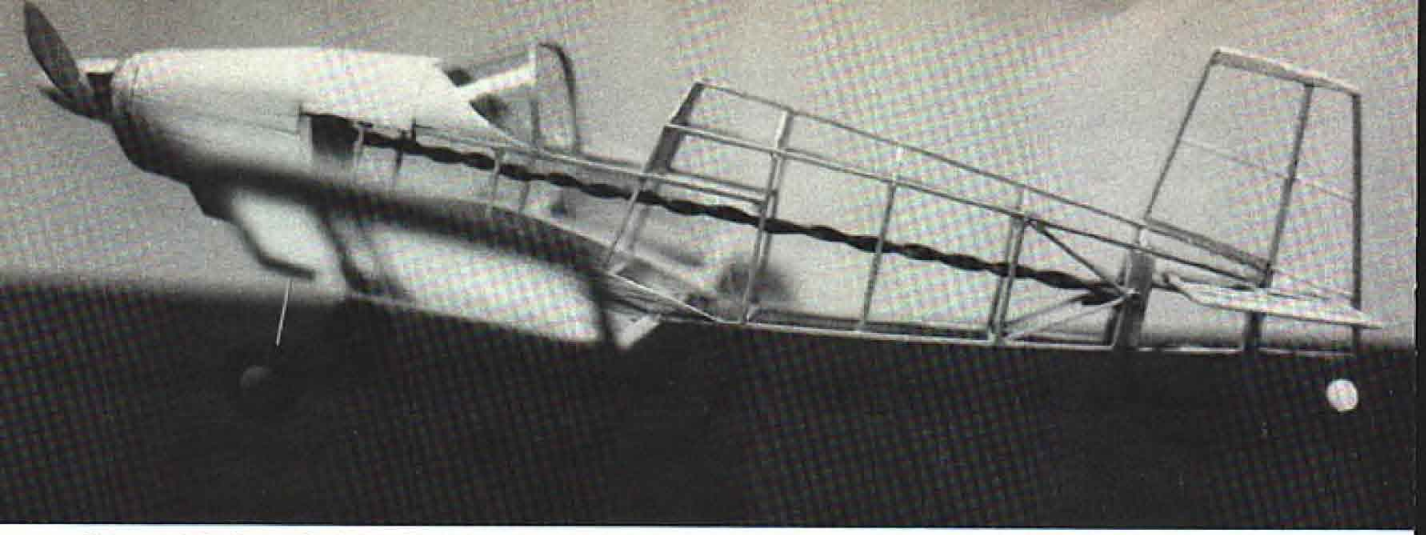


Uncovered, the Peanut Scale T-18 Tiger shows its straightforward construction and simple, clean lines inherited from the full-scale plane.

■Hal Stewart

Thorp T-18 Tiger

Full-size plans on pages 86-87

This low-wing Peanut Scale model has generous tip dihedral as per the prototype, so it flight-trims rather easily. It has a nice appearance and flight performance to match.

THE FULL-SIZE version of this aircraft is considered to be a flying hot rod by home-built aircraft pilots. It was designed by John Thorp as a two-place low-wing monoplane of all-metal construction that could easily be built by one man equipped with a pop-rivet fastener gun and ordinary tools such as wrenches, tin snips, and screwdrivers. Several have been built in basement workshops and family garages.

The 1965 edition of *Air Progress Homebuilt Aircraft Annual* provides documentation photos of the Thorp T-18 Tiger and a fascinating pilot's account of flying various home-built versions—from the standard 125-hp model to the 180-hp Super Tiger. A small airplane of 20-ft., 10-in. span, this sharp-looking but simple tail-dragger features tip dihedral without sacrificing responsive aileron control. Climbing out at 110 mph and with a max speed of 200 mph, this little hot rod cruises at 175.

I picked the Thorp T-18 for a Peanut Scale model because it was a simple and nice-looking low-winger of good proportions for the purpose, especially the tip dihedral. Besides, I had never seen it modeled before. The model is patterned after the aircraft built by Earl Love of Pacoima, CA, which bore FAA Certificate N299V.

While this is not actually a beginner's model, anyone who has built a few before is not likely to have any problems. Construction is straightforward. It's a good idea to start by accumulating the materials, tracing off all the ribs and formers, and cutting them out. Make a template for the wing rib to ensure consistency. Place the plan on your building board and tape wax paper over it before beginning.

Wing. Build it as a complete unit. Start by pinning down the 1/16 x 1/8 trailing edge (TE). Use the ribs to locate the 1/16 sq. lower spar, and pin it down. Glue the ribs in place, making sure the two 1/16 sheet ribs are properly located. Cut the leading edge (LE) as three separate pieces; use the dihedral view of the wing to get the joint shape correct.

Glue the LE to the ribs. After this is dry, notch the TE and lower spar, block up the tip ribs to the appropriate height, and glue the TE, lower spar, and LE joints. At this point you can add 1/16 in. shims under the trailing edge of the tip ribs to give washout to delay tip stalling; if you're an old hand at flying Peanuts, handle this as best suits your own flying technique.

Add the 1/16 sq. top spar. When dry, add the 1/32 sheet dihedral braces, clamping them for a good joint with the spars. Make the wing tips from 1/8 x 1/2-in. very soft balsa, gluing each in place with the lower edge flush with the main structure. Sand the LE and TE to shape. Carefully shave and sand the tips to a smooth and pleasing contour.

Tail surfaces. Both the horizontal and vertical tail are built directly over the plan using 1/16 sq. balsa except as specified on the plan. Be sure to keep everything pinned flat. When the parts are dry, take them off the building board; sand the LE round and the TE with a slight taper.

Fuselage. Cut the wing bed formers from medium-hard 1/16 sheet balsa. Build the two sides directly over the plan. Once these are dry, glue the sides together at the tail post, then carefully glue the nose of the side frames inside F-1, ensuring that they are flush (not protruding) and that the frame is square.

It's a good practice to build the fuselage directly over the plan top view; block it in place to keep it square. Cut the crosspieces to length, and begin gluing them in place starting at F-5. You should have already cut out the fuselage formers; insert F-3 and F-2. Add the turtleback formers and then the top stringers, carefully cutting and bringing them together in good alignment at the tail. A scrap piece of 1/16 balsa is used to fill the gap between the top of the frame and the stringers at the tail.

Bend .025 dia. music wire for the landing gear as shown on the plan. Epoxy it to the mounting pieces, one of which fits inside the rectangular top portion of the landing gear strut. This sub-assembly is then glued in place in the fuselage frame with the proper rearward slant.

Mark the position of the windshield/canopy former on the upper longerons, and cover the top of the fuselage, cowling sides, and bottom with 1/32 sheet balsa. Sand to a smooth contour. Add the chin scoop.

The windshield/canopy frame is made by cutting a template of heavy card stock, soaking 1/32 x 1/16 balsa (or basswood) strips, and carefully forming them around the template; pin in place until dry. Take the outer piece once it is dry and has its shape, apply glue, and stick it back around the piece still on the template. Let this dry

thoroughly, then trim it to shape (making sure to bevel the bottom ends to get the correct slant). Glue this in its proper position on the upper longerons of the fuselage.

Make a template of the windshield from bond paper. Trim the paper until it fits all around. Transfer this shape to thin acetate sheet, and glue it in place.

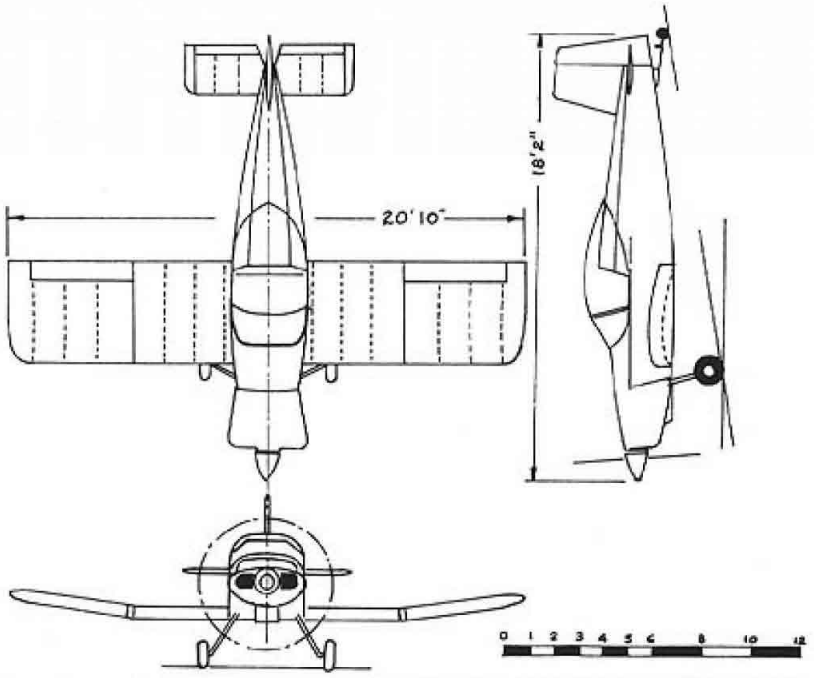
The nose block is made from pieces of ⅛-in. and 3/32-in. medium-hard sheet balsa. The 3/32-in. piece is best cut to 7/16-in. dia. and faired into the ⅛-in. nose block after gluing; use any good filler (I used spackling compound, and it worked well).

Drill the nose block to take a small Peck-Polymers nylon thrust button; note that the correct amount of right thrust should be provided. Make the 1/16 x ⅛-in. backing (set on edge) for the nose block, and carefully glue it in the proper location. Sand the nose block to blend its contours with the cowling.

Covering/finishing. Cover all surfaces with tissue. Care in sanding the frame prior to covering will eliminate a lot of wrinkles. I prefer the lighter Japanese tissue applied by brushing two coats of dope on the frame, holding the tissue in place, and brushing dope thinner over the joints. This softens the dope enough to stick the tissue to the frame and gives you enough time to work out wrinkles.

I have found that use of rubbing alcohol for shrinking the tissue works better for me than the old water-shrink method. This is described in Bill Hannan's book, *Peanut Power*.

The effects of dampness can be deterred somewhat by applying a coat of dope that has been thinned 50%. This also makes a good base for applying tissue trim. Letters and trim panels are made by accurately drawing them on bond paper or vellum, taping that down over the appropriate color tissue, and carefully cutting through the backing and tissue at the same time. Lay the letter or trim piece in the proper position on the model's surface; hold it in place while brushing on thinner (or 50% thinned dope) for adhesion. Done carefully, the result will be pleasing.



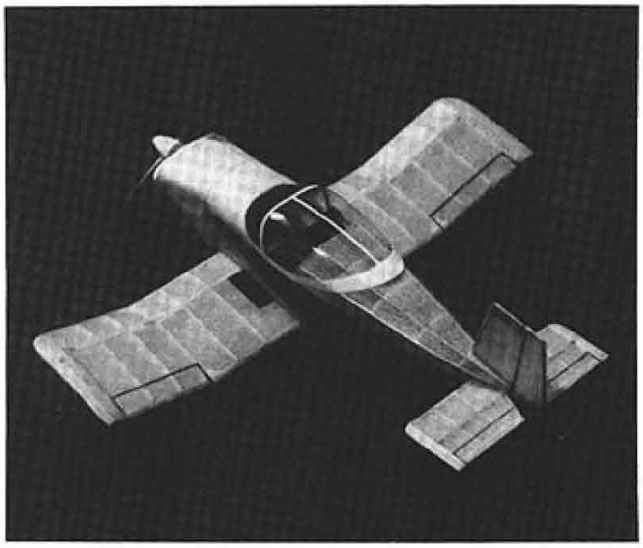
Three-view contest documentation drawing of the Thorp T-18, FAA registration N299V.

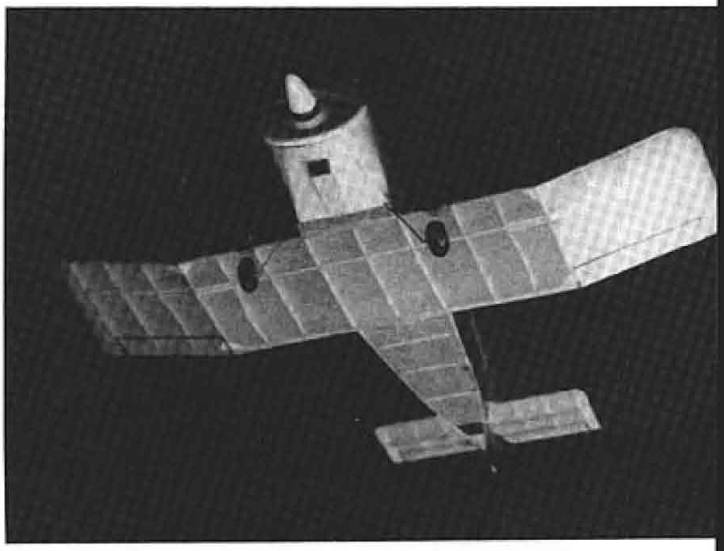
My prototype aircraft was originally natural aluminum with black lettering, including the word EXPERIMENTAL just below the cockpit. Since gray tissue is about as close as you can get to aluminum color without pigment doping, I covered my model in N299V's later scheme of white and red. Not having photos of the actual decoration pattern, I made my model typical of that used on some Thorp Tigers. Suit yourself in this area depending on whether you're interested in sport flying or competition.

Assembly, etc. When putting the parts together, be careful to keep everything lined up and square. Don't forget to lightly glue a small scrap of 1/16 balsa under the bottom of the horizontal tail spar for the correct angle of incidence.

If you can find a ready-made canopy you can cut to size, that will be great. I couldn't, so I molded one by carving a block to the shape of the canopy, heating some plastic sheet (I actually used the plastic film from a package of appliance bulbs), and pulling it down around the carved mold. A helper and a heat gun will make this easier. Use gloves to handle the hot plastic, and *pull* it down carefully and *steadily* over the mold until it wraps under the edges. It will cool to the desired shape quickly, and it can then be cut off the mold. Cut the canopy oversize, and carefully trim it with small scissors until the

Continued on page 169





Left: The molded canopy and spinner add a touch of class to this simple low-wing model. Right: A view of the Tiger in an overhead flyby.

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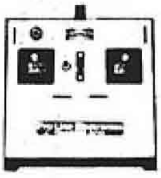

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curs under another pic of Dirty Harry doing-his-thing at WPAFB where our editor states an assumption that the D-T fuse is being lit with one of those "flameless electric igniters." Not so again, Ross Baby—it's a metal Bandaid box with the punk coiled up inside with a snuffer tube in the top. You know, "Safety First"—and all that good stuff! Are we still friends, Ross?...Ross?... H-mmmm, maybe he went to lunch.

See ya downwind!

Harry Murphy, 3824 Oakwood Blvd., Anderson, IN 46011.

Thorp Peanut/Stewart

Continued from page 75

fit with the model is correct.

Add the small lettering THORP T-18 and the cowl seams, etc., using a black ball-point or drafting pen. A pilot and passenger cut from light card stock add a nice touch. Engine intake openings and an oil radiator opening can be simulated by painting or gluing on black tissue cut to shape.

Prop and motor. Use a plastic 4¾-in. propeller with two small brass washers between the back of the prop hub and the small Peck-Polymers nylon thrust button. The spinner was carved from a soft balsa block with the grain running from the nose to the back. Hollow this out, and cut it to accept the prop blades. The use of a thin card stock disc to back up the spinner helps keep the spinner on; it should be added during the mounting of the prop, prop hook, and nose button. The spinner is painted to suit your color scheme.

A loop of 3/32-in. flat rubber approximately 1½ times the distance between the motor hooks should be made up. "Braid" the motor, tie the ends in a knot that won't slip, and apply rubber lubricant. By pre-stretching this motor and winding it, you should be able to get at least 95 turns per inch of length of the loop without it break-

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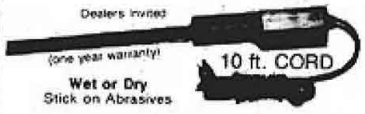

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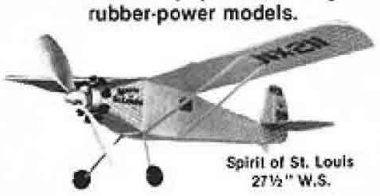

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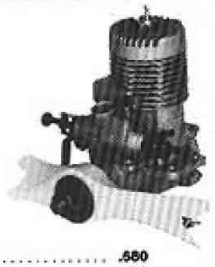

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ing.

Flying. Your model should balance at the wing spar location. Add ballast as needed to get it to balance there. Hand-glide the model, adjusting the tail or wing incidence to get a long, smooth glide with no gallop or dive. (This is one reason for lightly tack-gluing the wing during assembly; in this way it can be cut loose easily for adding slivers of balsa in the wing bed—sanding them away as necessary—for incidence adjustment.)

Try a few flights with a small number of turns in the motor. If the balance point is correct and the glide is okay, you should only have to worry about thrust line adjustments. Add down and side thrust as needed; observe each flight, and increase the motor turns in stages when the model is flying well at each stage.

This may seem like a slow process, but by the time you are up to max-turn flights, you not only will have your Thorp Tiger properly adjusted, you'll know its flight characteristics. For flying indoors, a lot depends on the room you have. Usually a steady climb of about 5° to 10° while turning in 70 to 80-ft. circles is about right.

I hope you enjoy your Peanut Scale Thorp Tiger as much as I do mine. If you've never built a low-wing Peanut Scale model before, this is one you should give a try.

Reno Air Races/Wallace

Continued from page 84

the North American P-51 Mustang, British Hawker Sea Fury, Grumman F8F Bearcat, and the Chance-Vought F4U Corsair. Several of these planes have been equipped with monstrous engines and props in combination with lightened airframes, clipped wings, streamlining, and other modifications.

The course for Unlimiteds is 9.2 miles per lap with eight pylons, and it is entirely within view from the specator seating area. Similar to the AT-6 class, Unlimiteds start each race airborne with the planes abreast. They enter the race course via what is referred to as the "chute." The sight and sound of seven to nine Unlimiteds thundering onto the course from a full-power descent is spectacular, to say the least.

The Reno Radio Control Club was highly visible at the race site with its display and raffle booth. In addition to the club's main booth, they had three satellite booths which offered raffle tickets on three ready-to-fly RC model packages.

Reno Stead Airport, the site of the air races and show (incidentally, also the main flying site for the 1984 AMA National Contest), is located approximately 11 miles north of downtown Reno via Interstate Highway I395. Some hotels and casinos even provide a free shuttle bus service to and from the race site.

The dates for the 1986 Reno Air Races and Air Show have been established as September 11-14. Any model flier who attends won't be disappointed.

Tips for first-time attendees:

1) Make your travel and hotel accommodation arrangements early. There are many fine hotels to select from, but their busiest time of the year is the week of the air races and show. Rates are reasonable. Circus Circus, for example, offers a double-bed room at $24.00 per day plus tax (Monday through Thursday) and $32.00 per day plus tax (Friday through Sunday).

2) Order your air race tickets early if you want reserved seating. The address: Reno Air Racing Association, P.O. Box 1429, Reno, NV 89505. Telephone: (702) 826-7500.

3) Food in Reno is excellent and inexpensive. Most hotels and casinos offer top-rated dinners at less than half the price of restaurants elsewhere. There are varied buffets at very low prices.

4) Rental cars are readily available, and many companies offer bargain rates of $70 to $90 per week with unlimited mileage for a compact or sub-compact model. Shop around via the WATTS line number provided by most car rental companies, but do reserve your car in advance.

5) Bring your camera and lots of film (or tape). There is a 24-hour film processing service at the race site.

6) Take some warm clothing. While the normal daytime temperatures at the race site are in the upper 70s and low 80s, colder temperatures sometimes occur.

7) If you have a radio receiver equipped with the aircraft band, take it with you. You'll be able to listen to the race pilots talking to the air traffic controller and to the pace plane. These conversations are fascinating, and you'll know if an emergency develops even before it is announced. The air traffic radio frequency is 118.5.

If you can avoid (or indulge in only moderately) the other temptations that Reno has to offer, it is certainly one of the least-expensive vacation spots in this country.

Whether your modeling interest is in Pylon Racing, Aerobatics, or Scale—or if you have a general interest in aviation—Reno has it all, and you should try to attend.

Whirlwind/Baker

Continued from page 94

to the wing, the sheeting, top block, and rear blocks can be shaped and attached. The top block will have to be close to its final shape before being attached, as it is hard to shape once in place. Install the engines and spinners, and glue in the blocks at the side of the engine. Carve these to shape, and sand the nacelles. Cut out the triangular areas in the nacelle sheeting, and glue in the 1/32 plywood half-round that goes under the muffler. When completed, there should be about 1/32-in. clearance between the muffler and the plywood.