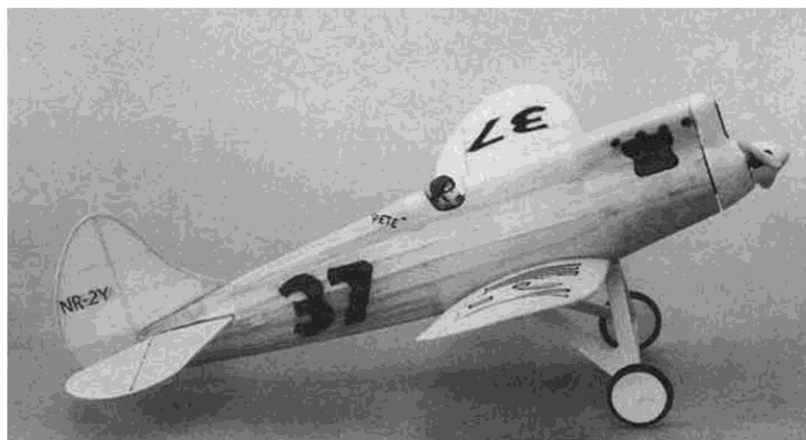


CONSTRUCTION



PEANUT SCALE: HOWARD'S PETE

BY JOHN BERRYMAN

It's hard to resist the appeal of a Golden Age racer. One of the most famous of the designers of that era was Benny Howard, who gave us "Ike," "Mike," "Mr. Mulligan," the "DGA" (Darned Good Airplane) series of civil aircraft and "Pete," the subject of this construction article. Pete as presented here needed no modifications—no blowup of stab or rudder, no lengthening of the landing gear, no changes in outlines or moments at all. The only readily apparent change is in the dihedral... Benny called for three degrees, but since our Pete will be on autopilot at all times, I roughly tripled the di-

hedral to aid stability. Like any racing thoroughbred, Pete is not for a tyro, but is intended as a rewarding project for an experienced flyer. Let's build Pete.

Flying Surfaces

Yawn. Nothing sexy here. The wing tips and curved surfaces of the rudder and stab are made from 2 laminations of 1/40 balsa. The ribs are 1/32, except for the center rib which is made from 1/16. The leading and trailing edges of the wing are made from 1/16 stock, as is the wing spar. The internal structure for the rudder and stab are cut from 1/20 balsa.

Fuselage

The fuselage is built in the classic "half shell" manner, and no, it isn't easy. However, I have evolved a couple of tricks that make the process a bit easier... not easy... just a bit easier... First, cut the four 1/20 main longerons (or "crutches") and the smaller 1/32 longerons that will serve to give the fuselage its beautiful flowing lines. Then soak the longerons in a 9x13-inch baking pan filled with hot water to which a glug or two of household ammonia has been added. Next, cut out the half-formers. Select light, *continued on page 103*

Close-up shows "cutaway" in cowl that was a field modification, apparently to improve cooling.



Flip-over photo showing landing gear. Original had flying wires to wing from wheel hub.



First ever Peanut Scale contest was won by Henry Struck, flying his Howard "Pete."



firm stock that will notch nicely. DO NOT NOTCH THEM YET—EXCEPT FOR THE NOTCHES THAT WILL ALLOW THEM TO FIT ON THE TOP AND BOTTOM CRUTCHES. Now, pin the top and bottom crutch pieces in place on the plans. You can also pin the side crutch pieces down to the top view of the fuselage shown at the bottom of the plans to prebend the pieces. Add the wing saddle as shown on the plans. CUT TWO EXTRA SADDLE PIECES AND RESERVE THEM FOR A LATER STEP. Let the assembly dry completely. When the crutches are dry, glue each half-former in place between the top and bottom crutches. Let them dry. Then, stick a pin in the building board about two inches in front of the nose of the airplane. Tie a piece of carpet thread to the pin. Lay the thread along the formers where the side-crutch should go, and mark the nice, straight line thus determined by the thread with a fine tip marker. Then, using a NEW and SHARP DOUBLE-EDGED RAZOR BLADE, cut notches in the marked formers to receive the pre-bent side crutch. Again, let the assembly dry completely. When dry, use the thread again to determine the locations of the smaller 1/32 stringers, and INSTALL THEM WET—WITH TITE-BOND. Let everything dry. Then, remove the half shell from the board, add the other halves of the formers, and after they've dried, add the stringers, WET, to the other side, using thread as you did before. This rather cumbersome procedure is the only way I've been able to keep my stringers straight, and to avoid adding bends and wiggles to the fuselage as I add stringers to the structure. If you have a better system, by all means use it. Next, you'll want to sheet the fuselage as indicated on the plans. I sheeted the airplane using five pieces of 1/64 balsa: cowl/turt ledeck, upper right nose, lower right nose, upper left nose, lower left nose. Incidentally, the sheeted portions shown follow closely those portions of the prototype sheeted with aluminum.

PROPELLER

A 4-3/4 inch Peck plastic prop will work fine on your Pete. I chose to hack my own out of some hard balsa. Using a block 4.75 long x .65 wide x .62 deep, I carved a 4.75 inch diameter by roughly 7 inch pitch prop.

MISCELLANEOUS

The cowl is carved from block. The spinner is made from a bunch of cross-grained laminations of 1/32 that were glued to a mandrel and spun to shape on a Dremel Moto Tool. The wheels were made from two cross-grained laminations of 1/16, and bushed with small pieces of 1/16 dowel. I think pilots are a must in open cockpit airplanes. Your first attempt may look a bit like Frankenstein, but keep at it, it's a skill well worth developing. All my pilots have mustaches, for two crucial reasons: because I have one, and because then I don't have to paint an upper lip. . . .

LANDING GEAR

The "real" gear is bent from .020 music wire, and glued carefully to the bottom of the fuselage with five minute epoxy. Then the 1/2 0 balsa legs are mounted over the wire. You'll note two odd things about the wheels: the "hub caps" don't exhibit the conic section common to many fabric covered wire wheels, and it appears that the hubs protrude through the caps. This is per the drawings. In the prototype, wing bracing wires connected to the landing gear at the center of the wheels.

COVERING AND FINISHING

Cover the flight surfaces in the usual manner. AFTER the wing is covered, and BEFORE you cover the fuselage, you need to fit the wing to the fuselage. It is done thus: Match the wing to the curved saddle piece. No, it won't fit, because there are stringers in the way. CAREFULLY cut them out BETWEEN THE BULKHEADS WHERE THE WING WILL FIT in such a fashion as to permit the wing to mate to the saddle (I needed to remove the two lower stringers on each side of the fuselage). Then after checking alignment in every way you know how, TACK glue the wing in place, and permit to dry. When dry, glue those extra saddle pieces (remember them?) in place between the bulkheads where the stringers were removed, mating them tightly to the wing's upper surface. Then cut the wing free, and cover the fuselage. For the fuselage, stick with Titebond as a covering adhesive. There are a wealth of curves on the fuselage, and to get a relatively wrinkle-free covering, I applied the tissue wet, covered the fuselage with six long pieces, and relied on the superior holding ability of Titebond to keep things in place. The control surfaces are drawn on with a *Sharp* fine tip marker . . . the only brand I've found that won't bleed through dope.

The racing numbers were applied with an airbrush, using frisket paper stencils . . . I used *Floquil Engine Black*. The registration numbers are gold, with thin black outlines. The gold Floquil goes on using frisket paper and an airbrush again. The black outlines are CAREFULLY painted on by hand with a TINY brush. The irregular smudge shown below the exhaust stacks is my attempt to duplicate a hole that was cut in Pete's cowl for extra cooling.

Now, the hole shows every sign of being a quick fix for an overheating problem . . . I doubt seriously that Pete started its life with a nasty hole cut in the cowl. I chose to show the hole; you may choose otherwise.

FLIGHT SETTINGS

Peanuts require very subtle flight adjustments . . . fractions of an inch make a BIG difference. Therefore, I think it's futile to try to exactly describe the flight settings used in

a particular aircraft . . . the odds that you and I will build identical airplanes begin to approach zero. However, here are some general guidelines. My Pete was about as cranky as most Peanut low wings usually are . . . but no worse, either. Because of Benny's great choice of moments, mine needed no ballast when a 12 inch loop of .100 FAI rubber was used (I balanced the ship at 25% of the wing chord). I always fly left, why fight city hall? To do so, I use right-and-down thrust, left rudder, washin on the left panel and washout on the right panel. Good luck with your Pete!

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