

• There is a nice three-view drawing and two photos of this Russian flying wing in *Aircraft of the Soviet Union* by Bill Gunston. This was the inspiration for a Miami Peanut entry in the Northrop Flying wing contest. The model was not finished in time, and when it was finally ready for test flying it showed why there are not too many flying wings passing overhead in the skies.

It certainly did NOT fly directly off the drawing board. As originally tested it was nastily unstable. That is, it would start out looking like a good flight and then either pitch-up and stall, or start an outside loop immediately on launch. These characteristics were both present without any change in surface settings or power of thrust adjustments. Adding ballast to the nose to increase the stability gave it the untrimmable stability of a bomb. Two flight circles were eventually achieved with some aft ballast and some weight on the left wingtip, but the flight looked like it was mostly stalled and falling off on a wingtip

BOK-5

By WALT MOONEY. . . This scale model of a Soviet flying wing may not be the best flyer--Walt says it is tricky to trim--but it looks so neat you may be tempted to give it a go anyway. Just the thing for the upcoming Northrop Flying Wing Contest in November!

continuously.

Dick Baxter suggested that the gap between the wing and the movable surfaces looked pretty narrow and maybe should be increased. Sure enough, on close inspection it was discovered that the gap was half of what the true scale gap should have been. The model was taken home and the gap was doubled. Now the model flies reasonable well with no ballast, al-

though once in a while it will do a strange pitch-down and pull-up maneuver during a flight. The suspicion is that the flow through the surface gaps is not necessarily continuous during a flight, resulting in large temporary pitch trim changes. If this characteristic is troublesome perhaps an even greater gap might be in order.

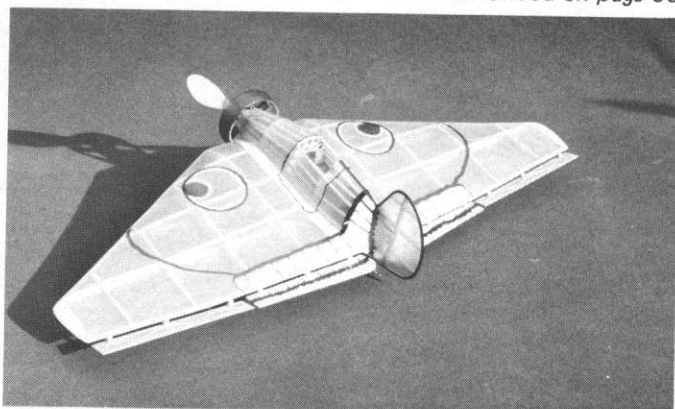
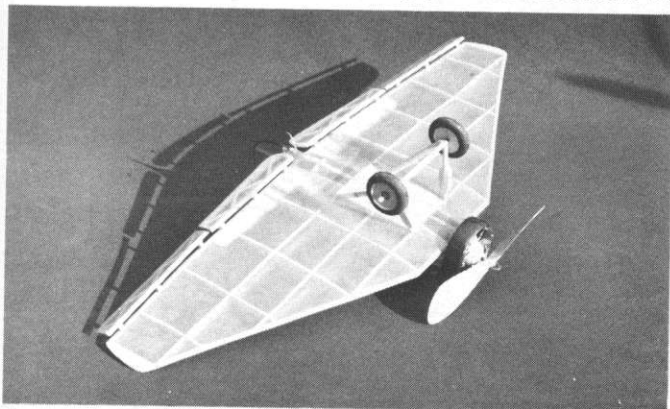
The model was a challenge in another way, how to arrange the plans so that both wings are shown and still get it on the two-page Peanut Format. It has a lot of wing area but it isn't a Fike beater. It has been fun inspite of all its challenges.

CONSTRUCTION

As might be expected from the configuration, building the model is somewhat different than usual. It is not difficult, just different.

Cut all the sheet parts out of fairly light-weight 1/16-inch sheet balsa. Make two of former 1 and laminate them together for the proper thickness. Cut out two of each

Continued on page 90



This Miami Peanut version of a Soviet flying wing was finished in yellow tissue with markings resembling a butterfly. Walt notes that first flights helped explain why there aren't too many flying wings passing overhead. . .trimming for proper flight is a real education!

BOK-5. *Continued from page 57*

rib "A" thru "D," and then cut out two more of "A," except make them 1/16 longer with the added length added on the aft end.

Start the assembly by selecting six pieces of relatively hard 1/16 square balsa for the spars. Make sure they are a bit longer than shown on the plans. Cement all the ribs in the proper location onto the two longest bottom spars and let this dry thoroughly. Remove this from the plan and

add the top spars. When this is done the bottom spars and the top spars will be bent to give the taper in wing thickness. Now add the top and bottom front spar and the trailing edge. Note that all the spars top and bottom, are continuous clear across the center section of the wing. The top spar would interfere with the rubber motor and will have to be removed between the two center ribs after the fuselage is constructed. It must be left continuous during wing construction to get the correct wing taper. If it were removed early, the wing would have a flat bottom in the front view and negative dihedral. Now add the wing leading edge, trimming off the excess length of the spars to fit. Before all the cement has dried make sure the two sides of the wing have the same twist and taper so that it is symmetrical in the front view.

A delta wing like this has dihedral effect that is somewhat proportional to attack so it doesn't need geometric dihedral, but it probably shouldn't have negative dihedral or droopy wings.

Now start the construction of the fuselage directly over the wing by cementing the formers on top of the spars. Note that former 4 leans aft and isn't directly on top of the spar, but is cemented to the two center ribs.

Now add the 1/16 by 1/8 bottom keel from the bottom rear spar to the aft end of the fuselage, cementing it into the notch in former 5. Cement the top center stringer into the notches in formers 4 and 5 and cement the 1/16 by 1/8 tail post in place at the aft end of what will be the fuselage. Now fill all the former notches with 1/16 square balsa stringers doing opposite sides of the fuselage simultaneously to avoid a tendency to warp the structure. Add the 1/16 by 3/16 rear rudder support braces to the aftside of former 5. Use 1/16 diameter aluminum tubing for the rear motor peg.

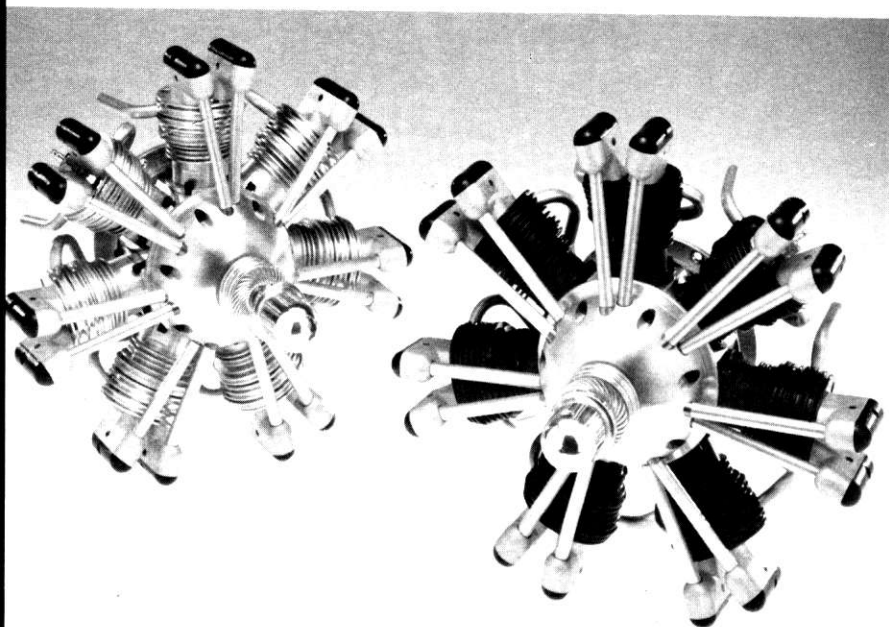
Carve the nose block (engine crankcase) from a block of solid balsa with the grain aligned with the direction of flight. Use a Williams Brothers thrust bearing or use your own favorite method of installing a thrust bearing. Use five of the medium-size Williams Brothers dummy cylinders to construct the replica engine. The ring cowl is three layers of 1/32 sheet laminated around a suitable form. The one on the model was done around a Gerber's baby food bottle which is a little too large, so a short segment has to be removed and the ends recemented to come up with the correct diameter. The cowl is cemented to the cylinder heads for support. The model used dress snap halves as simulated cylinder heads.

The vertical tail is constructed in conventional fashion with a laminated outline and 1/16 by 1/8 spar and ribs. Sand it after assembly to the steamlined shape shown in the top view.

Bend the landing gear wire to the shape shown and cement it in place on the aircraft.

The ailerons and elevators are built directly over the plans. Sand them to the airfoil shape shown and note that they are in-

Technopower's NEW BIG BORE 7



- 7 Cylinder
- 4 Cycle
- Overhead Valves
- Glow Ignition
- Displacement 2.0 cu. in.
- Red Line RPM 9000
- Flying RPM 8500
- 6-5/8" Diameter
- Hard Chrome Bore
- Cast Iron Piston Rings
- 14/6 - 16/8 Prop Range
- Extra Heavy Crank Shaft Supported By Ball Bearings Fore and Aft
- Phosphor Bronze Valve Guide

- Master Rod Runs on Needle Bearings
- Rocker Boxes Are Investment Cast. Balance of Engine is Bar Stock
- Hardened and Ground Steel Cams
- Hardened and Centerless Ground Valves
- Weight 30-1/2 oz.



FOR INFORMATION, SEND \$3.00 TO

TECHNOPOWER II INC.

610 North Street
Chagrin Falls, Ohio 44022



stalled flat side up.

Add the 1/32 centersection bottom sheeting. Because the model has to be covered as an assembled unit, there needs to be something to anchor the tissue to at the bottom of the fuselage and the root of the upper surface of the wings. This is provided by pieces of 1/32 sheet cut to the shape shown and labeled tissue anchor. These must be shaped by the cut and try method.

COVERING

The model is covered with tissue, the tissue is water shrunk and then doped just like many other models.

The bottom of the wing is covered in two pieces from the centerline to the tip

of each wing half. The top of the wing is covered similarly except that the tissue needs to be cut to fit the shape of the tissue anchor before it is put in place.

The fuselage is covered using six separate pieces of tissue. The tissue pieces are trimmed before attaching so that they cover an area between formers and reach around the fuselage from anchor to anchor. Between former 5 and the tail post requires a separate piece for each side. Cement the forwardmost piece to one anchor and pull it over the body so it is wrinklefree and cement it to the other side anchor. Use thinned white glue or a paste stick for tissue cement. Now do the second section in a similar fashion. Do

not cement the tissue seam where the second piece overlaps the first at this time. Do the rest of the tissue sections in the same manner. After all the sections are in place, take a brush and some thinned white glue and run a light coat along all the seams. Capillary action will pull the adhesive between the layers. The vertical

tail is covered in the standard fashion.

Water shrink and then give the model a couple of clear coats of thinned dope.

The color scheme of the original airplane is unknown and obscure in the photos. It does look like the airplane was painted up to resemble a butterfly and therefore the model in the photos was covered with yellow tissue. The markings look like they were done with a rough brush on the original, so felt pen and flat white paint were used on the model.

Use a six-inch diameter Peck-Polymers plastic propeller, or equivalent for propulsion. Balsa wheels were made up for this model.

Flying, we've talked about; you're on your own. The CG position the original is flying at is indicated on the plan. Weight without the rubber motor is 29 grams. ●



APPLIED DESIGN CORPORATION
738 Penn St.
El Segundo, CA 90245



MINI SANDER

ADJUSTABLE TENSION
HAND BELT SANDER

FIRMLY HOLDS PAPER
FOR EASIER SANDING

- Padded flats and curves
- Handy to Hold
- Easy to Use

\$2.45

MINI-STRIPS
SAVES TIME
AND EFFORT

\$1.65

PRECISION DIE-CUT
REPLACEMENT
SANDING BELTS

Medium Garnet
Fine Garnet
Asst'd. Water Proof