Sorrell Guppy

By HOBY CLAY . . . Tropical fish fanciers, such as Don Dewey, will understand the logic of this little staggerwing biplane's name. It flies well as an unusual homebuilt, and just as well as a rubber scale model.

• The Guppy is an ultra-light single-place home-built airplane. It was designed and built by Hobie Sorrell of Hiperbipe fame, one of the best designers, builders and restorers of airplanes around. The prototype is powered by an 18 h.p. Cushman engine and is one of the few truly successful airplanes to fly on less than twenty horsepower.

Hobie sold the original N2180 to Mike Kimbrel, a Western Airlines captain, who has recently talked him into marketing the plans for home-builders. He wrote an article on the design which was published in the October, 1977, issue of "Sport Aviation," the EAA publication. It has a color shot and several black and whites. He will send you the sales brochure for two bucks, which has a half-inch scale drawing, photos and a lot of description. Write M.G. Kimbrel, 1333 Garrand Creek Road, Oakville, WA 98568.

The model was designed, like the prototype, as an ultra-light for indoor flying. It's light and tough enough to bounce off the gym walls and bleachers but too flimsy and under-powered to do well among the tree branches, weeds, and gusty air outside. If you plan to fly it outdoors, I would recommend slightly larger wood sizes and lightly-doped tissue to withstand the rigors.

Construction is ultra-simple and duplicates the original with the exception of the fuselage covering, which is 1/8-inch luan mahogany door skin plywood. Hobie used sawed 1/4-inch balsa ribs (spruce cap strips) and 1.7 ounce Dacron covering material, lightly-doped.

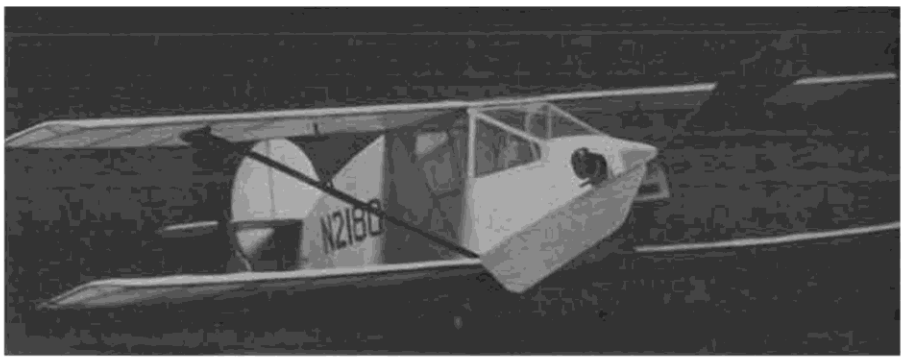
For the model, wing tips and tail surface outlines are laminated up from two or more thin strips of balsa, wet-shaped over a waxed cardboard form and tied together with thinned white glue. After the wing tip bows are taped to their form, bend it to match the top wing rib shape. The top cowl and nose block are shaped from soft balsa. I like to fit a frame of 1/32x3/16 strip inside the nose opening to hold the nose block. Cover the sides and bottom of the cowl with 1/64 sheet to simulate the plywood and add a little nose weight.

The light-weight but tough prop has blades soaked in ammonia water and twisted by strapping on a can or bottle about 2-1/2 inches in diameter at about 15 degrees forward skew. The .020 wire shaft is passed through a hole drilled in the round birch toothpick hub, bent over and cemented. The blades, after drying and standing, are jigged to pitch and spot-glued to the hub with Ambroid. When this has set, the blades and shaft are lightly epoxied to the hub and the assembly is sanded with an emery board to blend it all together and to balance.

The engine cylinders can be constructed quite realistically from bendable sections of 1/4-inch flexible drinking straws, with balsa heads and insulated wire exhaust stacks. Pull the wire about 1/8 inch back into the insulation to get the hole in the end of the stack. Leave the wire in the remainder to help hold the shape. Wheels are an odd diameter and should be turned from styrofoam or light balsa.

The model was built to scale with no dihedral. My model flies fine indoors that way, as do the Fikes and Laceys. About a 1/4-inch dihedral under each lower wing tip will give a little more stability. If you go that way, don't forget to adjust the length of the interplane struts.

Mike Kimbrel's plane is all white, with red struts and registration numbers. The letters and numbers for the model are 1/2-inch high cut from red tissue. They are standard aircraft type rectangular with diagonal corner cuts. Fasten to the



Here's a Peanut that, like its full-size counterpart, is easy to build. Struts eliminate need for landing and flying wires.

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sides with heavily-thinned dope before the plane is assembled. Paint the engine cylinders flat black, the heads metallic gray and the stacks flat brown.

The steerable tail wheel assembly used on the prototype is simple and light and puts a little detail on the model. Sliver up some bamboo to about 1/32 and 3/64, scrape the corners off and assemble a piece at a time with Ambroid. When finished, go over each joint with epoxy smeared on and smoothed with a sharp stick to reinforce, and paint red. The landing gear struts should have a thin piece of insulation from a length of telephone house-wire or similar stuff slipped on and painted red before the wheels are mounted.

My model, was built as shown on the drawing and covered with condenser tissue lightly air-brushed white with thinned Floquil, flew with .075 Pirelli. Heavier models and flown outdoors will, of course, need more power. Experiment with power and prop pitch for optimum duration. Fly in as large right circles as your site will tolerate. Biplanes flown left with torque tend to spin rather easily.

This is a really simple Peanut and can easily be built lightly for long, low-powered flights. It's so ugly, I think it's attractive, and the negative stagger wings are unusual for the biplane nuts. There is enough stagger so that the lower wing can be mounted at a slightly higher incidence than the upper, for longitudinal stability. The theory is that the forward wing will stall first when set up this way and the rearward wing, which is still lifting and behind the center of gravity, will pull the tail up and bring the ship out of the stall. •