Nick poses proudly with his "new" Swoose—configured for land operation. Either way, it makes for a great sport flier.

1989

SWOOSE

by NICK ZIROLI

This 1946 MAN design has been freshened up and modernized; proves good, basic designs are timeless.

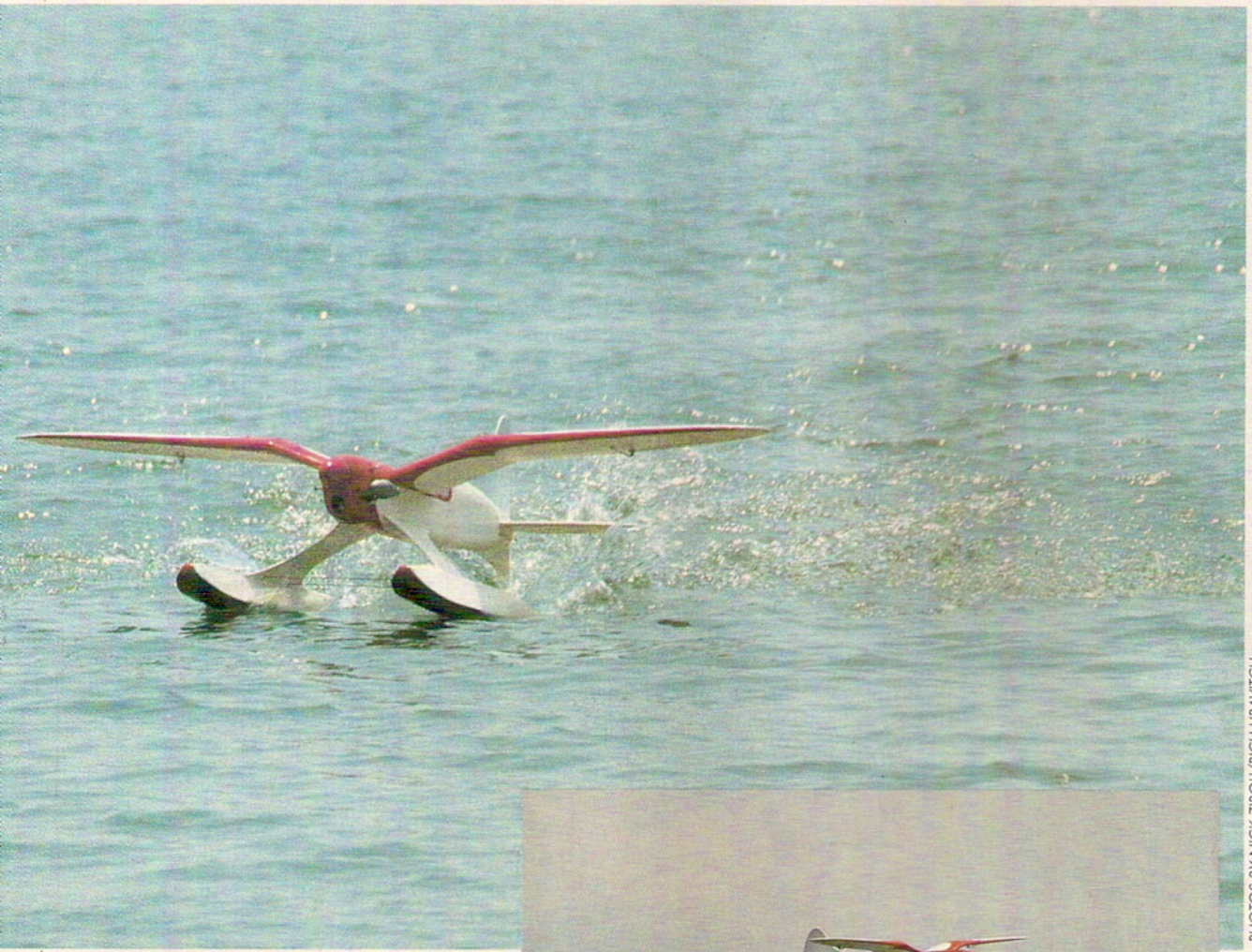
SPECIFICATIONS

Type: *Sport seaplane (convertible to land use)*
Span: *63 inches*
Length: *(fuselage) 47 inches, (float) 38.75 inches*
Weight: *102 ounces*
Wing Area: *588 square inches*
Wing Loading: *25 ounces per square foot*
Power Req'd: *.40-.50 2-stroke*
No. of Channels Req'd: *4*
Materials: *Balsa and Ply*

Here's the '89 R/C version of the '46 Swoose. It's refreshing to see the graceful, flowing lines consisting of many sweeping curves rather than the more typically contemporary angular, box-like designs.

IF YOU'VE ever flown a model seaplane, you'll understand why they're becoming so popular. The addition of a set of floats to your present model will open a whole new dimension of R/C flying. Of course, with this new dimension come some new problems that will have to be solved.

The biggest problem is the medium itself: water. It positively will not mix with radio equipment, so every effort must be made to waterproof this equipment and seal the fuselage. Salt water is especially destructive and will almost certainly ruin a system. Wrapping the receiver and battery pack in plastic bags is an effective means of keeping water



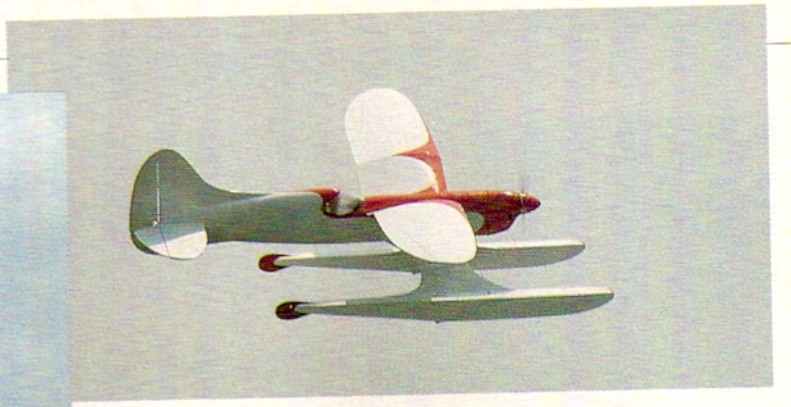
PHOTOS BY NICK ZIROLI/RICH URAVITCH

out. Servos are pretty well sealed, and they aren't usually a problem, unless they get a good soaking. A good wing-to-fuselage seal and "Gold-N-Rod," or similar type of pushrod, will solve most of the waterproofing problems.

The floats must be suited to the power, size and weight of the model they support. If they aren't, you'd better be sure your waterproofing is extra effective! Float angle and step location, relative to the model's CG, are just as important as a rigid mounting system. A small float deflection can be enough to make it dig in and dump the plane when traveling at high speed on the water. Recently, a lot has been written about seaplane flying and proper float installation. John "the Aquatic Guru" Sullivan has a lot to say about it in this issue.

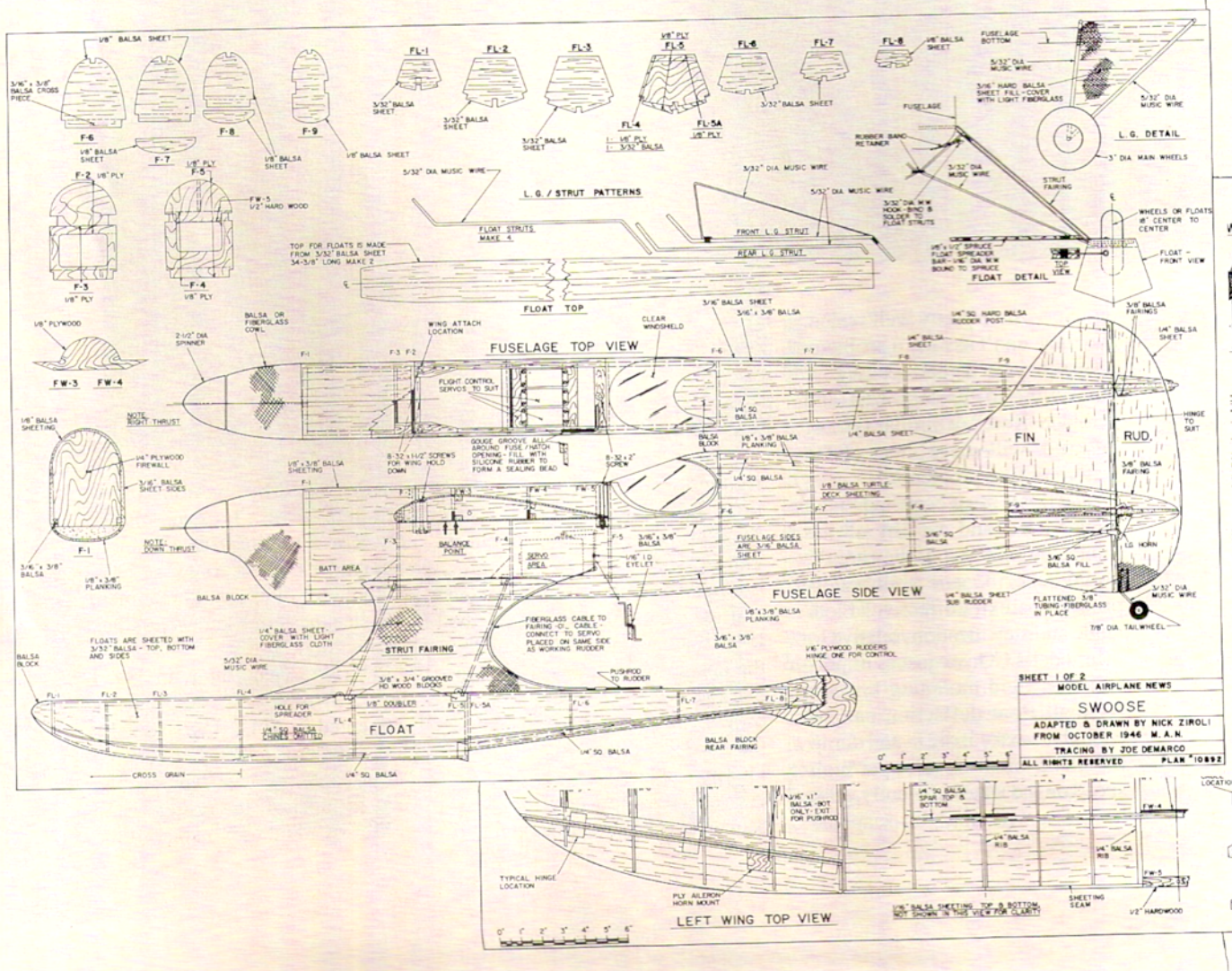
I decided to build a new plane and to get involved with all the local seaplane activity. Actually, the design wasn't new; it was an old one. In the October '46 issue of *MAN*, there was an article on the Swoose, one of the sharpest looking little seaplanes that I'd ever seen. Designed by Capt. A. Stolzenberger as a free-flight, it was powered by an Atom .09 on ignition. It wasn't a scale model, but it was reminiscent of the old Schneider Cup racers of the '30s. Although I didn't build one then, the sleekness of the design stuck in my mind.

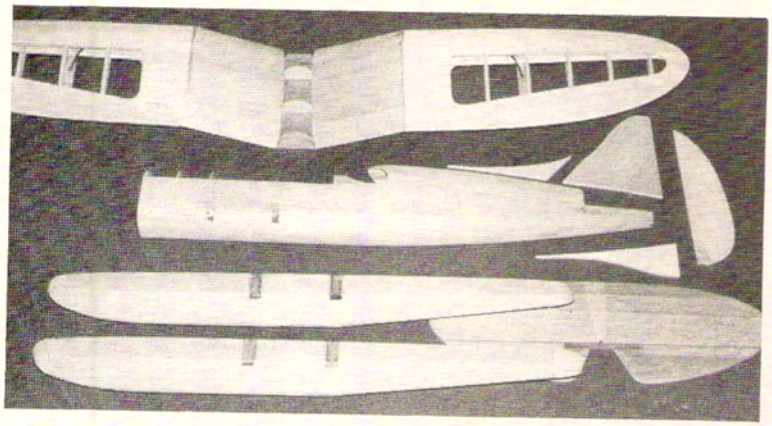
Thirteen years later, in '59, I built a Swoose as it was originally presented in *MAN*, but I added a few "modern" touches. A built-up sheet-balsa fuselage replaced the carved block of the original, and a McCoy .09 diesel displaced the



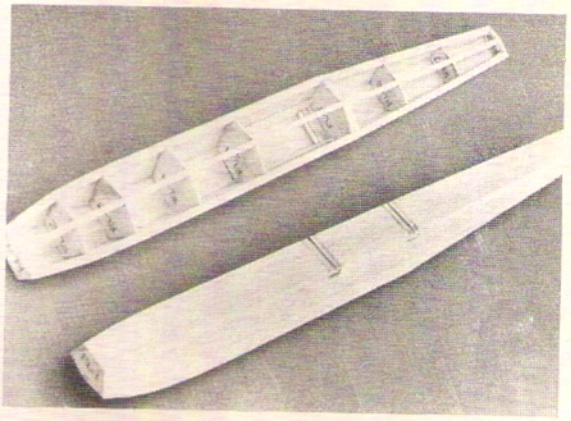
Atom. I got more kicks out of that little model than I thought possible. Picture a 31-inch-span all-balsa free flight powered by an .09 diesel, and you can imagine the exciting performance of this ship. There was no skyrocket climb; rather a long water-skimming takeoff, followed by a very fast shallow climb-out in large circles. A 30-second engine run put it almost out of sight. A de-thermalizer definitely wasn't required, as the descent was almost as fast as the ascent. It was truly an intriguing airplane that was literally flown to death.

In '67, I built an R/C version of the Swoose. Adapting it to R/C required doubling the wingspan to 61 inches, since the original size was too small to be practical. (Sorry, Joe and Randy!) Float width was also increased for bet-





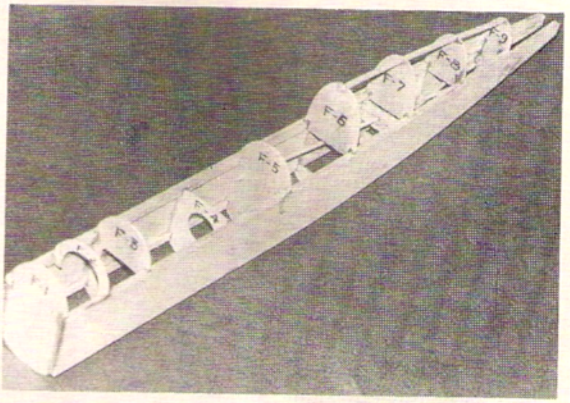
Basic assemblies framed up and ready for finishing. Wing may be left open and covered, or sheeted completely.



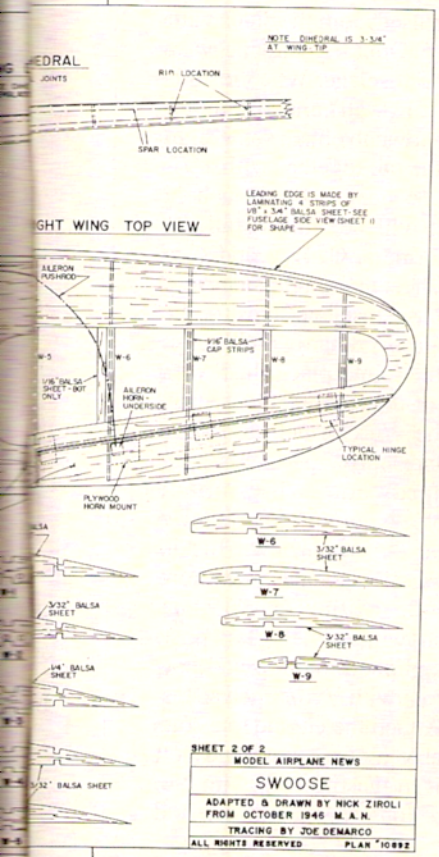
Top and bottom of nearly completed floats. Bottoms and tips remain to be added. Simple, strong structure.

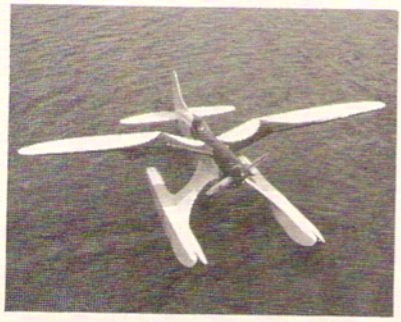
ter buoyancy. A screw-on wing (uncommon in '67) was used to form a watertight compartment that didn't allow a drop of water to reach the radio compartment. Even if the wings were broken off in a water crash, the center section was designed so that it would probably remain intact.

Since I wanted to do some of my flying over land, I decided to make the floats removable so that wheels could be installed—a worthwhile move, since it takes no longer than 2 minutes to reconfigure from sea to land or back. On occasion, I'd flown off a lake in the morning and gone directly to the field and flown the afternoon away on wheels. Excellent ground-handling characteristics were achieved by plugging a tail wheel into the bottom of the



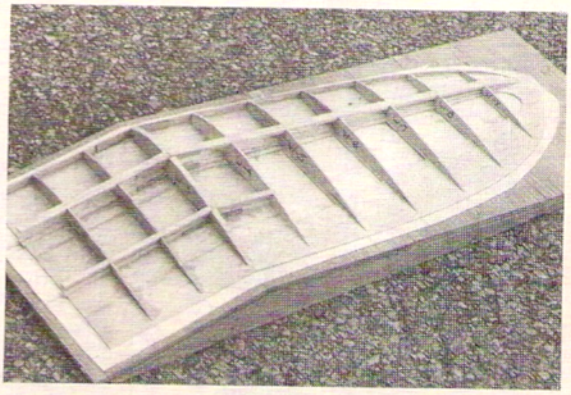
Framework of fuselage ready for top and bottom planking. Note offset in fire wall for right thrust.



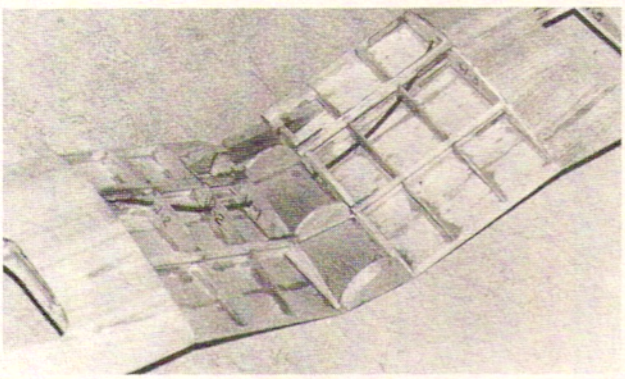


#10892 '89 Swoose $12.50

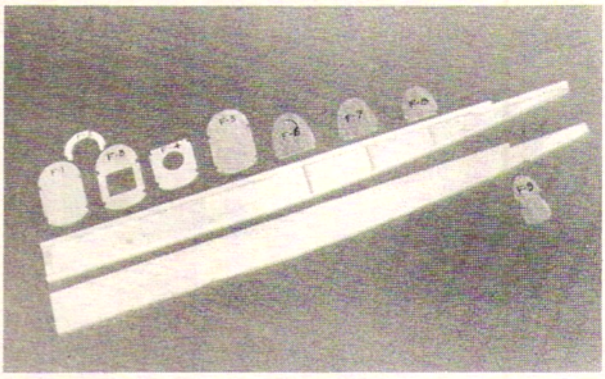
Nick Ziroli has taken a free-flight design that was originally presented in 1946, scaled it up, fitted it with a radio and produced a seaplane that will surely become a favorite with modelers. The most noticeable characteristic of this graceful bird is its inverted gull wing with an elliptical planform. Spanning 62 inches, the Swoose requires a .45 to .60 engine. The design is straightforward and easy to build. Balsa and plywood materials are used. Two detailed sheets.



A simple building board makes assembling the gull wing easy. Only one board is required for both wings.



Wings joined and final sheeting remains. Three screws secure wing to the fuselage for watertight radio compartment.



Most of fuselage parts ready to assemble. To save time, cut out all parts to make a kit.

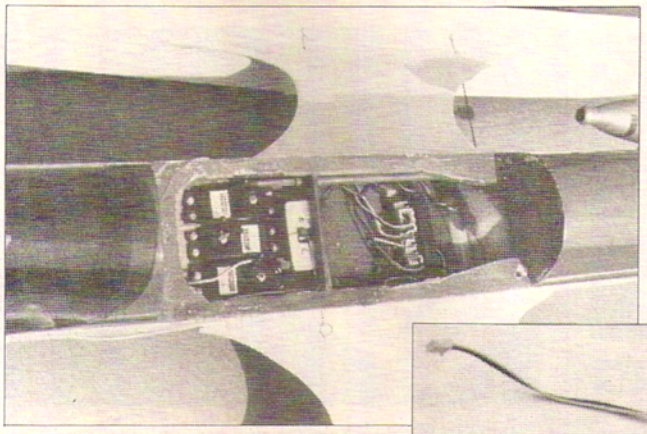
rudder.

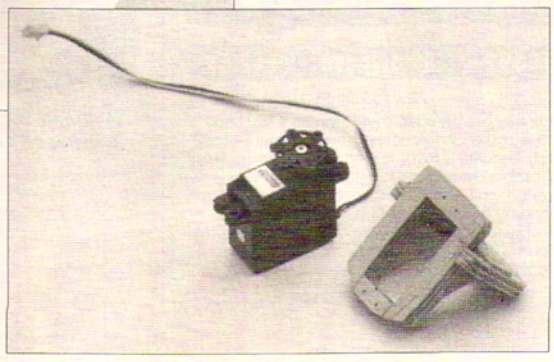
In '67, I flew the Swoose at the annual Brimfield, MA, Hydro Meet, which I believe is still held every year. Magazine coverage of that meet included photos of the Swoose, and to this day, I get an occasional inquiry asking what happened to this model. Modelers remember it. My '67 version of the Swoose was powered by an ST 51 and controlled by a Citizenship DP-3. Remember that one? No ailerons were used on the early version, and it really didn't require them. It was a very good 3-channel airplane, and the only major changes I made on my '89 version were to include ailerons, lengthen the nose, shorten the tail about 1 inch and invert the engine.

Construction of the Swoose shouldn't be too difficult for anyone who has scratch-built a plane or built a few kits. The flat-bottom wing is easy to build and performs well for this type model. The fuselage consists of sheet-balsa sides with planking top and bottom, which is the easiest method to use for a streamlined shape. A 1/16-inch sheet-covered stabilizer is used with solid 1/4-inch sheet elevators, fin and rudder. Looking like two basic fuselages, the floats are simple, rugged, and they make the whole project worthwhile. Building the wing center section and aligning the floats to the fuselage are the most difficult parts of the construction, but even they aren't major problems.

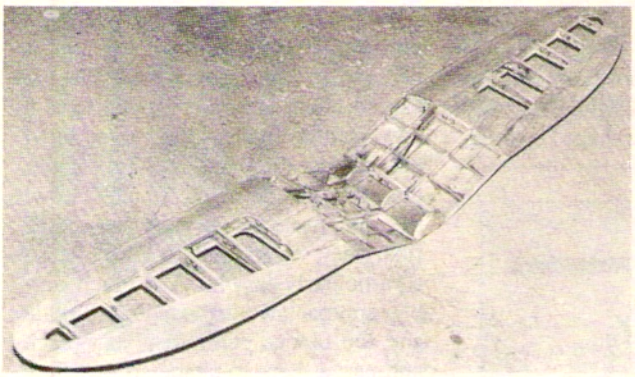
Many modelers prefer to prepare a complete kit of parts before they begin constructing a new project: a good approach that can save time. Superglues allow you to build as fast as you can put the parts into place. At least 90 percent of my Swoose is held together with CAs of different viscosities.

FUSELAGE: Cut the fuselage sides from 3/16x3-inch balsa, and glue the 3/16x3/8-inch longerons top and bottom to make a right and left side. A short splice will be necessary at the tail if 36-inch wood is used. Join the sides with F-1, 3, 4 and 5. Omit F-2 until the wing is fitted to the fuselage. When installing F-1 (the fire wall), make sure it's at the angle shown to obtain some right thrust. Pull the tail together with a 1/4-inch spacer between the sides where the tail post will be, and install the remaining formers. Cut out and glue the 1/8-inch sheet upper rear sides into place. Notch the fuselage sides for the 3/8x1/2-inch grooved hardwood blocks and epoxy them into place flush with the outside of the fuselage. Cut away the 3/16x3/8-inch longeron and epoxy 1/2-inch square hardwood wing-mount blocks into place as shown in the top view. Install Gold-N-Rod pushrods from F-5, exiting at F-9, as shown. Add the tail post, and plank the top and bottom with 1/8x3/8-inch strips. Attach the engine to a suitable motor mount and bolt it to the fire wall with No. 4-40 screws, washers and





Above: Three-abreast servo installation is no problem in nicely sized radio compartment. Switch actuated by wire to minimize water intrusion.
Right: Unique servo-mounting adapter, made from 1/4-inch ply, was employed to enable best possible connection with Nyrod pushrod system.



Elliptical wing planform is worth the little extra effort it requires. If you want 3-channel control, omit the ailerons.

The ol' master prepares the '89 Swoose for its test hop on the not-too-placid shores of Lake Ronkonkoma on Long Island.

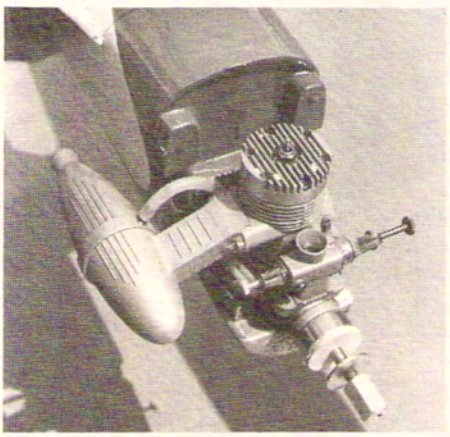
blind-nuts.

TAIL GROUP: Build the stabilizer by gluing the 3/16-inch outline and ribs to one 1/16-inch sheet surface cut to the outline. Use a regular slow-drying glue to attach the top stabilizer sheet, and hold it in place with a weight on a flat surface until it's dry. Cut out the 1/4-inch sheet fin, rudder and elevator parts. Join the elevators, and temporarily hinge them to the stabilizer.

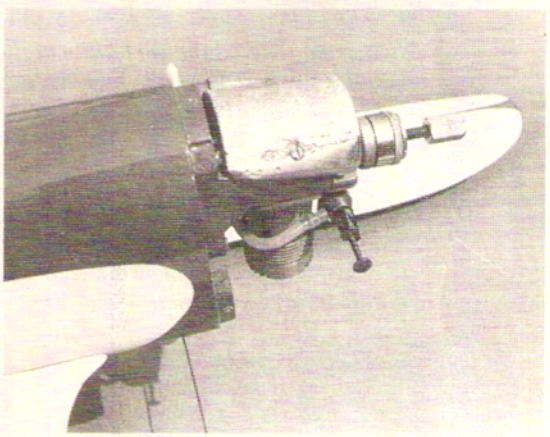
WING: The gull wing can be built in four separate pieces and joined, or built in two pieces on a simple building board, as I did. The wing consists of two flat boards at least 10 inches wide joined at the angle of the outer dihedral break. Cut out the bottom 3/32-inch sheet to the outline, then shape and pin it down over the plan. The outer panel can be sheeted entirely, or the center can be left open, and the ribs cap-stripped and covered with plastic or fabric. Add the bottom spars, ribs, joiners and leading-edge cap, and install the flexible Gold-N-Rod through the ribs. Lift the wing panel off the board so the pushrod conduit can extend through the bottom at the point shown on the plan. Cut the excess off flush with the bottom, and sand the leading-edge cap to match the ribs. Position the panel on the building board once again, and add the top spars, tapering them at the tip so they come together just inside the bottom sheet. Sheet the top of the wing, sand the leading edge sheet even with the 1/8-inch cap, and add the two 1/8x3/4-inch leading edges. Carve and sand them to shape.

Cut through the top and bottom sheet to remove the ailerons, install 1/4-inch-thick hinge blocks inside the upper sheeting and sand the hinge-line and glue the cap into place. Sand to match the outer surface. Cut the hinge slots, and temporarily hinge the aileron. Be careful here, as the hinges aren't the same distance from the top surface of the wing because of the curve. The center hinge is lower than the end ones. Keep all three in line.

Cut a 3 1/2x9-inch center-section bottom from 1/16-inch plywood. Place the wing panels against this on a flat surface with the trailing edges all in line. Block up the tips 3 3/4 inches and add the joiners and mounting blocks. Set the wing in place on the fuselage and glue F-2 in against FW-2, leaving enough space to allow for the finish and paint. After ensuring that the formers line up properly, plank over the top with 1/8-inch balsa. Don't obscure the holes in the mounting blocks. With the wing in the correct position, drill through these holes into the hardwood surface flat. Cap the opening with 3/32-inch sheet and sand it to match the top and bottom surface of the wing. Sand away enough of the front of the aileron to allow it to fit correctly into place with the 3/32-inch cap between it and the wing. (Note the angle to allow downward aileron deflection.) Install the 1/8-inch plywood horn mount plate and 1/4-inch hinge blocks, sand flush



Fox .50 ran very well, had remarkably reliable idle for a new, out-of-the-box engine. Upswept version of muffler available as well as the downswept version shown.



CG management by way of a shaped block of lead. Took nearly a pound! No problem running the new Fox .50 inverted.

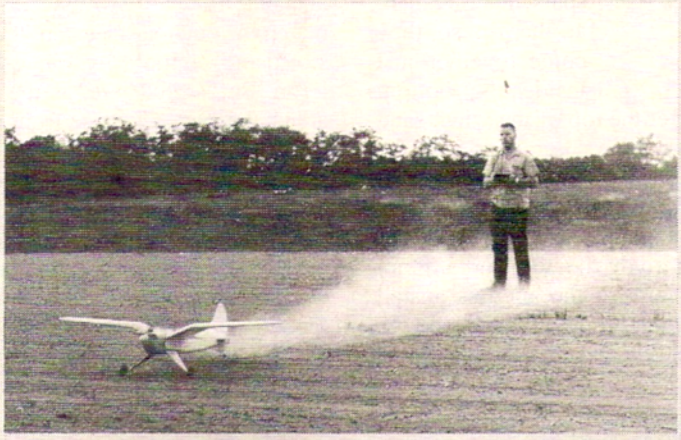
blocks in the fuselage. Tap the holes for No. 8-32 nylon bolts or install blind nuts in them.

Install the engine. The cowl can be made as simple or as complicated as you wish. I took the more difficult approach by carving blocks glued together around the engine to the shape I desired, removing it, covering it with clear plastic wrap, and fiberglassing it. When the carved block is removed, you have a cowl. Unfortunately, the carved cowl block must be made slightly smaller than the outside of the finished cowl to compensate for the thickness of the fiberglass, which is about 1/16 inch (not a particularly easy task). A much simpler approach would be to glue the side and top blocks permanently in place and carve them to shape so that they blend into the spinner. The bottom would be left entirely open for cooling and access to the engine. Your choice.

FLOATS: Build the floats by cutting out the top surfaces from 3/32-inch sheet balsa. Mark the location of all the formers and glue them into place. Pin the top surface to the edge of a piece of 3/4-inch wood that's the length of the floats. This will keep them straight while the stringers and sides are glued into place. Notch the sides, and epoxy the mounting blocks into place. Trim the sides even with the stringers, and add the bottom surfaces and tip blocks. Carve and sand the floats to shape and make sure you keep all the bottom corners sharp.

Bending a trial set of float struts to shape from coat hangers can save you wasting a lot of wire and time. Tack-glue a 1/4-inch strip of wood across the front and rear tips of the floats to hold them 18 inches apart from center line to center line. Block the floats up on a flat surface so their tops are parallel to it. Mount the fuselage to them on the trial struts. The object is to make the fuselage center line (use the wing-saddle face as a guide) parallel with the top of the floats and, at the same time, to locate the steps 7 1/2 to 7 3/4 inches aft of the fire wall. This takes some bending and adjusting to get it right. When you're satisfied, duplicate the struts in 5/32-inch music wire, and trial-fit to make sure they're correct. Epoxy the struts into the mounting blocks *on the floats* and, while still aligned, fill between the struts with 1/4-inch balsa. Bend the 1/16-inch wire spreaders to shape and fasten them to the top of the floats with sheet-metal screws. Add the front and rear strut fairings and sand

Some things age gracefully, and others become classics!!



Nick demonstrated the versatility of the Swoose design by fitting land gear to his first scaled-up version back in 1967. The dusty takeoff site is now overgrown with houses!!

Nick reversed the usual trend by having more hair now than he did 22 years ago, but note that the "flying outfit" remains pretty much the same! Both design and designer have longevity!

1967

1989

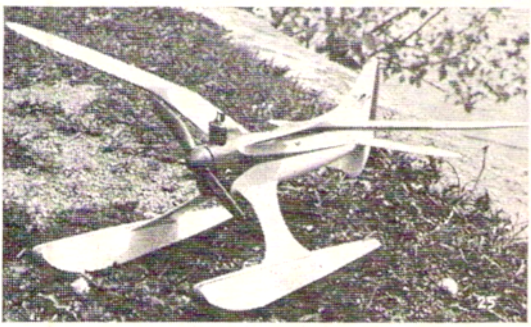
them to a streamline section. Since you're in the wire-bending mode, bend the landing-gear wires to shape, install them in the fuselage, then bind and solder them together. While still in the fuselage, epoxy the balsa fillers into place. The landing gear and float struts, including the area where they mount to the floats, should be fiberglassed with 2-ounce cloth.

COVERING, FINISHING & OUTFITTING: I covered the fuselage and floats with 3/4-ounce cloth and resin. The wings and stabilizer were covered with clear MonoKote* and painted with K&B* Super-Poxy. If MonoKote or other iron-on covering is used, cover the stabilizer and fuselage separately before installing the stab.

Install the servos, pushrods and horns. The aileron servo was difficult to mount. The original R/C Swoose didn't have ailerons, so it wasn't obvious to me that a servo wouldn't fit in the wing in the conventional manner. A plywood mount was made to orient the servo vertically, and that solved the problem. Water steering can be accomplished by incorporating either a movable rudder on one float or a rudder that plugs into the bottom of the air rudder in place of the tail wheel.

Balance the Swoose as shown on the plan. I hate to say it, but, to achieve this, mine took almost a pound of lead screwed to the top of the motor mount, so make every effort to build the tail surfaces and aft fuselage as light as possible. I used a Fox* 50 for power, and this has proven to be a very good engine with plenty of power and a good idle. The newer Fox carburetors (a vast improvement over the older models) are easy to adjust for both high and low speeds.

PERFORMANCE: Flying is easy off both land and water. We performed morning test flights at a local lake without a problem, and we did many touch-and-gos for the camera. That afternoon, we were at our field with the Swoose on wheels for some more photos. It flies equally well with floats or wheels, and ground and water handling are both very good. The aft ends of the floats sit low in the water, but the Swoose gets right up on the step, ready to fly very quickly. In the air, it's as acrobatic as I want. All the basic maneuvers and then some can be done very smoothly. If you like a racer-type sport model that looks as good on wheels as it does on floats, the Swoose may be the answer. The fact that it looks as good today as it did when I first saw it 43 years ago is a tribute to Capt. Stolzenberger's eye for a classic design.



Here's the original Swoose, reprinted from the October '46 issue of MAN. The wing had a bit more dihedral since there was no radio aboard to ensure "picture-perfect" flights, which, according to the article, most of them were!

Here are the addresses of the manufacturers mentioned in this article:
MonoKote; *distributed by Top Flite, 2635 S. Wabash Ave., Chicago, IL 60616.*
K & B Manufacturing, *12152 Woodruff Ave., Downey, CA 90241.*
Fox Manufacturing, *5305 Towson Ave., Fort Smith, AR 72901.* ■