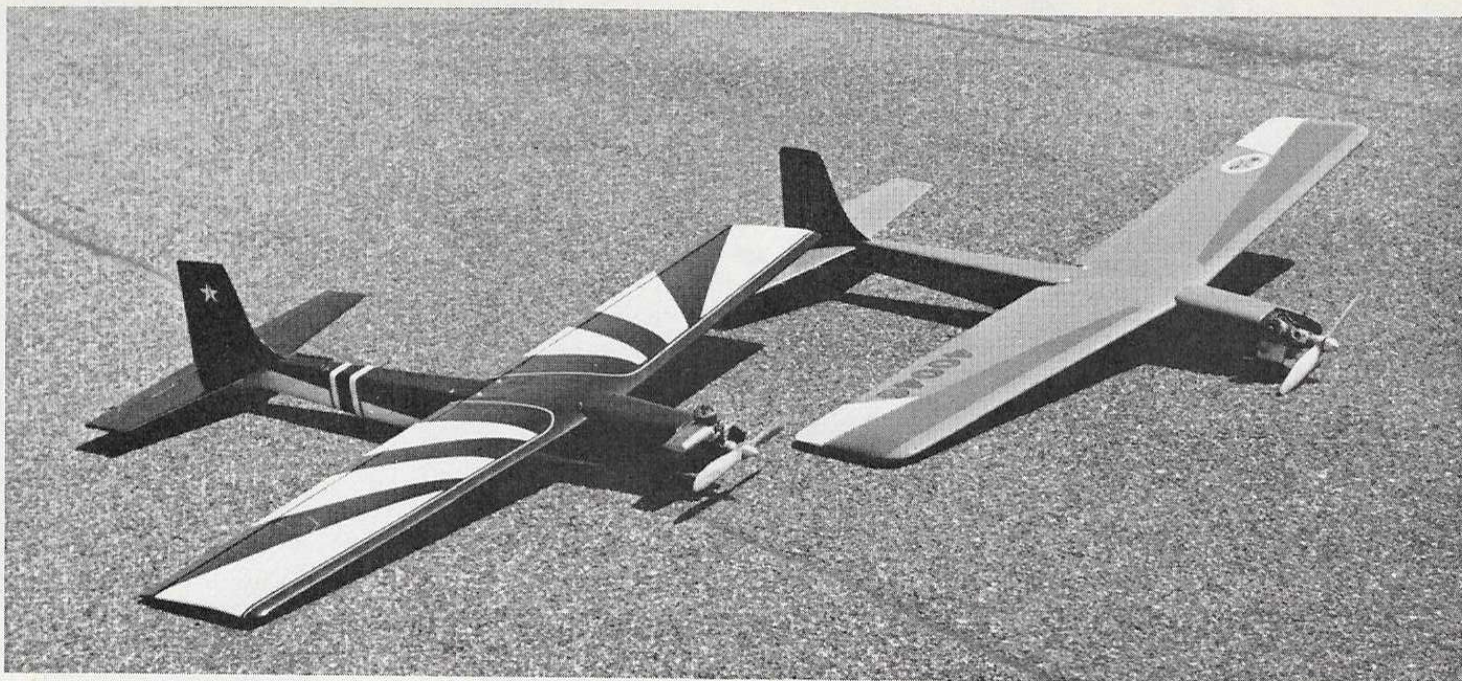




WHIPLASH!

If you were in it while it was flying, you'd understand how this plane got its name,
by Dick Sarpolus



The angular lines of the Whiplash allow many variations in personalizing the finish. Wayne Marcy did the eye-catching MonoKote job at the left.

If weather conditions in different parts of the country have an effect on aircraft designs, then the Whiplash is a result of our northeastern (New Jersey) winter climate. I am primarily a pattern competition flier, and after the last contest in October, I hang the current hot ship on the workshop wall until spring. I just don't enjoy serious practicing in cold, wet, windy winter weather—I'd rather not risk a good pattern aircraft in casual fun flying.

Our club field does see a lot of winter activity and, without the contest season pressure, it is a lot of fun. Because of the weather, our winter flying is done a little differently—we don't plan on a

whole day at the field. Much of the time is spent with hot coffee in a handy car.

For this type of flying, a small, easily assembled plane (especially one that will fit in the car assembled) is a real advantage. We observed some fliers who flew powered gliders exclusively and, while this was not what we wanted (can't practice Class C maneuvers with a glider), the simplicity of hand launching appealed to us. Elimination of landing gear would further simplify the plane and enable better performance with a small engine.

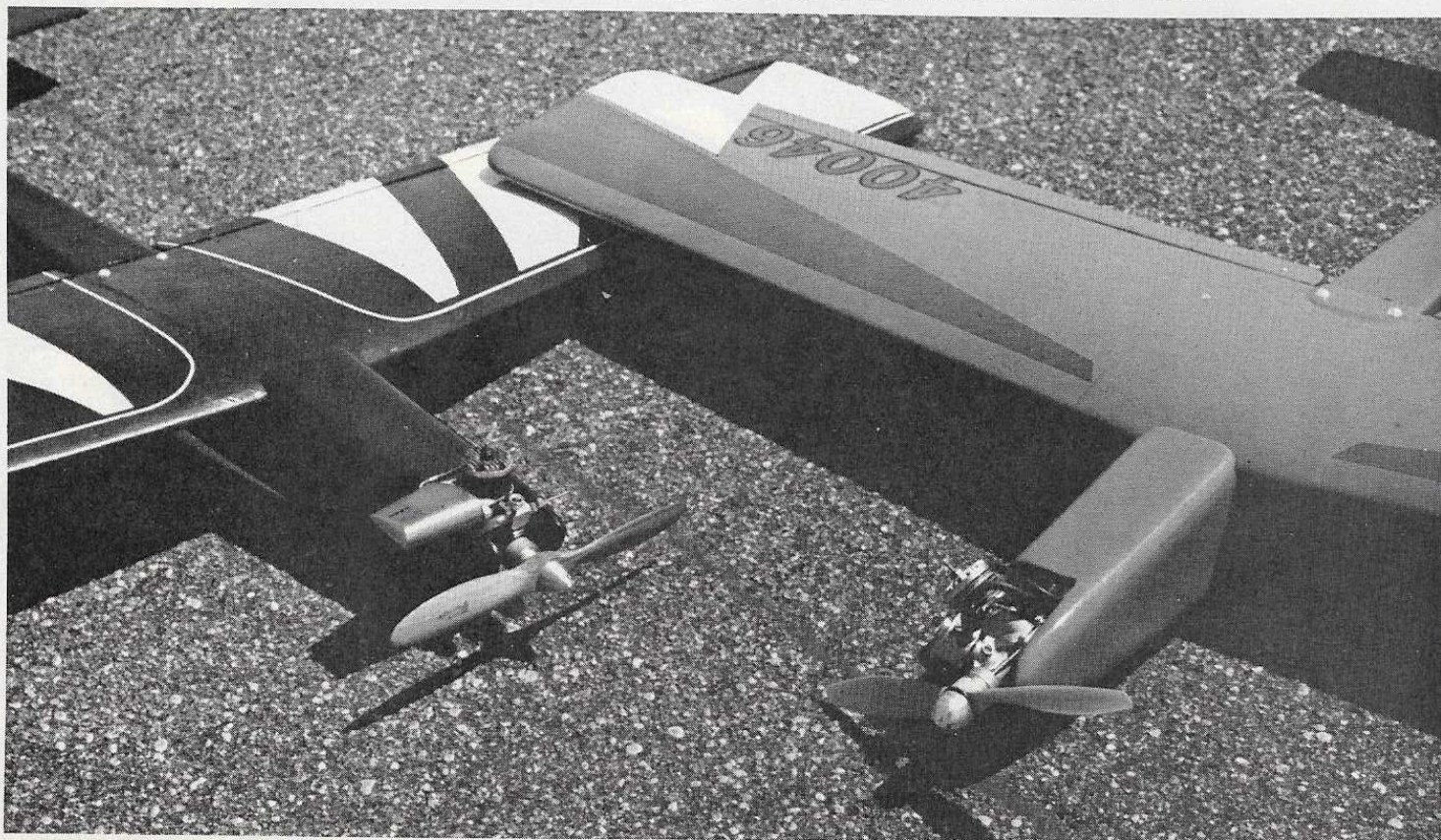
One characteristic we had to have to allow pattern practice was full aerobatic capability. To be competitive in Pattern, you must fly a lot. To do all the flying

with the same aircraft would, of course, be ideal. However, that is not a necessity. The important thing is to fly something that will perform all the maneuvers.

Don't think that these desired characteristics result in a hot, "experts only" airplane. The Whiplash is not a basic trainer, but it did turn out to be a good intermediate ship. Anyone who can fly basic ships like the Falcon 56, J-Craft, etc., can fly our Whiplash. And the expert flier can have plenty of fun without worrying about his top contest ship.

We settled on 19 power to keep the size down and still achieve acceptable performance. We would be using four

The sidemounted engine (right) ensures that the center of the tank falls in line with the needle valve.





Dick uses transmitter antenna to prod Arni Pederson into one of his statuesque launches.

channels, so the equipment weight would be considerable. There are some good 19 engines on the market, and we felt this was as small an engine size as possible. The wing would need to have a fully symmetrical airfoil for full pattern capability; we wanted this plane to "feel" like a typical 60 competition ship. Wing planform would be tapered, of course, with strip ailerons for ease of construction. Foam wing cores were desirable for a quick, easy, rugged model. The wing would be top mounted, so we could hand launch and belly land.

Competition ships are exclusively low- or mid-wing now, but a top wing on a reasonable fuselage design doesn't change performance noticeably. The fuselage was held to a minimum crosssection for the least possible drag and weight. One area that could significantly help in weight was the radio equipment; we used a 600 mah battery pack and KPS-10 size servos. The newer mini-servos and lighter battery packs would make a difference. Throughout the plan sketching, we stressed simplicity—we wanted to fly, not build.

Specs came out like this: 50" span, 390 sq. inches of wing area, 41" overall length. So many of our local club members liked the concept that, with the help of the local hobby shop, we made several dozen "semi-kits" which were sold at a nominal charge.

Lynn Sarpolus gives some feel for the size of the model—large enough for smooth aerobatics, yet small enough to dump in the trunk or back seat between flights.



One alteration of the original concept was the addition of landing gear. I like the plane better without it, but after our club put down a blacktop strip 250 x 40', we did want to use it on occasion. I added the gear to my completed plane, made it removable, and really haven't used it very much.

That covers the design. Although the major design influence was our local weather conditions, we feel the result may appeal to many fliers.

CONSTRUCTION

I would suggest cutting out all the parts first, making your own kit, rather than the cut-as-you-go approach. It will save time. Wings first—most clubs now have foam cutting ability and it sure makes for an easy wing.

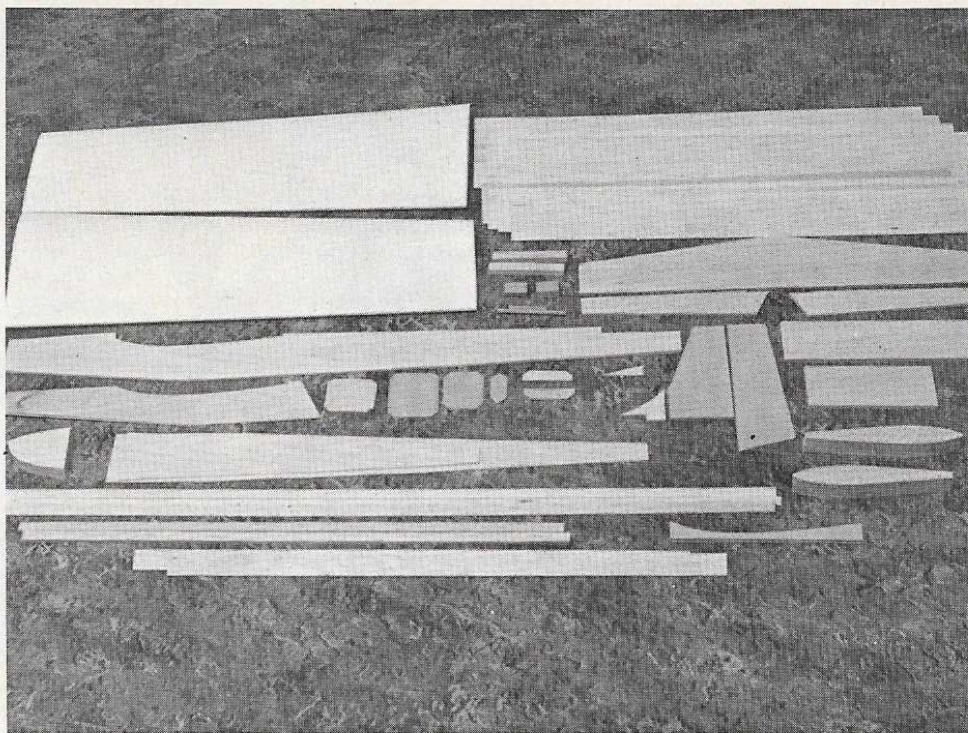
Foam wing construction has been covered many times, so I'll emphasize only a few points. To insure a smooth job, join the 1/16" balsa skins, truing the edges first, taping the seams, then gluing and sanding before cementing the skins to the core. The best contact cement I have found is Southern's Sorghum or Mini-Flite's Maxi-Tac. I skin the cores first, true the leading and trailing edges with a long sanding block, then glue on and finally shape the leading and trailing edge wood. Tips come next; center section is joined and reinforced with fiberglass cloth and epoxy. Aileron horns are installed, then the 1/16" plywood reinforcement for the nylon hold-down bolts.

Tail surfaces are simply 3/16" sheet balsa. Try to select light wood throughout and sand everything well.

The fuselage is a basic box, with triangular balsa in the corners to permit a well rounded shape. The 1/32" plywood doublers add a lot of strength. The sides are parallel from the firewall to the wing trailing edge, which makes it easy to align. I build almost the entire fuselage with five-minute epoxy. The engine could, of course, be faired in more with balsa blocks shaped to match a spinner but, again for simplicity, I used side cowl pieces only.

Glue the hardwood wing mount blocks securely and drill and tap for the nylon wing bolts. There is not a lot of room for the radio equipment, so the installation must be neat. The three servos in the fuselage should be installed as low as possible, and the aileron servo should be installed as deeply as possible in the wing. The gas tank can be inserted through the wing opening and held in place with foam rubber.

We have used the Kraft nylon engine mount and the Tatone aluminum mount. The models built so far have balanced pretty well without any added weight; they do tend to be nose heavy, so try to use a light muffler and keep the radio equipment as far back as possible, etc. We put the servos at the rear of the compartment, receiver in the middle, batteries by the leading edge. If you use an engine larger than a 19, it might be well to shorten the nose by 1/2" or so. A 19 seems to be the ideal size. I have flown four different Whiplash models, each with different engines (a Veco 19, Supertigre 19, OS 19 and a



A minimum number of pieces makes the Whiplash not only simple, but inexpensive to build.

Webra 20), and all performed about equally.

It is a good idea to put a skid of some sort under the nose section, or to even cover the bottom with fiberglass or celastic. We adjust the carburetor to stop the engine on command and, if the prop is set horizontal at compression, it will stop at that position.

MonoKote or a similar material is of course best from a weight and finishing time standpoint.

Flying the model should present no problems; if inexperienced, let a pro set it up for you. The rudder is only needed for certain maneuvers and, if lack of a throttle doesn't bother you, I see no reason why it couldn't be flown two channel (ailerons and elevator). With the

fully symmetrical airfoil, it isn't going to float like a sailplane, but it is pretty gentle. We sure don't need more pylon racing classes, but a 19 class with a design like a Whiplash would be a lot of fun.

If you can't get foam wing cores locally, contact me at 32 Alameda Ct., Shrewsbury, N.J. 07701.

Every project leads to another idea; after flying the Whiplash and reading about the progress in electric power for RC aircraft, I feel an electric-powered Whiplash would really be the thing for fun flying. Perhaps our next project will be an electric-powered pattern-ability fun ship. The state-of-the-art moves ever onward!

A Whiplash with legs. The landing gear might be essential in some areas (after all, it doesn't snow everywhere). Try skis in place of wheels for an ROS (Rise Off Snow).

