AT-6 SNJ

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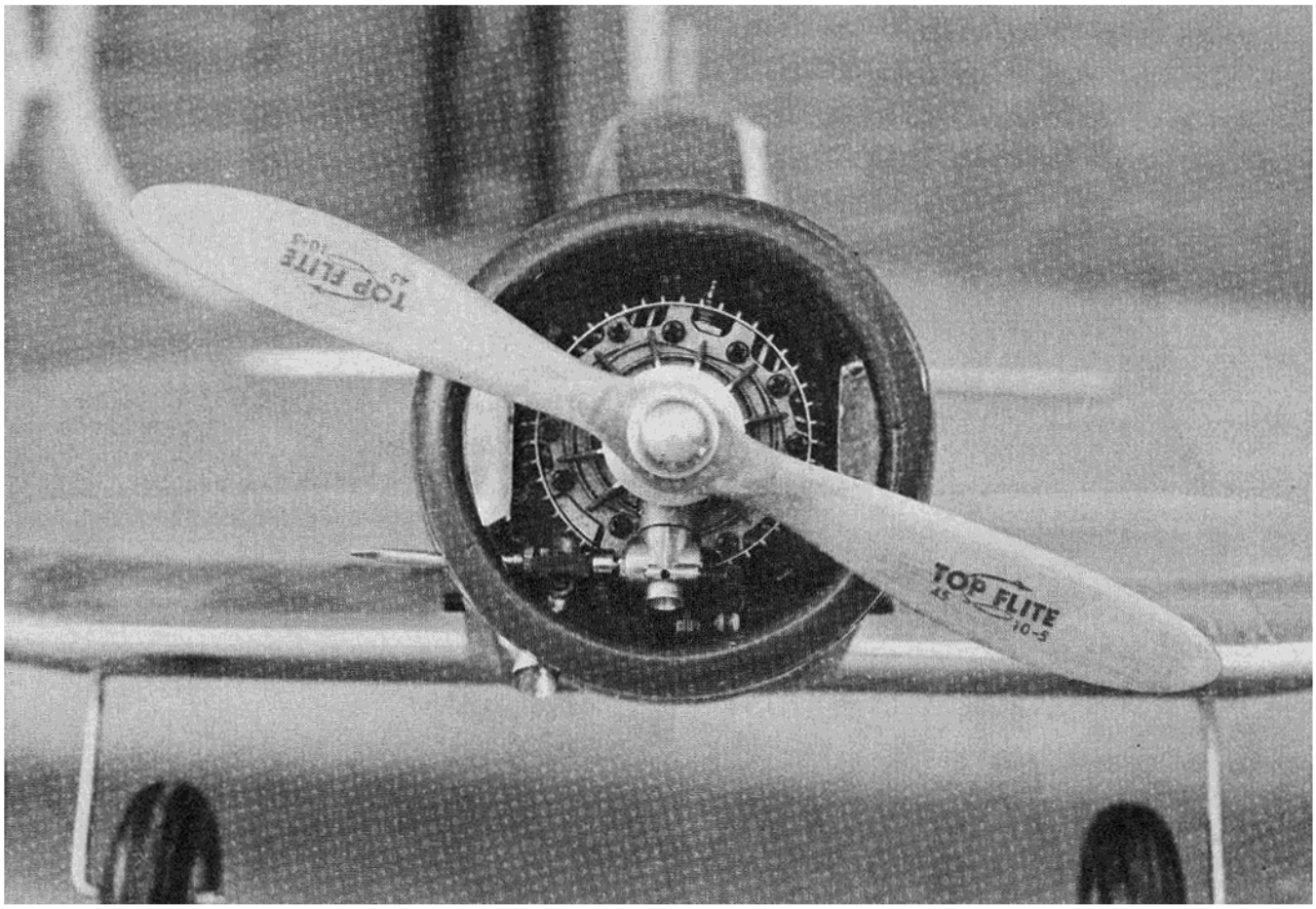
A SEMI-SCALE VERSION OF THE NORTH AMERICAN HARVARD II DESIGNED FOR THE GRAUPNER / O.S. WANKEL ENGINE. PATTERN PERFORMANCE ON A .29 TO .40.



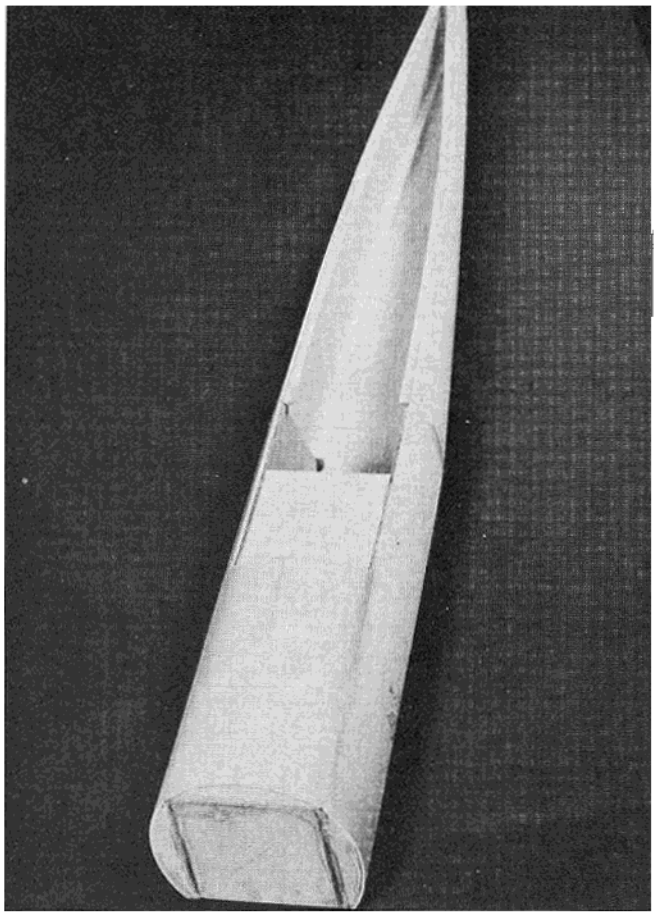
Hello, again. It has been some time since I could join you with a model project. The opportunity presented itself to start a new club here in West Virginia, so I have spent a year or so plunging into the various chores of club activities and training new members. Membership is up to 30 proud, dues-paying members with five competent instructors with "ready thumbs" to help the beginners. This year's election produced eager, new faces and I was allowed to settle back into the background and design models again. We are known as the Mountaineers of Charleston, West Virginia, and all of us extend the invitation to come fly with us.

AT-6 SNJ North American Harvard II

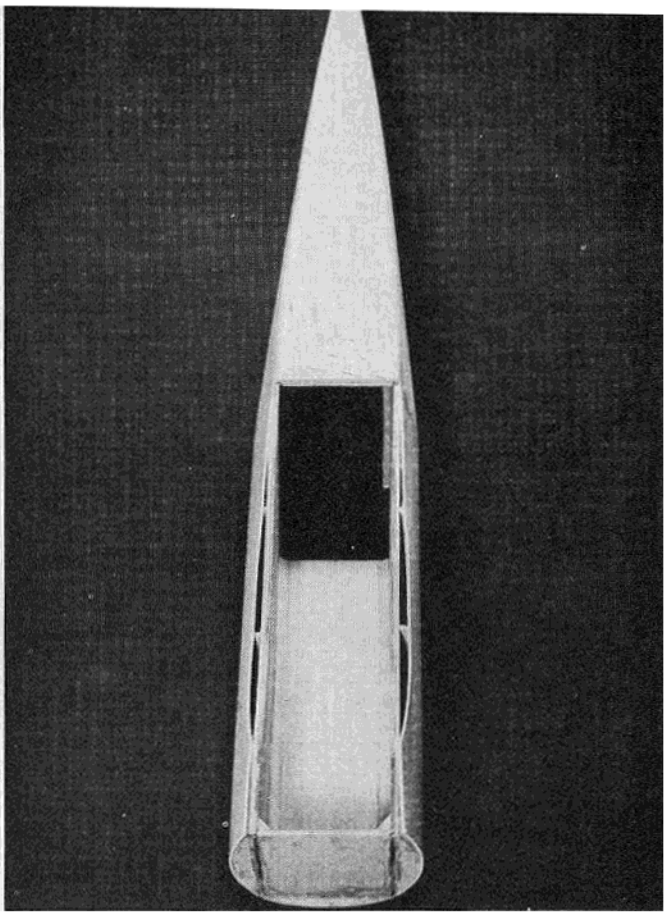
This aircraft needs no introduction to aviation-minded persons. It was the basic trainer for the Army and Navy, produced after the second World War because of its excellent handling characteristics for training. It was first ordered in 1938 by the R.A.F. The popularity of the Harvard II soon spread to the U.S. and over ten thousand were produced in the U.S. and Canada. The design possesses the distinction of having been manufactured in larger quantities than any other basic trainer.

The model presented here is a semi-scale SNJ. It is close enough for stand-off scale events and actually won first place this spring at a contest. The head judge suggested I add instruments and rescale the ailerons for more points, however.

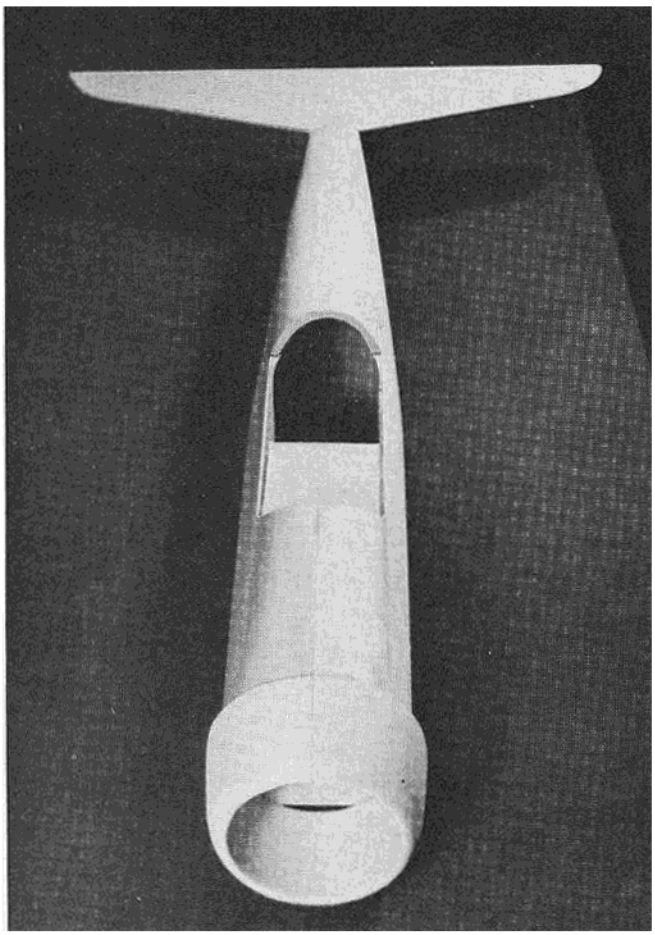
The real plus for this model is its ability in the air. The power, drag, and wing loading ratio is close to perfect. The first few flights were a thrill for me. I found myself doing things that are normally difficult for me. For example, I can pull the stick back, and it will do a **round** loop. With a touch of down trim, you can roll it upside down and it just stays there. Slow it down and point its big nose up into a stall and plop, straightforward to recovery. I went charging into an eight point roll and to my surprise, I did it. I



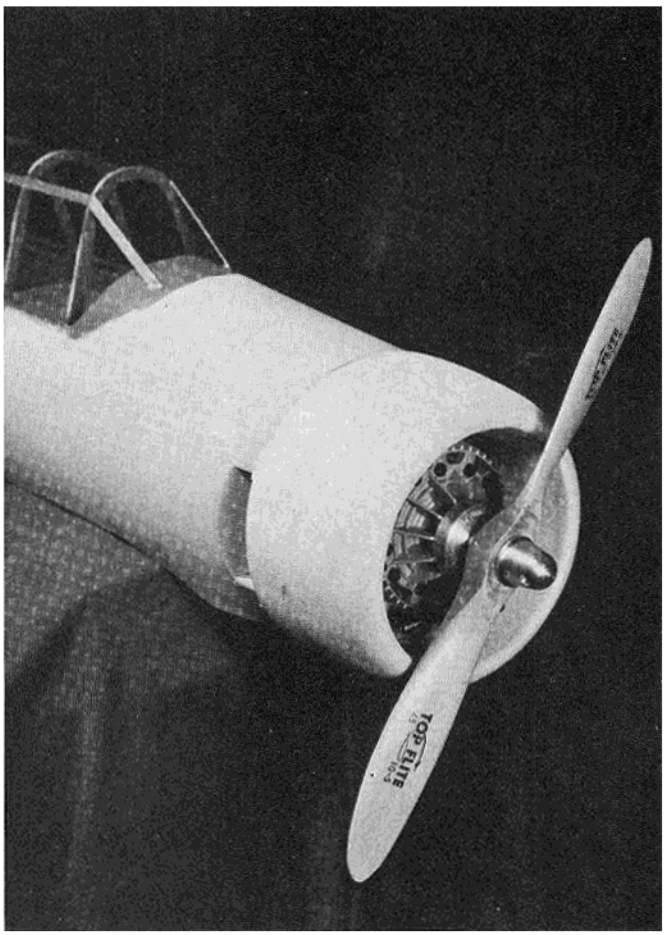
Fuselage with all sheeting in place.



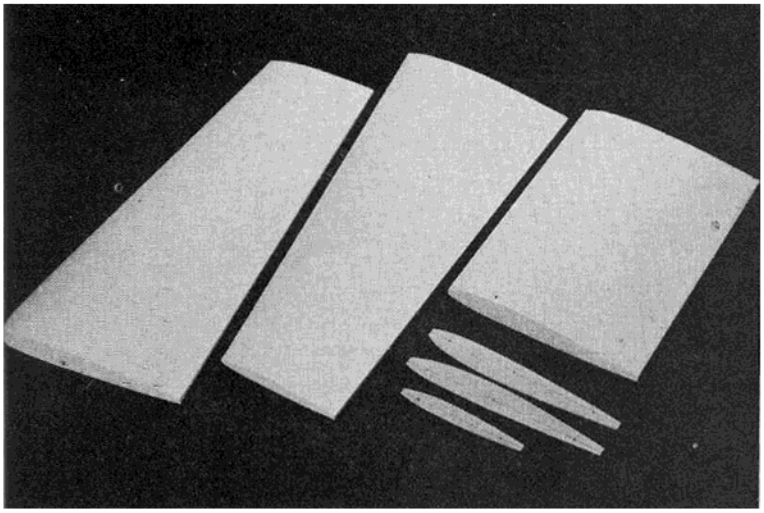
Fuselage bottom view minus the covering.



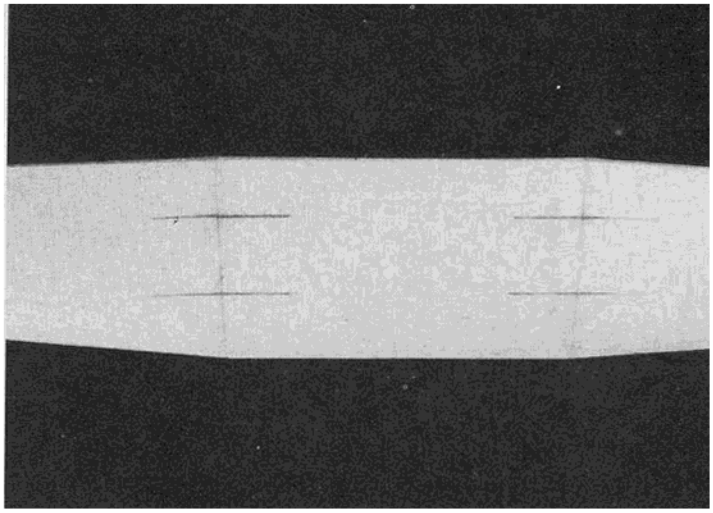
Fuselage with horizontal stab. Ready for cockpit detail.



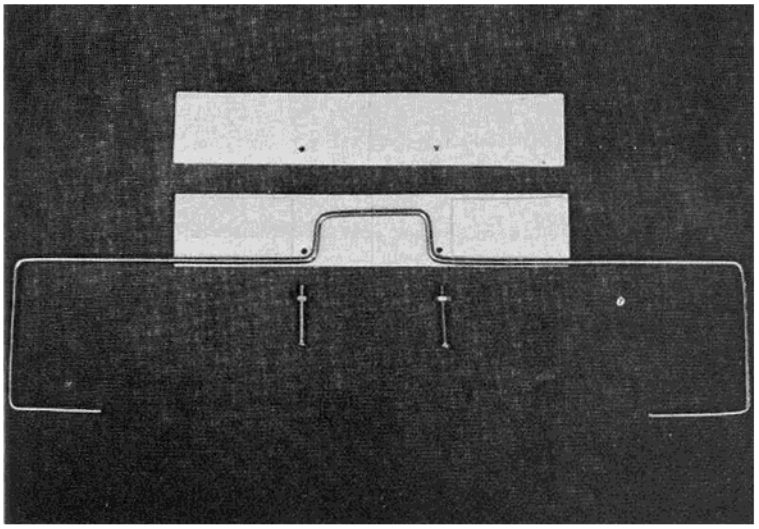
Cowling ready to be epoxy filled and painted. Note vent for Wankel.



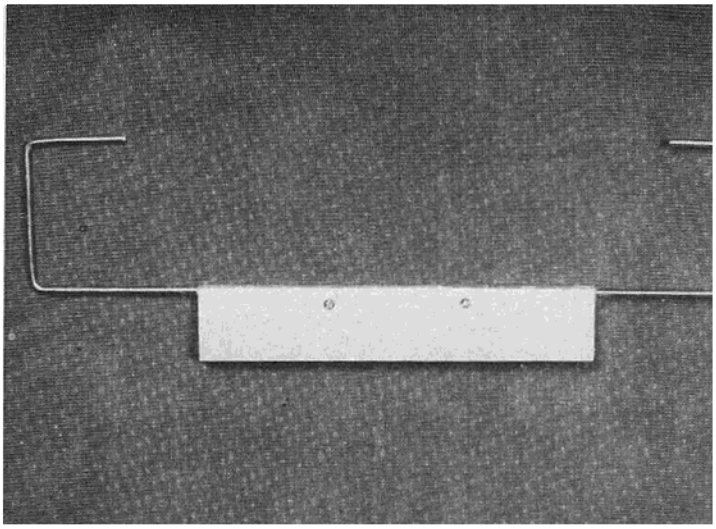
Foam cores with cutting templates.



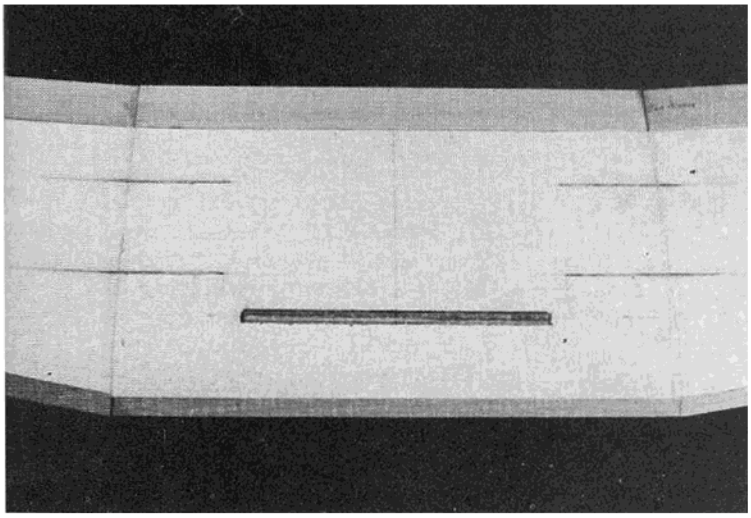
Cores are joined and ready for L.E. and T.E. caps.



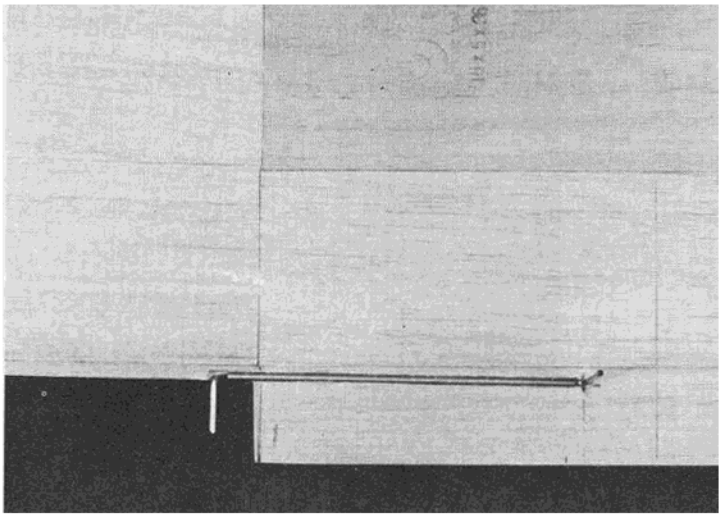
Plywood and metal parts for landing gear.



L.G. epoxied to wood pieces and ready to mount in cores.



L.E. and T.E. and landing gear in place. Cores ready for sheeting.



Aileron detail. Top of wing showing wire and plastic tube.

Author, Bryce Petersen, with his AT-6 Enya .29 in this prototype.

am so impressed with its flight characteristics I plan to enter it in pattern next month. For a 0.30 powered scale model that brings the "ooh's" and "aah's" on the flight line, then flies like it does, I am quite proud of this one. It has been amazing to me how much trouble some designers go to designing scale models. Why do they make things so difficult to construct? The average modeler is interested in a model that is realistic and flies well. I looked at some of the all-balsa scale models at Toledo this year, and I wonder how many of these kits will be completed and flown by the builder. I believe the modelers of the near future will demand scale appearance even in the beginner-trainer kits.

The model presented here was designed for flight performance first and scale appearance second. Construction is as simple as the average slab side square-tipped monster, but in my opinion, it looks like a real airplane. In order to transmit the construction techniques that I think are easy for the prospective builder, I have added key photographs to answer questions the plans fail to show. I have found that it is almost impossible to communicate with drawings, little ideas that are so easy for the experienced builder and seem to confuse the beginners.

Let us start construction by cutting two fuselage sides from a good grade of medium hard 1/8 in. balsa. Lay them on a flat table and trace your 1/32 in. plywood doublers. Epoxy the doublers to the insides. Cut two hardwood dowels to length and the 1/16 in. plywood center section (F1) that extends into the cockpit area. This extension forms a base for mounting a pilot in the cockpit area. Cut the 1/4 in. plywood firewall and sand all rough edges smooth. On a flat table, turn the fuselage sides upside down and slide the two dowels in place. Slide F1 in place and add the firewall. This will form a box-like structure and everything should fit squarely. Epoxy these parts together except for the dowels. The latter are epoxied after the 1/16 in. sheet sides are in place. Draw a straight line on your work table and a center line on the fuselage. This line will allow you to pull in the tail section to the exact center for securing the tail block. Add the top and side ribs next. The next step is important and will allow the side sheeting to align properly. Sand a small edge on the top side of the 1/8 in. balsa sides to conform with the roundness of the plan. Epoxy this joint first, allowing the glue to set before making the round bend in the sheeting. Because this is a straight line, it is easy to make a perfect fit at this joint. The round bends in the sheeting are slight and will offer no problem.

Elevator: The horizontal fin and elevator is secured at this point. I obtained the 3/16 in. balsa by sandwiching 1/8 and 1/16 in. sheet together with epoxy. This gives you a warp-resistant surface with hard edges. It also used up my overstocked supply of 1/8 in. balsa! Now we can finish the fuselage by adding the balsa rear section (top). I used balsa block for this because the rear sands to a point while curving in. Add your vertical fin and tailwheel hardware at this time. Finish with the rudder.

The cowling is made by cutting a ring from solid block with a bandsaw. This block can be made from several pieces of balsa block epoxied together. The sanded balsa cowling is hardened by saturating it with slow epoxy. The cabin area is the highlight of your model and a joy to build. Epoxy your plywood structure first and finish the area with filler and battleship gray dope. The long flat section is covered first with plastic. Fit wax paper over the structure and mark a pattern on the wax with a pin. This is a quick and positive way to make see-through patterns that fit.

Power: A Super Tigre .29 was first installed for flight testing. Lead was added to bring the engine weight up to 14 oz. to match the Wankel. The performance was amazing. The ship would do anything I asked it to do without the usual hesitation on top. With a fine tuned Wankel up matching the power of a conventional .45, the sky is yours.

Wing: The foam wing is cut in three sections using three cutting patterns. The three foam sections are epoxied together on a flat table with the tips raised before the balsa is glued in place. Add the leading and trailing edges to stiffen the structure. Prepare the landing gear hardware and epoxy together. Make a slit in the foam the full width of the wire and bury the gear in the foam using a generous amount of epoxy. With contact cement, sheet the wing with 1/16 in. balsa. The ailerons are cut out of the trailing edge and fit back in place after fitting the mechanical hardware in the center section. Add the wing tips, sand, and cover.

Sand the entire airplane, using your favorite filler. Remember your finished surface is only as smooth as the surface under it. Then cover your entire model with silver Super Mono-Kote.

The sheet metal seams and rivet marks will add 100 percent to the appeal of your model and are easy to make. With a scribe and straight edge, simply dent the balsa under the covering. The rivets are punched in with a marking tool used by dressmakers. Do not punch through the covering. Apply just enough pressure to dent the surface. These dents act like little reflectors and show best in the highlight areas of your model.

If you like the model, and if the construction techniques are to your liking, I am sure the project will be rewarding both in the workshop and on the flying field.

Good luck! □