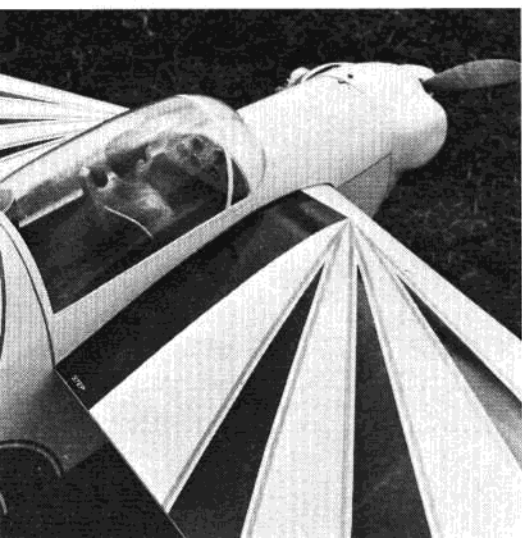


If you envisioned a monoplane version of the great Jungmann biplane would it be like this? Swept wing helps with perfect tracking through stunts and permits easier, slow landing approaches.

# JUNGSTER

Two-inch Williams "Sportsman" pilot fits under home-made canopy. Burnished aluminum panel with Tatone instruments.

Wing has no dihedral because the swept wing supplies adequate lateral stability. Also permits easier wing construction on flat working board. Knife-edge flight should actually climb with all this side area and large rudder. Main gear is wing mounted as on low-wingers.



An aerobatic model designed to look and fly like a full-scale plane. Article describes unusual cowl and canopy molding methods.

**GERALD C. LEAKE**

WHAT the heck is a Jungster? It's a Jungmann gone single-wing, and modernized. It's simple and fast to build, and resembles a modern homebuilt aircraft.

My scale Jungmann had such good flying characteristics, I decided to build a single-wing version for aerobatic competition and Sunday flying. Coincidentally, the nose and tail moments are the same as a Kwik-Fli. The Jungster goes together quickly and cheaply since the fuselage is just a bundle of sticks with no carving of big, expensive blocks of balsa. And it's rugged.

The entire plane was built in one week. Only the fiberglass cowl took time. The mold took 24 hours to set up; the cowling within the mold only about two hours. Covering takes a couple of nights, and painting a week.

Out to the field we go with our 720-sq. in. Enya 60-powered, 6½ lb., true-scale Jungster. It does every maneuver in the book with the greatest of ease, and it looks splendid. I've had any number of people come up and say, "What's it a scale model of?"

Fuselage construction is the same as building a rubber-powered model. It's a stick box with sheet balsa in front, and sticks in the back. Build two identical sides. Epoxy the plywood bulkheads and firewall vertically to one fuselage side and then epoxy the other fuselage side to the top of the bulkheads. Make sure all bulkheads are vertical to the sides. Let dry, pull the tail together and epoxy. Then epoxy in the sticks to complete the fuselage box. Make sure it's straight before the epoxy is dry.

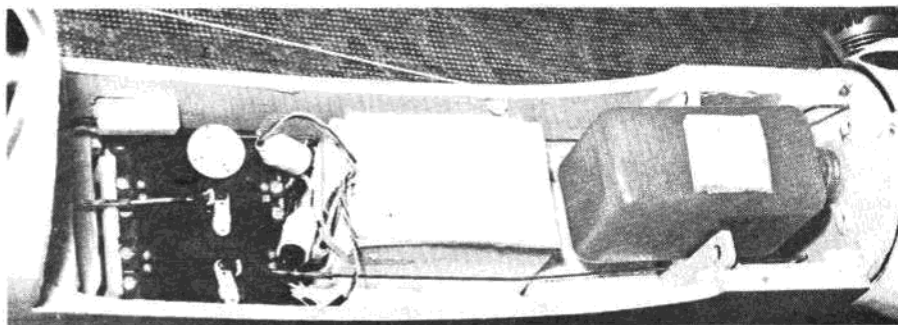
Glue on the formers for the turtle-deck structure and add the stringers. Sheet the forward bottom half of the fuselage, add fairing strips where indicated, and the basic fuselage is completed. It takes about two nights to build.

Build the wing and tail feathers next. The tail is sanded to shape after all the ½" sticks are dry. The wing is built conventionally except that it is best built upside down and as one piece. It also can be built as two pieces, joined. It has no dihedral (15 degrees of sweep); therefore, it can be built flat on the work bench. The spars and center section ¼" balsa splice can be built before the ribs are glued in place.

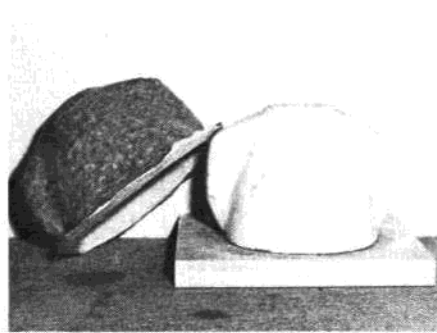
The ailerons are cut out after the wing is constructed. Position triangular jigs even with trailing edge of the wing. Lay the trailing edge sheets flat on the jigs. Lay down the main spar assembly and glue down all the ribs. Glue the top spar in place. Add leading edge, aileron spar, and vertical webs between ribs and through spar structure center section.

Sheet top of wing. Let dry and sheet bottom of wing. Don't forget to poke pin holes through the wood to mark where you should cut out the ailerons before you sheet the top trailing edge. Also, epoxy in the aileron horns before the trailing edge is sheeted. Add the bellcranks, rods, and wing tips. The servo hole can be cut out after the wing is covered. The wing and tail feathers can be built in two nights.

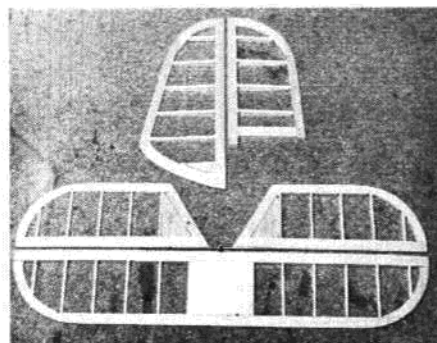
To build the fuselage canopy-hatch, cut out the ¼" hatch sides; glue the formers in



Virtually any control system will fit in this cavern! With swept wing, radio must be as far aft in fuselage as practical. Holes in bulkhead beside tank are for wing-mount dowels.



New method for making fiberglass cowls. Latex rubber mold is made over pine plug, then glass cowl is made in rubber mold.

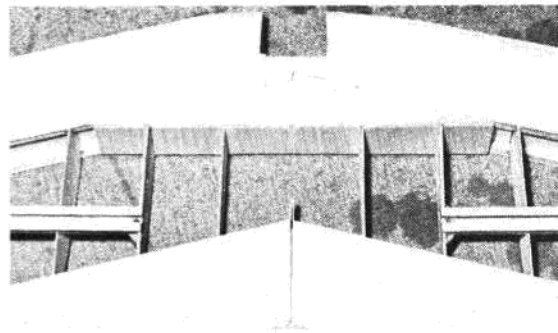


Built-up tail surfaces are light and sturdy. Generous control surface areas give powerful control responses. Great for spins.

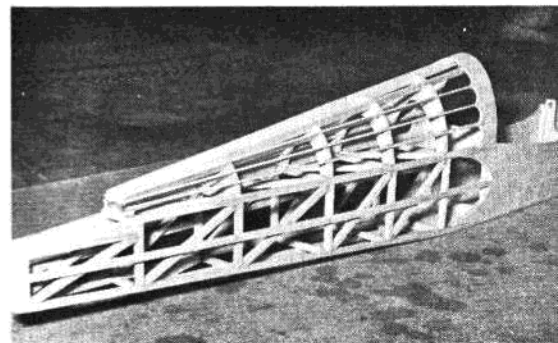
place and let dry. While the hatch is drying, shape a mold for the canopy out of pine or poplar. Allow at least a half inch extra on bottom of the mold.

Sand the hatch sides to match formers and sheet the top of the hatch. Add the ¼" block to the back of the hatch. Add the ½" sheet in the cockpit area. Now, epoxy finish your canopy mold. Don't use dope as it will blister when the hot acetate is drawn over it, and remember, the canopy is only as good as your finish. After the hatch is dry, put the wing on the fuselage and carefully align it so it is square. Put the hatch on top and trim as necessary to get a good close fit. Hold the hatch in place and drill a ¼" hole through the hatch, wing, and wing hold-down block on the fuselage.

A ¼" blind nut can then be inserted in the bottom of the hold-down block. The hatch acts as a clamp to hold the wing in place; therefore, no special beefing up of the trailing edge of the wing is required. A nylon ¼" screw works great to hold the wing and hatch in place. The forward part



Joining wing halves requires no dihedral braces as such; rather, a special built-up box holds sheeting and spars together.



Fuselage is made up of sticks of ½" square balsa as with a rubber-powered free-flight. Formers, stringers, and doublers are added.

of the hatch is drilled with a 3/32" drill clear through into the top edge of the firewall. The firewall is then tapped with a 4-40 thread. Don't forget to put a plywood insert in the screw hold-down area at the front of the hatch and over the wing hold-down screw hole at the back of the hatch.

The canopy can now be formed. First build a vacuum box. Build an open top box a little bigger than the length and width of the canopy and about 2 to 3" deep. Bore a hole in one end of the box, just the size to press a vacuum cleaner hose into. Be sure it's a close and tight fit. Fasten the canopy mold to a sheet of peg board (with wood screws from underneath), the size of the box and seal the top to the box. Make a frame from ½ x 1" lumber that has the same dimensions as the box top. A vacuum box is now completed. Air tightness is not critical, but the box should be glued and nailed.

Forming the canopy is easy despite its size. Fasten a sheet of .030" butyrate acetate to the bottom of the frame with staples.



## Jungster

*Continued from page 23*

mold dry for 24 hours and then peel the rubber mold off the cowling mold. You'll find that it is about  $\frac{1}{16}$ " thick and fairly stretchy; however, it retains its shape. Wash out the inside of the mold with warm water and behold, one master female rubber mold. You can make all the replacement cowlings you want.

To make a fiberglass cowling, we need a supporting frame. Get an 8"-square piece of  $\frac{1}{8}$ " plywood or hardboard. Lay it over the firewall of the plane and trace around the firewall with a pencil. Carefully cut out the hole in the plywood and save the center piece. Now build a little box (no top or bottom) about 6" deep. Nail the plywood to the box. Push the rubber mold through the hole until the lip of the mold supports the mold all around the hole and the mold is hanging down inside the box. Put a bead of glue all around the lip of the mold and glue it to the top. Place the center piece into the top of the mold to ensure the mold has exactly the same shape as the front of the airplane firewall. Let the glue dry and remove the center form.

A fiberglass cowling can now be formed. Mix up some polyester resin and lay in one coat of resin all over the inside of the mold. A parting agent isn't really necessary. Let the first coat almost dry. While the first coat is setting up, cut out 2" wide by 6" triangular pieces of 4 oz. glass cloth, about enough to go all around the mold four times. Lay a triangle of cloth in the mold when the gel coat is still tacky and apply resin through the glass cloth. Repeat until you've built up about four layers all around the mold and let dry. The cowling will be about  $\frac{1}{16}$ " thick. The cowling should be dry in about two to four hours. Break the lip of the mold loose from the box (the rubber

stretches) and push the mold out the bottom of the box. Peel the rubber mold off the cowling and trim the excess cloth.

The rubber mold can be used over and over. Cut out the holes in the cowling with a sander on your Moto tool and trim to fit around the engine and against the firewall. Install hardwood mounting blocks on the firewall, place mold over blocks, and drill with  $\frac{3}{32}$ " drill. Tap the wood blocks with a 4-40 thread; the cowling can then be mounted with 4-40 screws.

Cover the airplane with silk and finish any way you wish. Super MonoKote could also be used. It would be a crime not to put a good finish on the plane after going to this much work. The cockpit can be spruced up with a man and Tatone instruments. I mounted my instruments on a  $\frac{1}{16}$ " burnished aluminum panel. I also used one of the Williams Sportsman 2" pilots which helps give the impression of a true home-built aircraft. The inside of the cockpit is painted flat black. Don't forget to install a cardboard shield around the wing hold-down hole so that the screw can't get loose and rattle around in the cockpit. Epoxy the canopy on the plane after it is all painted, then mask the border of the canopy and paint with matching color.

I'm sure you'll like the way the wide-tread landing gear helps the airplane stick on landings. The  $\frac{3}{16}$ " wire may be a little hard to come by unless you check in the Yellow Pages for a local spring manufacturer. You can obtain 6 ft. of the stuff from him for about 50c.

If you complain about not having enough room in the fuselage to get your big fists in, you're nearsighted and using 1936 radio gear. Proportional gear is recommended but it could be flown with reeds. Just lengthen the elevator horn. I'm sure you'll get as much pleasure out of building and flying the Jungster as I have.