

# The Viking

By MICHAEL SAPONARA. . .An easily-built swept-wing R/C model for two-channel control, powered by a Cox Tee Dee .049 to .051 engine. Foam wings help make construction a breeze, and it's a great flyer too.

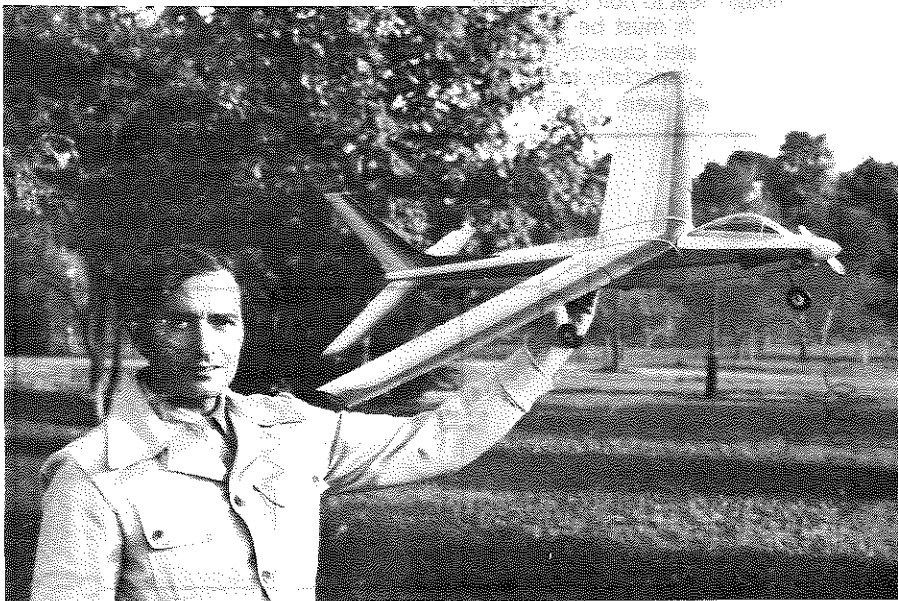
• I have always enjoyed the sight of a swept-wing model in the air. Unfortunately there are very few in kit form, and most of those are rather complex, with the major-

ity of them being the ducted fan variety. Right now I have built and designed some twenty models which will eventually appear in this and other magazines. The Vik-

ing is one of my earlier models and I hope it will inspire other modelers to design their own swept-wing models.

The Viking uses the Ace mini-foam wing. The model is easy to build and should take less than a week to build. I chose the Ace foam wing because it cuts building time and in the event of a mishap the wing can be easily repaired at the field with 5-minute epoxy. The model is not as stable as say a Jr. Facon, so I would not recommend it for a rank beginner, but if you have flown before the model will not be a problem to fly.

I highly recommend the Cox Tee Dee .049-.051 engine for this model. If you wish you can use an .099 engine, but this will make the model really move. Do not attempt to fly the model with a reed engine such as the Black-Widow or Golden Bee. While the reed engines look a lot like the Tee Dee engines they only develop about one half the power. Since this is a small model don't attempt to fly it on windy days. First flights should be made on a day that has virtually no wind, as you gain experience with the model you can fly in winds of less than ten miles per hour. I have lost a few models because I didn't follow that rule. Viking has room



The author with his Viking. Model uses an Ace foam wing, and takes only about a week to build. The Viking is designed to be powered by an .049 to .051 Cox Tee Dee engine.

enough for any modern two-channel radio. The plans show rudder and elevator control, but the model can be flown with aileron and elevator if you're so inclined. The model is easily hand launched into the wind. While I have never attempted ROG I believe the model will lift off the ground if you have a long true runway.

### THE FUSELAGE

Start by cutting the fuselage sides from 3/32 hard balsa. Next glue the 3/8ths triangular stock to the fuselage as shown on the plan. Use white glue for this and make sure to make a left and right fuselage side.

Cut out the fuselage formers from 1/8th plywood and 1/16th balsa as shown on the plan. Bend the nose gear from 3/32nd music wire and attach it to F-1. Take a razor saw and cut the 3/8th triangular stock down to the fuselage side at former F-5 as indicated on the plan. This is necessary so the rear sides of the fuselage can be bent parallel to each other. Install formers F-2 and F-3 using epoxy. Be sure they are perpendicular to the fuselage. When dry, glue the other fuselage side to the two formers. Now glue the firewall (F-1) in place. Next glue F-4 in place. Do this by lining up the top edge of the triangular stock and drawing the fuselage sides together so they mate with F-4. Also, run a bead of cyanoacrylate glue down the top edge of the triangular stock to hold them in their parallel position. It is necessary to have the rear of the fuselage parallel because of the anhedral of the stabilizer. Finally, install F-5 but DO NOT glue it in place. It will be necessary to remove it to install the stabilizer.

Now, bend the main landing gear from 3/32nd music wire and install it as shown on the plan. Glue the 1/8th plywood on either side of the landing gear as shown on the plan. It is now time to glue the top and bottom sheeting in place using white glue and masking tape to hold the sheeting in place. The top rear sheeting is 1/16th medium balsa, grain running lengthwise. The bottom sheeting is 1/16th balsa running lengthwise from formers F-3 to F-5. From F-3 to F-2 grain runs crosswise. The top sheeting in the front of the fuselage is 1/8th medium balsa grain running crosswise. This completes the fuselage. When the glue is dry you can carve the two edges of the fuselage round where there is triangular stock. Finally sand it round using medium grit sandpaper.

### THE WING

Start construction of the wing by cutting 5/16ths off the trailing edge of one constant chord wing panel and both tapered wing panels. This will bring the trailing edge thickness to 1/4 of an inch. Next measure 5-29/32 at the leading edge and 3-13/32 at the trailing edge of the constant chord wing to produce the necessary sweep angle, as shown on the plan. Do this twice. Next, sand the ends of the

wings true as the molds don't always line up perfectly. Cut out the trailing edge filler from 1/8th balsa. It will be necessary to cut out four and glue two together to bring it to 1/4 inch thickness. Glue the filler to the trailing edge of the constant chord panels that have been cut out as shown on the plan. It is now time to glue the constant chord panel to the tapered panel. To do this, first lay some waxed paper down so you don't glue the wings to the building board. Mix up some 5-minute epoxy and line up the trailing edge of the constant chord section with the trailing edge of the tapered section, using the balsa trailing edge as a straight edge. Once you see that they do in fact line up spread the 5-minute epoxy on the tapered section and lay it down over the waxed paper and join it to the constant chord section using the balsa trailing edge as a straight edge to line up the two panels trailing edge. Failure to do it this way may result in misalignment. Repeat the procedure for the other two panels. It is now time to glue the balsa trailing edge to the foam wing panels, using white glue for this. Spread the glue on the trailing edge to the foam wing panels, using white glue for this. Spread the glue on the trailing edge of the foam wing and lay the balsa trailing edge on the wing. Use pins to hold it in place and make sure the balsa trailing edge follows the contour of the wing. When dry, use a razor saw to cut the sweep angle at the root of the panel and the balsa trailing edge at the tip. Do this for both panels. Finally, it is time to add the necessary dihedral to each wing panel. The dihedral is 2-1/4 inches per panel. Follow the instructions that come with the foam wings.

### STABILIZER AND TAIL

Cut out the stabilizer and tail pieces from 1/8th light balsa. Make two stabilizer panels. Hinge the stabilizer and tail using nylon reinforcing tape. Do not use plastic hinges as the balsa is too thin to accommodate them. It is now time to add the anhedral angle to the stabilizer. Lay wax paper down and using the anhedral gauge lay one panel flat on the board and the other panel 15 degrees above the board. Use epoxy for this operation.

### FINISHING

It is necessary to keep the plane as light as possible. Give all balsa surfaces two coats of clear Aero Gloss dope, sanding between coats. Be careful when doping the balsa trailing edge on the wing that the brush doesn't come in contact with the foam portion of the wing as it will melt the foam. You may wish to cover the model with a plastic film (low heat type) in which case you do not need to dope the model. I painted my model; there are two reasons for doing this. First, a more complex trim can be applied to the model and second, if the model should be damaged, the model covered with film cannot be fixed at the field whereas the painted

model can be replaced right at the field.

I used Aero Gloss Formula-U polyurethane paint on my model. First, the entire model is given one coat of white paint. Next the trim is applied. On the wing I used black plastic electrical tape to mask off the area to be painted. On the balsa surfaces I use Magic Transparent Scotch tape. My model is trimmed in red, orange, and yellow on the tail, stabilizer, and wing. The top and bottom of the fuselage

is painted white while the sides are painted half orange, half yellow, with a black spear dividing the two colors. It is a lot of work to paint the model this way but it makes for an exciting model to look at.

### ENGINE AND RADIO INSTALLATION

Install the engine in an Ace nylon motor mount. The holes on the firewall on the plan are for this mount. Before mounting the engine to the mount, mount the engine mount to the firewall and drill two holes (1/8th inch) through the mount and firewall for the fuel tank tubing. The engine should be side mounted, not inverted as it makes for easier starting.

The two servos should be mounted on 1/8th plywood rails at the rear of the wing compartment. The elevator pushrod has two links connected to a common pushrod as shown in the photograph. The rudder pushrod exits from the top of the fuselage in the normal manner. The receiver is wrapped in foam and placed in the front of the wing compartment. The battery should be wrapped in plastic to keep fuel from getting to it, and then wrapped in foam and placed in the front compartment behind the fuel tank. I recommend that you use a two-ounce fuel tank.

Finally, add the wheels, canopy, and attach the hatch to the fuselage. Congratulations, the Viking is complete.

### FLYING

As I said before, fly the model on a calm day. My model needed 3/32nds up elevator trim. Hand launch the model into the breeze and be alert as the model may turn. Be prepared to trim the model so it flies straight. The model is capable of doing almost anything asked of it, loops, rolls, etc. I hope you enjoy the Viking as much as I have and that it will inspire others to design their own swept-wing model.

