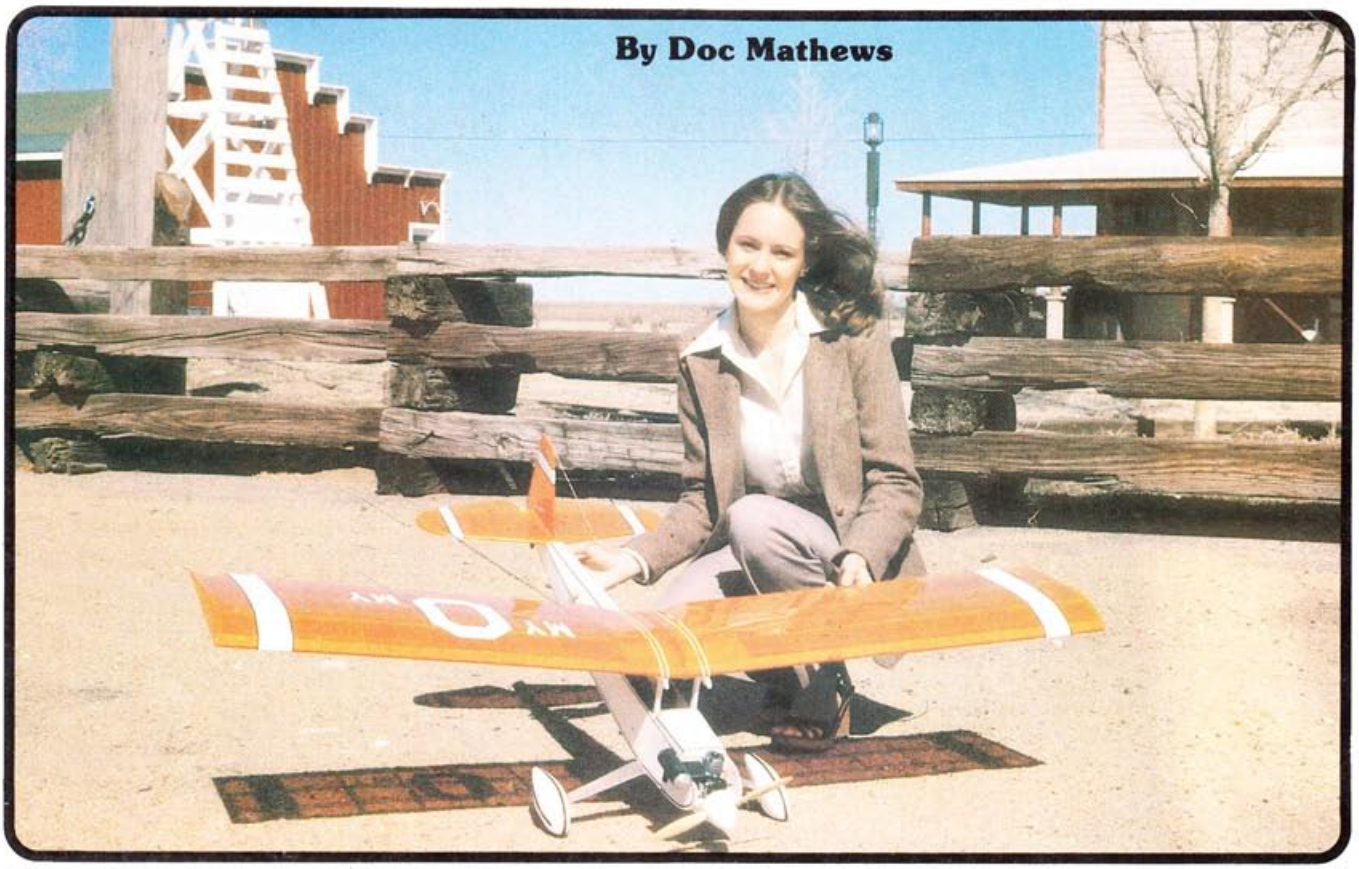
By Doc Mathews



Doc's daughter, Shelly, a Junior at the University of Houston, proudly shows off dad's My-O-My.

MY O MY

The My-O-My's author, Doc Mathews, has attempted to create an old timer RC type model. There are those who say she looks like this or that. Doc's reply to each claim has been, "You are absolutely right."

That Old Timer free-flight models converted to R/C make superb primary trainers has been widely recognized for several years. These old designs with their light wing loadings and high degrees of inherent stability, coupled with slow velocities, and relatively large size, provide the rank beginner with an opportunity to learn the rudiments of pilotage with a minimum of risk. My personal experiences, as well as those of the numerous builders who have written me, indicate the Old Timer type of models to be nearly perfect as trainers for those who have never previously flown R/C. These same characteristics also make these light, slow and large models highly attractive as sports subjects.

Sadly, the average Old Timer design is not easily constructed by the beginner. The design and construction of these model aircraft from the 1930's strongly reflects the state of the art of that era . . . one must remember that epoxy, aliphatic resin, the glow plug, nitromethane fuel, heat shrink covering material, etc., were not available to those pioneer designers. The extraordinary flying ability and lovely appearance of those old designs attest strongly to their designers high skill levels with the techniques and materials available to them. The fact, nonetheless, remains that newer building and designing techniques can be used to create model aircraft possessed of the desirable performance traits of these antiques, while vastly simplifying construction and improving the durability of the model.

The My-O-My is an attempt on my part to create an Old Timer R/C type model, utilizing modern adhesives, materials, and techniques, while retaining those highly desirable virtues previously mentioned. That the My-O-My weighs 14 ounces per square foot, flies well on low power, has exceptional stability, and is startingly easy to construct, leads me to feel that indeed she is a "new" Old Timer.

Her lineage has been a source of amusement for me. There are those who say she is a semi-scale Pober Pixie, or a Baby Ace, or maybe an obscure Old Timer or home-built. Others see an enlarged Q-Tee or a shrunken something-or-other. My reply to each

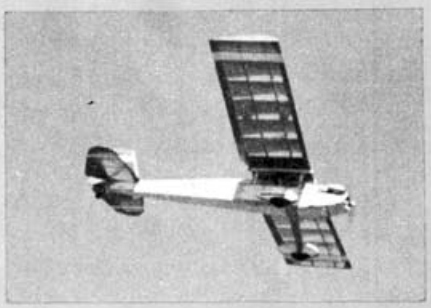
claim has been, "you are absolutely right."

Some readers may feel the structure of this model is too minimal to provide adequate strength, particularly in a mishap. Let us take a brief look at the philosophy involved. The collision survival of any model aircraft is a relationship between its structural integrity (strength) and the kinetic force delivered to its components by the object or objects with which it makes contact. Therefore, to render our models relatively "crash resistant" we face a paradox. On one hand, if we design for strength by utilizing large wood sizes and numerous braces, we add to the total mass which, in turn, increases the kinetic force developed in a collision. Conversely, the deleterious effects of an excessively flexible structure are also obvious.

We, therefore, continuously walk a narrow line between strong and heavy, and weak but light. The My-O-My represents a reasonably successful balance of these factors. It is light enough to "bounce" in the fashion of smaller 1/2A models, but also possesses sufficient structural strength to survive the rough handling to which such trainers are invariably subjected.

An effort has been made to provide convenient access to the systems of the model via the use of removable hatches, open areas, and a removable cowling. Nothing can be more frustrating to the flier than a malfunction of an inaccessible unit. Please note the pragmatic approaches used in designing the tank plumbing, landing gear mount, and the servo installation. Every effort has been made to follow the K.I.S. principles while remaining painfully aware of Murphy's Law.

The My-O-My incorporates building techniques that require only a flat building surface to create a "true" component, free of warps and misalignments. The builder need only follow the most basic tennants of craftsmanship to produce a model of which he can be justly proud. An effort has also been made to minimize the number of parts used; wood sizes and accessories are all standard stock items in any well stocked hobby shop. The wheel pants and landing gear unit are Sig catalog items and may be ordered direct or through your dealer. Only minor wood carving is required and parts fabrication can be easily accomplished with standard shop tools.



MY-O-MY

Designed By: Doc Mathews

TYPE AIRCRAFT
Sport Trainer
WINGSPAN
54 Inches
WING CHORD
10½ Inches
TOTAL WING AREA
560 Square Inches
WING LOCATION
Parasol Wing
AIRFOIL
Flat Bottom
WING PLANFORM
Constant Chord
DIHEDRAL, EACH TIP
2½ Inches
OVERALL FUSELAGE LENGTH
41 Inches
RADIO COMPARTMENT AREA
(L)10" x (W)2½" x (H)2½"
STABILIZER SPAN
19 Inches
STABILIZER CHORD (incl. elev.)
6½" Average
STABILIZER AREA
116 Square Inches
STAB AIRFOIL SECTION
Flat
STABILIZER LOCATION
Top of Fuselage
VERTICAL FIN HEIGHT
5¾ Inches
VERTICAL FIN WIDTH (incl. rud.)
6" Average
REC. ENGINE SIZE
.15-.25 Cu. In.
FUEL TANK SIZE
4 Oz.
LANDING GEAR
Conventional
REC. NO. OF CHANNELS
3
CONTROL FUNCTIONS
Rud., Elev., Throt.

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage	Balsa, Lite Ply, Spruce
Wing	Balsa, Ply & Spruce
Empennage	Balsa
Wt. Ready-To-Fly	54 Oz.
Wing Loading	13.9 Oz./Sq. Ft.

Although several innovative construction techniques are employed in the construction of the My-O-My, they are all well tried and of proven practicality and strength. Several of the innovations used will strike a familiar chord with anyone who has examined or built any of my previously published original designs and modernized Old Timers. Let's get to building . . .

General:

The basic adhesive for this project is aliphatic resin (Sig-Tite, etc., bond). The epoxy joints **should** be made with slow cure type, however, several My-O-My's have been constructed using 5-minute epoxy with no deleterious effects except some weight build up. Do not substitute balsa for spruce in the wing, nor spruce for balsa in the tail. The cut-outs in the fuselage sides are not needed unless a very light engine is to be used. For a S.T., K & B, or larger Fox, the model will tend to be nose heavy anyway.

Fuselage:

(1) Place 1/8" lite ply under the fuselage side view with carbon paper placed to create a tracing on the wood. Use a straightedge and a pencil to trace over the drawing.

(2) Cut straight lines with a knife and the curved lines with a Dremel or coping saw. Use the first pattern to develop a second. Lightening holes are created using a hole saw to cut through, then connecting holes with a knife and straightedge.

(3) Draw position reference marks for the cabane struts on the interior of the sides. Cut cabanes to **exact** length, identify front and back units for later reference.

(4) Epoxy spruce cabane struts to inside of lite ply sides. **Be certain you are making a left and right side.** Cut and epoxy the 1/2" triangular balsa stock to the firewall joint. Add the T.E. stock scrap to the rear tail post.

(5) Develop the four plywood bulkheads by tracing through the plans with carbon paper (or make a Xerox copy from the plans), cut it to rough outline, spray with 3-M Sprayment, stick onto appropriate ply and cut out on the Dremel saw, then peel off the pattern. Drill all holes **now**! Install 4-40

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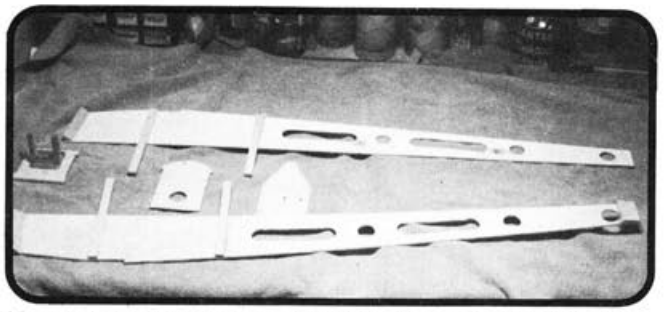
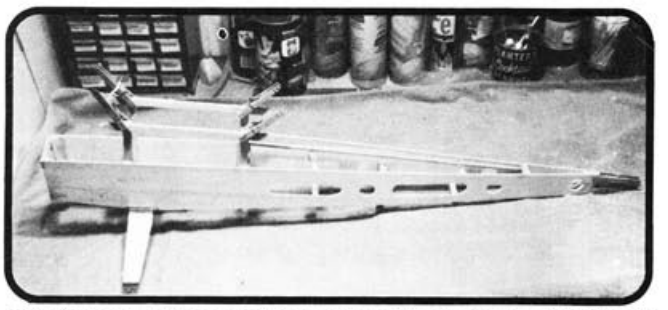
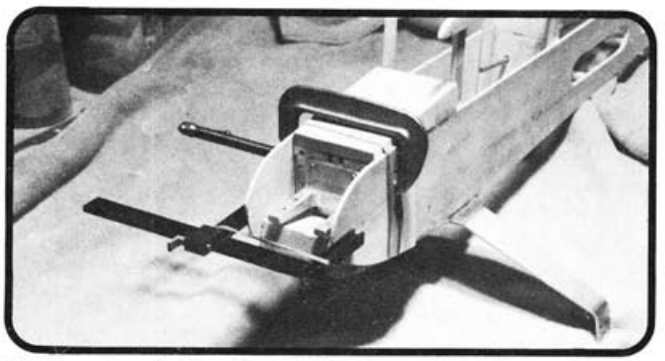


Lite ply sides cut with cabane struts and tail block glued in place. Ready to join together. Fox mount installed on firewall.

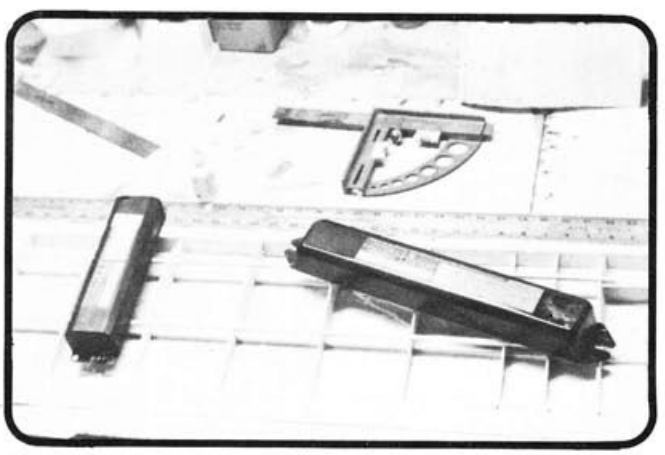


After fuselage sides are joined, epoxy wing saddles onto cabane struts.

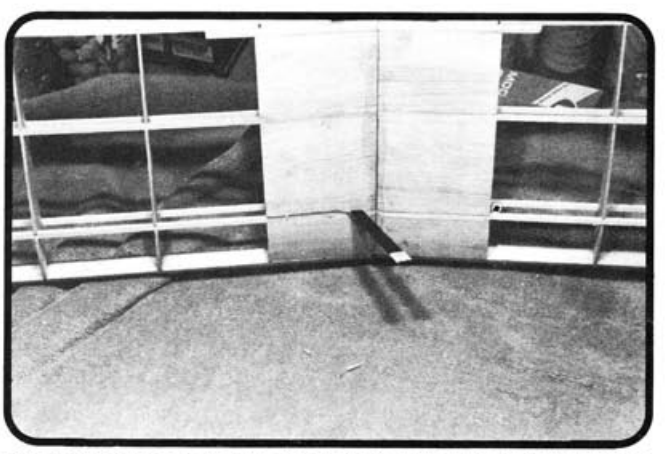


Hatch and cowl side clamped in place while glue sets.

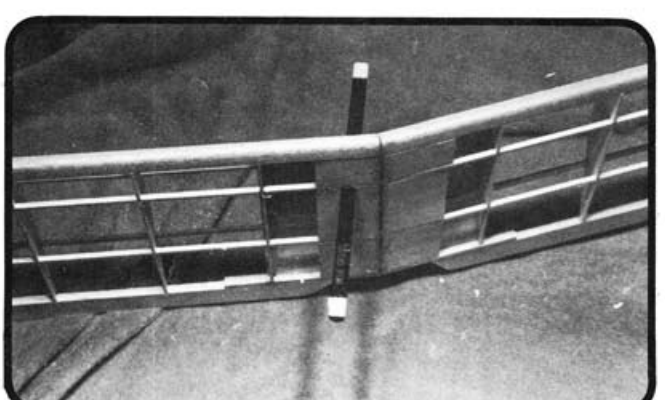
Center wing rib tilted using angle guide shown on plans.



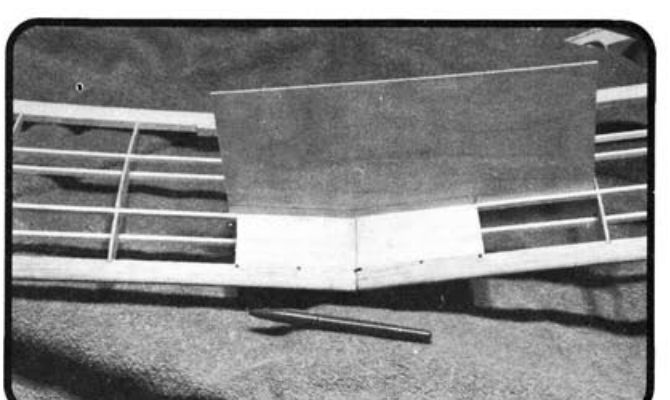
Top spars being held in place by author's unique weights (burned out fluorescent light transformers).



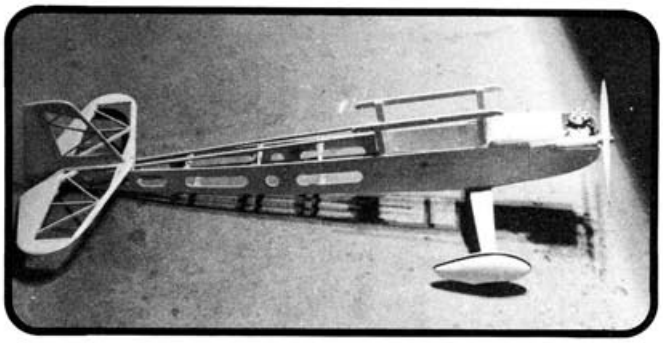
Top view of wing center section being opened up for ply spar brace. With .15 engine, needed at front spar only.



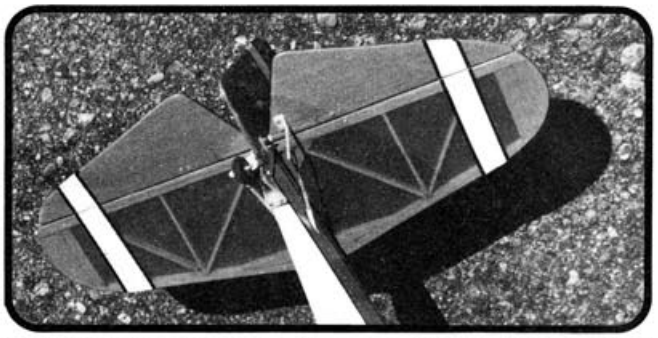
Bottom view showing 2 hacksaw blades taped together to cut out for ply brace.



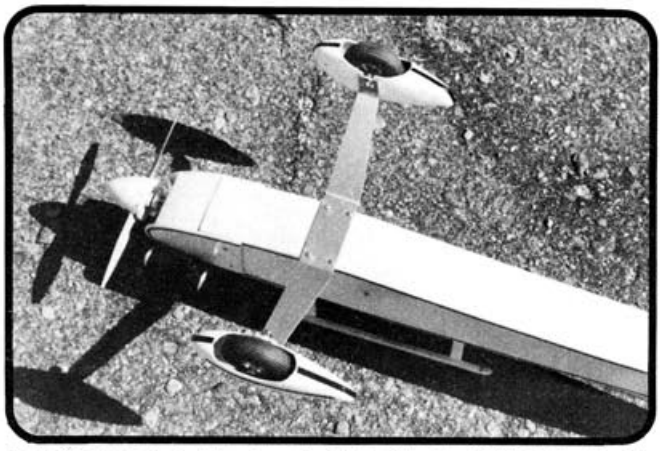
Slip ply in opening and mark top and bottom. Cut out and epoxy in place. Neat!



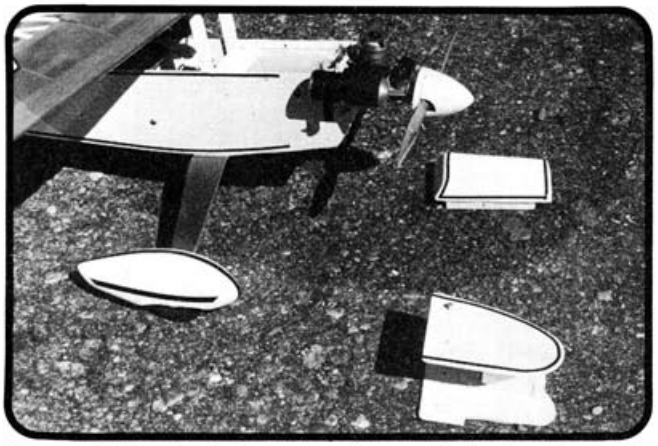
This shows off the clean lines and simplicity of the construction.



Underside of tail feathers showing control hook-up and tail wheel.



Landing gear bolted in place by (4) 4-40 bolts with blind nuts. Sig wheel pants really add some class.



Remove (6) sheet metal screws and expose the tank and complete engine. Makes easy access for inspection.

Looks like it's a modern version right out of the thirties that has been rolled out of the hangar onto the runway.

Our little jewel lifts off in short order and heads for open sky.

blind nuts and other hardware, trial fit the bulkheads into their respective positions (trim for good fit if necessary), pin and weight right side to building board.

(6) Epoxy A, B, and C into position using slots and vertical guides as a reference. Check for good alignment in all planes using a 90 degree triangle to establish exact right angle relative to the right side.

(7) When epoxy has completed its set, position and epoxy the left side onto the bulkheads.

(8) Epoxy the landing gear mount into the slot and onto the rear of B.

(9) Position the tail post with a block, pin it exactly 1⅜'' off the surface at the inside (top) face of the lite ply. Pull down and epoxy the left side to the T.E. stock. The rear ends **must** parallel each other in both planes, so adjust accordingly. Hold in place with clothespins while epoxy sets.

(10) Remove the fuselage box from the work surface. Cut and epoxy the wing saddles onto the cabanes (see photo).

(11) Cut and fit the 1/4'' x 3/8'' balsa cross members and stick with C.A. Continually check for symmetry, only forced fits will affect the contour adversely. Cut out and affix the turtledeck formers.

(12) Trial fit the 3/16'' spruce

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turtledeck stringers for a smooth fit. Glue into place, then sand to blend.

(13) Position and drill for landing gear against and through the mount; bolt into position using 3/8'' x 4-40 bolts and blind nuts.

(14) Cut two cowl sides and the 1/2'' balsa filler block for a snug fit, position the sides onto the fuselage and epoxy the block to them. Carve to shape after epoxy sets. Some customizing will be necessary to match the engine and muffler used. The O.S. .15 muffler requires a notch to be cut for clearance, other mufflers fit with little or no cutting.

(15) Cut the hatch to rough shape, position 3/16'' x 1/2'' spruce to inside for tight fit. This should be done prior to installing the ply on the bottom to facilitate reaching up through the bottom. Carve to shape. Drill through the ply sides and into the balsa blocks with a 1/16'' drill. Remove the hatch and enlarge the holes in the ply to freely admit a #6 sheet metal screw. This technique also applies to the cowl (see photo).

(16) The fuselage is now ready to install the hardware after the empennage is completed, and the 1/8'' lite ply bottom has been epoxied in place.

Wings:

(1) Develop a master rib pattern using one of the techniques described for the fuselage bulkheads. Cut twenty blanks of 3/32'' C-grain balsa sheet, pin the ply master rib onto the top of a stack of blanks, cut to rough outline on the Dremel saw, with a coping saw, or even by carving with a long bladed knife. Sand the ribs to match the master pattern and cut out the four spar notches. Cut four ribs to the reduced outline shown, using the master rib set below the full outline by 3/32''.

(2) Mark and cut the L.E. and T.E. for rib notches using the plan as a guide. Cut the L.E. stock notches with the material held at a rear face-right angle to the saw table. An alternate route would be the use of two hacksaw blades taped together or the blade of a table saw.

(3) Cover the plans with Saran Wrap then pin the bottom spars, L.E. and T.E., bottom center sheeting, and the 3/16'' x 1/2'' spruce center filler to the plan. Block up the tip as drawn for built-in wash-out.

(4) Glue the ribs into the slots and onto the spars. Tilt the center ribs using the jig. The other ribs should approximate a right angle to the building surface.

(5) Add the gussets, top spars and top sheeting before removing from the board. Allow at least 8 hours for complete glue curing.

(6) Remove and repeat the process for the opposite panel. Both panels are actually identical; the tip and center sections are merely reversed. A few minutes of thought will prevent any possibility of building two lefts, and the finished model will look much nicer with a left and a right wing.

(7) Block up a panel to 2½'' at the tip, use a sanding block against the flat edge of the work table to sand the spars, etc., to a flat countour. Repeat with the other wing panel until the center section will mate quite closely with each other.

(8) Pin one wing panel flat onto the building board with the other blocked up 5''. This joint **must** be done with conventional slow setting epoxy.

(9) After cured, remove the joined panels, place the doubled hacksaw blade flush against the back of the front spar and slowly saw through the ribs and sheeting, being careful to stay up against the spruce all the way. If a .19 or larger powerplant is to be used, I would recommend ply gussets at both spars and perhaps vertical shear webs if aerobatics are anticipated.

(10) Place a piece of 3/32'' ply into the slot or slots, draw a line at the spar-ply junction (top and bottom) with a pencil, then remove the ply and cut it to shape. Epoxy into the slot or slots generously.

(11) The center section should be wrapped with 2'' glass tape and resin or epoxy.

(12) Complete the wing by adding tip blocks and contouring; contour center cut-out, etc.

(13) Inspect and correct any deficient glue joints, then cover.

Tail Feathers:

The key to the stab construction is the cutting of the 1/4'' x 3/8'' filler that backs up the leading edge joint. It must be reasonably accurate with a right angle cut. Use a razor saw if at all possible, otherwise cut with a knife very carefully. I prefer to rough out the tips and elevator leaving the final contouring until after the hinges are in. The 3/16'' spruce joiner in the elevator must also be epoxied.

The rudder and fin construction follow the above closely; the fin **does** need to fit snugly into the stab slot, and may require some fitting to do so. The four components of the empennage are most easily covered separately, then permanently hinged with toothpicks, and C.A. used to lock the hinges.

Radio Installation:

Servos must be mounted on an appropriate tray. The tray, in turn, is screwed onto two pieces of hardwood cut to fit snugly inside the fuselage walls. Once a satisfactory C.G. has been found, the hardwood rails are epoxied to the sides with sheet metal screws used to lock them. Position empennage with horns installed, holding it to the fuselage rear with pins or tape. Use a portable electric drill held parallel to the fuselage mid-line, and on the plane with the horns, to drill a pass-through hole for the pushrods. Push the rods through the holes in

bulkhead C, passing out through the rear holes. A 48'' length of Sullivan Gold'N-Rod cut in half is exactly the correct length.

Thread the studs into the inner rod by chucking them in a 1/4'' electric drill; use a ''blip and push'' to thread to desired depth. Install clevis to rear ends and snap into horns. Adjust front length of Gold'N-Rods by cutting the correct length, then connecting to the servo arm with solder clevis, bent studs or, best of all, Du-Bro E-Z connectors. Rough adjust for neutral.

Temporarily install the engine and mount, thread a cable-rod throttle unit through the appropriate holes in A and B. Adjust for throttle control, following instructions on the package. One can substitute a piece of 1/32'' music wire with kinks for throttle and servo connection. Although hardly artistic, the music wire is simpler and **does** work.

Temporarily install the tank, batteries, switches, etc. Check the C.G. which, at this point, should fall **ahead** of the front spar to compensate for the slight rearward shift that will come with covering and painting of the fuselage. Adjust the receiver and servos if needed, then permanently mount the tray runners. Remove all hardware before applying the finish.

Finish:

A My-O-My can be satisfactorily finished with darn near anything, short of old undergarments. That transparent MonoKote on the wing and tail with opaque on the fuselage is attractive, and goes without saying. Other alternatives such as polyester (acetate) sheathing (coat-dress liner) with nitrate dope and urethane color certainly have appeal from an economy and strength viewpoint. The only limitations I have seen are a need for sheer webs in the wing when using one of the more flexible low heat shrink-ons and, of course, a strong need for fuel proofing the tank compartment and all other exposed areas of the nose. The wheel pants are held to the aluminum landing gear with sheet metal screws threaded into the A.B.S. with a scrap of the material C.A. inside the pant for additional ''bite'' and strength.

Flying:

The My-O-My is one of those rare designs that can be successfully soloed by a low time (perhaps even a no time) pilot. If the C.G. is right, there are no warps, dime has been used under the motor mount lip for right thrust, and everything is on straight, do this . . .

(1) Trim the elevator for down trim and the rudder for right trim.

(2) Start the engine and run at 1/4 throttle — low enough that the model will not taxi.

(3) Point the nose directly into the wind while you stand directly behind.

(4) Slowly advance the throttle while controlling the direction with the rudder.

(5) When the tail insists on rising off the grass, ease in a little up elevator.

(6) Climb out very shallow by applying additional throttle, **not** up elevator.

(7) At 25', institute a gentle left turn, allowing controls to return to neutral when you wish to terminate the turn. No opposite rudder or up elevator is needed.

(8) Use the first flight to accommodate mentally to the coming and going shift, while practicing maintaining a heading. If you get rattled, allow all controls to return to neutral. The model will fly itself while you get caught up.

(9) Landing requires only a reduced throttle, slowing more and more as the model settles, with a tap of up just at touch down to flair the landing.

There, in a nut shell, is the attraction of this type of big, light, and slow model. It possesses enough stability to fly fairly well without help, allowing the pilot to regain his composure. One need not be overly concerned over a dead stick situation as the model will glide a considerable distance, and even center up in a strong thermal. An additional bonus not often discussed is visibility. A model of this size is much easier to see, and remain in visual contact with, than the more ordinary 1/2A trainer, which is a very helpful state of affairs when trying to figure if you are turning left or right. Wind penetration has been most satisfactory. My-O-My will handle 20 knots with no trouble (that's a calm day in Western Kansas).

When I was a boy, many models were advertised in the magazines as ''guaranteed to fly'' or ''guaranteed to fly 1000 feet.'' I have always wondered where one was to file the claim should he have constructed a model that did not perform. Although I will not guarantee your money back if your My-O-My should not meet my claims, I will guarantee any builder that somewhere in the course of building and flying, he will say, ''**My-O-My**, what a nice model this is.'' Should you find that explanation difficult to chew and swallow, upside down the initials spell W.O.W. Whichever way you look at it, I hope you will enjoy yours. □