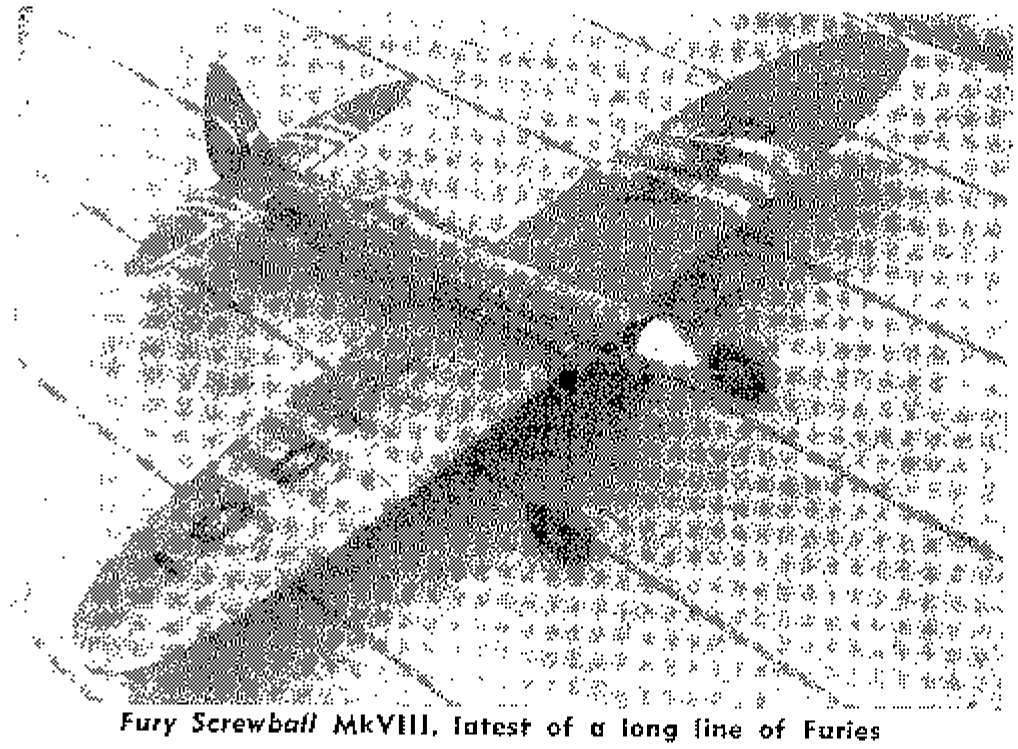
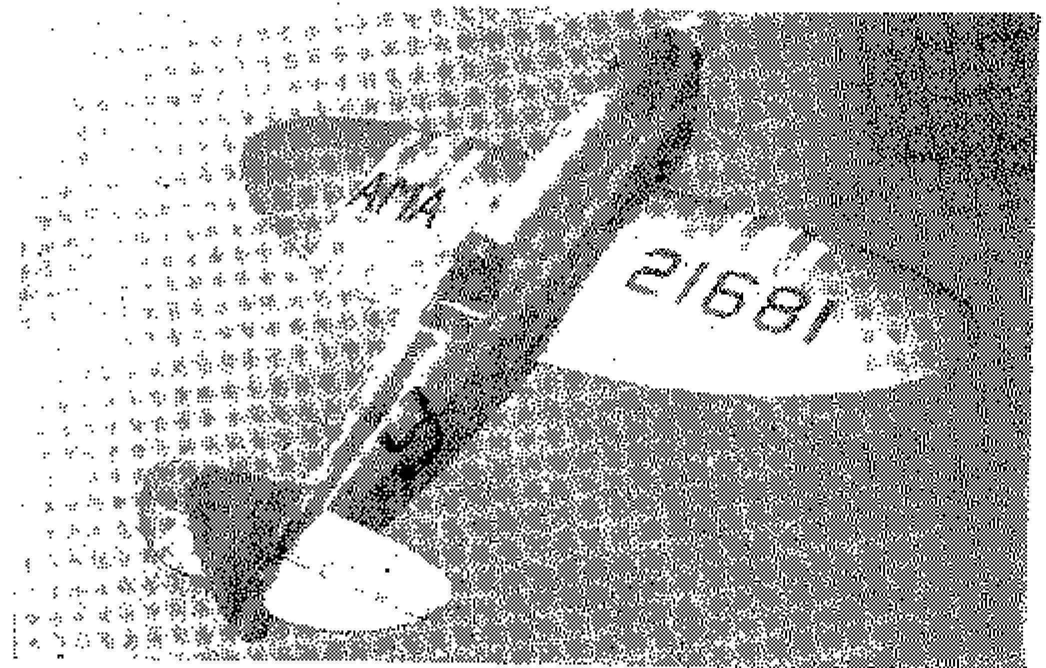
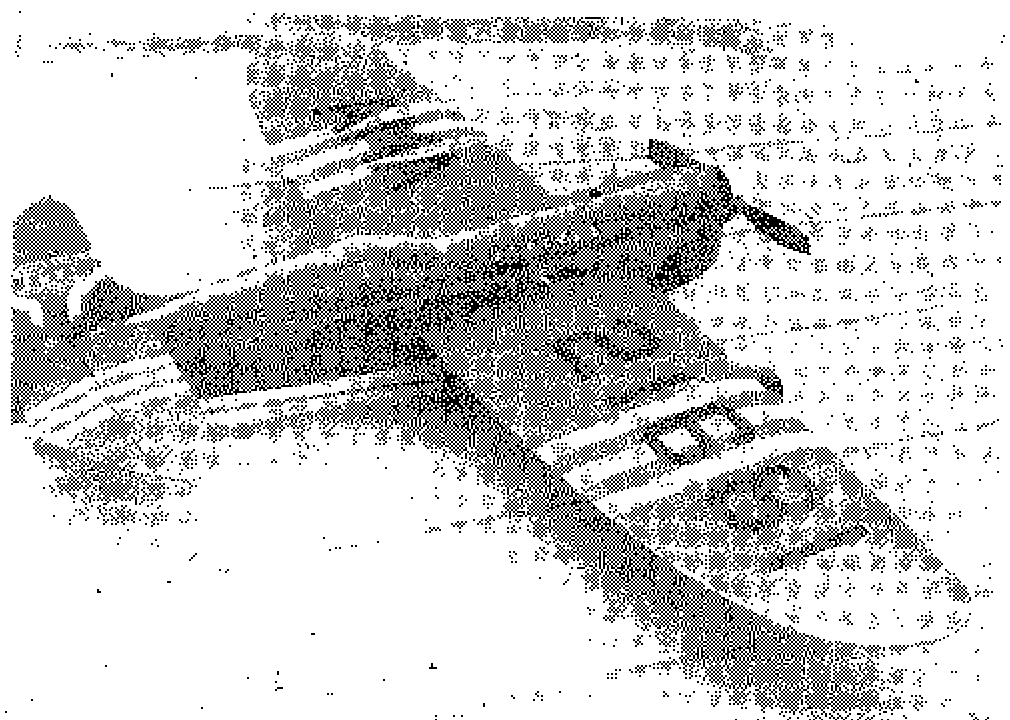


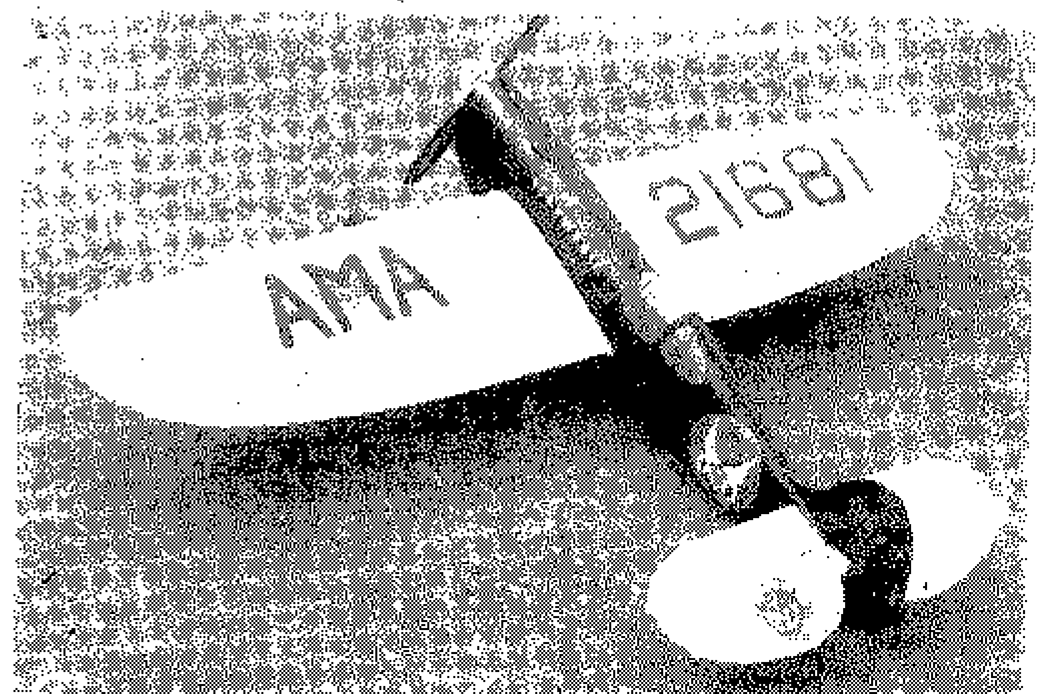
Fury Screwball MkVIII, latest of a long line of Furies




Screwball Jr., powered with a .19, is a beautiful little ship



Note flipper area, smaller on this ship than on one at right




This is MkVII, designed to do violent maneuvers if expertly handled

# FURY SCREWBALL

**by J. S. LUCK**

THE FURY series of controliners have been in the process of development for quite a while now. They first appeared in a 1944 issue of M.A.N., another in the series was described in '46. This article covers the two latest models: Mark VII and VIII. Designed in the light of most recent controline stunt practice, they should meet the requirements of skilled flyers who demand a ship that can be relied upon to execute all the aerobatics in the book—smoothly, surely, and swiftly. But that is not all. The *Fury* clan has always attempted to prove that ugliness of form is *not* a prerequisite of functional efficiency. These last versions are no exception. They will demonstrate that a stunt job doesn't need to offend the eye with clumsy square wings and a generally misproportioned configuration. In fact the aerodynamic qualities of the cleaner looking, more streamlined *Fury Screwball* is at least up to, and more often exceeds that of the ugly ducklings.

On the matter of airfoils: it will be noted that the *Screwball* employs the N.A.C.A. 23012 section. In these days, when nearly every super sunt ace advocates a symmetrical section, a lifting airfoil may seem to be a foolhardy departure. Well! each to his own opinion. Those builders irrevocably wedded to the sect which believes a symmetrical airfoil is a *must*, may use one on the *Screwball* if it makes them really happy. All-round performance is almost as good. But to some of us, commonsense thought on the matter leaves no doubt as to which type of section will give better takeoffs, snappier loops, and easier, slower landings. The lifting sections, natch! We Lifting Section guys will admit that when flying upsidedown our ship has to fly in a very slightly tail-down manner; but, heck! better to induce drag in the abnormal flight attitude than condone it as a necessary evil in all conditions of flight including the normal. That is true of the symmetrical airfoil, and there is nothing to be done about it because such a section must enter the airstream at some definite angle of attack in order to generate lift. Generally speaking, supported weight being equal, the lifting section has a lower average drag—for the conditions we are interested in, that is.

The *Screwball*, as shown in the plans, is a Class D ship. Maybe it would wallow around with a topnotch Class C motor, but the only maneuver that could be definitely counted on with an underpowered ship would be such spectacular aerobatics as "crawling down the lines," or completing an outside loop with the spinner coyly buried, ostrich fashion, in the ground. Even the rugged *Screwball* could not take that sort of thing. Not only is a Class D powerplant specified, but the prop should also be right. The propeller recommended is shown. Although it was developed from tests conducted only with the *Atwood Champ*, it should work equally well with similar motors; or at least provide a point of departure for further research into other 'plane-motor combinations. This prop is designed according to the findings of Prof. F. W. Schmitz; the pronounced undercamber of the blade section is a necessary feature, and the location of the widest element falls ideally at about 70% of the radius. The props carved from the blank shown will be 12" in diameter and of 8" pitch. Straight, close-grained birch makes a beautiful prop. Despite its hardness it is easy to carve.

Two *Fury Screwballs* are shown; Mk. VII and VIII. Which of these to build is entirely up to the reader. Perhaps certain features of both may be combined to give the desired model. Flight and handling characteristics of the Mk. VII and VIII are quite different. The Mk. VII is the more sensitive of the two; it will perform its stunts with the hair-trigger touch desired by the maestro. The VIII is a little more docile; it will answer its control with certainty and deliberation. The bell-

(*Turn to page* 42)

## Fury Screwball

(*Continued from page* 13)

crank is offset to give faster "up" than "down" and elevator area is less. A very *smoo-oo-ooth* handling ship. Just the thing for the expert who has not yet reached the exquisite proficiency of the one guy in every model club who is always referred to as the "maestro."

Clockwise or counter-clockwise circle? The plans show the clockwise arrangement. It really doesn't matter which is used. The first *Screwballs* were flown clockwise; the later models, counter-clockwise. To insure complete safety in all maneuvers it is suggested that a lead weight, of about 3 ounces, be cemented into the wingtip of a counter-clockwise flying ship.

The plans have been drawn on 1/4" x 1/4" squared paper. As they are one-quarter full size it means the grid should be 1" x 1" on the full size layout. In some instances the squares have been subdivided so that certain contours may be followed more closely. Dimensions are shown only where the grid does not automatically give them. This method of presenting plans makes the preparation of working drawings easy. It is also possible to reduce the size of the finished model by changing the grid. For a Class B model, reduce the squares to 3/4" or 13/16"; for a Class A make them, say, 1/2" or 5/8". The .19 powered *Screwball* pictured was built from these plans with 1/2" squares on the working layout. Naturally, some modifications had to be made to accommodate the proportionately larger Class A motor and to reduce weight.

The following building procedure is suggested: build the crutch over a full size layout; when dry attach the firewall and motor skids. Pin the crutch to the building board upsidedown. The firewall will be just over the edge of the board so the crutch is in flat contact. Cut the 1/4" x 1/8" uprights to approximate length. Then, with the aid of a set-square, cement them to the crutch. Lay in the 3/16" square longerons, trimming the uprights as required for a smooth curve, and adding the 3/16" square crossbraces as this proceeds. At all times check the structure for true alignment. Make full size drawings of the formers. Use the completed fuselage frame and the side elevation on the plans as a check. Leave the formers C, D, E, and F very slightly oversize so they may be trimmed to exact shape for easy sheeting. This is best done by sighting and with a flexible straight length of 1/8" square. When formers B to F are glued to the frame, set aside to dry thoroughly before sheeting the entire fuselage. Make the removable hatch. Add the empennage and landing gear. Carve a cowling to suit the powerplant. Cut away a section of the sheeting between C and D as shown and put in the celluloid. The fuselage is now complete.

The wing panels are best started "in air." That is, the top three spars are marked where each rib is to be placed and assembly begins while holding the structure free of the board. While cementing keep the structure square and free from twist. As soon as this is done, and before the cement has hardened (within, say, half an hour of starting each panel), pin the structure down to the board with the top spars in contact for their whole length. The two rear spars must be jacked up, of course, but keep them parallel to the building surface. Now add bottom spars, leading edge, and tips. When completely dry (takes overnight even with fast setting cement) start sheeting the undersurface. While the undersurface is drying keep the wing well pinned down.

Remove the semicompleted panels, drill for the control leaders and put them in, add the tubing at the leader outlets, and cut away part of ribs R1 and R2 to accommodate gussets. Cement the gussets securely and finish applying the sheeting.

The completed panels are now assembled to the fuselage. Slots must be cut in the fuselage sides to take the wing spars. The spars are then joined inside the fuselage so that the top surface for the entire span is flat. The bottom surface will have a slight dihedral—just pronounced enough to prevent that illusion of hang-dog, dejected anhedral which is the objectionable head-on appearance of all wings with a square planform.

It is only necessary to add the control mechanism and a suitable gas tank (and ignition components if wireless ignition is not used) before the ship is ready for finishing. A "quality" finish involves a good amount of careful work. First a coat of shellac followed by a grain filler. Then two or three coats of sealer, sanding between each. Next, two or more coats of colored lacquer and light sandings with "wet-or-dry" between each. Finally, glider polish over the hardened lacquer will give a glowing, super finish.

Note that *lacquer* rather than dope was specified. The tautening characteristics of dope are definitely a drawback when finishing a sheeted structure. Even 3/32" sheet is easily distorted by the extreme shrinkage of dope.

The finished, ready-to-fly *Screwball* should not weigh more than 42 ounces. So if conventional ignition is used, it would be advisable, if not imperative, to attempt a little weight reduction. For instance, wings could be part sheeted and part paper covered; the fuselage might employ stringers in place of sheet, and so on.

As in most things, you only get out of something what you put into it. A carefully made *Screwball* will repay generously in performance and length of service—and, who knows, maybe even a trophy or two.