

# SUNDAY FIGHTERS



KEN WILLARD

During the summer of 1973 I was trying to think of something different and exciting for the second annual WWI Western Front Jamboree, sponsored jointly by American Aircraft Modeler and the Pioneers RC Club of Sunnysvale. The year before, I'd made a hit with a little 24-in. S.E. 5 powered with an O20. Tough act to follow.

Curiously enough, I had been experimenting with Ace foam wings while trying to develop a Sunday Glider. It turned out successfully and Ed Sweeney bought it for publication in AAM. So I built another one, taking a little more care than I do when I'm testing initially. In the process, I used four untapered Ace wings—two for the left wing and two for the right wing—and had polyhedral with  $3\frac{1}{2}^\circ$  both at the center and tip panels.

Well, I had the left wing put together, then the right wing and was about to join them at the center section. As I did, for one brief moment I put one above the other. Instant biplane! Looked like a set of S.E. 5 wings all ready for rudder, elevator and motor control. Just the right amount of dihedral to give good rudder turns.

That was it. Why not make a Max 10 powered Semi-scale S.E. 5 for the Jamboree? No, that wouldn't quite do the trick. Gotta do better. Got it! Make two Semi-scale models using the same wings, but gussy one up with balanced ailerons (fake), elevator and rudder, with a scalloped trailing edge on the wings. Paint it red and make some German crosses out of MonoKote. Then, on the other, paint and decorate it a la RAF, and make the wing tips and tail surface look a bit like the Bristol.

As a final touch, change the landing gear slightly, with both struts forward of the wing for the German versions, and one strut extending back to the trailing edge of the lower wing for the English type. Also, make some fake engine heads and exhaust collectors or louvres, just to change the front end appearance. The rest of the design is common to both, except for cutting off a couple of inches from the lower wing tips of the German version to give it the Fokker D. VII touch.

And thus the "Sunday Fighters" came to be. Now, what should I call



Achtung! Come fight mit me!  
In my Fokker Heinschmitt!



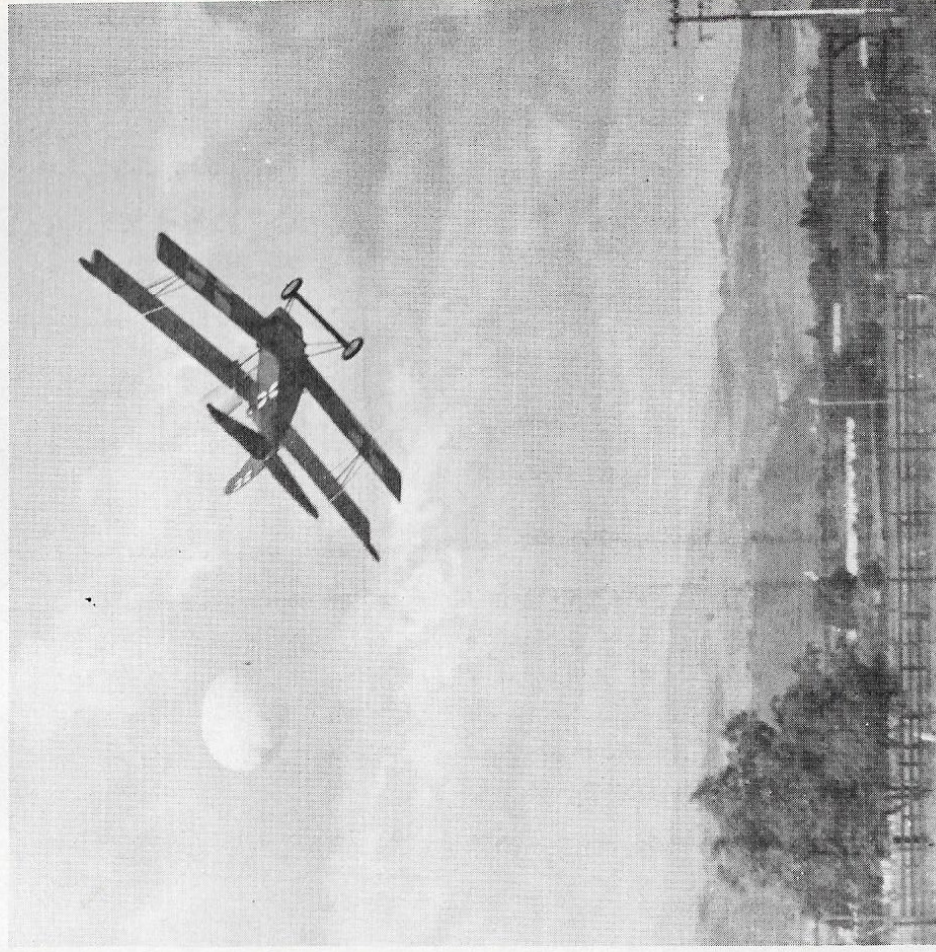
The Fokker Heinschmitt built to Sunday Scale. Louvres, dummy cylinder banks, pilot (with scarf, natch) create the illusion of the great air war.

them—individually? Well, the German version looked a bit like a Fokker, or a Heinkel, or maybe an early Messerschmitt. So, let's call it the Fokker Heinschmitt scale model. Absolute scale—one to one on the original. And the English job? Well, there's a bit of Bristol, and maybe some Spad, and for good measure you might detect some Nieuport. So, let's name this one the Bristol Spadport. Keep everybody happy.

And what fighters they turned out to be! Fast, but not too fast. Maneuverable, but not tricky. Surprisingly rugged, and a snap to repair compared to most. I know—in the Balloon Busting event, I missed the balloon but hit the supporting string; it wound around the prop shaft and pulled the model over on its back and into a dive into the ground. Snapped the cabane structure loose and broke a wing. With some five-minute epoxy and 15 min. of work, it was back in the air for the next event.

You should see them take evasive maneuvers in Dog Fighting. Snap rolls into spins, even inverted spins. And if you roll inverted and keep the speed up, you can even maintain inverted flight. Sure, it will roll out if you let the speed drop too much. But I have to tell you! These Sunday Fighters are the most fun I've had with power planes in a long time.

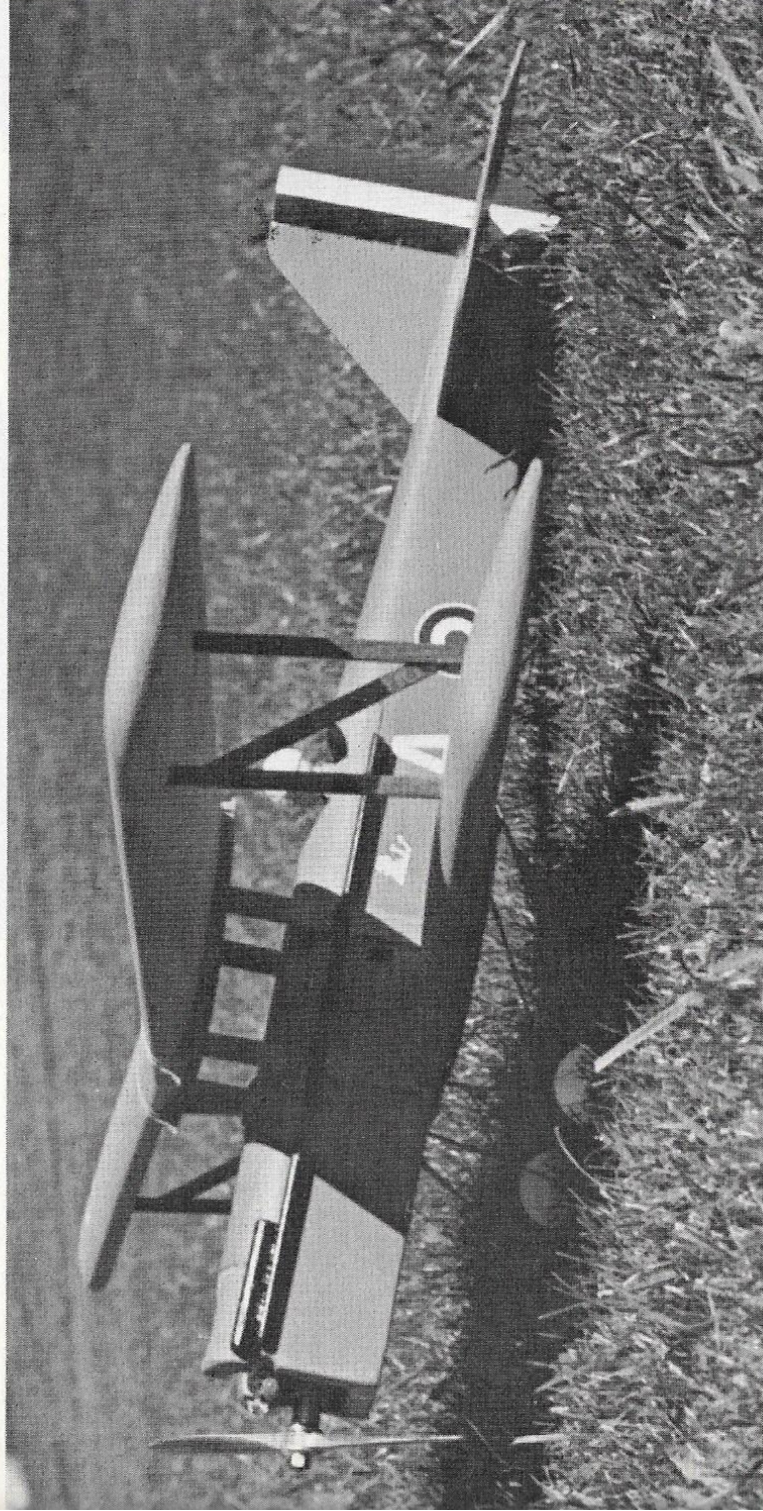
A word of caution. For best performance, keep the construction light. Use medium grade balsa throughout; these are not big planes, and don't need the rock hard stuff. And don't go for the super finish—adds too much weight. To paint the wings, I recommend that after you've sanded off the molding



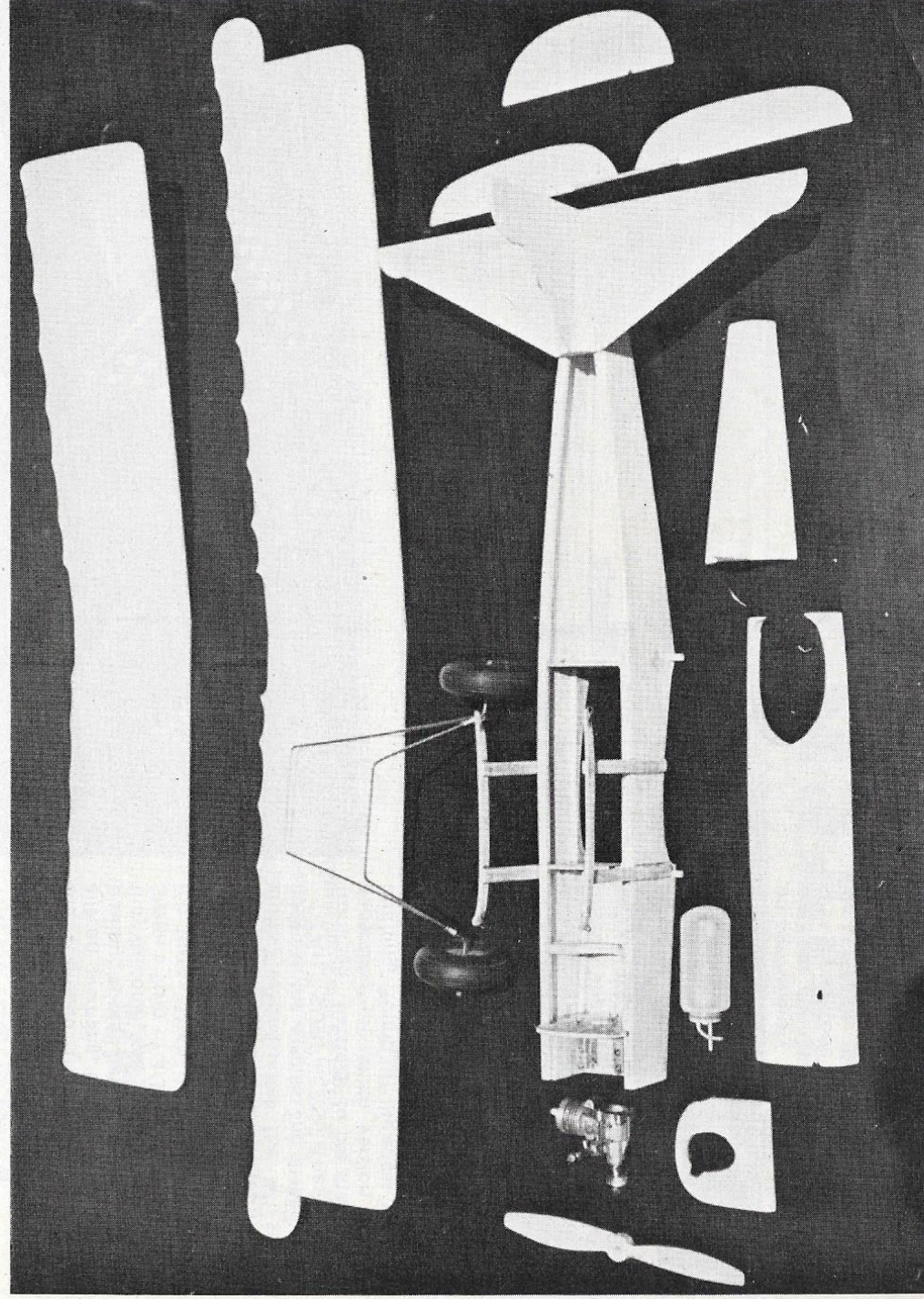
ABOVE: The Heinschmitt attacks! Balloon Burst is the mission. Bomb drop (via cup strapped to wing) has already been completed. Model offers the maneuverability needed for these fun events. RIGHT: A weekend project to spawn a Sunday Fighter. A box fuse, two foam wings and you're on the way to instant nostalgia.



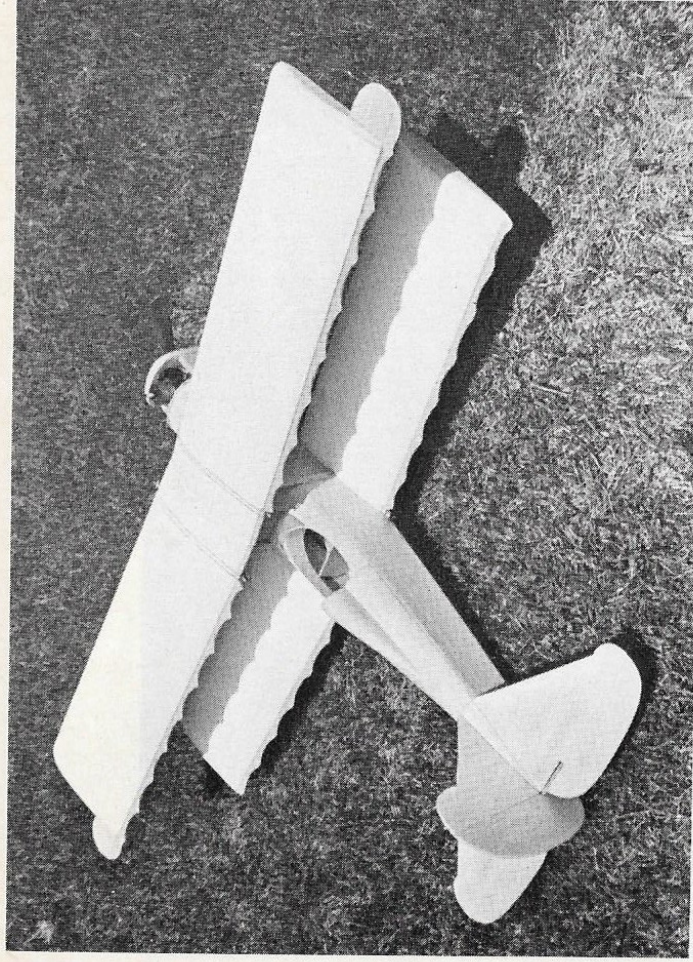
I say, old chap, let's have a go!  
In my Bristol Spadport!



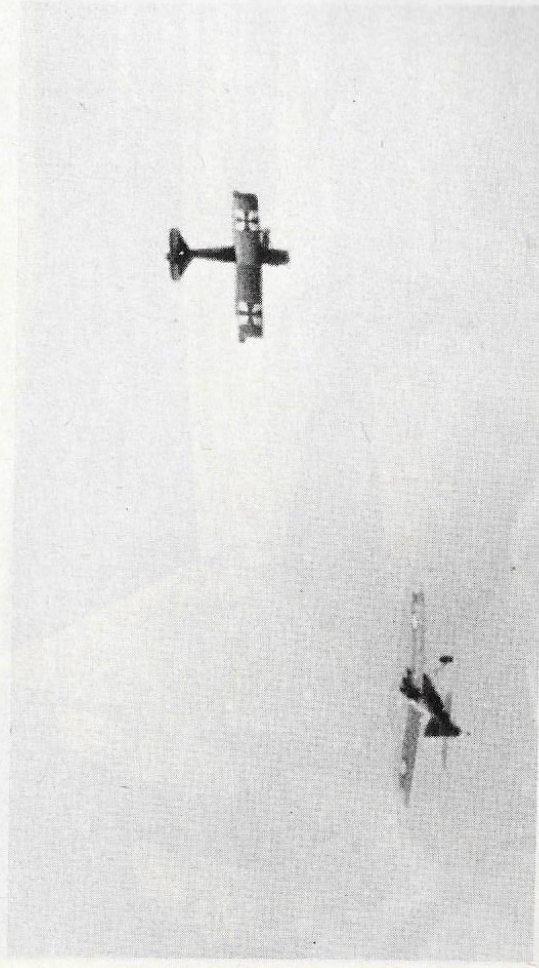
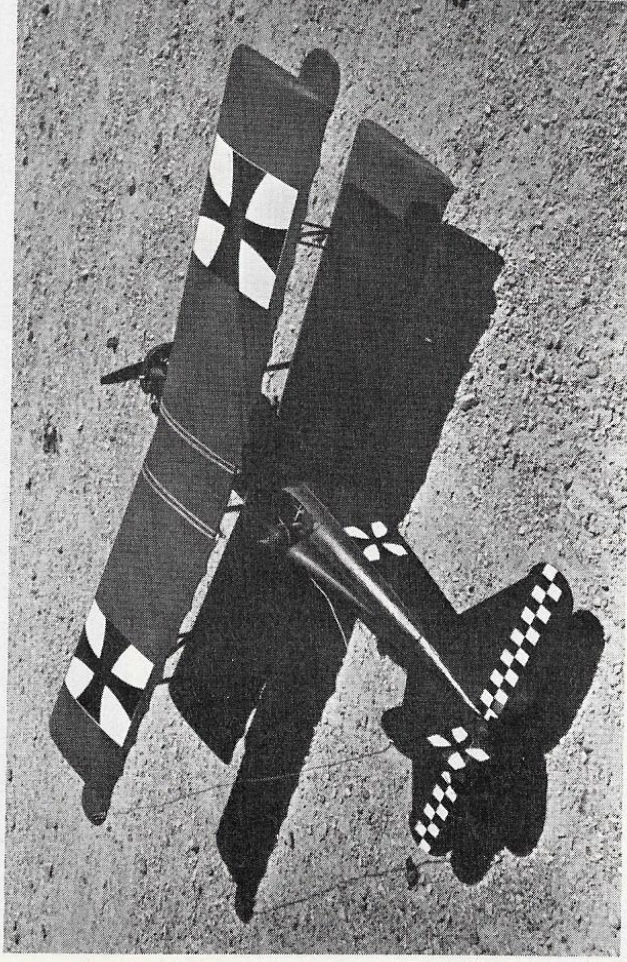
The Bristol Spadport has simple geometry which makes for easy building and finishing. A natural for front line action on a Sunday afternoon.







Willard's wonderful bi-winged thing (above) makes the metamorphosis to... the Heinschmitt (below).



The Hun in the sun at the West Coast WWI Jamboree. Heinschmitt gets the upper hand on a Sauliner in the Combat event. (Photo by M. B. Groves)

flashes (and the scalloped balsa trailing edges on the German version), simply spray the surface with Testor's Spray Pla Enamel. Hold the can about a foot away when spraying; if you get too close, it could "eat" the foam slightly. And just apply enough to coat the foam with a uniform color. You can use the same spray for the balsa surfaces, or use a similar color of Aero-Gloss fuelproof spray if you prefer. Don't undercoat the balsa; it won't matter if the grain shows.

Now that I've given you the preliminary warning about keeping things light, let's talk about some of the details of construction. There's not much to tell that isn't already apparent from looking over the plans carefully. Just a couple of building hints is all you'll need.

**WINGS:** For the Bristol Spadport, you hardly have to do anything. Paul Runge has stocked a special set of "Sunday Wings" which have the dihedral pre-cut to give  $3\frac{1}{2}^\circ$  in each panel. Order a set (Catalog No. 13L65) and when they arrive, simply butt joint them together at the center and epoxy. If they don't match exactly, due to slight variations in the mold, make sure the bottom surfaces match and let the top be slightly out of alignment. It won't be more than a  $1/16"$  at the most. But it is important that the bottoms match to assure uniform incidence in both wings. Epoxy the  $3/16"$  dowel in at the TE.

Cut the wing tips and give them the slanted shape as shown; then round them to a smooth contour. Presto! That's it—except for painting.

The Fokker Heinschmitt wings require more work due to the addition of the scalloped trailing edge and the aileron overhang. But it's easy. Sand the trailing edges flat and vertical, and they'll come out about  $3/16"$  high. Shape a strip of  $3/16 \times 1/2"$  to the scallop form; attach it to the trailing edge with Titebond and, when dry, sand it to conform to the airfoil. The fake aileron balanced surface is just fitted in place with Titebond after the  $1/4"$  strip is added to the wing tip and shaped.

**TAIL SURFACES:** These are cut from  $1/8"$  flatstock to the shape shown depending on which version you are building. Round off the edges and that's all there is to it.

**FUSELAGE:** This is a standard "box" construction with a hatch and "turtledeck" added on top. The plans are self-explanatory, but there is a variation you can use if you prefer as I did on the first prototype. The plans show a built-up hatch and turtledeck with formers and stringers. Since I was in a hurry, I went a simpler although slightly more expensive route. I used a  $1 \times 3"$  block of very light grade balsa and carved it to the shape of the hatch and turtledeck. Then I hollowed it out to accommodate the tank and also to reduce weight. The turtledeck was glued on permanently with the hatch held in place by running a small rubber band over it from one side to the other. Simple and quick.

Up forward in the engine compartment,  $3/16"$  doublers are added to the

(Text continued on page 76)  
(Plans on page 24)



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## F-51 MUSTANG

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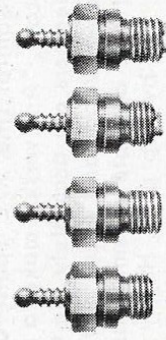
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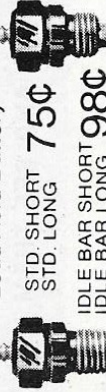


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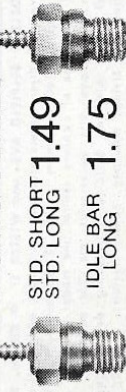
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### SUNDAY FIGHTERS

(Continued from page 22)

sides and bottom between the longerons for strength. Noseovers are common with all WWI fighter type models because of the high landing gear.

Note the downthrust and sidethrust which is built into the firewall. The amount shown is a good average, but you may find it varies slightly with individual models. That's always true.

The nose block is shaped and hollowed to fit your engine. Although it can be permanently glued in place, I preferred to make mine removable for ready access to the engine and to ease the cleaning of the compartment. To keep it on in flight, a couple of small screws can be inserted in the two sides, and a rubber band stretched between the screws and in front of the nose-block. Align the block simply by pinning it in place with a couple of T-pins—or if you prefer, use a couple of short 1/8" dowels which fit into aligning holes.

Engine mounting is also a matter of choice. I used a Tatone mount that I've had around for years; that makes it easy to vary the thrust line as needed. In my prototype, I installed the firewall with no downthrust or side thrust, and thorough flight tests added the necessary number of washers behind the Tatone mount to get what was needed. It turned out to be approximately as shown on the plans; so rather than make

You go through all that, the down and right thrust is built-in.

The cabane structure is simple, but you must be careful to assure that it is properly aligned. You must not only have the right incidence, but it must be the same on both sides. Best way I know to do that is to epoxy the fuselage members in place; then lay the fuselage on its side over the plans and carefully epoxy the right-hand wing cradle to the uprights, making sure it is lined up. Then epoxy the left-hand cradle in place to match. Double check the alignment by measuring the distances from the top longeron to be sure they are uniform.

The plans show short lengths of paperclip wire epoxied to the wing cradles to retain the wing rubbers. Here again, if you prefer, cut the wing cradle out of the 3/32" plywood with a little knob on it, rather than adding the wire. Frankly, I didn't think of that until after I had mine assembled.

Although it is not necessary, I did add strips of 1/4 x 1/16" wing seating tape to the top of the wing cradle and to the bottom of the fuselage where the lower wing fits. Helps to keep the wood from cutting into the foam wings when the rubber bands are tight.

Back at the tail, note that a piece of 1/16" plywood is glued to the bottom, to provide a stronger surface for the tail-skid mounting. Be fairly generous with the epoxy when attaching the skid—it gets some pretty rough side loads at times.



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**LANDING GEAR:** This is the usual wire bending job, a little tedious but not too hard. Wheel alignment is easy since an axle is used. The "sub-wing" spreader bar between the wheels is shaped from 1/8" balsa sheet and epoxied right to the axle. No need to imbed the axle—you can't notice it from five ft. When attaching the landing gear, use individual rubber bands at each attachment point where the 3/16" dowel protrudes. This reduces the stresses which are imposed during ground loops and hard landings. The MonoKote "fairing" is just trim strip, cut and folded over the wire and then stuck to itself. Looks OK from five ft., and isn't always breaking off. Good example of KISS—Keep It Simple, Stupid.

Wheels are Williams Brothers 2 1/2-in. WWI scale type.

**INTERPLANE STRUTS:** Here are some other examples of KISS. Make struts from coffee stir sticks cut to length and epoxied together. The length will depend on whether you build the German or Allied version, since the former slant inwards slightly. Placement is not critical; in fact, you don't need them at all but they do add to the appearance. Locate them about five in. from the tip of the top wing of the Fokker Heinschmitt and four in. from the tip of the lower wing. On the Bristol Spadport, above five in. on both wings is OK. It isn't critical.

To hold them in place, the T-pins are first stuck into the lower wing; then the

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upper wing is lowered into place on the cabane cradle and the pins stuck into the lower surface of the top wing. I did find that, when doing violent maneuvers, it was necessary to stretch a small rubber band around the wings at the strut line, otherwise the flexing of the wings would permit the pins to become dislodged. But you can't see it in flight.

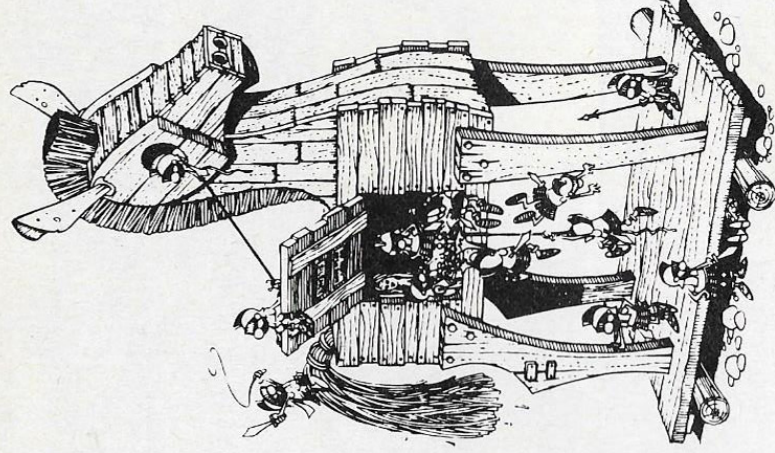
**EQUIPMENT INSTALLATION:**  
Shown is a simple method of installing small servos using servo tape. It works well, but if you are one of the modelers who doesn't care for servo mounting tape, it's easy to add a couple of cross braces for servo mounts. I happen to like mounting tape. There's enough room for almost any of the current small size servos.

**FLYING:** The Sunday Fighters are really nothing more than sport free flight models with radio control added. Properly trimmed, they could be flown free flight using a good hot 049. With three-control radio, however, they are about as much fun as you'll find.

A word of caution. I cannot honestly say that they are good models for beginners to fly, even if they are excellent for beginners to build. They are very responsive to the controls and because they are small, the response is relatively quick. But any sport flier who has flown an Ugly Stik or any of the other simple trainers will have no trouble with the Sunday Fighters. Arrange the control linkages so that you get about 20° of throw in either direction—maybe 15 if you think you are a little slow on the uptake, and get used to the response. Then, if you want, you can increase the throw to 25 or even 30°, and watch out! You'll put on the wildest show in your life. Get a fellow modeler to build one version, you build the other, and go up for some Sunday fighting!

Achtung! Come fight mit me! In my Fokker Heinschmitt!

I say, old chap, let's have a go! In my Bristol Spadport!



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