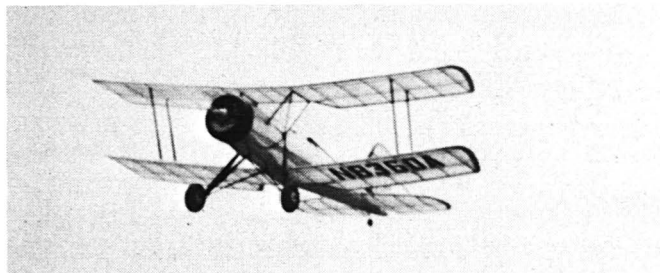




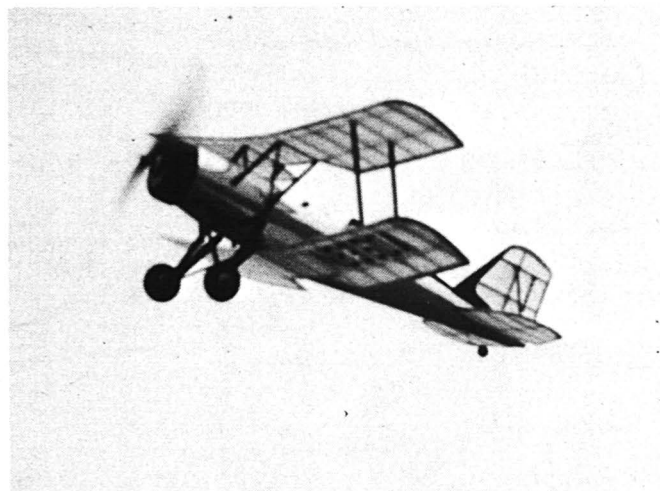
Finished with Walt's usual attention to details and good workmanship.



Front view with prop spinning shows effective use of metallic mylar.



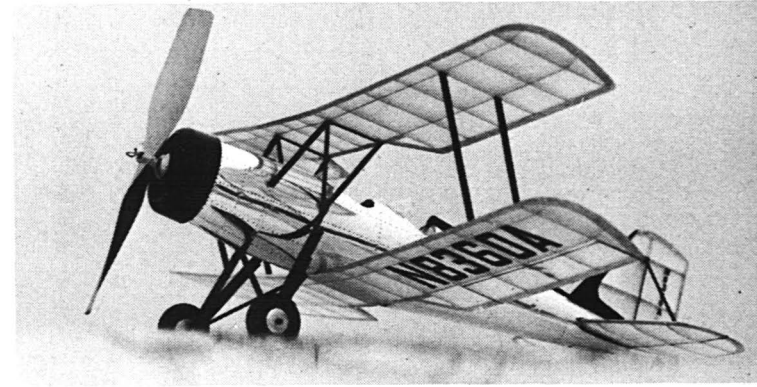
Straight away climb of our little beauty is seen in this flight shot.



Nothing prettier than light reflected through Jap tissue covering.



Aluminized mylar simulates metal covering. Note rivet detail on fuselage.



No, it's not flying above the clouds. Unusual photographic effect.

MEYERS OTW

All of you small, scale powered aficionados should have a ball with this latest in the line of scale rubber machines by California's old Perffessor of free flight.

By WALT MOONEY

► The Meyers OTW is a classic biplane. It has been used as a Trainer, a Sportplane, and a Glider Tug. There are a great number of Meyers lovers although there were not a lot of OTWs made. It has an aerodynamic set up that makes it ideal for a small flying model. There is plenty of vertical tail area and a relatively long landing gear in addition to quite a good separation between the wings.

Model in the photographs was built during my spare time at the 1967 Nats. Several features may surprise Meyers enthusiasts. It has parallel interplane struts, and it has an engine cowl depicted. Most Meyers have N struts and a radial engine that is out in the breeze. This model was drawn up from a three view of the prototype and is accurate with the exception of the enlarged horizontal tail area. The flying propeller is oversize and all the rigging wires have been omitted. A cowled engine is easier to simulate than a uncowed radial and the flying wires add lot of drag in a model of this size. (Continued on page 69)

photo credit: Fudo Takagi

FULL SCALE PLANS FOR MEYERS OTW ON FOLLOWING TWO PAGES

Meyers OTW

(Continued from page 15)

One feature that attracts all eyes is the simulated metal covering. This is three mil mylar with vacuum deposited aluminum on one side and adhesive on the other. Pin holes are used to indicate rivets. The mylar is attached over one thirty-second thick balsa fuselage covering in several separate pieces and the seam overlaps and pinhole lines make a very effective simulation of the real plane's metal fuselage.

The fuselage is probably the most difficult part to make, so start here. The fuselage is composed of a top and a bottom keel and a series of formers. Cut out the keel pieces and formers making sure the former notches are accurately cut for a snug fit and properly aligned on the keels. Cement the formers to the keels. Note that the keel should continue across the cockpits. They will be cut away when the cockpits are cut out of the covering.

When cement holding the formers to keels is thoroughly dry, add short pieces of one sixteenths by one eighth balsa between former B and former C where the cabane struts will later attach. Then by trial and error, make up bond paper patterns of the fuselage covering in three pieces for each side from keel to keel. One piece goes from A to B, one from B to E, and one from E to H. When you are satisfied with your patterns, select a soft sheet of "A" grain one thirty-second thick balsa for covering sheets. "A" grain has the grain crossways to the thickness of the

balsa sheet and is therefore easier to wrap around the fuselage formers. Even so, you may find it necessary to wet their outer surface to bend enough to fit the smaller formers. Cement the covering in place.

After cement is dry, carefully cut out the two cockpit openings. Also cut out the opening for the horizontal tail. Note tail to allow some tail angle adjustment.

Block for the combination noseblock and cowl can be laminated from several thin layers of balsa or it can be carved from a single block of the required thickness. The original was turned on a hand drill using medium sandpaper for a lathe tool. To do this, your block must be exactly circular to start with. Then you put a screw through the exact center of the block, tighten a nut on the far side, and chuck the assembly in the hand drill. Use the sandpaper carefully to get the correct contour on the front of the cowl. A corner of the sandpaper can be used to undercut the front face of the cowl.

Cement a rectangular piece of balsa on the back of the cowl to just fit in the opening in former A. Use a length of one sixteenths diameter aluminum tubing for a propeller shaft bearing and using some freely fitting wire make up the front hook and install the propeller.

The mylar covering will stick better if the covering of the fuselage is first given a coat of clear dope and is then sanded to remove the surface roughness. Most of the existing OTWs have been painted so the mylar is not really necessary but it's so nice. In larger cities, it should be available at plastic retailers. Perhaps you can even get a sample large enough for this job. Use your paper covering patterns to cut out the mylar and be sure to allow about a sixteenth of an inch of overlap.

Carve the headrest from a piece of three-sixteenths by three-eighths balsa. Sand it smooth and cement it to the top center line of the fuselage. Carve the tail cone from balsa and fit it in place but do not cement it until later.

The wings use egg-crate construction. This is only slightly different from standard procedure in that the spars and the ribs are both full depth and notched about half way through where they intersect so that they interlock when assembled. Each wing will have to be built one side at a time because the spars are continuous full span and therefore only one side can be pinned down to the work board. Because of the division necessary to fit full size on two pages of Model Airplane News, the wing and spars appear to be in two pieces; they are not, cut the spars out of a single piece of one sixteenths thick sheet balsa. Note that the front one is constant depth except at the tip taper but that the aft spar is cut down in the area of the wing cut out. The spar braces should be hard balsa.

Both the top and bottom wing are identical. The leading and trailing edges are one sixteenths by one eighths balsa strip with the trailing edge flat and the leading edge set on edge.

After assembly, the wing structure should be carefully sanded to remove all roughness. The leading edge should be rounded and the trailing edge tapered to the section indicated in the side view. Round off the edges of the wing tips and the wing cut outs.

Both the vertical and horizontal tails are built one sixteenths thick on the top of the plan. Then, soft one sixteenths square pieces are added on top and bottom of the tail ribs. These are sanded to give the typical tail section shown.

Cover wings, stabilizer and rudder with light weight tissue. Spray lightly with water to shrink the covering tight. Then, when

they are dry, give them one coat of clear dope thinned about half and half with thinner. If you like numbers on the wings, add them now. Either cut them from tissue and dope them in place or use decals. The original model has white tissue wings and empanage and uses black trim and black decal numbers. The surface outlines are easy to put on at this point before assembly with the fuselage, (the old prof. always forgets until later), so add them. India ink makes nice lines but a thin black felt pen or ball point can be used. The ailerons only go on the bottom wing.

The wire struts are bent next. These must be accurately done if the model is to assemble correctly. One thirty-second diameter or thinner music wire should be used. Note that only the left landing gear Vee and cabane strut are shown. The right hand ones should be bent in the opposite direction.

Poke holes, with a pin, in the fuselage where the struts fit and assemble the struts to the fuselage. Note that the long landing gear strut sticks through the loop in the Vees. Make landing gear fairings from stiff paper carefully wrapped and cemented around the wires.

Cement the cabane strut wires in position and add the one thirty-second thick sticks to fair them and the one thirty-second by one sixteenth stick to make the slanting part of the "N" of the cabane struts.

Carefully cut the notch in the bottom of the fuselage for the lower wing. Put the horizontal tail in the correct position and check to see that it and the lower wing are aligned properly.

Cut windshields from thin clear plastic and cement them in place at this point. If you wait until after the upper wing is installed the forward one is a little difficult to install.

Now cement the lower wing in place. Now check the spread between the horizontal wires of the cabane wires and cement the upper wing in place on them. Four small "x's" on the wing plan indicate where the cabanes go under the ribs R-1 at the outer end of the wing cutout. Check your model to see that the wings are exactly parallel to each other especially from directly below.

Now cut out the interplane struts from one sixteenths by one eighth hard balsa and sand them to a streamlined section. Install them between the wings at the "x's" under the spars and the ribs R-2 third from the wing tips.

Put the horizontal tail in place, but do not cement it. Cement the tail cone in place being careful not to get any cement on the horizontal tail. Cement the vertical tail in place and add the one thirty-second by one sixteenth tail brace struts between the vertical and horizontal at the "x's".

Obtain or make your main wheels and install them. You can retain them with a drop of cement placed carefully on the end of the axle wire. If your wheels have aluminum tubing bushings through them, you can use my favorite method which is to squeeze the end of the wire with a vice-grip pliers to squash the wire wider and so retain the wheel.

Make the tail wheel from five layers of one thirty-second sheet laminated and sanded to shape or use a wheel and wire if desired. There is no real reason for it to turn and, if it does not, the model is less likely to roll off work benches. Cut a small hole in the mylar covering and cement it in place.

Install a lubed loop of one eighth flat rubber, retaining the aft end with a straight pin pushed through the fuselage sides just aft of former G. When you try this, you'll

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Meyer's OTW

(Continued from page 70)

find the biggest disadvantage of this design, it's dark down there in the fuselage.

Make sure the center of gravity is at the arrow shown on the plans. My model required a piece of clay pushed into the face of the noseblock for flying. Now put a thin sliver of balsa above and below the leading edge of the horizontal tail across the fuselage notch to wedge the tail in place.

Test fly the model indoors preferably, or outdoors if it is calm, by making all your flights R.O.G. working up from about fifty hand winds. If the model climbs or dives too steeply, you can adjust the tail setting by changing the thickness of the slivers of balsa above and below the tail. If the model turns too tightly some side thrust is in order. Some right thrust is shown in the top view of the fuselage. If more is required, shim the side of the nose block for flying.

Best flight time for the original model is about 55 seconds indoors. It will probably do better than this but I haven't had many opportunities indoors. There has been one horrifying five minute flight outdoors—I was afraid it was gone and I didn't have photographs yet. Almost anything will stay up in a thermal, at least for a while. Incidentally O.T.W., I've been told, stands for *Out To Win*. So use your Meyers that way.
