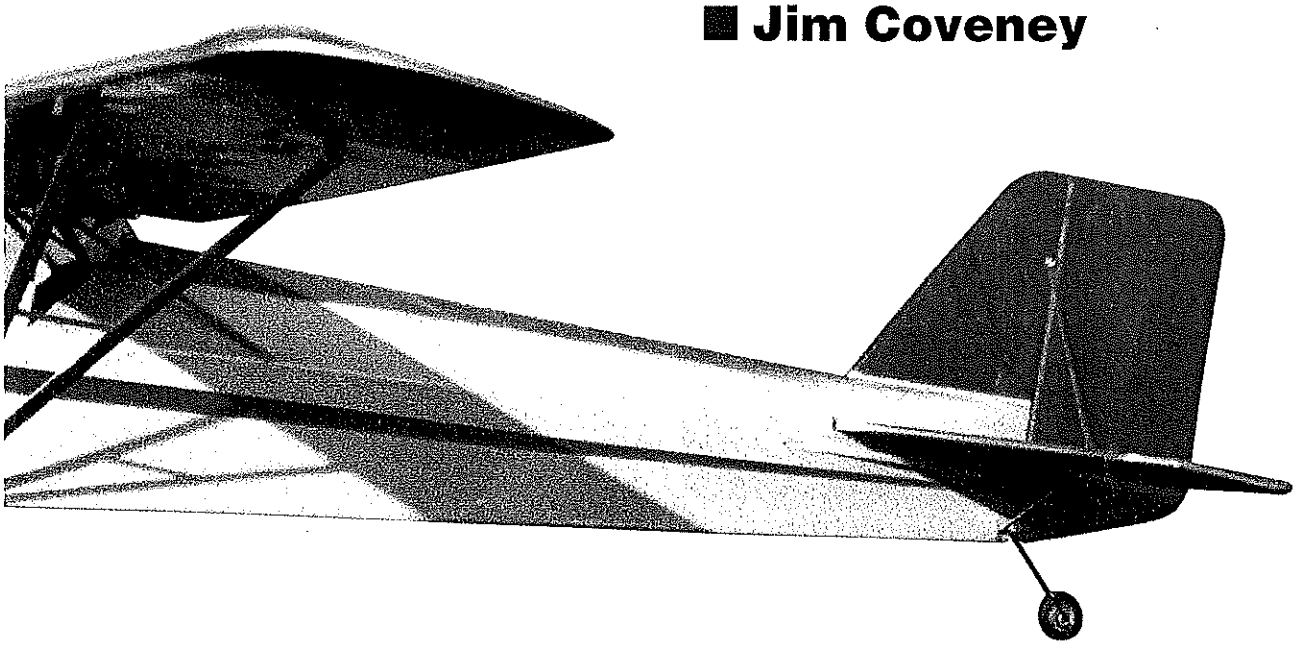
THE INSPIRATION for this article came when I found myself thumbing through some old issues of *Model Aviation* and I ran across an article for a 1/2A Cub by Don Srull. Although the little model was appealing, I wanted something a bit bigger. I think I came up with a very stable, easy to build, flyable design.

The full-scale prototype rolled off the line in the mid-1930s, and from what I understand, it was extremely underpowered. The original engine put out a whopping 20 horsepower, and initial test flights were a disaster. Only a few feet of altitude was achieved and designer Gilbert Taylor (in cahoots with Bill Piper) decided on a 37-horsepower flat four-cylinder Continental. This proved to be a perfect combination.

Mr. Taylor's objective in designing his Cub was an affordable, economical

R CUB

■ **Jim Coveney**



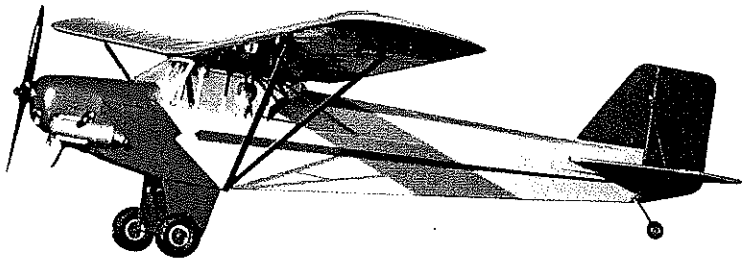
rcraft for the average Joe. anes like the Howards and 'ACOs, although beautiful, ere out of reach for all but e very wealthy. You might y that the Taylor Cub was, the time, the Chevrolet of ght aircraft.

In the years to come, ndreds of would-be pilots t their feet wet in this little tandem tail-dragger. The darned thing just about flew itself. Because of its light weight and that big 35-foot wing, short takeoffs and landings were the norm. With a good headwind and a good pilot, you could land it on a dime.

I'm sure that Mr. Taylor didn't realize the enormous contribution he made to aviation when he designed his Cub. It's truly a classic from the age when seat-of-the-pants flying was considered an art.

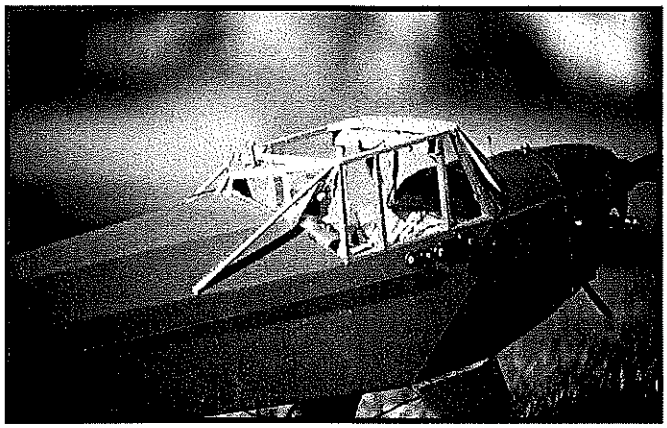
The model exhibits all of the fine characteristics of its full-scale counterpart. It has absolutely no bad habits,

TAYLOR CUB

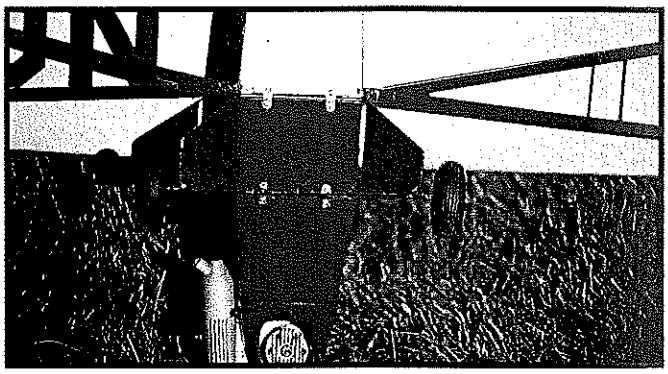


Photos by the author Graphic Design by Carla Kunz

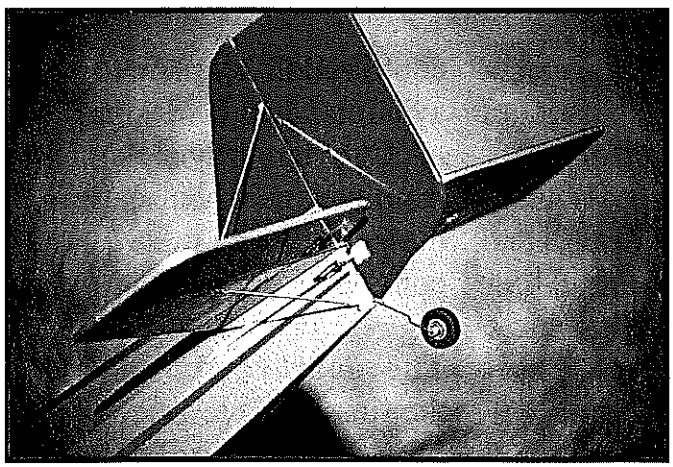
With its classic lines and Scale appearance, the Cub will be a real eye-catcher on any flightline. Be prepared to pass the transmitter!



Rear view of cabin shows a rather unique design by Mr. Taylor. Cabin uprights and fuselage sides are built in one piece.



Landing gear held in place with brass fittings made from thin K&S stock. Struts anchored with 2-56 bolts, blind nuts.



Half of a Du-Bro ¼-scale hinge is used as a tailwheel bracket. It's just the right size for 3/64 music wire.

TAYLOR CUB

Type: RC Sport/Scale

Wingspan: 56 inches

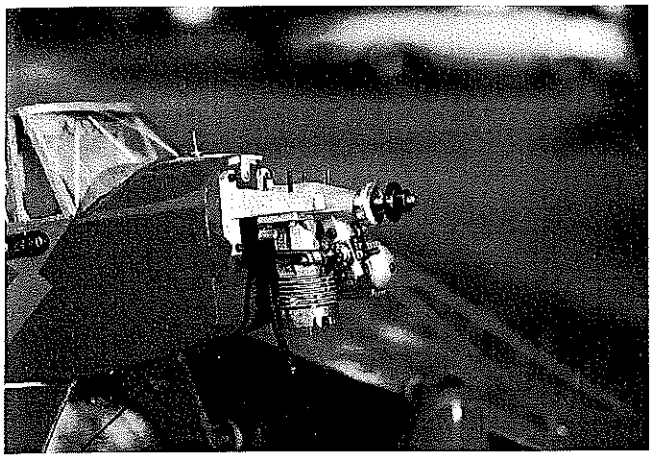
Engine: Max .20 FP

Functions: Throttle, elevator, rudder

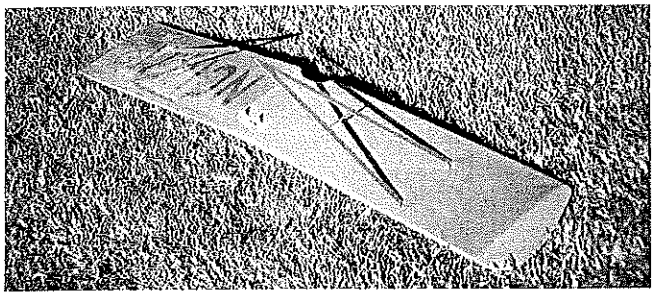
Flying weight: 2½-3 lb.

Construction: Built-up

Covering/Finish: MonoKote and Cheveron paint



ax .20 FP is inverted on small Sig aluminum mounts. Drill and p for 4-40 bolts. Third line recommended for fueling.



uilt-up wing has simple structure—easy to build. Note plywood old-down hooks protruding from wing center section.

nd flies beautifully on three channels. I suppose you could ıcorporate ailerons, but it is not necessary. Turns are in the groove.

The engine used on the model is an O.S. Max .20, and it has ıore than enough power; in fact any good-running .15 would be erfect. As far as engines go, we all have our own preference.)ependability, good power, and easy starting are what we look for.

The color scheme shown is true to scale, although there were thers. All yellow with a black stripe was one scheme. (Piper's idea, f course!) An all-red fuselage with silver wings, stab, and stripe is nother.

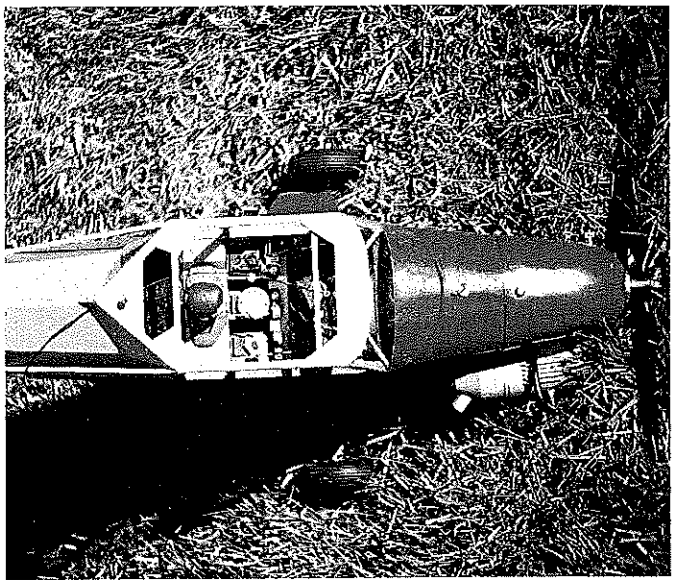
The full-scale prototype originally came without side windows, ut were available as an option. If you choose to leave off these /indows, be sure to get the exhaust down and away from the cabin.

f you decide to build an E-2 Cub, I guarantee many hours of njoyable, relaxed stick time. The structure builds fairly quickly, vhich means you'll be flying your Cub in a relatively short period of ime. The prototype model was completely framed up in just over wo weeks, but remember: this isn't a race. I make it a habit to study . set of plans, and "build" the model a few times in my head. This vill save time in the long run, and eliminates needless mistakes. Enjoy!

CONSTRUCTION

Wing: Make two rib templates from 3/32 plywood. Be sure the spar ıotches in the templates are cut so as to give a snug fit. Using 3/32)alsa sheet, cut rib blanks to the appropriate length and height and tack between the templates. When the ribs are sanded to shape, :arefully cut the spar notches with a razor saw.

Cover the wing plan with plastic wrap, and lay the 3/16 square pruce bottom spar in place. Place pins on either side of the spar ılong its length to ensure alignment. Cut a strip of sheet balsa 3/16 x /8 x 30. This is your trailing edge. Lay it over the plans and place a nark at each rib station. Draw a line down the length of your trailing



Standard servos mounted three across on 1/8 plywood rails. Battery pack in front of servos; receiver wrapped in plastic and foam under tank.

edge 1/8 inch from its leading edge. This is your depth guide for rib slots. Using two hacksaw blades taped together, cut the rib notches.

Place the TE and 1/4 x 1/2 LE over plans and pin down. Glue all ribs in place except the root rib (this is done later). Make sure all ribs are 90° to your building board. When dry, insert top spar and glue.

Remove the pins and block up the wing panel 1 1/2 inches at the tip rib. Make sure the panel is square to the plans. Glue the root rib in place so that it's 90° to the board. This will ensure proper dihedral.

Cut the wingtip from 3/16 sheet and bevel so that the tip is 1/4 inch from the board when wing is flat. Cut the wingtip brace as shown and glue. Make the center section and second panel in the same manner as described above, always making sure everything is square. Install all gussets as shown on the plans. *Don't leave them out!*

Join the panels to the center section, making sure the center section is flat. Block up the wing panel at the tip 1 1/2 inches and glue. Use enough clamps to ensure a good bond. Repeat for the second panel. Relieve the spar notches 1/16 to allow for the dihedral braces. Glue and clamp.

Make a set of false ribs in the same manner as you made the ribs. Slide them into place as shown on the plans and glue. Install the 1/8 plywood pieces as shown for strut attachment. Glue in the spar webs, making sure the grain is vertical. Use a sanding block to shape the leading and trailing edges.

Tail Surfaces: Make sure to use 3/16 hard balsa. Tail braces on this model are necessary and can be attached easily with solder lugs, which can be purchased by the bag from Radio Shack. They will accept small piano wire, which is soldered in place.

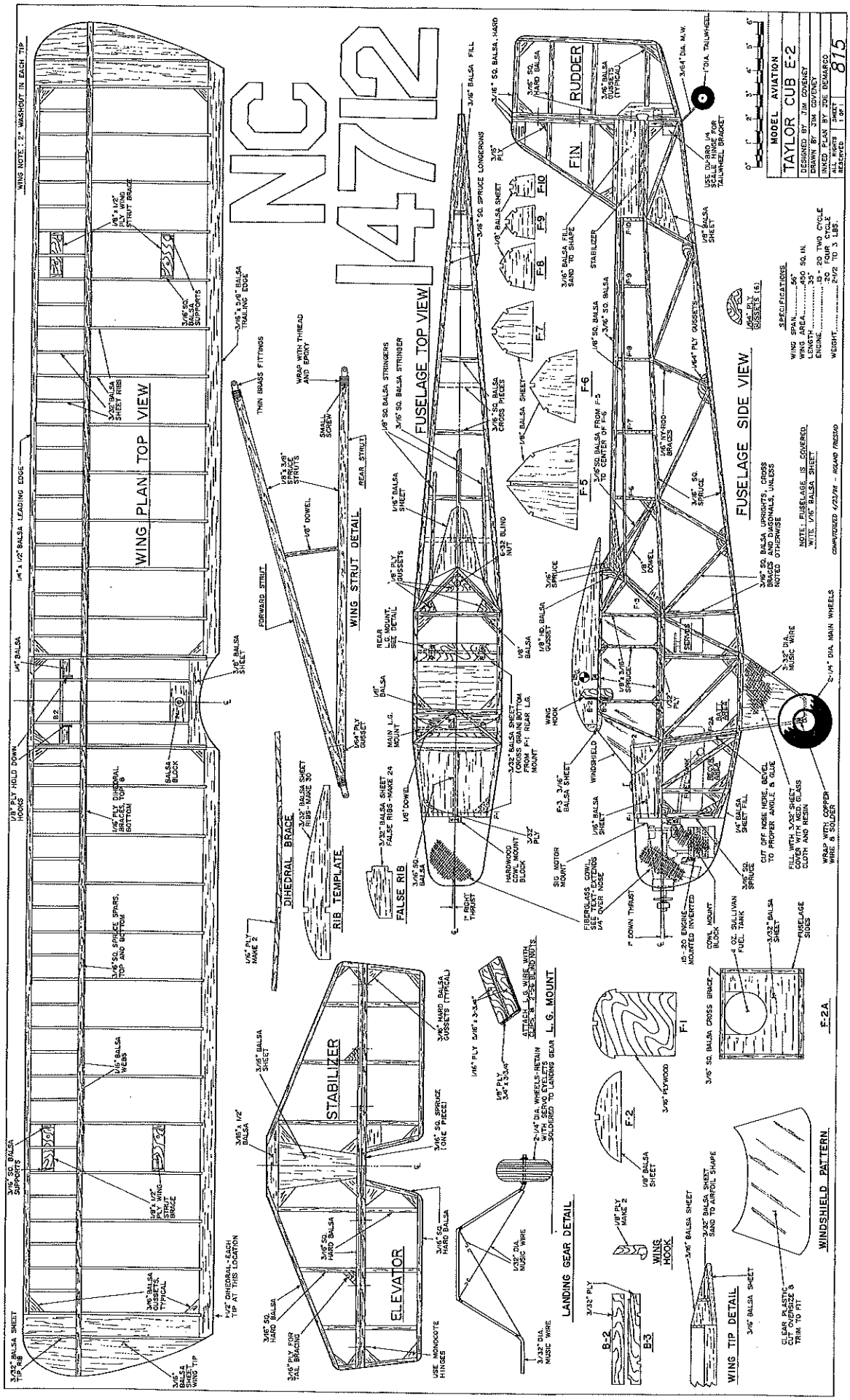
Fuselage: Make identical sides using 3/16 square balsa and spruce. The cabin is made from 1/8 x 3/16 spruce. Gussets of 1/64 plywood are used on the cabin sides; 1/8 hard balsa gussets are used on all crossbraces when the fuselage sides are joined.

When the fuselage sides are complete, cut off the nose section where shown. Bevel these sections so as to achieve the angle shown on the plans, then glue and clamp in place.

Make up the landing gear blocks and cut all crossbraces the same length as the blocks. Place the sides over the top view on the plans, making sure they're 90° to the building board. Install the blocks and crossbraces from the rear of the cabin to the nose.

Bevel the firewall to conform to the nose angle for a good fit and glue in place. When dry, bevel the inner sides at the tail and glue

Full-Size Plans Available—see page 189



ogether.

Install all crossbraces and deck formers t the rear of cabin. Now's the time to drill ut the firewall for the engine mount and uel tubing. Glue F-2 and 3/16 square center tringer and 1/16 sheeting.

Sheet the bottom of the fuselage as hown (between longerons). Note: To ssure proper alignment of the top rear tringer, glue F5 and F10 in place first. Glue warp-free 3/16- square stringer across the wo formers. Slide in the remaining formers nd glue them in place.

Attach the wing to the fuselage. This is ot particularly difficult, but will take a bit f figuring on your part. Follow the nstructions and take your time:

Install B-2 as shown and clamp B-3 in lace. *Don't glue it yet!* Put the wing in lace so that it's square to the cabin and B2 nd B3 are directly over each other. Drill a ole through the balsa wing block and 1/8 lywood hold-down plate. Use a 6-32 screw nd blind nut and bolt down the wing. Glue n 1/8 plywood hooks as shown. Be sure to ull them up into the B-2 slots. Clamp and llow to dry.

anding Gear: This is made from 3/32 nusic wire and is easily bent without eating. If you use Goldberg or Du-Bro wheels, you will have to reduce the hole in he hub from 5/32 to 3/32. Do this by cutting a iece of 1/8 and 5/32 OD tubing slightly maller than the width of the hub. Retail the wheels with servo eyelets and solder.

The Cowl: This is the part of scratch-building that scares off many of us. Until ecently, I, too would overlook a lot of eautiful airplanes if a ready-made cowl vasn't available. This can be very imiting—and when you come right down o it, who wants to be limited?

There are a few things you'll need to complete the cowl, and all are readily available. A foam block is needed for the mold. This can be obtained from Sig Mfg. in many sizes. I bought a 5 x 12 x 36 sheet, and it'll probably last a lifetime. Medium glass cloth, a small can of polyester resin, and a few epoxy brushes will also be needed.

For a release agent, I used some plain old Simoniz car wax. I'm sure if you scrounge around out in the garage you'll dig some up. For final surfacing, get a tube of automotive glazing putty at any auto paint supplier.

Let's get started! Cut a piece of foam slightly larger than the size you'll need. The length is determined by measuring the distance from the firewall to 1/8 behind the thrust washer. Make templates from top and side view as shown on plans. Tack-glue the block to the firewall. Remember, when shaping the foam, it's an extension of the fuselage and should be sanded flush with a block.

When you're satisfied with the shape, remove it and add an additional 1/2 inch of foam to the rear of the mold. Carefully sand this to shape. This will give you an overlap on the nose.

The foam is now given a few coats of white glue to protect it from the resin. When dry, apply a heavy coat of the wax. Glue a stick into the foam so it can be placed in a vise.

Use three layers of cloth and resin. One layer consists of five separate pieces of cloth (one for each side, and one for the front). When dry, sand as smooth as you can without hitting the cloth. Wipe off all dirt and grease and apply the glazing putty. Let dry and sand smooth. Now dig out the foam and check out your home-grown cowl!

Finish: The prototype was covered with aluminum and red MonoKote. The cowl, gear, and struts were sprayed with red Cheveron paint. This is the best paint I've

ever used. It covers like a blanket in one coat, levels beautifully, doesn't smell, and dries as hard as a rock overnight. You'll love it! (Note: When spraying red, always use a white base coat first, to avoid bleeding.)

The cabin was painted with Testors model paint. To match the MonoKote, mix a little gray in a bottle of silver. A 1½-inch scale Williams Bros. Sportsman pilot was used, and remember: The pilot of the full-size Cub flew from the rear seat.

Struts: These are functional—an absolute must! They will also help in adjustment of washout by positioning rear strut until the desired amount is achieved. Besides, I think they give the model a lot of character. Build them exactly as shown on the plans and they should fit perfectly. Make brass fittings from thin K&S stock, available at your local hobby shop.

Flying: As with all models, make sure your Cub is balanced properly. Radio gear should be installed neatly and securely, and control surface movement being free of any binding. Check and cycle batteries regularly, and please, all repairs and maintenance should be done at home, so that the time you spend at the field is enjoyable.

When my model was completed, Long Island was getting more than its fair share of inclement weather. Being the optimist that I am, I would give the batteries a few hours to charge each night, just in case. On the fifth day of this seemingly endless torture, I would finally get to fly my creation.

In the late afternoon, after a torrential downpour, everything got really quiet. The sun peeked through and the sky turned a deep blue. Needless to say, the car was packed in record time.

When I arrived at the flying field, there were a few friends getting in some well-deserved stick time. Some local spectators spotted my little Cub and proceeded to ask me a million questions.

I gave my trusty radio a good range-check and made certain that all was secure. I fired up the Max and set it a little rich. Usually about this time, my knees turn to Jell-O, but this was different. I set the model down on the blacktop, and without hesitation, poured on the coals. With a little right rudder, it tracked straight down the runway tail-high. A touch of elevator and it was off. A small amount of right trim was needed to overcome torque.

Turns are very smooth and scalelike; in fact, no one knew it was a three-channel model—they thought it had ailerons. After about ten minutes of pure satisfaction, the engine quit. I decided this would be a good time to land! Would you believe, a perfect three-point landing, as smooth as silk?

I hope you have as much fun building and flying your Cub as I have with mine. Good luck! ✈

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