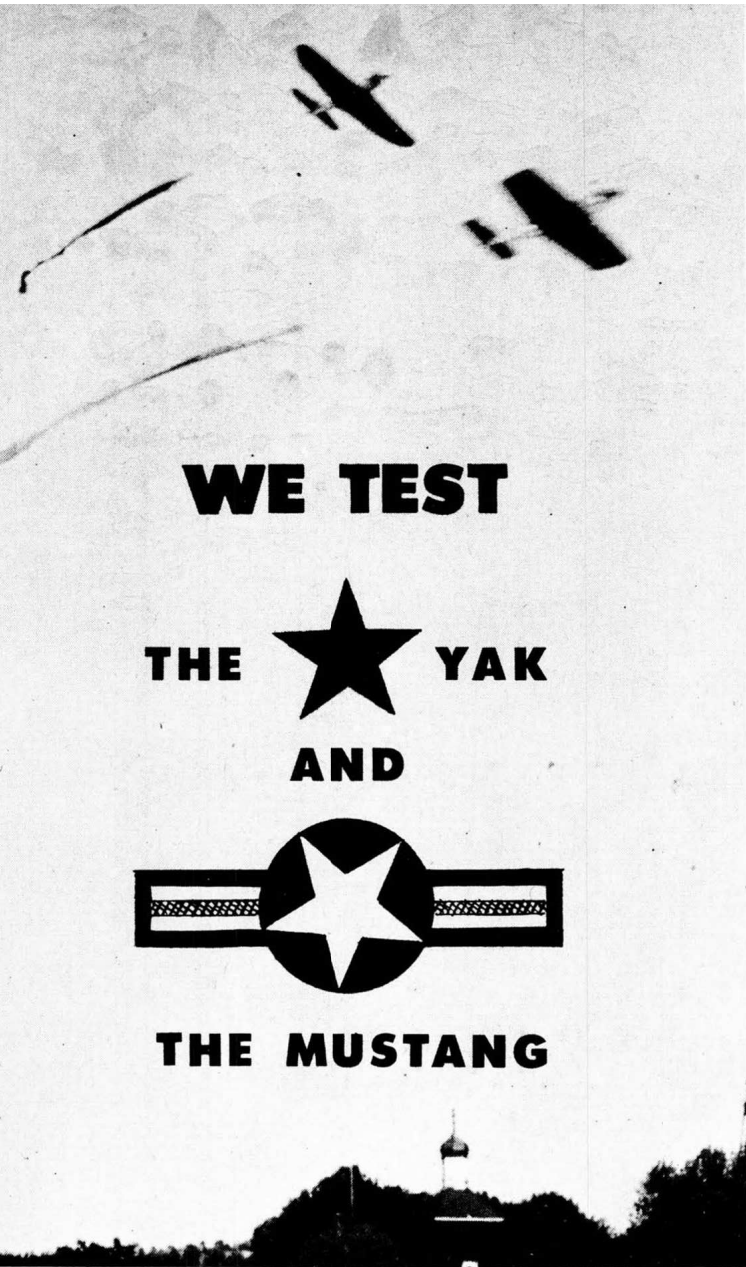




In actual combat, the M.A.N. tested Yak chases the Mustang. Before you hiss (!) note that the Mustang still has the long streamer. Exciting, eh!

► Spectacular to fly and watch, combat is proving a real crowd getter. It injects not only the elements of building and flying but also of competition and chance. One contestant competes physically against the other, not against time or comparative performance. Combat can be flown by the average flier in a parking lot, flying field or back lot. In one extreme case of combat flying, six ships were in the same circle with every man for himself. At the Mirror Meet this year, it created tremendous spectator appeal all day, with everything from sensational exhibitions of attack and maneuvering to belly crashes and dive-ins by over anxious contestants, to a mid-air collision.

Sterling Models of Philadelphia has now put on the dealers' shelves, the *F-51 Mustang* and the Russian *Yak-9*, a natural combination for combat flying. They are both similar in type and simplicity of construction, but present quite a different appearance when finished.

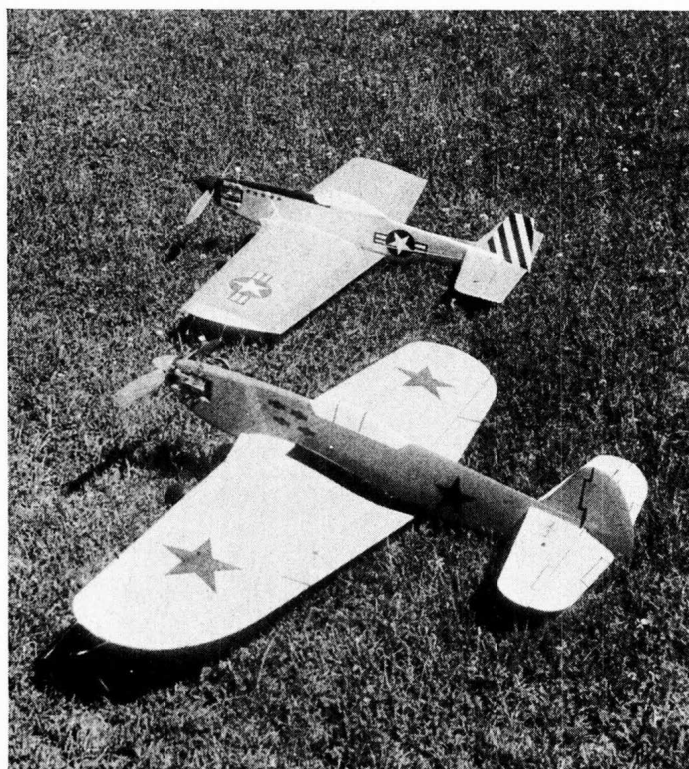
The *Yak* has a rounded wingtip while the *Mustang* is a square wingtip ship. The tail and rudder are the same. Although both have an under wing air scoop, the profiles are quite different and make an eye catching and snappy flying combinations.

For "We Test," we wanted to fly both the *Mustang* and *Yak-9*. "Loop" Holomany, a control-line enthusiast since the "Brown engine days," built the *Yak* while Yours Truly built

by DON GROUT



Two semi-scale Sterling kits designed expressly for combat flying breeze through a rugged test routine. For good measure the test pilot's report gives the run-down on combat rules as developed for both the *Mirror* and at the *Plymouth* finals.



With appropriate color schemes and markings, this pair makes swell building project. Either ship will make an excellent sport flying plane.

the *Mustang*. Both are profile fuselage types with operating wing flaps. Designed for A, B and C displacement engines, the wing span is 38" on the *Mustang* and 40" on the *Yak*. Both have tapered wings with an 8-1/2" average chord, including flaps. The difference in wingtip design gives practically identical wing areas. The kits are highly prefabricated. The body is completely cut out. The wing is of a shaped and notched edge construction with die stamped ribs. The main spar is 1/4" x 3/8" with solid wingtips, and a center rib section, sheeted top and bottom for strength. Tail, rudder and flaps are die stamped. Plywood reinforcement is used in the nose, as are hardwood motor mounts. There are plywood control horns, formed wire flap and elevator joiners, and landing gear. Also large insignia decals and the usual Sterling detailed, step-by-step, easy to follow plans and instructions.

For "We Test," both ships were powered with K & B 29's. A 32 or 35 displacement engine would not be too much. The ships would fly well with hot 19's but don't forget, if you're competitive minded, you'll have to compete with the larger engines. K & B 100 fuel and Top Flite 10-6 props were used although other brands of fuel and props could also have been used. Combat rules, of course, call for 60 foot lines.

The plans show how to make a tank. We used a commercial 3-1/4" long wedge. The *Mustang* weighed just under two



"Loop" Holomany and the author, background, about to begin combat article test flight. Both ships are very evenly matched, so no favorites.

pounds ready to fly and the *Yak* slightly less. Both had plenty of speed and snap in maneuvers and will do a full stunt pattern.

The die stamping is clear and the wood very good. The designing throughout combines the simplest and fastest construction. If you are an experienced builder, you can literally throw away the plans. If you are a beginner, you'll find them very detailed and explanatory—even the ribs are numbered. Plywood control horns are included to give you as complete a kit as possible at a low price. However, we suggest bushing the holes for the push rods with eyelets or tubing to save wear. Veco control horns also worked fine for both flaps and tail. Remember to put horns and bell crank on the correct side of the body for your particular direction of flying. The plans are shown counter-clockwise.

In cementing the wing together, you may save yourself trouble if you cement the main spar together with the reinforcements and allow to dry, then slip the ribs in the spar. Next cement the leading edge together and check the angle with the front of the ribs before the cement is dry. If that angle is not correct, it will put a strain on the spar and possibly cause a warped wing. In assembling, leave the ends of the lead out wires until last and don't cement in the tail until the wing is permanently affixed. In that way it is possible to counteract any small errors in bending the push rod. Also you can completely assemble the elevator, stabilizer and horn and still use Z bends in the push rods. Incidentally, Sterling stresses "double glueing." It's the first time we can remember seeing it stressed in plans. It is important and will greatly increase the strength of your ship.

In fastening and cementing the landing gear, it was found advisable to drill bolt holes through the body on each side of the landing gear wire, just below the wing. Bolt metal strips over the wire, otherwise only the cement holds the landing gear from being pushed back into the leading edge of the wing during a bad landing. Veco bell cranks were used with a hookup of push rods from the inside hole of the bell crank to the middle hole on the flap horn and from the outside hole on the flap horn to the inside hole on the elevator horn. On most flap ships, the best combination is a minimum of flap movement to about 35 degrees or 40 degrees movement of the elevator. Excessive movement acts as a break.

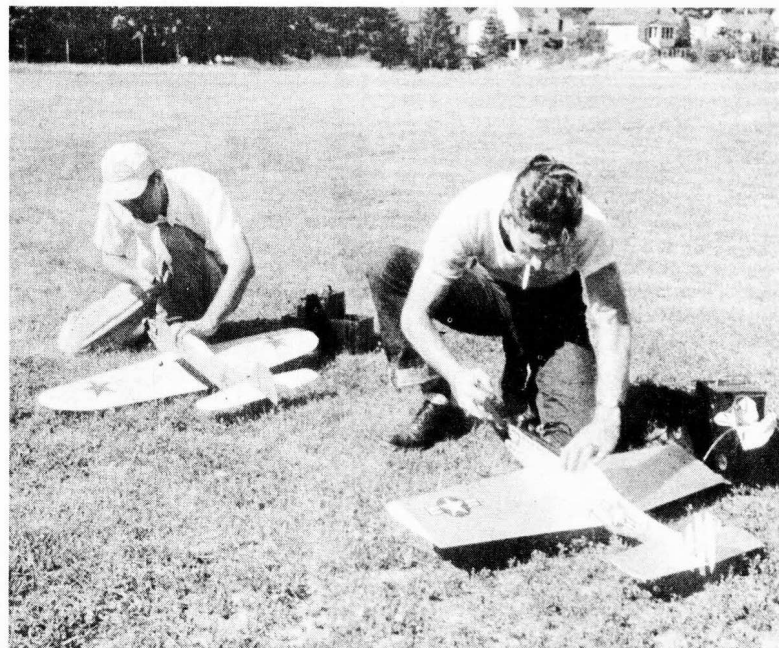
A tail skid with a small loop in the end is a good idea otherwise the bottom of the rudder will rest on the ground. Also the loop can be used to tie

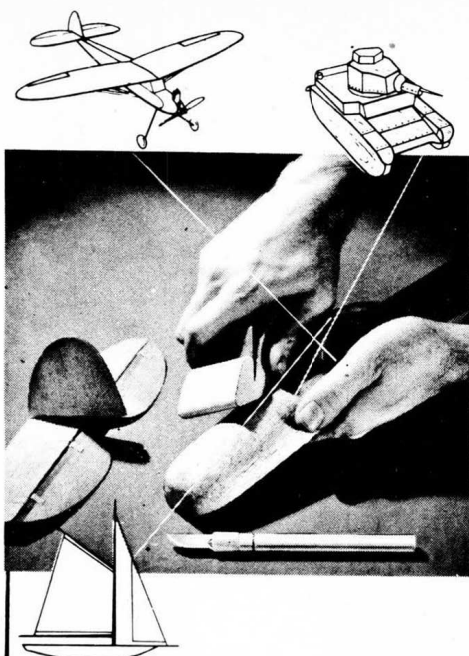
Construction theme for both planes is thick, die-cut profile fuselage, built-up wings of shaped edges, die-cut ribs, die-cut tail. A cinch to assemble.



Extra maneuverability is imparted by the use of full-span flaps. For this article K & B 29's were used, but hot 19's ok. Bigger engines get lively.

Below—Quick restart between "missions." Lines for both ships must be exactly the same length. Eight-foot long colored crepe streamers used.





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We Test

on the streamers out of the way of the elevator.

Shape the body per the cross section in the plans, not where the wing fastens on. This adds to the appearance of the ship. The nose is easier to shape before the landing gear is permanently cemented and fastened at the bottom. There is plenty of room for individuality in the shaping of these ships, if you so desire. You can obtain a picture of a *Mustang* or *Yak* and make a scale outline as follows: block out around the nose, fair into the spinner, outline and taper the blocks back to a point just aft of the leading edge of the wing. If you use about 1/2" stock for the wing fairings, they can be sanded to appear as part of the leading edge. A drop-off landing gear would add to maneuverability.

Combat rules are still in the formative stage according to Russ Nichols, none having been adopted as yet by AMA. He referred us to the rules adopted by the Mirror Meet and the International Plymouth Meet in Detroit. Although these rules will probably require some changes, they form a good basis for combat.

AMA regulations regarding pull tests and safety apply. Both meets grouped all engine classifications together. The Mirror .035 to .37 and Plymouth .000 to .49. No jets. Lines .014 (.020 for single line) 60 feet long. Lines must be of accurate length as the planes must line up when attacking or maneuvering.

Any plane meeting the safety requirements and capable of attack and evasive maneuvers is eligible. No points for appearance or scale. Streamers of crepe paper eight feet long are attached to the rear of the model with two feet of string extending past the rear point of the ship.

The scoring is five points for each attack and three points for each successful evasion of an attack. A bonus of 25 points for each attack in which an opponent's streamer is cleanly cut. 100 additional bonus points for cutting an opponent's string leader so that no part of the streamer is attached. This is a "kill" and no additional points awarded. A judge should signal a kill and no further attacks should be made by either contestant. In the event of a mid-air collision, no score for the pilot at fault. Points for cutting opponent's streamer are:

7-8 ft. 350 points, 6-7 ft. 345, 5-6 ft. 335, 4-5 ft. 320, 3-4 ft. 295, 2-3 ft. 255, 1-2 ft. 195, 0-1 ft. 110.

Flights are five minutes from the time the first plane is airborne. If the second ship does not get into the air there is no score. Model must be flown over six feet for level flight (not under eight feet for more than one half a lap per Plymouth). If a streamer falls off within one minute of start and no "kill" has been scored, both scores are void. Refueling and restarting are permissible within the five minute period.

Now, it's up to you. If you've never flown with someone else in the circle, take it easy at first but you'll soon find it's as easy as flying alone and you'll really get a kick out of combat flying.

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