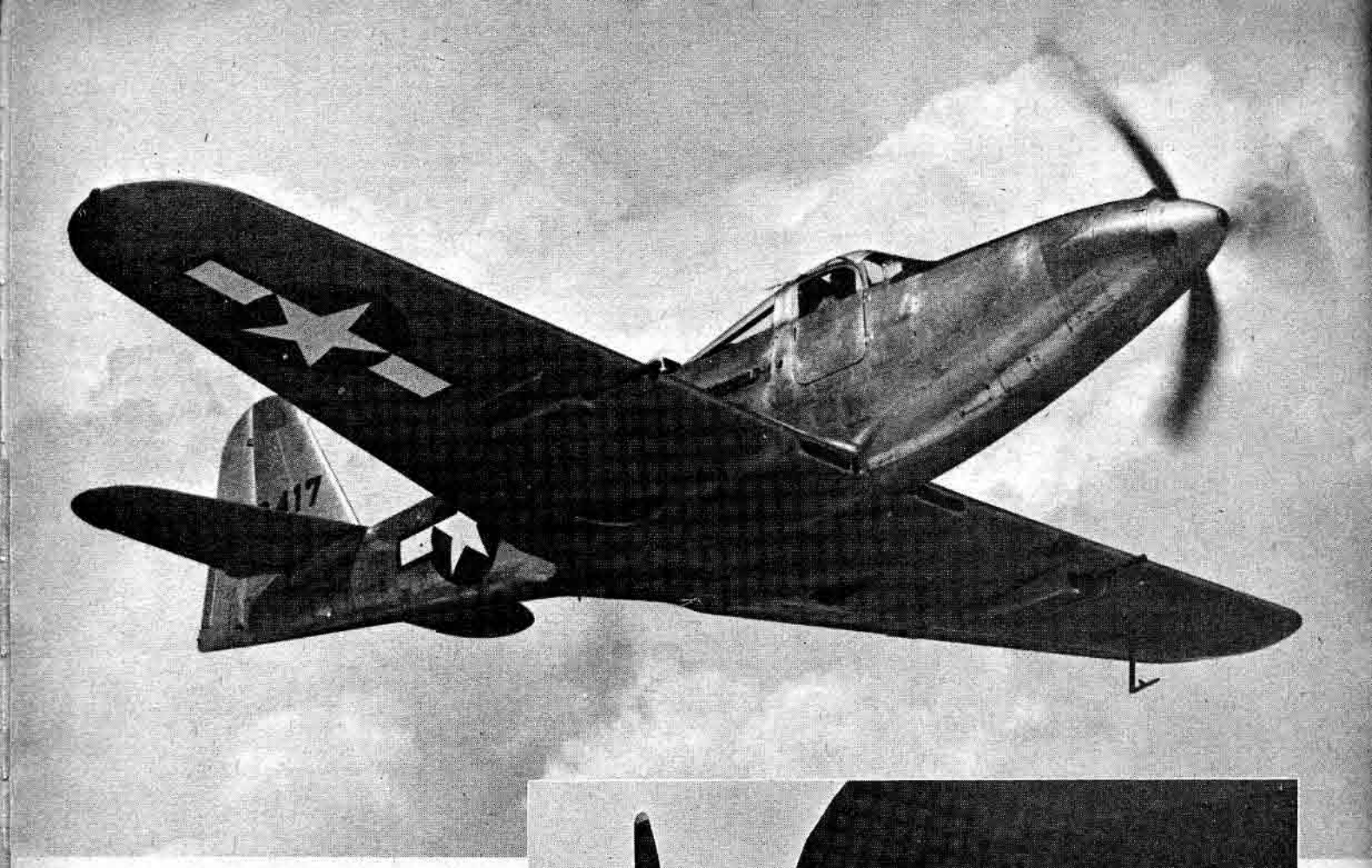


BELL P-63 Kingcobra or Clipped Wing Racer

■ The never ending quest for exact scale control line models which can attain high speeds or complete a competition stunt pattern led to the devlopment of this unusual speedster.

Major Charles Tucker and General Petroleum Corporation (an affiliate of Socony-Vacuum), realizing the possibilities of this ultra streamline airplane, radically modified a standard World War Two Bell P-63 "Kingcobra" fighter which later qualified for the Thompson Trophy Race at 392 miles per hour. The top speed of the plane was estimated at close to 600 mph; she was hailed as an engineering marvel. These speeds were mainly possible by removing eight feet from each wing thereby reducing the 38 foot fighter span to a mere 22 feet! The horizontal tail surfaces were reduced in similar fashion. These modifications, coupled with the gleaming white finish with black and red trim, makes the "Flying Red Horse" one of the neatest racers to ever round a pylon. Unusual bad luck prevented the plane from winning the Thompson Trophy Race, yet the possibilities as a speed scale model are most inviting.

It will be noticed that the plans include additional information which will enable the reader to complete the World War Two P-63 "Kingcobra," designed by the Bell Aircraft Corp., as part of our ¾" to the foot scale World War Two series. The Bell P-63 was a development of the Bell P-39 "Airacobra" and attained speeds up to 437 miles per hour. During the years between 1941 and 1945 over 4,000 Bell "Kingcobra" aircraft were constructed, many of which were used by Russia.

The P-63A was powered with an Allison 12 cylinder "V" type engine of 1325 h.p. This was located within the fuselage directly behind the pilot with the propeller shaft running under the pilot's seat and between his legs. This unorthodox

You paid your money, now take your choice... make a beautiful WW II control line scale or fast Thompson racer... design by Walt Musciano

location provided space for a 37mm cannon in the nose firing through the hollow propeller shaft. In addition to the cannon four .50 calibre machine guns were fitted, two in the nose and two in the wing. Some models had 20mm cannon in the wings. Gross weight was 8442 lbs., service ceiling was 35,000 ft.

This model of the "Flying Red Horse" is the second designed by the author. The first was constructed several years ago and attained speeds just over 100 miles per hour when powered by a Dooling .29 engine. This craft was quite heavy and it was fitted with a two line control system.

The second model described here is a considerable refinement over the first craft. Construction is light, yet strong, and the airfoil has been modified. A Stanzel Mono-line Speedmaster control system is installed which eliminates considerable resistance. When powered by a well broken-in McCoy Redhead .29 this craft will consistently surpass the one hundred mile per hour mark. Larger engines can be installed for even higher speeds. A .35 or .49 engine can be installed to satisfy those builders that are interested in even higher speeds.

The scale sport enthusiasts will find that any engine from a .19 to .23 will produce some very happy flying for the "Flying Red Horse." Those who desire to construct the World War Two Bell P-63 "Kingcobra" can install any engine from .23 to .35 cu. in. displacement.

Our plans were developed from drawings supplied by the Bell Aircraft Corporation and the scale of our model is ¾" equals 1 ft. We wish to express our sincere appreciation to Don M. Trantor of Bell for his cooperation which made this article possible.

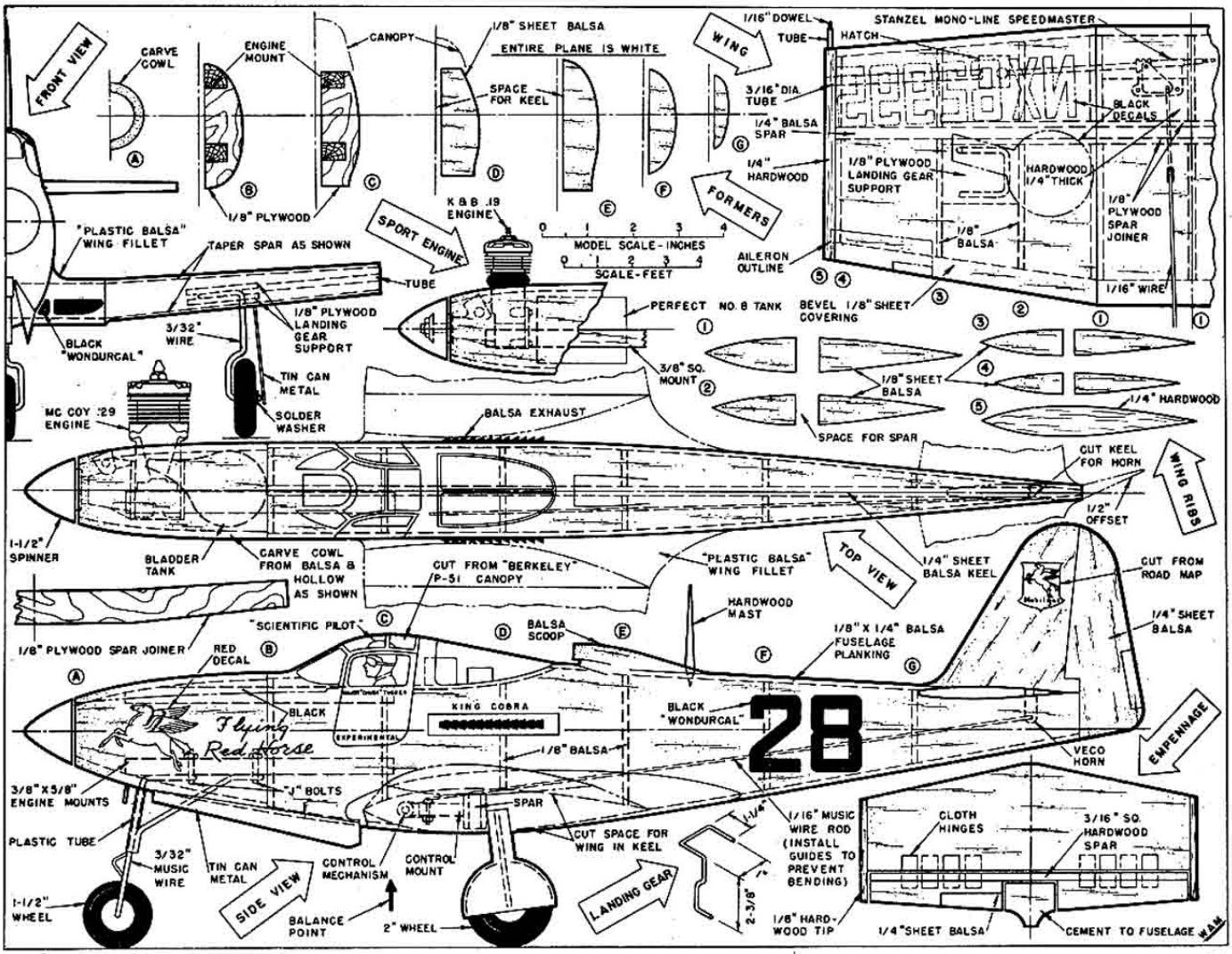
Construction is identical for the P-63 and "Flying Red Horse." It is recommended that construction begin with the wing. Cut the hard balsa spar to shape and cement the plywood joiners to both sides using clamps to hold these in place. Cut the wing ribs and firmly cement them to the spar. When this is dry the bottom of the wing can be covered with ⅛" sheet balsa. It will be necessary to butt cement standard 3" widths of sheet balsa to form the necessary chord of the wing. Cut the lower covering to outline shape and cement this to the underside of the wing structure using plenty of cement and straightpins. The wing must be covered in three sections.

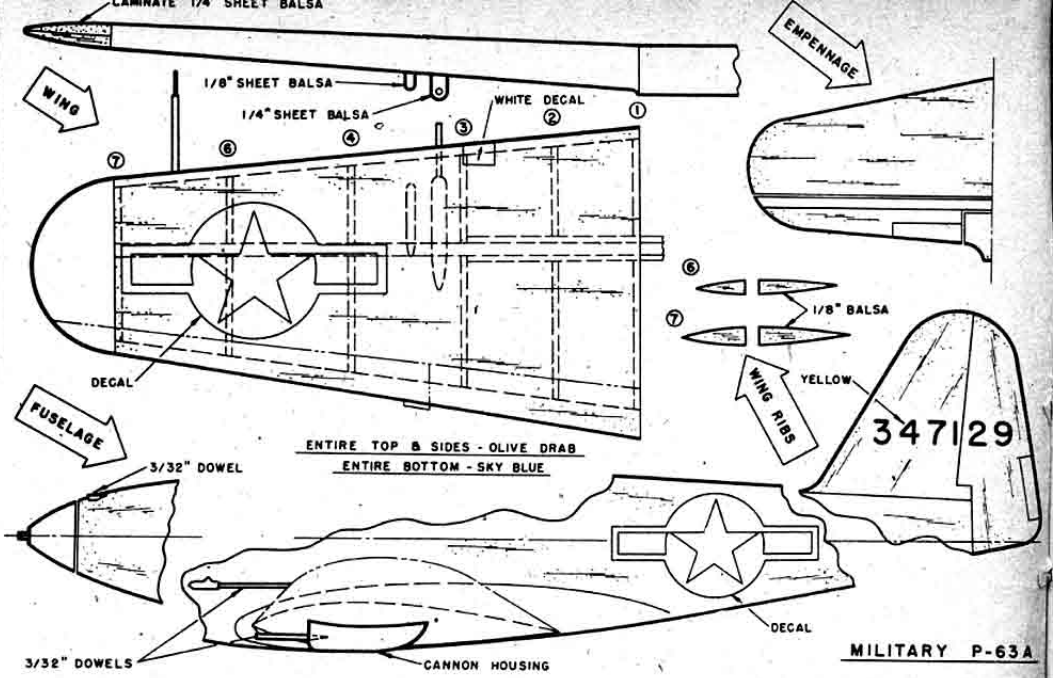
Each main landing gear strut should be bent to shape and securely sandwiched between the two plywood supports with strong thread and plenty of cement. Carefully make a hole in the lower covering in the place where the strut emerges from the wing. Slip the strut through this hole from the top and firmly cement the plywood supports to the spar, rib and lower covering. Apply several coats of cement to this installation.

Now a Mono-Line Speedmaster Class "B" control mechanism is installed in the wing. This should be done carefully; it must be firmly bolted to the hardwood support which, in turn, is securely cemented to the wing structure. The wire control rod must be installed before the wing top covering is added. Allow an extra inch on the control rod in order to insure adequate length when the rear is attached to the horn. Add the tube wire guide now.

Bevel the leading and trailing edges of the lower covering to the same angle as the rib upper camber. Sand this smooth and cover the top of the wing with ⅛" sheet balsa using plenty of cement. Cut a door into the bottom covering for access to the Monoline attachment.

When the wing is thoroughly dry it should be well sandpapered. Cut the hard balsa keel to shape and firmly attach the engine mounts. Cement the keel to the wing. Cut the bulkheads and formers to shape and cement them to the keel and/or wing.





BELL P-63 "Kingcobra" or CLIPPED WING RACER

With differences illustrated above applied to preceding plan you have a Bell P-63. Full size drawings on Group Plan #159 from Hobby Helpers, 770 Hunts Point Ave., New York 59, N.Y. ($1.25). Photo shows Thompson racer.

The elevator and stabilizer are cut to shape and trimmed to a streamline section. Firmly install the control horn to the elevator and then hinge the elevator to the stabilizer. Cement the stabilizer in place on the keel.

A pancake engine installation is almost mandatory on this model unless an upright engine is preferred. An inverted engine is out of the question because of the nose wheel. The engine mounts must be very hard and securely installed as previously noted. The location of the mounts is governed by the engine that is used but they must extend through bulkheads "B" and "C" as shown.

Connect the control rod to the control horn as on the plans. Remove the excess control rod length.

The fuselage should be planked with 1/8" x 1/4" medium hard balsa strips and be certain to use plenty of cement. Bevel and taper the planking strips to insure a neat and strong installation. Fill any cracks with Plastic Balsa and sand the entire fuselage smooth when dry.

Cut the fin and rudder to shape and sand smooth. Cement these in place at this time. Note the rudder offset. This is recommended only for the sport flier.

The nose wheel is attached to the lower engine mount. This installation must be very strong.

The balsa cowl is made from two blocks joined at the vertical center line. Trace and carve the side view to shape followed by the top view of the cowl. Carve to the exterior shape and, after sanding, separate the blocks along the centerline. The cowl interior is now hollowed as the plans illustrate. It will be necessary to trim the engine mounts slightly in order to clear the cowl. It should be mentioned here that the cowl is a very close fit around the engine and mounts and therefore considerable care must be taken during this work. Install the engine now in order to determine the location of holes for engine cylinder, exhaust, air intake, etc. Clearance around these openings should be kept to a minimum, about 1/16". Solder the engine mounting nuts to a brass plate which should be attached to the mount. Remove the engine and cement the left half of the cowl firmly to the bulkhead and spot cement the right half of the cowl in place. Form the wing fillets from several applications of Plastic Balsa.

In order to obtain superior strength the "Flying Red Horse" speed version should be covered with silk over the entire wood surface of the model. This will also aid in producing a fine finish. Clear dope should be the adhesive and the model should be covered in large patches, overlapping where two pieces meet. Before covering at least two coats of clear dope must be applied to seal some of the grain and provide a foundation for the dope being used as the adhesive. When the model is completely covered and thoroughly dry give it three coats of wood sealer. It then receives a thorough sanding. Care must be taken to prevent the sandpaper from cutting the silk. Continue the application of balsa filler with sandings until the finish is smooth as glass. Sport version need not be covered with silk.

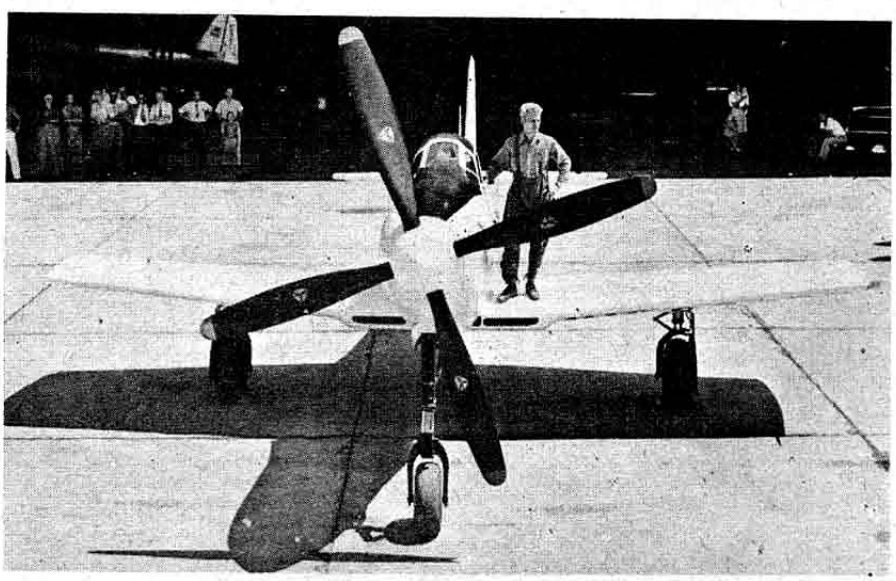
Carefully cut the engine hatch with a sharp razor and finish the cowl interior to prevent fuel from seeping into the wood.

The cockpit interior should be colored apple green and miscellaneous details added if desired. The plastic canopy can be adapted from one of the many commercial canopies available at most hobby shops. Trim the canopy with scissors to make it fit the fuselage, then cement it securely in place.

Paint the entire model after protecting the canopy with masking tape. Colors are noted on the plans. Fuel proof dope is recommended such as Aero Gloss or Testors Butyrate. At least eight coats are required for a good finish. Rub the final coat with rubbing compound after the paint is thoroughly dry.

Markings are cut from Wondur-Cal fuel proof decals and applied after the painting is complete.

(*Continued on page* 64)



Clipped wing P-63 before Thompson Trophy race start. Note extremely small span. She qualified at 392 mph.

ver, place the stern back on the scale nd start moving the support around, eeping it at right angles to the hull nterline. Find a position where the ale gives the same reading as the an- ver to your problem. Mark the hull here you have the edge at that time. his mark is the position of the step.

Position the sponsons so the step is '4" below, and the front tip is even ith the hull bottom. Press the sponsons gainst the hull sides so that the exposed ds of the dowels make indentations in e balsa wood of the sponsons. Having cated the proper points, drill holes in onsons, dab glue over all contacting eas and force sponsons against hull. road rubber bands that will not crush e balsa can be wrapped around the onson-hull assembly to keep the spon- ns snug against the hull while drying.

Remove all hardware and paint the ull. Use the best finish you can. I use vo coats of Duco "Dulux" auto lacquer s a *minimum*. If thinned for spraying, bout four or five coats should be ap- lied. For any racing boat, a bright or ght-hued color is best (for maximum isibility). Once painted, reinstall hard- are, checking the prop strut to see that is straight and square. Make sure that he shaft revolves freely in the stuffing ox.

Make a temporary bridle from copper ire and install on hull. Bridle should be t least 48" long and hull should be level hen suspended on bridle from overhead fter. While hull is suspended, line up ridle hangers and screw in place. Using he copper wire as a template, make the ermanent bridle of stainless braided able about 1/32" or 3/64" diameter .031" to .048"). Once the bridle is in- talled, all you have to do is fire her up nd away she goes . . .

(Ed. note—At press time Pete wrote o say that a 2/3rd size Waterfly is also uitable for 35's in the IMPBA's new 'E" class. He also pointed out that the atest McCoy 60's no longer use the hrome-plated rotor shim.)

P-63

(*Continued from page* 22)

Sport fliers can install any reliable metal commercial fuel tank, however, speed flying demands something more positive and elaborate. There are several commercial metal speed tanks on the market today which perform quite successfully. A metal fuel tank must be securely attached to the engine mounts and fuselage structure. A pen bladder tank is

HOBBY SHOP DIRECTORY

Model Builders! Here is a listing of nationally known hobby shops. You'll want to file it away—and when you're in the neighborhood, drop in and browse around. They're expecting you.

MASSACHUSETTS—BOSTON (8)
Radio-control equipment & accessories
Gas model planes and supplies.
Daily 9:00 to 5:30
Monday & Wednesday to 8:30
BOSTON HOBBY CENTER
226 Washington St. CApital 7-3442

MASSACHUSETTS—CAMBRIDGE (38)
Model planes, motors, railroads, ships,
Radio Control Equipment and Accessories
Open 9 a.m. to 6 p.m. daily &
Thurs. evenings
CROSBY'S HOBBY CENTRE
1704A Massachusetts Ave. KI 7-4389

MASSACHUSETTS—MATTAPAN—MILTON
Radio control—Flying models—HO trains—Boats—Crafts—9-6 Daily—9-9 Friday
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List of Material

One 1/4" x 3" x 36" hard balsa for fuselage keel, wing spar, tail; (1) 1/8" x 3" x 36" hard balsa for fuselage formers, wing ribs; (2) 1/8" x 3" x 36" med. balsa for wings covering; (14) 1/8" x 1/4" x 36" med. balsa for fuselage planking; (1) 1/8" x 6" x 12" plywood for fuselage bulkheads, spar joiners, landing gear supports; (1) 1/4 x 3/4" x12" hardwood for wing tip, control unit mount; (1) 1/8" x 1/4" x 12" hardwood for stabilizer tip; (1) 3/32" dia. x 36" music wire for landing gear struts; (1) 1/16" dia. x 36" music wire for control rod; (1) 1-1/2" x 3" x 18" med. balsa for cowl block; (1) 5/8" x 3/8" hardwood for engine mounts; (1) 1-1/2" dia. Froom Alum. spinner; (1) Consolidated plastic cockpit canopy.

Miscellaneous—Mono-Line class "B" Speedmaster control unit; control horn; wheels, one sq. yd. silk; 4 oz. clear dope; one pint balsa filler coat; 8 oz. white dope; 1 oz. black dope; red and black fuelproof Wondurcals; fuel proof cement; plastic balsa.

excellent for this model and is recommended.

It will be noted that the tank is located outside of the planking and within the cowl in order to facilitate experimentation with tanks of varied designs as well as to have the bladder tank available for refueling. Install the engine now and fit the cowl hatch so it will be easily removable.

Miscellaneous details such as wheel covers exhaust stacks and mast can be added at this time. Those who consider high speeds of paramount importance can eliminate the wheel covers and mast, and use decal for the exhaust stacks which will aid in the reduction of drag.

In order to eliminate erratic behavior at the higher speeds we balanced our models a bit further forward than is our normal practice on scale models. We used .018" Mono-Line control wire on our model with very satisfactory results. Heavier wire would make the controls more sensitive which is undesirable. Our line length is 60 feet; however, longer lines can be used. Speed flying is conducted with a two bladed propeller while sport flying can use a scale four blader.

We always fly from a paved surface especially with scale models and fast models. During takeoff maintain tension on the line because of the tricycle landing gear. Landings are fast, flat and smooth. When the craft rolls in do not maintain line tension but merely let the model roll straight to a stop—very realistic and guarantees no broken propellers.

Some added thoughts on the subject of scale speed include the elimination of the tricycle landing gear and utilizing a dolly for takeoffs and wire skids for landings. We are now contemplating this modification to the prototype model "Flying Red Horse."