

If you prefer speed control-line flying, realistic scale models, and solo performances, here's your answer!

## LET'S HAVE PROTO SPEED EVENTS

by Harold Stevenson

This P-40 Warhawk model meets all the suggested proto-speed requirements listed in this article. Powerful, speedy & sleek, it offers you new thrills in speed control-line flying!

● The static yowl of a Class C speedster clipping off speeds in excess of 160 m.p.h. has caused many a faint heart to quaver. By and large, few modellers—even those interested in speed flying—are out to break the sound barrier with a model. Speed flying is fun—but many modellers prefer to keep their speed within limits.

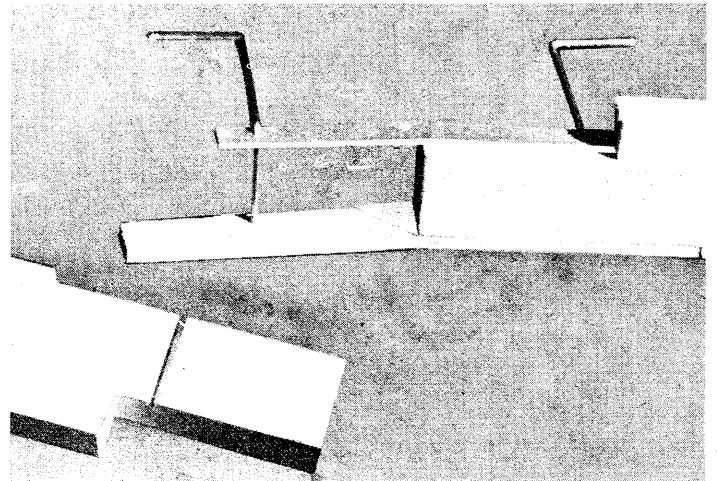
Some enthusiasts have found the answer by going in for team racing. Since prototype racing models are required, the top speeds attainable are automatically reduced. But what about the fellow who wants to fly high-powered speed models, doesn't feel up to "super-sonic" speeds, and dislikes flying in a team race? The fellow who wants to compete on the basis of speed alone, doesn't like having his toes stepped on by three or four other modellers jockeying for position in the circle, and likes more realism in his models than team racing rules permit?

That's where proto speed flying comes in! It takes real skill to combine speed-flying knowledge with the limitations of scale models. Too, you can fly Class C planes and yet keep down to reasonable speed ranges.

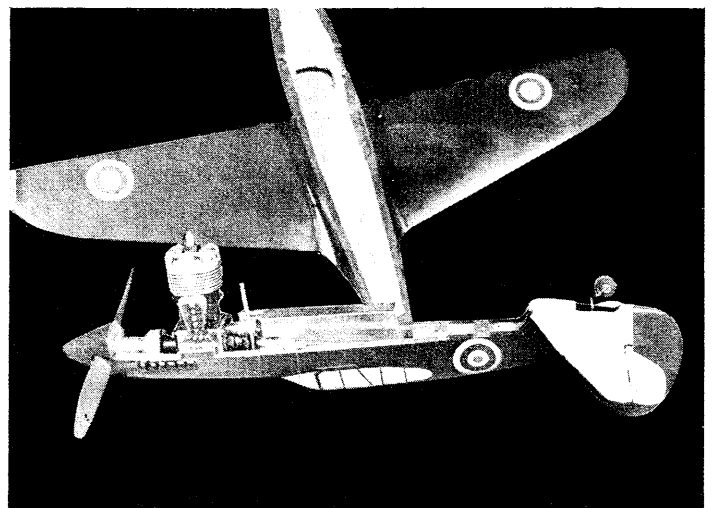
The idea isn't new. Several W.A.M. clubs on the West Coast have been flying protos for a number of years, with great success. And, even as this is being written, members of the Academy of Model Aeronautics are voting on the question of whether or not to add a proto speed event to the rules' book, for national competitive flying. We'll soon know the results.

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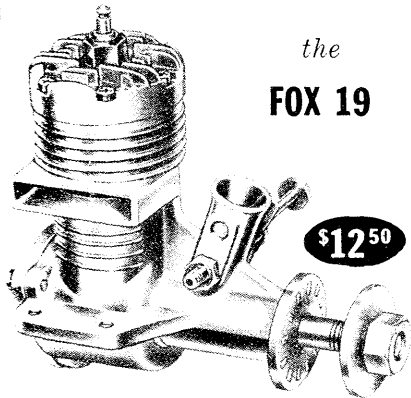
Above, the landing gear installation. Note the 1/16" aluminum front spar and the 1/8" plywood rear spar, joined by one of the hard balsa front wing panels. Note how wing panels are slotted for the landing gear wire.



The photo above gives you a close-up view of the top of the fuselage, including engine installation, front bicycle-spoke hold-down, bellcrank mounting, and under-surface of the stab. It's a simplified scale model.

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# PROTO SPEED

(Continued from Page 13)

While we don't know what the final A.M.A. competition rules will be—if any—we do feel that you should try proto speed now for sport flying. This will enable you to see for yourself the advantages, and get a head start if the event is made official. Here are our suggested rules:

- (a) Models must be exact scale copies of full-scale planes.
- (b) The model must have a fixed gear, unless the prototype drops its gear in flight.
- (c) A minimum wingspan of 20" is required—no limit to maximum span.
- (d) Any scale may be used, provided the span is within the rules.
- (e) The engine displacement must be between .49 cubic inches and .65 cubic inches, inclusive.
- (f) All A.M.A. rules pertaining to line diameters, line lengths, pull tests, and number of laps shall apply.
- (g) The engine must be fully cowled, with the exception of the piston cooling-fin area, which may be exposed if desired. A non-scale propeller may be used, and the wheels may vary slightly from true scale.

(h) Scale and Appearance Bonus: Models will be judged for appearance, fidelity to scale, and workmanship. Bonus credits will be given as follows:

- True scale model; fully cowled engine; superior finish, markings and detail ..... 6 m.p.h.
- True scale model; fully cowled engine; average finish, markings and detail ..... 4 m.p.h.
- True scale model; fully cowled engine ..... 2 m.p.h.
- True scale model; semi-cowled engine; superior finish, markings and detail ..... 2 m.p.h.

The foregoing rules are not presented as the ultimate for running proto speed—they are only presented as a starting point.

It should be noted, though, that if the builder wishes to cowl his engine fully, the size of the airplane will go up. A semi-cowled engine allows a much smaller plane. Thus the bonus speeds are given to the builder who spends extra time and workmanship and comes out with a larger but more realistic ship. With more and more competition, a better bonus can be worked out—one which will tend to equalize the speeds and make for more exciting contests.

### BUILDING A PROTO SPEED JOB:

Included with this article is a set of plans for a P-40 proto speed job which fits in with our proposed rules. The P-40 was one of the most famous of our fighter planes and attained an almost legendary reputation early in World War II. It has good clean lines—a must in a speed ship.

Anyone who has built a speed, team racing, or flying scale control-liner will have no trouble building our P-40. The plans are half-size for the most part, so doubling the dimensions with a pair

of dividers will solve the enlarging problem quite easily.

**TOP FUSELAGE HALF:** Start construction by laying out the engine mount pattern carefully on a piece of 1/8" hard aluminum. Cut it out on a band saw and then drill and countersink all the holes for the wood screws. Next, drill and tap the motor-bolt holes.

Now, begin shaping the block for the top of the fuselage, cutting it in accordance with the side-view drawing. Make sure you cut out the front lower edge to allow for flush mounting of the motor mount assembly. Then fasten the mount in place. Note the engine mount doublers, made from 1/8" aluminum, which are tapped to take the engine bolts.

Hollow out just enough of the top fuselage half to allow clearance for the engine crankcase. Then carve the outside contours to the finished shape, using the cross-sections shown. Finally, hollow the block to the wall thickness indicated by the broken line on the plan sideview.

Remove the engine mount and fuel-proof the inner wall and the edges. Then, replace the mount, making sure all wood screws are securely tightened. Next, make and install the fuel tank, front former, front and rear hold-downs, and bellcrank.

**TAIL ASSEMBLY:** The next step is building and installing the tail assembly, which is done in the conventional manner. Use cement liberally in fastening the stabilizer and rudder to the top half of the fuselage.

Form the pushrod of 1/16" music wire and fasten it to the control horn. Install the elevator with fabric hinges, after first sliding the pushrod into the top half from the tail forward. Slide the pushrod guide on the rod and fasten it to the engine-mount cross-piece with a flat-head machine bolt. Hook up the bell-crank. Make sure you have smooth easy-control movement! That finishes the top half.

**WING:** Start on the wing by cutting out the four wing panels from 3/4" sheet balsa. Next, cut out the two wing spars, as shown. Then make the first two bends on the landing gear wire, slide the spars on the gear wire, and complete making the other bends.

Slide the two front wing panels between the wing spars and cement firmly. Make sure the bevel is correct where the wing panels join, or an incorrect dihedral will result.

Now, butt-join the two rear wing panels, and carve a groove to clear the main spar. Cement the two joined panels to the rear of the front panels. Use cement liberally. Allow to dry thoroughly, then carve to the airfoil shape shown on plans. Add the wheel fairings, dummy machine guns and lead-out guide.

**BOTTOM FUSELAGE HALF:** Carve the bottom half of the fuselage from  
(Please turn to Page 28)

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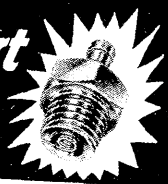
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## PROTO SPEED

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hard balsa, in the conventional manner. Then, install the wing, using cement liberally. Fill in the leading edge in front of the aluminum spar. Then add the air scoop details, drill for front hold-down, and install the rear hold-down. Cut the slot for the aligning key and add wing fillets.

**FINISHING:** Sand the whole ship, add plastic balsa fillets where needed, and finish with a good fuel-proof wood filler and dope. The under surfaces are painted light blue, the upper olive drab. The cockpit areas are painted white. Add decals for any of the major allied powers in W.W. 2.

**FLYING:** Fly your P-40 off a very smooth field pavement, if available. You can expect speeds above 120 m.p.h. with McCoy 49. By experimenting with various props and fuel, 130 m.p.h. can be reached.

### BILL OF MATERIALS

(Balsa unless otherwise specified)

- 1—3/4" x 2" x 36" (hard).....Front wing panels
- 1—3/4" x 3" x 36" (medium).....Rear wing panels
- 1—2 1/8" x 2 5/8" x 18" (pine, basswood)....Top half
- 1—2" x 3" x 36" (hard).....Bottom half
- 1—1/4" x 3" x 36" (medium).....Tail assembly
- 1—3/16" x 7/32" x 8" (maple)....Stabilizer spar

From 1 1/2" spinner; two Veco 1 1/2" wheels; 5/8" wheel; 1/8" hard aluminum for engine mounts; 1/16" half-hard aluminum for bellcrank, front spar, hold-down strap; 36" length 3/32" music wire for landing gear; 36" length 1/16" music wire for pushrod, tail wheel strut; fin can stock; 3/32" aluminum tubing; bicycle spoke; 1/8" I.D. and 1/16" I.D. brass tubing; assortment of 1/2" and 3/4" flat-head and round-head wood screws; fuel-proof wood-filler and dope; decals; 8"/13" prop; McCoy .49 engine or equivalent.

## MARTIAN SAUCER

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Add the floral pattern, the center lines, and the "sugar" slots with a soft pencil—going over the former with a colored ball-point pen or pencil.

Now cut out the combined "cup/saucer" portion (B) and the "saucer base" (C) from 3/32" medium sheet. Sand these parts so that they taper in thickness to 1/16" at the rear—then add the decoration as before, but on both sides of course. Cut the two "sugar lumps" (D) from 1/16" medium sheet (note grain)—and the two nose pieces (E) and the Jetex "50" motor mount (F) from 1/16" plywood.

Begin the assembly by smearing cement along the lower edge of the "spoon" (B). Then, hold the "spoon" in position on the top of the "saucer" (A) with pins pushed through from underneath at 3/4" intervals. When dry, remove the pins and cement the "saucer base" (C) in position underneath. Now install the "sugar pieces" (D)—checking from the front to see that all the parts line up correctly with each other.

Cement the two nose pieces (E) to the "spoon handle" and hold them in place with a couple of spring clothespins until dry. Drill or pierce two holes in the Jetex mount (F), cement it in

place, and screw on the mounting-clip.

Complete with unloaded motor, the model's weight should be around the one ounce mark. Push a pin into the "cup handle" as shown, and add clay to the extreme front or rear until your model balances level both fore and aft.

**FLYING:** Choose a calm day and test-glide over long grass with the Jetex motor unloaded, holding the model at the balance point and launching it into the wind from shoulder height. Aim at getting a flat straight glide—alter the nose weight, if necessary, to achieve this. A steep turn in either direction may be corrected by adding a paper clip to the edge of the disc on the outside of the turn.

When the "saucer" is trimmed to a shallow, straight glide, load up the little rocket motor, ignite the fuse, wait 2 to 3 seconds for the thrust to develop, and then launch the model smoothly, straight ahead. A steady climb followed by a slow stable glide should result. Tilting the disc usually results in a circling flight in the direction of the bank, followed by a straight glide. Minor trim adjustments may be made by twisting the rear edges of the disc. Happy space-traveling and watch out that the little men in white coats don't catch up with you!

### BILL OF MATERIALS

(Balsa unless otherwise specified)

- 1—1 1/16" x 3" x 30" (medium).....Saucer disc and sugar
- 1—3 32" x 3" x 18" (medium).....Cup, spoon, saucer base
- 1—1 16" x 3" x 3" (plywood).....Nose piece and mount

Jetex "50" motor, clip, 2 woodscrews, cement, fine sandpaper, pins, etc.

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