



STITTS ULTRA-LIGHT

By Tom Henebry

Ginny, the author's daughter, shows off the fine model. It can be built for .020 or .049 engines as explained in the text. Loads of fun on any model site. Skeeto used a 25 hp Evinrude engine, difficult to scale for model work. The original ship used hand-carved props cut from 2 x 4. Grandiose modeling, eh?

• Any modeler worth his weight in balsa chips has at one time or another built a parasol monoplane—probably a Heath, Pietenpol or some other home-built designed in the thirties. Very rarely do new designs appear that utilize this stable configuration, so popular with the model builder. Fortunately, Ray Stitts prolific designer and builder of light planes has recently been experimenting with a new design that has the weight distribution and overall outlines of a scaled-up model. The new design called "Skeeto," has a long nose moment, slim fuselage, squared-off wings and simple lines that make it the heir-apparent to the Heath Parasol in modeldom.

Stitts and many others believe that a truly economical airplane must utilize some other type of power-plant than the expensive aircraft engine, and it's equally expensive accessories. To hold building costs to a bare minimum, Ray used wood as the major construction material and resorted to such design tricks as hinged trailing edges for ailerons and the

use of commercially available wheels. Many engine arrangements were tested on the little ship but the one that proved best (but not quite good enough) was the modified 25 hp Evinrude outboard motor shown in the photos. Ray became interested in another project and decided he needed the hangar space more than he needed to invest more time in "Skeeto." He donated the airplane to Ed Maloney's Air Museum at Claremont, Calif., it is now on exhibit there.

For those that may be interested in the trials and tribulations of such a project, Ray wrote a two-part article on the plane that was published in the March and April 1958 issues of Sport Aviation. Copies of both issues may be obtained by writing to the Experimental Aircraft Assn., Hales Corners, Wisconsin, and enclosing 50c per copy.

A problem long associated with model parasol designs is the construction of a sturdy, well aligned cabane section to support the wing in its correct position. The problem is resolved in this

particular model by using a simple jig that makes misalignment virtually impossible. Plans are shown half size but it's a very simple matter to double all measurements with a pair of dividers or a compass. For those who may like a .049 version of this job, triple the dimensions shown and use the next size balsa for the various parts.

Start construction with the fuselage, the 3/32" sq medium-hard balsa sides are built directly over your scaled-up plan, one on top of the other. The 1/16" sq. fairing strips are cemented in position before separating the two sides. It is wise to cement the 1/16" sheet sides in the position shown before separating the sides as it is easier to get them exactly alike at this time. Sand the sides lightly with a sandpaper block being sure to smooth the 1/16" sheet parts so a neat covering job will result. It is not necessary to draw a top view of the fuselage, simply double the lengths of the cross-pieces shown on the magazine page and cut to length.

Box-in the fuselage with the

cross-pieces paying particular attention to squareness. Cement formers F-4 and F-5 in position, cut a piece of .051" piano wire for the center-line piece of the cabane, and cement it securely in position in the former notches. Check at this point to see that this wire is exactly in line with the fuselage center-line and that the proper incidence angle is maintained. Mark the point on this wire where the front cabane strut should attach, with a piece of masking tape. Bend the front cabane strut by centering an 8" piece of .031" wire on top of the fuselage (at the F-3 location) bending it so it is a little wider than the fuselage at that point and it touches the center-line wire at the proper spot. Cement this wire to the rear edge of the cross-piece and bind each end with a few turns of thread. Clean the wires at the points of contact and solder the joint. Be sure to have the .031" wires slightly below the center-line wire so it can be used as a device to center the wing.

The rear cabane strut is made in the same manner and should be installed next. Then, the strut that slants rearward is bent, located and soldered. If all is in alignment, and the joints are soldered securely, remove formers F-4 and F-5. Bend up the landing gear "V" over the pattern shown on sheet 2 of the drawings, then cement and bend it to its respective cross-pieces. The long .051" landing gear leg is bent up in the same way that the cabane pieces were formed—across and below the same cross-piece that supports the front cabane strut. Bend this wire outward at the point it crosses the landing gear "V" to form the axles for your wheels. Solder this joint securely and cement the wire along the fuselage cross-piece again and bind all three wires firmly together.

All the fuselage formers and the 1/16" sheet dorsal stringer. The rearmost wire in the cabane section may now be added to complete the wire work, with the exception of the wing saddles that must be installed after the wing is complete. Cover the top of the fuselage at the nose with 1/32" sheet and fill in the first section of bottom and the last with soft 3/32" sheet. Cement a piece of scrap balsa block to the slanted part of the nose and sand it with a block until it forms the correct angle for the firewall. When the firewall is cut and installed, smooth up the nose area and lightly sand the fuselage to prepare for covering. Do not cover it, however, until the tail surfaces are covered and installed. The tail wheel should be made up and mounted at this point.

The rudder outline is built directly over your scaled-up drawing using medium-hard 1/16" x 1/8". The ribs are made from 3/32" wide strips cut from 1/32" sheet, and soft 3/32" sheet gussets are used at all joints to provide a more warp-resistant structure. When the rudder is completely dry, sand both sides to obtain a slightly streamlined and symmetrical section.

The elevator is built the same way except that 5/32" wide strips of 1/32" sheet, notched to clear the 3/32" sq. spar, are used for ribs. The completed elevator is sanded to a slightly lifting surface as shown on sheet 1 of the drawings. Cover the rudder and elevator with red Jap tissue, water spray and dope with a thinned coat of clear dope, preferably butyrate. During the water spray and doping operations, it is a good idea to pin the surfaces to a smooth, straight board to prevent warping.

Cement the surfaces in position on the fuselage and cover the top surfaces of the fuselage first. Use

a single strip of tissue for each side of the top and blend it into the covering on the tail surfaces. If any difficulty is encountered at this point, triangular strips of soft balsa may be used to fair in the tail, and small sheet gussets may be cemented around the wires, to provide more doping surface. The rest of the fuselage covering should present no problem.

A foolproof jig for the wing panels can be made by placing both trailing edge pieces back to back, notching them at the proper rib locations with a hack saw blade to the required depth. After both panels have been joined at the proper dihedral angle the leading edges are covered with a strip of 1/32" sheet, on the top only. The center section is covered on top and bottom. Before cementing the center section bottom sheet covering, bevel the sheet edges that touch the centerline at 45° so the two pieces form a 90° notch along the centerline of the wing.

Cement and bind the 1/4" long pieces of 1/16" o.d. aluminum tubing to the 3/32" sq. pieces which have been built into the wing. Straight pieces of .031" wire may be used to hold each pair of tubes in correct alignment. Make two sets of wing struts as shown on the plan from 1/16" diameter birch dowel.

Install the struts on the wing and mount the wing on the plane, using the center-line notch to center the wing over the .051" wire in the cabane. Move the struts up until the pointed ends press against the fuselage sides and adjust until the wing makes the same dihedral angle on both sides, in relation to the fuselage. Mark the points on the fuselage where the struts touch, if you have worked carefully the marks should be just above the lower longeron and in front of the 3/32" sq. upright.

If they are too far off, check back and rectify the mistake now. Press 1/16" i.d. eyelets into these spots, one on each side of the fuselage. With the ends of the struts in the eyelets, check again for alignment and see that the struts are held in the eyelets with a moderate, yet firm, pressure. With the wing and struts still attached, turn the model upside down and place the wing saddles in position and solder them to the center-line wire.

With the outboard struts removed the wing saddles should be able to hold the wing securely in the correct position. Remove the wing and cover it with red Jap tissue, water spray and dope the entire model -with two coats of thinned clear dope.

The plane is painted insignia red with white trim. The wing panels are white from the rib outboard of the strut sockets to the tip. The 1/4" wide stripes on the tail surfaces and the 1" numerals on both sides of the fuselage are also white. The model was spray-doped with two thin coats of white

on the wing tips and two coats of thinned insignia red on the remainder of the plane. Trim-film was used for the stripes and numerals. Ready to fly, the model tips the beams at 3-1/2 ozs.

With the Cox "Pee-Wee" installed, and no prop, test glide the model over tall grass, as is usually prescribed for this operation. Adjust until a smooth, stable glide is obtained, a slight right turn is desirable as the model will turn left under power. There are a few precautions that are well worth considering before you try powered flight.

By all means, put the prop on backwards for the first few flights or until you are sure the plane will behave. With the prop installed correctly work up to full power over a series of half a dozen flights, this little engine has fooled lots of modelers. Glide troubles may be corrected by shifting to wheels of various weights or adding small amounts of modeling clay to the indicated spots Power troubles should be cured by tilting the thrust line and trying props of

different pitches.

Best results were obtained on the prototype model with a 5-1/4" x 3" Power Prop that had 1/4" clipped off both tips. If you should have trouble with spiral dives (this did not happen but is fairly common in parasol configurations) try putting Scotch tape on both sides of the cabane area to increase the lateral area. This should cure the tendency and the tape may be removed in successive strips as the model gets trimmed out.

Interior details are practically nonexistent on the original airplane, a simple seat, stick, rudder bar and a few instruments are all the cockpit contains. A small light plane-type gas cap can be mounted on the area forward of the windshield, if desired, and masking tape may be wrapped around the landing gear to indicate the shock absorbers. The needle valve on the "Pee-Wee" will be easier to operate if the head of it is slotted with a hacksaw and a small screwdriver is used to adjust it.