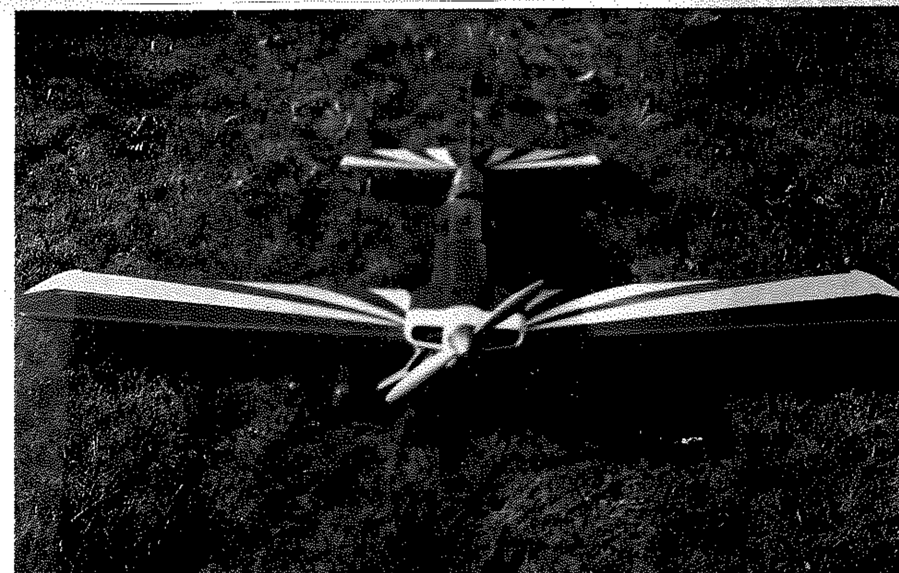
Bobcat Mark II

By BOB BENJAMIN. . .This 'could-be-scale' model is the imagined counterpart to an imaginary sport aerobatic homebuilt. The original Bobcat was a construction article in the January, '85 Model Builder.

• What do you call a model that looks like a scale replica, but isn't? "Semi-scale" suggests a heavily compromised scale effort. "Scale-like. . .?" I rather like "could-be-scale." When I first saw this term several years ago (I think it was in the pages of *Model Builder*), I understood it to refer to a model of some possible, but nonexistent full-scale aircraft, or to put it differently, a model which might reasonably be scaled up to become a man-carrying machine.

The Bobcat Mark 2 is a could-be-scale model of a hypothetical full-size single seat sport aerobatic homebuilt airplane and is indeed intended to be a serious aerobatic machine just for the fun of it. As a matter of fact, there is no reason why it shouldn't be right at home in some aspects of serious competition. The original Bobcat, presented in the January '85 *Model Builder*, was a much smaller airplane developed along could-be-scale lines to explore the capabilities of smaller Davis Diesel engine conversions in aerobatic R/C models. That ship was a real hot dog (I should say "is"; it has been retired to a place of honor on the wall of my shop); it performed on a .15 diesel conversion the way other similar airplanes do on glow .20s. The bigger airplane presented here was developed for much more "mellow" performance. Keeping in mind the imagined 100- to 150-hp fifties or sixties homebuilt single-seater that I wanted the airplane to represent, I thought in terms of maneuver radii and rates of acceleration that would bring to mind such an airplane. Everything in the design, from control surface sizes through the choice of airfoil and considerations of cross-sectional area right on down to the use of a four-stroke engine turning a large prop at moderate rpm, was intended to contribute to the illusion of having reduced a man-carrying airplane.

A similar effort was made with the appearance. Aside from the obvious devices of cowling the engine, fitting a spinner to the cowl, and making a serious effort to create a believable cockpit, the most important aspect of the Bobcat's design in terms of appearance is the use of the fuselage cross-section such that a scaled-down man could really sit in it. I actually drew a template of a one-fifth-size, six-foot man in a sitting position and used it as a guide to laying out the original drawing, just as though I were working on a full-scale homebuilt. This feature caused two reactions. Experienced modeler friends, seeing the working drawings, exclaimed that it was "too big." These same friends, looking at the completed airplane, couldn't understand why it looked so realistic compared to the thinned-down, skinny models they were accustomed to. We are indeed used to looking at "pencil bombers." Slender fuselages have been with us for decades, mostly in the name of minimal cross sectional area to reduce drag for peak performance. While this is a legitimate consideration for categories like FAI free flight or racing events, it may work the other way around for aerobatic airplanes to be flown at moderate speeds. It has been demonstrated that in the speed range we are flying in, a long, thin shape (fuselage) can be less efficient when forced to assume an angle of attack than a well-streamlined, thicker body. The best fuselage shape for what we want may well be a well-finished, fat teardrop! Some experimentation has convinced me, albeit on a qualitative basis, that the greater-than-customary fuselage cross-section of the Bobcat Mark 2, combined with attention to streamlining and finish, has contributed significantly to the airplane's flying through maneuvers at a very consistent speed. Using various four-stroke engines turning 13-6 and 14-6 props in the 8600 to 9500 rpm range, the Bobcat seems to be flying at speeds between 60 and 75 mph and does in fact go up and come down at just about the same speed. This is just what you want for smooth, consistent maneuvering in close where it can be appreciated. Don't take my word for it; build one and try it yourself.



Nose detail on the Bobcat. A cowl available from Ikon N'West will fill the bill. Author advises reinforcing the entire cowl unit with 2-ounce fiberglass cloth and resin or cyano glue.

Some specifics on power: The prototype airplane which you see in the photos initially used an O.S. FS .61 engine turning a Top Flite 13-6 prop on Red Max four-stroke fuel. I flew the airplane in this configuration for nearly two years. A .60 to .65 four-stroke will provide plenty of power for fun-type flying. I'd compare it, based on experience with full-scale airplanes, to the performance you'd expect from a scaled-up version, a single-seater of about 1200 pounds gross weight flying on a 150 hp engine. The airplane will do nice round sequential inside loops from level flight for as long as you pay attention, but will eventually fall out if you're careless.

Late last year I put in one of the then-new Saito .80s, and the Bobcat really began to snarl. I use a 14-6 prop, which the Saito consistently turns at 9500 rpm or better as measured by my Ace Tachmaster II, on good ol' Red Max 10-percent, four-stroke fuel. With this engine at full throttle, the airplane will climb at a 60- to 70-degree angle until I chicken out. (Note: There are some inconsistencies on the translated performance figures on the instruction sheet provided with the Saito .80. I did some careful checking with the folks at A&M Aircraft Supply, who distribute the engines, and determined that the numbers I just mentioned are right on. Contact A&M if you have specific questions.) Takeoffs are effortless at about 60-percent power. In fact, I always take off at partial power to keep things slow enough to enjoy watching. It's not uncommon for me to go through an entire flying session without even opening the throttle all the way except for a preflight check, even in maneuvers like great big square loops. I have had the opportunity to fly a couple other locally-built Bobcats on four-stroke .90s and found their performance consistent with that of my airplane on the Saito .80.

Structurally, the Bobcat Mark 2 is for you guys who take pride in your ability to do a good building job. There are plenty of air-

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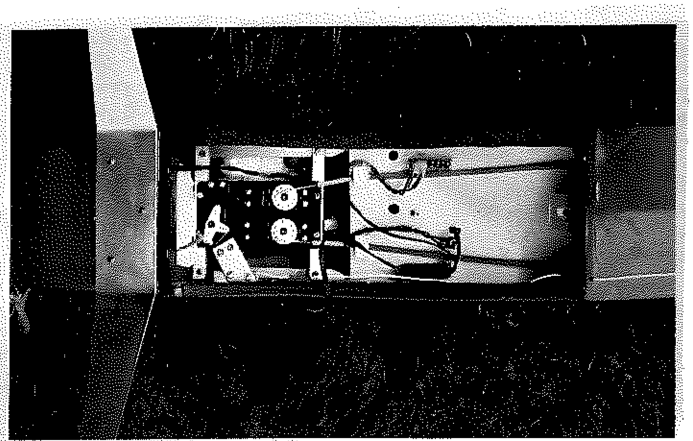
Bottoms up Bobcat showing belly and nose detail.



Radio area, including throttle servo-actuated micro switch for on-board glow heater.

planes around designed to be built over a weekend or two and tossed into the air and, unfortunately, most of them look the part. This airplane will give you a chance to show off your skills. Don't be scared off by the cowl. This is not a first-timer's airplane, so I'll assume that you've carved a few blocks before. I haven't provided a lot of detail on the cowl, as those of you building one up from scratch will have your own ideas and will be fitting dimensions to a lot of different engines. Another option is a ready-made cowl. Ikon N'wst has agreed to make styrene cowls moldings available for $9.95 plus $2.00 shipping. Contact them at P. O. Box 566, Auburn, Washington 98071.

Let's get on with the building. I won't go through all the details of the stuff you should already know if you're going to tackle this project. Materials are called out on the plan. Plywood means good aircraft grade stock, except where lite ply is specified. All balsa should be good, firm medium weight B-cut stock except as follows: use medium weight A-cut for the top cowl sheeting *if* you intend to use fiberglass reinforcement; otherwise, put up with the difficulty of bending the stiffer wood to get the strength you'll need. The leading edges of both the wing and horizontal tail should be the hardest pieces of balsa you are comfortable with to withstand dents and dings over the life of the airplane. Use super-hard 1/4-inch square balsa for the longerons and stringers, or do as I did and use spruce for real long-term durability. My choice of adhesive for the past several years has been Satellite City's Hot Stuff line. While there are other CA-type products on the market, these guys were first and, in my book, are still in first place. Since they put Special T on the market, I have stopped buying epoxy glue entirely; I even install hinges with it. Forget the old wives' tales about CA adhesives being good only for light work, or for "tacking." It works. Try it.

I build the wing first, and then the tail surfaces, so that when the fuselage is put together, the flying surfaces will be right there ready to be used to set up the incidence angles. Make up your ribs first. Although the wing is of constant chord and airfoil (NACA 2412), there are enough variations for aileron cutouts and different combinations of spar holes that there's little point to making a template and cutting them all together. I just traced the patterns and used a razor knife, then stack-sanded the lot. Anyway, hand-cutting ribs is good, nostalgic fun, and besides, this isn't a race. It wouldn't hurt, if you don't mind the extra work, to extend the ribs 3/32 inch on each end and then notch the L.E. and T.E. to accept the extra length. You'll have to fill the resulting holes ahead of the L.E. sheeting and behind the capstrips if you do this. Lay the lower front 1/4-inch square spars in place, add 1/4-inch square under the ribs as noted on the plan, then shim the lower rear spars to fit. Adjust all this as necessary to get the front edges of the ribs exactly vertical, as an aid to keeping everything in line. Assemble the ribs and then the top spars, followed by the leading edges and the trailing edge/aileron well edge pieces. Add the tips, then put in the vertical grain spar webbing on the front and rear spars. Now you can turn the panels over, square them up carefully on the board, and add the center section and leading edge sheeting to the bottom surface, followed by the bottom cap strips. Then you can turn things right-side-up again, true-up the center W-1s so that the panels fit smoothly together with a combined dihedral angle of six degrees, and line up both panels in place on the board prior to assembling the plywood leading edge and spar joiners. I'd suggest that you cut out the spar joiners without making rib cutouts, then measure and cut the rib notches by marking directly from the assembled ribs onto the ply; this assures that the spar joiners will match your particular wing assembly perfectly. I learned a new trick for getting all this into perfect alignment from Mike Montgomery of Columbus, Georgia, who wrote to me commenting on my Big Apprentice article. When the wing panels are in place on the board, stretch a string from tip to tip along the leading edge, using a reliable reference point such as the junction of the outer W-5s with the back side of the leading edge. Using a drafting square placed against the leading edge at the center W-1s, with a suitable extension added to it to compensate for the thickness of the L.E., keep wiggling things around until the string bumps the extension on the square and projects directly over the rear side of the L.E. at the center. Thanks, Mike!

Now you can assemble the joiners, followed by the hard filler blocks at the center rear to firm up the structure where the wing attach bolts will go through. Make up aileron horn assemblies, or use commercial units if you can find any to fit. Install these, slotting the top of the filler blocks so that the top of the aileron horn bearing tube will lie flush against the top of the blocks. Double check alignment, then add all the top surface sheeting, the top capstrips, and the reinforcing doublers at the tips. With the wing panels in final form, you can lay out the ailerons over the plan using the actual wing panels to get a perfect fit. Refer to the wing cross section drawing to cut the correct bevel into the top and bottom of the aileron leading edges, then assemble the leading edges, the WA ribs, and the filler block at the horn location right on the lower sheet surface. Add the top sheet surface and sand the ailerons to fit the wing cutouts accurately. Don't forget to drill for the horn. Now do all your preliminary contour sanding, and pre-fit the hinges at this point if you wish. The mounting bolt holes, leading edge attach dowels, and lower L.E. fairing will wait until you have a fuselage to fit things to.

The tail surfaces really are pretty much self-explanatory. Do be sure to use firm wood for both the hinge line edges and for the horizontal tail L.E., as a protection against weed-whacking if you land short. Make sure you understand how R-4 fits into the center of the horizontal tail before you start cutting.

The fuselage is built in the grand tradition of the rubber-powered free flight job, two side frames joined by formers. I'll repeat my caution to use good stiff material for the longerons. The primary side frame structure is indicated by shading on the plan; note that the primary structure includes F-11 and the triangular gusset behind the wing T.E. Add the lite ply doublers to what will become the inside surface of each side frame. Pre-drill 1/4-inch wing dowel holes in F-3A and holes to fit your wing mounting hardware in W-M. Join the sides over the plan top view, making certain that you keep everything square. The sides are parallel between F-3A and F-6A; join at these two stations first, then add formers F-3 through F-5 and W-M. Now draw the sides of the nose together at F-1, being very of alignment. I chose to build in one degree of right thrust by offsetting F-1; this turned out to be nearly perfect for both the O.S. FS .61 and the Saito .80. You may prefer to build the nose straight and add a thrust offset shim under your engine mount; take your choice. Add LG-M, noting that it rests securely against the front of F-3A, in the notches provided in the nose doublers, and against the inside surfaces of the F-11s. Add F-2 and triangle section gussets where indicated. Draw the tail together over the plan and add the 1/4-inch square cross members at the bottom and formers F-5 through F-10 at the top. Bevel the inside edges of the side frames to give a total tailpost width of 3/8 inch and join the tail, then add the 1/4-inch sheet gussets at the rear of F-6A followed by the 1/4-inch square diagonals on the fuselage bottom. Add 1/4-inch square doublers inside the lower edge of each F-11 to form a 1/2-inch wide wing seat. Install the top stringers between F-6 and F-10, working in pairs to avoid twisting the fuselage, then add the front cowl stringers between F-1 and F-5.

True up the top longerons behind F-10 and mount the horizontal tail, aligning as though your life depended on it. Doing this with the fuselage fixed in position over the plan top view will help; if the fuselage is aligned correctly, you can draw an extended stabilizer trailing edge line and square up on that. Establish that the fuselage sides are perpendicular to the board, then measure to insure equal distances from the stab tips to the working surface. The upper longerons will automatically determine the incidence at zero degrees. Now add the vertical tail, aligning it with the fuselage centerline and squaring it with the horizontal tail.

Now mount the wing, redoubling all the care you took with the tail surfaces. Start by trueing up the lower surfaces of the F-11s and doublers, then temporarily fix the wing in place and square it on the fuselage. I suggest establishing a centerline by measuring in from the edge of each W-5, then establishing lines which will align with the outer edges of the fuselage sides. With the wing aligned on these marks, trim the wing saddle as necessary to get the tips equidistant from the board with the fuselage sides perpendicular to and the stab tips equidistant from the surface. Now trammel the wing using the top of the vertical tail trailing edge and the junction of the W-5s and the back side of the leading edge as reference points. When you've got it right, screw both 1/4- x 20-inch wing mounting bolts down through W-M until they mark the upper surface of the wing sheeting, then remove and drill the wing and add your choice of attachment hardware to W-M. I used the 1/4- x 20-inch threaded brass inserts sold by Du-Bro. When this is done, replace the wing on the fuselage with the two 1/4- x 20-inch screws, recheck alignment to make sure nothing moved, and reinstall the airplane on the bench. Block up the fuselage until the top longerons (and the horizontal tail) are parallel to the surface. I used a Robart incidence meter for this operation; if you don't have one, or something like it, I suggest that you get one before you go any further. Relying on guesswork at this point is almost certain to leave you with an airplane that will never really fly right. Trim the wing saddle so that the wing rests at three degrees positive, that is, with the leading edge raised. When it's right, mark the L.E. through the pre-drilled holes in F-3A, remove the wing, drill through the L.E. and L.E. doubler, and add the 1/4-inch dowels, which rest against the front surface of the front spar and project about 3/8 inch ahead of the L.E. I use copious amounts of Special T, followed by Kick-It accelerator, for jobs like this. This is faster and neater than epoxy (lighter, too) and has held up perfectly in every installation I have done.

Now mount the main landing gear. If you use an off-the-shelf unit, it may not match the fore-and-aft measurement shown on the plan. This is not a problem; just be sure that the axles will line up under or slightly ahead of the leading edge. You can vary the length of the 3/32-inch lower nose sheeting to fit. Gear height and tread width are not critical. Make sure you have sufficient prop clearance. Increased tread width within reason won't hurt anything. The original on the gear shown has never shown any tendency to ground loop on landing or to tip over and is easy to control on takeoff with gentle right rudder correction as long as the throttle is advanced smoothly. I mounted the gear with three 4-40 bolts in a triangular pattern, with blind nuts recessed into LG-M.

Add the 1/8-inch ply tailwheel mount between the lower longerons at the tail, then install the tailwheel assembly using two 4-40 bolts and blind nuts on the inside surface of the mount. Mark and drill F-1 for the engine mount you are going to use. I mentioned side thrust before; if you haven't incorporated it in F-1, make provision for shimming the engine mount. The one degree right thrust I have mentioned has worked well in all the Bobcats I have seen so far. No downthrust is used. While the nose is open, make sure the tank you plan to use fits in the cutouts in F-2 and F-3.

Make and fit the 1/4-inch square side stringers. Notice that these must be relieved at the front end to accept the 3/32-inch side sheet. These stringers must also be tapered from F-8 back to fair smoothly into the tailpost. As an alternative to leaving very little wood at the rear end of the stringers, I mortised them to fit down over the uprights and diagonals and tapered only the last few inches. Add a 1/4 x 1/8-inch filler strip at the bottom of F-6A, tapering it to blend smoothly into the lower longeron at either side. This will allow the 1/4 x 1/8-inch belly stringer, which you can add now, to blend into the lower surface of the wing at the T.E. Make sure that the stringer likewise fairs into the tailwheel mount at station F-10. Add 1/4-inch square balsa scrap to the outside edges of F-3A and taper at top and bottom to support the side sheet; check the F-3 cross section drawing to see how this works.

Sheet the chin area ahead of LG-M and between the F-11s with cross-grain 3/32-inch sheet balsa; this sheet rests on the lower edges of the Lite Ply doublers and flush with the bottom edges of the F-11s and serves as a doubler to provide a solid floor for the battery compartment. Now add another cross-grained 3/32-inch sheet layer overlapping the outside edges of the F-11s and F-1 and extending back over LG-M to where the front edge of the landing gear will rest. Sheet the entire top cowl with 3/32-inch sheet. I suggest that you start at the center of the top front stringer and work downward onto each side, wetting the sheet as necessary to facilitate bending. Extend this sheet to the lower edge of the longerons, flush with the forward face of F-1, and back to F-6, with the outer surface of the sheet lying flush with the outer edge of F-6. You will have to cut away some material in what will become the cockpit area to allow for bending; I suggest that you remove as little as possible while sheeting so that you can later fit a template for the exact cutout shape that you find pleasing and do a final trim when all the sheeting is securely in place. Add a 1/4 x 3/32-inch cap to the outside edge of the top longerons from F-6 back to the tailpost and a 3/32-inch sheet filler between the side stringer and this cap below the horizontal tail on each side. These will allow you to locate exit holes for the rudder and elevator pushrods and will be tapered along with the longeron cap to fair smoothly into the tailpost. Fit the nose side sheet pieces carefully, splicing stock if necessary to get pieces wide enough to butt against the lower edges of the top cowl sheet and reach to the bottom edge of the fuselage. Note that the rear curve of these pieces follows that of the lite ply doublers, then extends back at the wing saddle to form an attachment surface for the covering, in order to prevent unwanted adhesion of the covering to F-11. Fair this extension into the bottom stringer just behind F-6A. Add the 1/4-inch sheet filler blocks between the stringers behind F-56, being sure to do a careful job of cutting the inside curve on each of these, as this will really show up on the finished airplane and tell the world what a good builder you are. Cut, fit, and fair a 3/32-inch sheet fairing to the space between the top of the horizontal tail and R-4. As an alternative, if you choose to add a dorsal fairing as shown on the plan, you might want to add just a narrow fabric attachment strip to the top of the stab and use a fared fabric fillet.

Remount the wing and build up a fairing at the lower leading edge to blend the contour of the bottom center section into LG-M. Don't forget to allow for the thickness of the landing gear. Make a pattern using the top plan view of the fuselage or following a contour of your own choosing and finish the cockpit cutout. Now give the entire structure a thorough sanding to blend all edges and fair everything together.

Decide what type of cowl you are going to use. If you use the plastic molding from Ikon N'wst, I suggest that you assemble it and then reinforce the entire unit with two-ounce fiberglass cloth attached either with your choice of resin or using Hot Stuff. Check out Satellite City's *second* Hot Stuff video if you aren't familiar with this technique; it's well worth your time. If you are going to build up your own cowl, either sidewinder or inverted, mount the engine and spinner with all thrust offsets in place, protect everything with a generous wrapping of masking tape, and assemble the various blocks of wood or foam that you are going to shape right in place around the engine. It wouldn't hurt to put the plastic cowl together the same way. The sidewinder cowl as drawn provides more than enough cooling; just be sure to cut away enough material inside the cheeks in the cylinder head area to allow good air flow past the engine. An inverted installation would look good with the side profile of the cowl lowered in front to enclose the entire engine, if you don't like the sidewinder approach. If you go this route, leave an ample air intake at the front, and use either wide louvers at each side or a large air exit at the bottom edge (preferably both) to insure enough air exit area to cool the engine. Remember, the exit area must exceed the intake area by a significant margin to get the engine to cool reliably.

The sidewinder cowl shown is secured by aligning it with bent sheet metal brackets at either side, to which it is attached by 4-40 screws running into fiberlock nuts soldered to the brackets and by an alignment block at the bottom of F-1 which keeps it from wiggling around. I left an opening about one inch in diameter at the top rear edge for the needle valve, fuel filler, and choke extension. It's not necessary to get at the pressure line from the muffler to fuel the airplane; just use a separate filler as you would in an atmospheric pressure system, allowing the pressure line from the muffler to serve as a vent, then cap it for flight. With these connections provided for a reasonable size hole in the bottom of the right cheek for the exhaust pipe, I found it easy to remove the cowl from my airplane by removing the prop, spinner, and muffler and twisting the cowl while pulling it forward. I suggest that you rig up a remote glow plug connector and terminate it in a convenient spot away from the propeller and the worst of the exhaust goo. It has been my experience with this and similar airplanes that once the engine is broken in and adjusted, it is not necessary to remove the cowl for normal flight operations.

I reinforce all my cowls inside and out with two-ounce glass cloth, as mentioned earlier, and finish with several coats of polyester resin, well sanded, and suggest that you consider doing likewise. After three years of active flying, the original balsa cowl on the Bobcat Mark 2 shows *no* signs of deterioration or fuel infiltration.

If you are going to use wheel pants, this is the time to build them up. I laminated several cores of 3/8-inch light sheet balsa, faced them with 1/4-inch sheet on both sides, and invested a good session with the sanding block to get them shaped. They got the same fiberglass treatment as the cowl. The attachment system is based on a couple of 4-40 fiberlock nuts trapped inside the inner edge of the pant with Special T, and a mounting plate locked between the gear and the axle mounting nut. Take a good look at the photos. This system works just fine and has shown no tendency to slip or break during those occasional "drop-and-bounce" landings that sneak by on windy days. Don't be scared off trying the wheel pants by the thought of a little extra sanding; remember, if you're building this airplane, you're one of the good guys, the last of the real craftsmen. Take another look at the pants in the photos and think how great they're going to look on your airplane.

Clean up all the dust, dig out your radio system, and add appropriate servo tray rails. I didn't show mounting details on the drawings because of the great variation of servo size and preferred style of installation. I used 3/8-inch square spruce rails notched to fit on the inside of the primary side frames between F-3A and F-6A; the servo board was screwed to 1/4-inch ply crossmembers which in turn screwed to the 3/8-inch square rails. My radio is an Airtronics Championship 7 which has served superbly since I first put it in this airplane three years ago. I'm using standard size servos, but have a 1200 mAh battery pack in the airplane because I do a lot of flying, including occasional demonstrations, and I like the idea of having some reserve capacity available. I would recommend fiberglass shaft pushrods. I used 2-56 clevises and hardware and have had no problems; however, if your style of flying is intense and you are using an .80 or .90, it wouldn't hurt to go to 4-40 hardware. My switch mounts on the cockpit floor along with the charging plug.

Add all the mechanical goodies, including fuel system plumbing, throttle connections, and whatever else will be inside the airplane when it is finished, hook everything up, and make sure the complete control system works while you can still get at it to make changes. When you are satisfied, pull everything out, remove the engine and landing gear, and give the entire structure a really good sanding job.

You have lots of options on covering and finish. I'll tell you what I used on the prototype. My standard system (after many years of experimentation with lots of different materials) is 3/4-ounce fiberglass cloth over all the high-stress areas—nose to trailing edge and the entire wing center section—attached with either Hot Stuff if I'm watching weight or polyester resin if I want to build up a really slick finish. When this is well sanded out, I follow with two heavy coats of clear nitrate dope over the entire structure. This is likewise well sanded, then Sig Koverall (untreated polyester cloth) is ironed on using Stix-It as an adhesive. Two coats of clear nitrate with a little plasticizer seal the fabric. K&B superpoxy primer and perhaps a little autobody acrylic lacquer primer with *lots* of careful sanding bring the base finish up to specs. The final finish is K&B Superpoxy. The resulting airplane is a few ounces heavier than it would have been with plastic covering, immensely stronger, and built to last. As with the cowl, three years of regular flying of the prototype have resulted in *no* fuel infiltration, softening, sagging, or other deterioration. If you aren't familiar with this approach to covering and finishing and would like more information, check the July '87 *MB*; Al Alman's "Big Birds" column in that issue contains a much more detailed discussion of my favorite fabric and paint methods.

When the last coat of paint is really dry, it's time to reinstall the engine, radio, and all the other hardware you took out, and go through all the little rituals that insure that your shiny new flying machine really will. I won't go through the details of preflight checkout here, as many of you building an airplane of this type have enough experience not to need any help. Those of you for whom this is a first "plans-built" model who are using the Bobcat as an advanced trainer might like a little more detailed information. You guys get your hands on the May and June '87 issues of *Model Builder* and read the two-part article I wrote for you on trimming for flight.

Set the balance point at 26 percent (the forward location shown on the plan) for the first flights. I have control throws set as follows: ailerons at 40 degrees with no differential, elevator at 30 degrees up and down, and all the rudder I can get. These deflections give me all the control authority I want for the smooth flying style I prefer, with some reserve for getting out of trouble.

The Bobcat Mark 2 doesn't really have any bad habits, except perhaps to demand, as does every other high performance airplane, that you stay with it all the time. The airplane, once trimmed, will hold unaccelerated level flight very well and at low power settings is quite gentle as long as you stay in charge. As with any high-powered taildragger, be prepared to add some right rudder correction during the takeoff roll. You will have better luck at making smooth, professional-looking takeoffs if you develop the habit of opening the throttle gradually, rather than jamming full power. As I mentioned earlier, when using the larger engines, it won't be necessary to use anything like full power to make a good takeoff; this one is right out of the book on flying full-scale prop fighters. Smooth and easy does it.

Don't be afraid to slow down to land. The Bobcat will not fall out from under you without warning. It is, however, so clean that if you don't use the throttle properly in the traffic pattern to get it slowed down you'll probably run out of runway on landing. Make a couple of low, slow fly-bys before your first landing, and you'll have no trouble.

If you enjoy this airplane anywhere near as much as I have, you'll be leaving the field with a big, happy grin on your face. Share the fun, please . . . I'd like to see pictures of your Bobcat Mark 2 care of *MB* •