TEXAS WILDCAT

This nifty CL sport/stunt profile model of the innovative but ill-starred early-20s racer is at its best with a .30 to .40 engine turning a 10 x 6 prop. It's easy to fly and has no bad habits.
■Bill Darkow

YOU COULD HEAR IT COMING from 10 miles out. The Texas Wildcat, its slipstream howling through brass tubes in the fuselage-mounted box radiators, gave a terrifying screech as it roared by in a wide-open pylon turn at nearly 200 mph. It's easy to see why the racer was nicknamed "Whistling Bill."

The Texas Wildcat and its sister ship, the Cactus Kitten, were sponsored by flamboyant Texas oilman and aviation enthusiast, C.E.J. Cox and his strong-willed wife, Nellie, in an unsuccessful attempt to bring the prestigious international Gordon Bennett Trophy race to Houston. On April 13, 1920 Nellie, who was already famous for being the first woman in America to have her own personal plane and pilot, ordered the Curtiss Aeroplane Company to build her a Gordon Bennett racer. Two months later, Mr. Cox ordered a second racer.

In an era when most airplanes looked like flying bird cages, the Wildcat and Kitten were all the more notable for being 90-day wonders. With only three months to go before the finished racers had to be shipped to France, the design emphasis was on maximizing speed. At the time, design details for the project were to be kept secret.

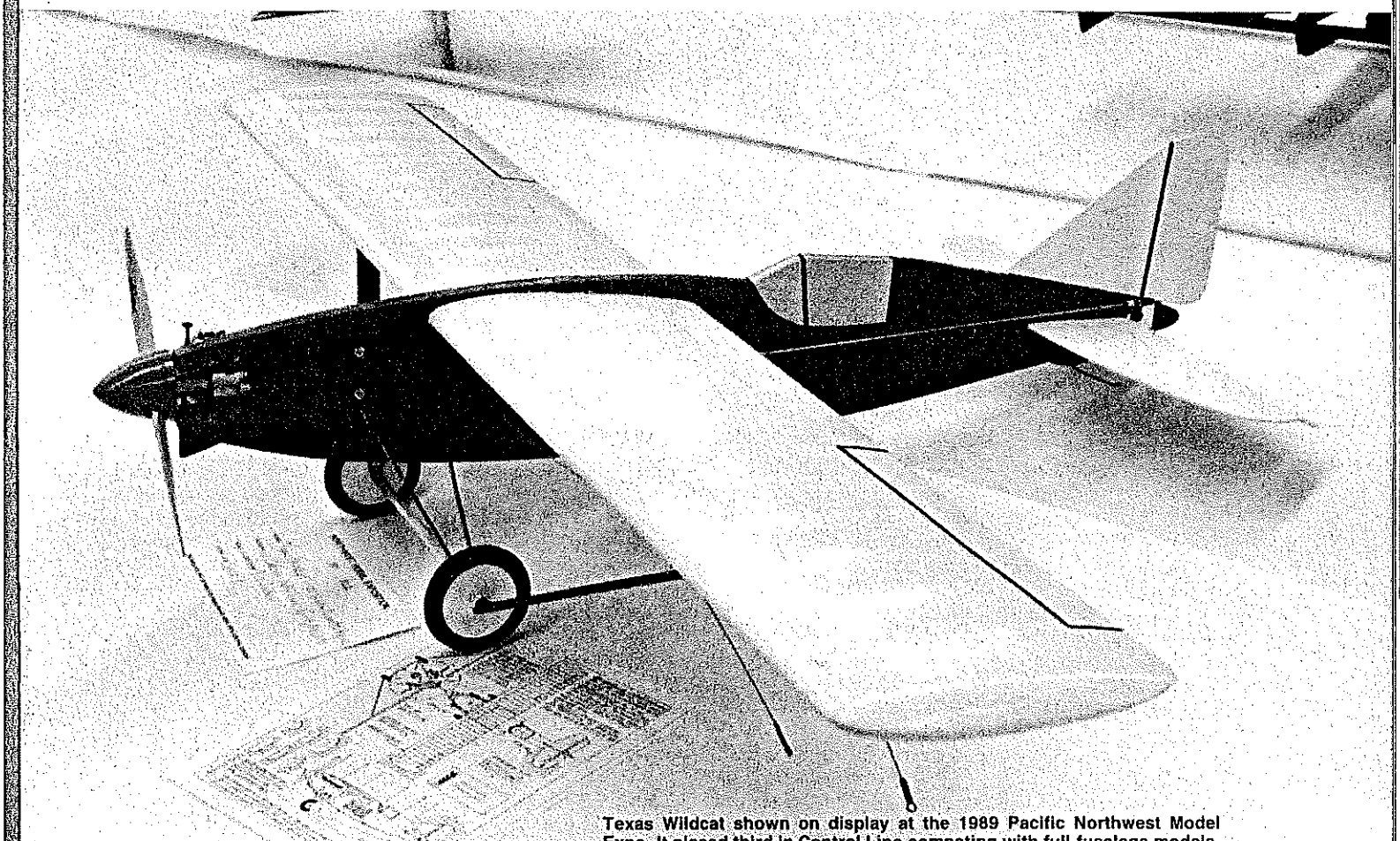
The engine was the new Curtiss 430-hp C-12. The fuselage was planked with stressed-skin veneer, and doped fabric covered the wings. The Wildcat was built with two sets of wings—a 32-ft., high-lift wing for test flying, and a thin, 25-ft. one with double-cambered airfoil for racing. Finally, a rigid landing gear was used—a decision with fateful consequences for Cox's dream.

Both racers could be converted into biplanes. The model presented here uses the racing wing with a thick symmetrical airfoil.

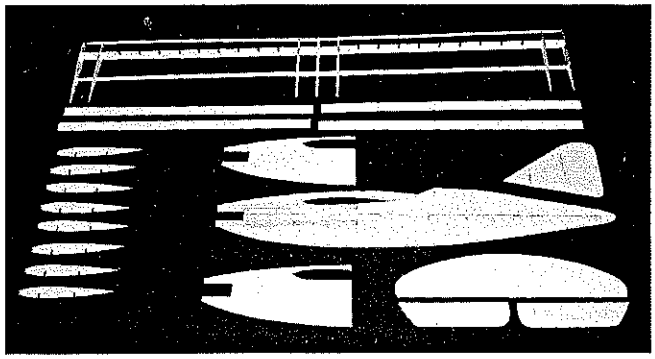
Test pilot Roland Rohlfs first flew Wildcat shortly after it was christened by Nellie. The racer exhibited aileron flutter severe enough to nearly end Rohlf's career, but this was quickly corrected. He completed the test flights with the Wildcat, though he ran out of time for putting the Kitten through its paces.

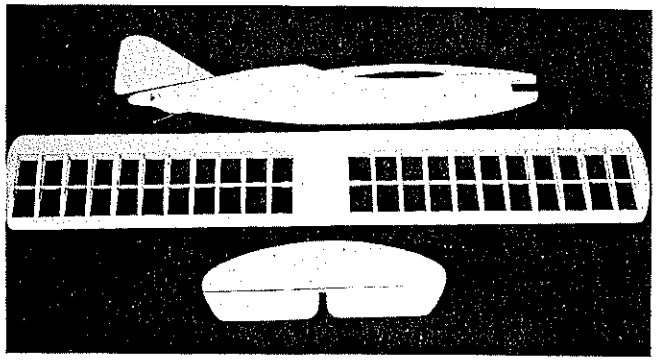
Nellie persuaded her husband to assign a pilot of her own choice to fly in the Gordon Bennett race instead of Rohlfs. Furious at the snub, Rohlfs talked Cox into signing an agreement that reassigned the other pilot to the Kitten. He then clinched matters by taking a one-inch brush and some black paint and quickly slapped "Texas Wildcat" in block letters on both sides of the plane.

Unfortunately the piloting dispute was only a foretaste of the Pandora's box of problems that hounded the Wildcat from that point forward. Organizational problems and flaws in the hastily executed design became distressingly obvious as soon as the planes arrived in France. First, incredibly, the monoplane wings had been

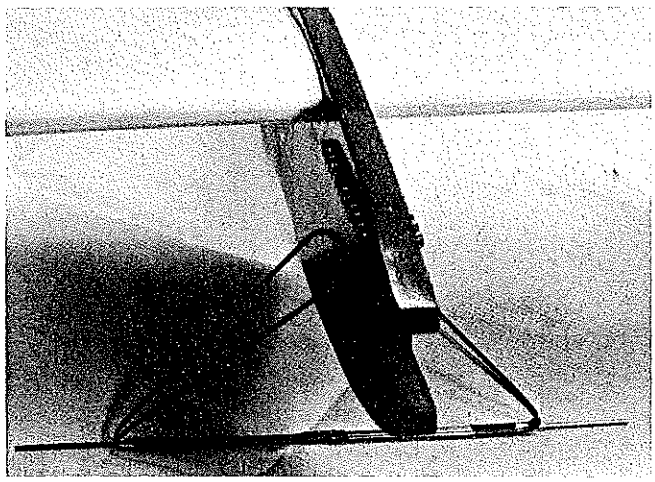


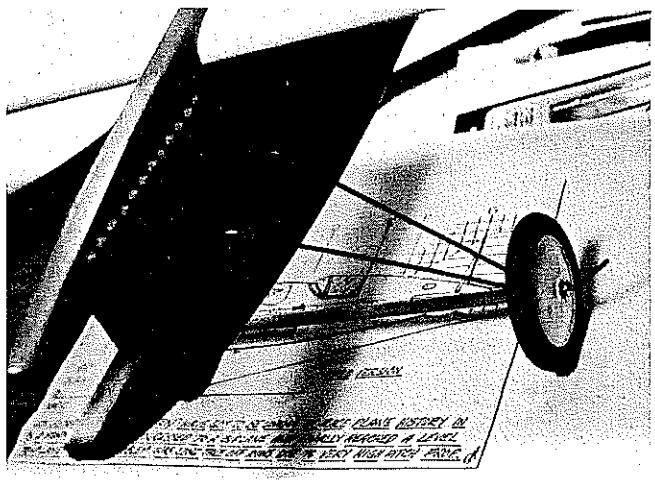
Texas Wildcat shown on display at the 1989 Pacific Northwest Model Expo. It placed third in Control Line competing with full-fuselage models.



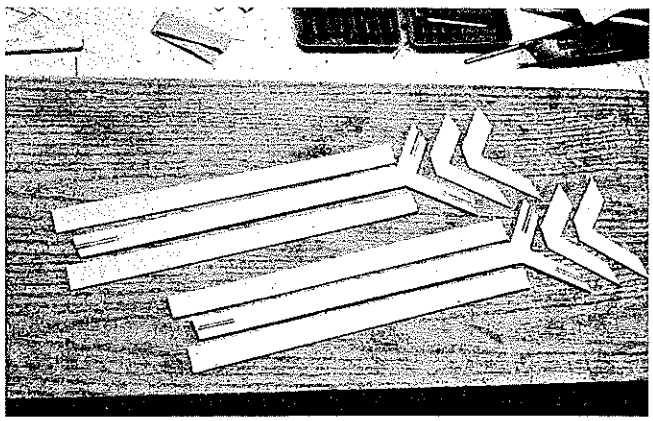


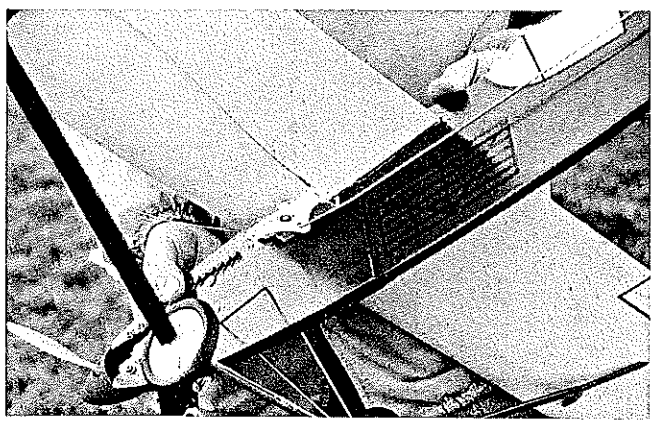
Left: Component parts for the basic airframe are laid out. The fuselage halves are joined and the engine mounts are glued in place. Right: The wing with its sheeted leading edge forming a strong D-spar, the profile fuselage, and the tail section are finished and ready for assembly.





Left: The landing gear installed on the finished fuselage. The gear is formed from two 21-in. lengths of 3/32 wire, and the axle is formed from the same-diameter wire cut to 12 in. Right: This photo shows the split thin-walled aluminum strut fairing covering the axle assembly. Three-inch Williams Brothers wheels are installed with 5/32-O.D. brass tube bearings. Note the protruding axle designed to receive the wing strut.





Left: The wing strut components are shown here with the 5/32 brass plug-in tubes already installed. Right: Details of the control system. The bellcrank mount is made from hard aluminum and is bolted to the fuselage with the nylon bellcrank, pushrod, and lead-out wires already attached. You can also see the wing struts plugged into those protruding axle ends, the dummy exhaust stack, and the simulated radiator.

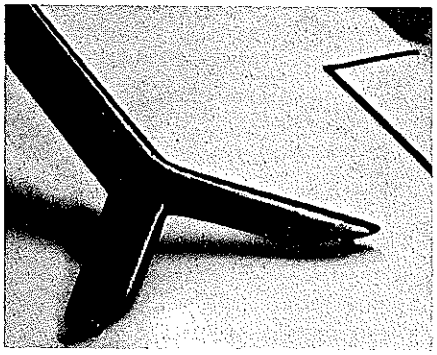
left in America, which meant that the Wildcat had to be assembled in its untested biplane form. Then, when Rohlfs opened the throttle for its first flight, the plane wouldn't move—the extremely high pitched racing prop simply didn't have enough bite. This meant that the Wildcat had to be pushed to start its takeoff run, and the plane covered the whole airstrip and part of a farmer's field before it was airborne. Once aloft, the airplane pitched violently. Rohlfs was barely able to get back to the field and land safely. He pronounced the entire flight "a nightmare."

In desperation, the designers stayed up all night laying out new ribs for the spars. With the workspace and help gallantly provided by the French at the Moraine-Saulnier factory, a new set of biplane wings was completed and fitted in just four days.

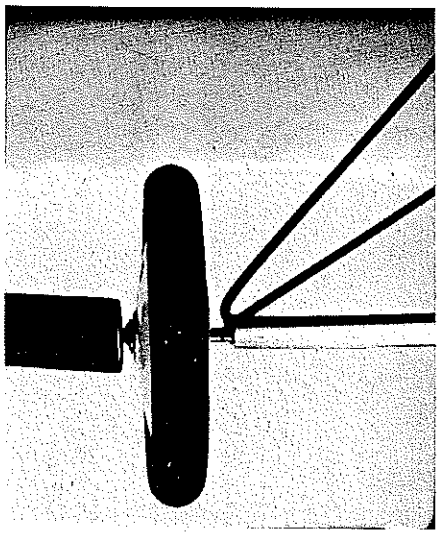
However, the Wildcat had to be at Etampes by 7 a.m. the next day to qualify, and by the time the biplane wings were completed and finished it was already late afternoon. Time was running out. Still smelling of fresh dope, the racer was rolled out, and putting in only enough fuel for the 30-mile flight, Rohlfs took off at dusk. Just as he lifted off, the wheels struck a hidden rut and the plane bounced into the air. Rejoicing in what he described as the plane's "greatly improved flight characteristics," Rohlfs was unaware that the shock had broken the wheel spokes in his rigid landing gear. As he turned on final approach to the field at Etampes, the engine quit. Rohlfs prepared for a dead-stick landing. When the wheels touched, the broken spokes collapsed, the rigid gear dug in, the airplane flipped, and the fuselage broke in half.

Cox's attempt to bring the Gordon Bennett Trophy race to Houston had, quite literally, lost its wheels. Fortunately for the pilot, there was no fire. Rohlf's worst injury was a dislocated shoulder.

The Cactus Kitten, in the meantime, was never uncrated. Shipped back to America, it was converted to a triplane and raced with



Close-up shot showing the Y-strut plugged into the wing. Study the text and plan carefully, as the fitting of these mounts is critical.



Close-up photo showing the details of the wing strut plugged into the axle. This assembly creates a strong, rigid landing gear/wing support assembly that'll withstand hard use.

some success.

Construction

The Wildcat has three distinctive features that improve flight safety and contribute to ease of finishing. The exterior-mounted control system and the landing gear are tied directly into ½ x 2/8 x 12-in. engine mounts. Together with the unique plug-in wing struts, they are added after the model is finished.

Wing. Make a rib pattern from thin metal or plywood. Cut the ribs from three sheets of ⅛ x ½ x 36-in. balsa stock, using the remainder to finish the rudder.

Join the wing spars with four 1/16 x ½ x 6-in. ply doublers. Cut half-depth notches on 2-in. centers in the main spar for the wing ribs. Cut 24-in. leading and trailing edge planking strips from two sheets of 1/16 x 3 x 36-in. balsa. Use the remainder for cap strips and center section planking.

Mark 2-in. spaces on the rear spar and the inside of the trailing edge planking. Assemble the ribs on the spars without gluing. Note the double ribs at the center section and the triple-laminated ribs at the strut attachment points.

Pin the entire lower half of the trailing

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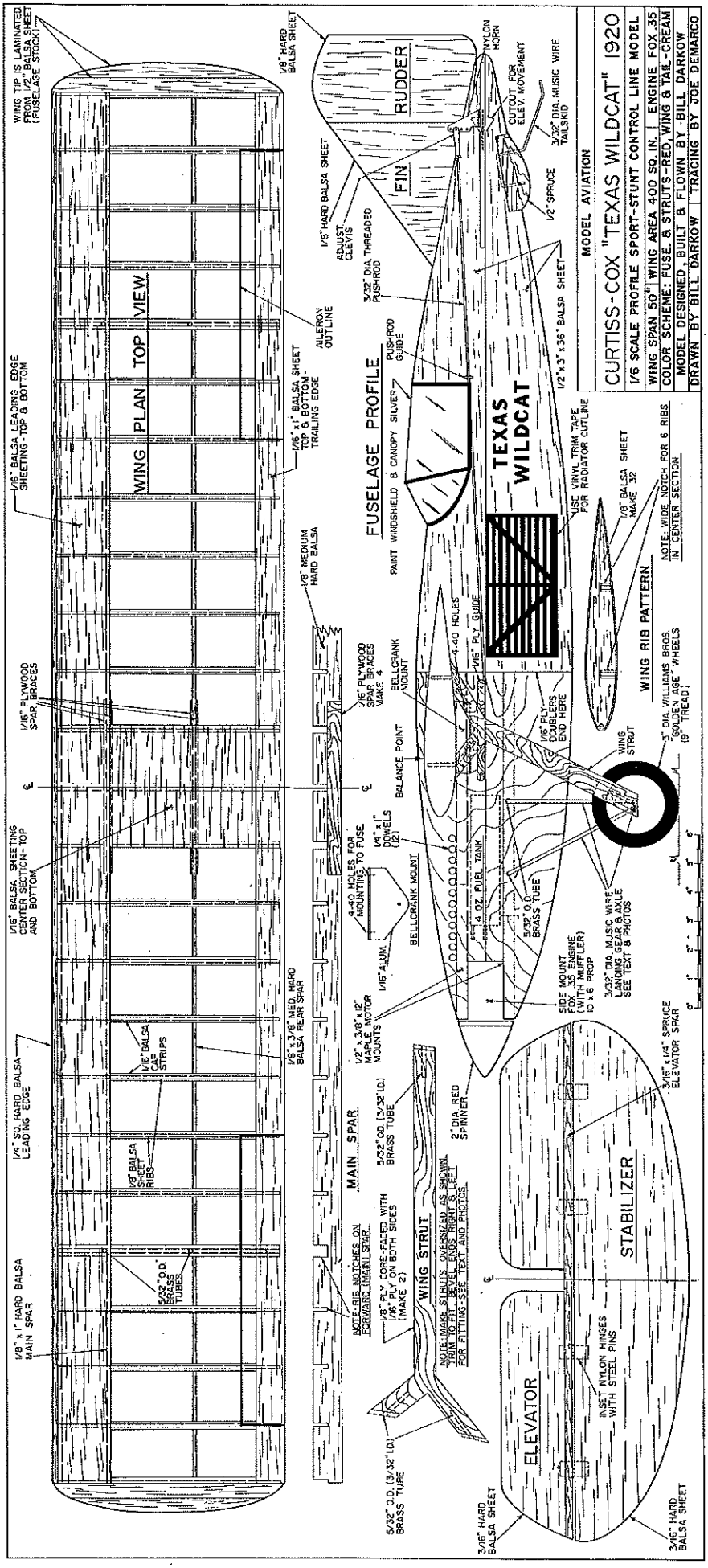

Full-Size Plans Available . . . See Page 196

CL Racing/Ballard

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model built to these rules should be able to be flown and pitted by intermediate-level participants. The rules appear to work successfully on the "drizzle circuit" and could be used by Racing enthusiasts in other areas of the country.

Basically the rules follow the AMA Slow Rat (Event 312) rules. Deviations from the AMA rules are in the areas of engine requirements, fuel tank design, pull-test, and control line specification.

To quote from the Northwest rules with respect to the engine: ". . . and shall operate on suction feed. The engine shall be of the plain-bearing type, with single bypass intake port. No variable or in-flight adjusting carburetors are allowed as used in AMA Slow Rat Race; however, any other modification to the intake is permissible. There is also no restriction regarding engine rework, except that all major components shall be produced by the original manufacturer and that no non-factory material may be added to the engine."

With respect to the fuel tank: ". . . and located on the outboard side of the fuselage. The tank may not be designed so as to cowl the engine."

Pull test is 35 lb.

Lines are to be of stranded construction.

Propellers for Scale Racing: I have been asked by several Racers for the typical starting point for a Scale Race prop. I generally use the Kelly-Wizard III or a McCollum/Garner-type Scale Racing propeller. After removing the flashing, the Kelly prop will generally require thinning.

The pitch distribution of both props should be as follows (as measured with a Prather prop gauge):

Station I—3½ to 3¾ pitch.
Station II—3¾ to 4 pitch.
Station III—4 to 4¼ pitch.
Station V—4½ pitch.
Station VI—4¾ pitch.
Station VII—5 pitch.
Station VIII—5⅛ pitch.

After the props are pitched, I thin the upper surface of the blade so that the tips are around .025-.030 thick. I then carefully balance the prop using a dynamic balancer.

The general length of the prop will be 6½ in; however, I have found some engines that require a 6⅜-in. prop, and some with a blade as short as 6¼ in. You will have to try several propeller modifications both on the test stand and in flight on your plane/engine combination to achieve maximum speeds.

As always, I solicit your comments and photos.

Texas Wildcat/Darkow

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edge to a flat surface, being careful to keep it straight. Glue the rear of the wing ribs to the lower half of the trailing edge, leaving ⅛ in. of clearance at the back. Glue the upper half of the trailing edge to the rear of the lower half and the wing ribs.

Remove the wing from the building board. Mark the wing rib locations at 2-in. intervals on the ¼-in. leading edge, then glue the ribs in place. Rubberbands may be used to hold everything together.

After checking alignment carefully, glue the ribs to the spars. Add the leading edge planking to complete the D-tube spar. The wing will become quite rigid. Plank the center section, install the cap strips, and glue and shape the tips. Set the wing aside for the time being without drilling holes for the strut fittings.

Fuselage. Cut the upper and lower halves to shape from two pieces of ½ x 3 x 36-in. medium-soft balsa. Join them at the centerline. Make cutouts for the wing and between the engine mounts. Epoxy the engine mounts in place.

Cut 1/16 ply nose doublers to shape, and glue them to the fuselage. Drill landing gear mount holes through the lower engine mount as indicated on the plan. Glue 5/32-O.D. brass tubes in the holes flush with the fuselage sides. Drill ⅛-in. holes for the engine and bellcrank mounts. For dummy exhausts, drill 12¼-in. holes on ⅜-in. centers as shown on the plan, then glue 1-in. lengths of ¼-in. doweling in the holes.

Tail assembly. Cut the rudder, stabilizer, and elevator to shape. Join the elevator halves with a strip of 3/16 x ¼-in. spruce. Join the elevator and stabilizer with nylon hinges. Cut out the stabilizer slot, and glue the tail assembly to the fuselage, being careful to maintain correct alignment. Mount a 3/32 wire tail skid in a spruce block, and glue this unit into the notch at the rear of the fu-

selage.

Use your favorite material to cover the wing, which may be done either before or after epoxying it to the fuselage. Again, be sure to maintain correct alignment when mounting the wing. The model is now ready to be finish sanded, painted, and trimmed.

Landing gear. Cut two 21-in. lengths of 3/32 wire. Center the wire pieces in the brass tube fuselage mounts, then bend them down by hand until they are parallel and flush with the fuselage sides. Bend them back out until they are positioned at approximately 45° to the fuselage. Measure 6 in. from the fuselage, then bend each wire back under the fuselage and at right angles to it. You should have two triangles swinging from the mounts, with the tips of the wires just touching under the fuselage.

Cut a 12-in. piece of 3/32 wire for the axle. Center it between the gear legs, then bind and solder securely. For a finished look, split an 8½-in. piece of streamlined, thin-walled aluminum strut material, and epoxy it to the axle section.

Cut two 1-in. lengths of 5/32 brass tubing, and slide them on the axle for wheel bearings. Carefully mount 3-in. Williams Brothers Golden Age wheels. About 1 in. of wire should remain on each axle for wing strut attachment. Bend it back and up until it points directly at the wing strut plug points.

Wing struts. These must be custom fitted to the distance between the axle and the

plug-in points on the wing. Cut the Y-struts from ⅛-in. ply, leaving them a little long for trimming to fit. Notch as shown on the plan, and glue the 1-in.-long 5/32 brass tubes in place.

Glue 1/16 ply facings to the struts, and trim to fit. Note that there are both a right and a left bevel at the attachment points. Bend four L-shaped attachment fittings from 5/32 wire. With the struts plugged into the axle, fit the four wire pieces to the Y-ends, and mark the exact attachment points on the triple-laminated wing ribs. The mounting points should be approximately 3 in. apart, with the front point 2 in. from the leading edge. Drill the strut mounting holes, and glue in 5/32 brass tubes. Finish sand, paint, and plug in the struts.

Control system. Make a bellcrank mount from hard aluminum as shown on the plan. Bolt it, with nylon bellcrank, pushrod, and lead-out wires attached, to the fuselage. Use an adjustable threaded clevis to fasten the pushrod to the elevator control horn, run lead-out wires through the line guide on the strut, and form loops to attach the control lines.

Engine/muffler/fuel system. I used a new 1954/55 vintage .35 Fox. Since the engine lacks muffler mounts, I clamped on a cut-down Du-Bro Muff-l-Aire. Using a 10 x 6 prop, the Fox provides plenty of power, while the muffler eliminates some of the noise, although not as much as I would like. Clamp a 4-oz. pressurized constant-flow fuel tank to the fuselage as indicated on the plan, and you're ready to go.

Flying. Before that first takeoff, be sure the flying surfaces are warp-free and properly aligned. Balance the model at the center-of-gravity indicated on the plan. On the prototype, I accomplished this by securing about ½ oz. of lead on top of the lower engine mount with the mounting bolts. You'll find the Wildcat a smooth, nimble flier and a graceful Stunter. The model has no bad habits to speak of—unless, of course, you happen to rediscover what Roland Rohlfs learned about the consequences of that rigid landing gear!

Pot-O-Gold/Neitzke

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a show of daring. As the aircraft worked its way into the stadium for landing, a brisk wind came up. With about four feet of altitude as it reached center field, the Buccaneer's tired old four-stroke engine suddenly stopped. The crowd gasped, then cheered when the Buccaneer simply did a vertical touchdown with no roll-out. The excited onlookers thought the touchdown was a planned maneuver, but of course the other pilots on the field knew better. Anyone who's ever doubted "the luck of the Irish" would have to admit the old chestnut just might have a kernel of truth!

RC Aircraft Static awards began with a first place to Chris Langton of Mishawaka, IN for his Bell Jet Ranger. Chris is a member of the local Michiana RC Choppers Club. In the Sport class, Al Beek of Grand Rapids, MI came out first with his version of the Aeromaster. A superb Corsair, created by Phil Von Ville of Delaware, OH, took first place in Military Scale. Phil spent three and a half years building this one. The top laurels in Civilian Scale went to show manager Jack Allinger with a Cap 21. In Giant Scale and Best of Show a very realistic P-38 Putt Putt Maru, scratch-built by Richard Waugh of Portage, IN, received the honors.

Finishing second and third in Civilian Scale were a pair of highly unusual models. A mother-and-daughter team built quarter-scale sister ships of the famous Bumble Bee and Sky Baby. Kathy and Tina Mahar hail from Osceola, IN.

AMA was notably present at the Pot-O-Gold show again this year. Jim Sears, our