BY KEN WILLARD

Remember when you were a kid and started racing - - - skates, bikes, and as time went on, cars, boats, and for some of you, even airplanes. But it was getting too expensive - - - - so you tended to stifle the desire to race. Said you really weren't interested but if there was a model that you could race, you would. And did. And that's where the concept for the Hot Dawg came from - - - - a quick and inexpensive to build and maintain Half-A Racer. Let's race - - - -

HOT DAWG

"Race you to the car!"
"Race you to school!"
"Race you home!"
"Race you to Johnnie's!"

Remember when you were a kid? How much fun it was to "race" anywhere, with anybody? And all you had to do was run faster.

When you started racing with equipment -- skates, bikes, and as time went on, cars, boats, and for some of you, even airplanes. But it was getting too expensive -- and in some cases, too dangerous, so you tended to stifle the desire to race. Said you really weren't interested. But if there was a model that you could race, you would. And did.

But even models have a way of getting too expensive. This, of course, is relative, but not too many modelers can afford the sophisticated equipment used in Formula I R/C racing -- and those who can have trouble finding the time to build one.

So, as equipment became available, racing of small R/C models has become entirely practicable. The 1/2A engine puts out all the power you need, and a two channel radio gives you all the control you need.

But how about the time to build?

That's where the Hot Dawg concept came from. It seemed to me that if a racer could be put together in a few hours instead of a few weeks, it would have an extra appeal to the modelers who only have a limited time for building.

After watching a couple of 1/2A races, I noted that those with foam wings seemed to be pretty competitive, and I knew from some experiments that I had made with Ace foam wings that they were strong enough to take the G loads of those pylon turns. So wings would be no problem.

How about the fuselage? For fast building, it should be a slabsider. But they don't look streamlined -- even though for 1/2A racing they are fast enough. So, let's compromise - - - make a slabsider, with triangular stock for longerons, then round the corners and fool the fuselage into thinking it's sorta' oval. And, by keeping the lines straight from nose to wing on top, nose to landing gear on the bottom, then straight back from the wing and the landing gear to the tail, but at a different angle, you don't notice the break in the lines, and a pleasing appearance results. Since the lines are straight, though, it's easy to glue the triangular stock to the sides without resorting to a lot of pins to hold things in place.

Sheet balsa for the tail surfaces. Can't be simpler.

A Kraft or Tatone mount for the 1/2A engine, bolted on the front; Hallco landing gear with Veco wheels; plenty of room for whatever radio you prefer. Finish with your favorite material. About ten hours work, and – Hot Dawg!

For what they are worth, here are a few thoughts on the design concept for the aerodynamic viewpoint rather than the structural aspect.

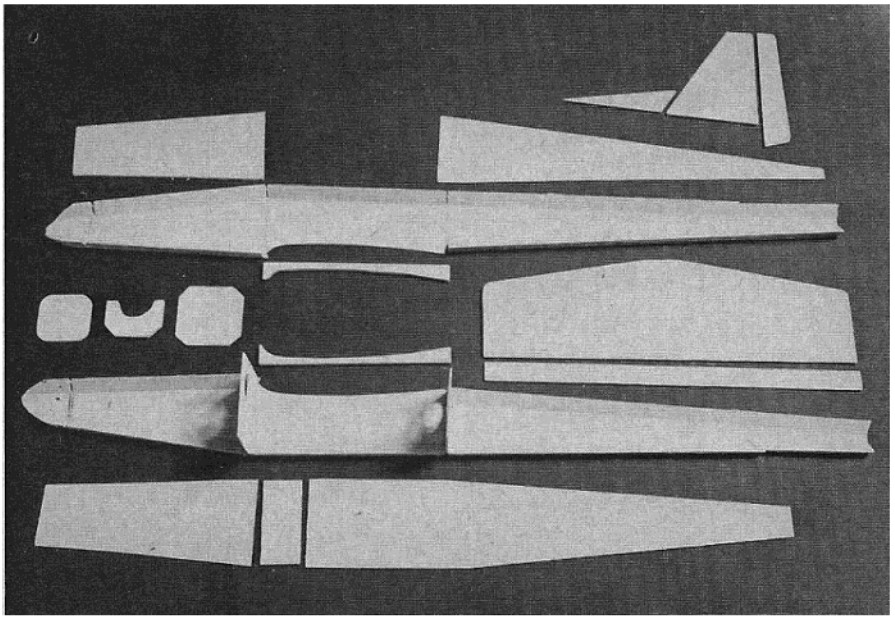
First, the long nose comes from comments I've heard experienced racers make to the effect that the long nose seems to help a racer "groove" on the course.

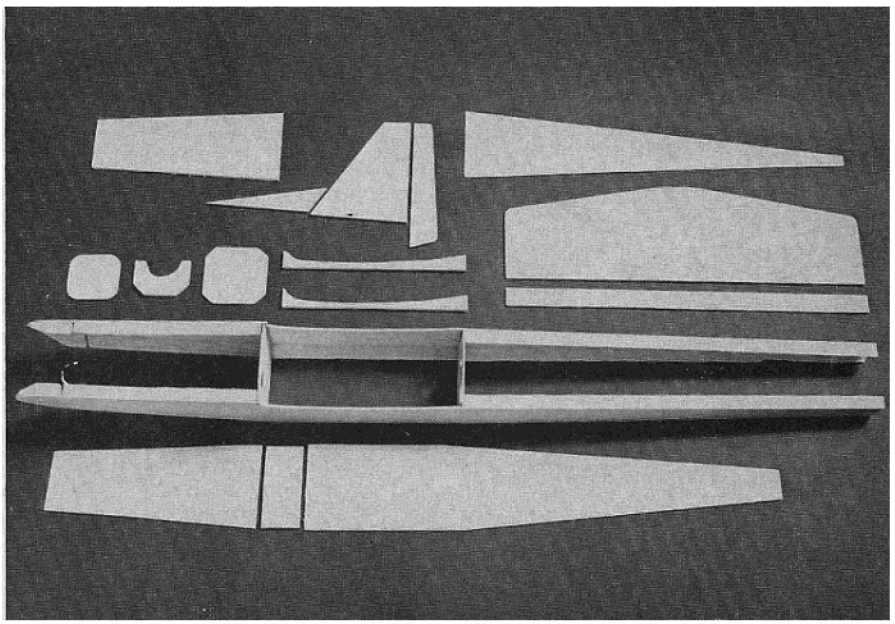
Second, the location of the stab on the bottom of the fuselage is something I've been doing for many years. Long ago I found out with a design called "Breathless" that if I put the stab on the bottom, it was hard to stall and very hard to spin, compared to a design which was identical except for having the stab on top of the fuselage. This tendency was very noticeable when rudder action was full throw or neutral, rather than proportional as we have now. So, maybe it isn't really important any more. But for smooth turns I still like it.

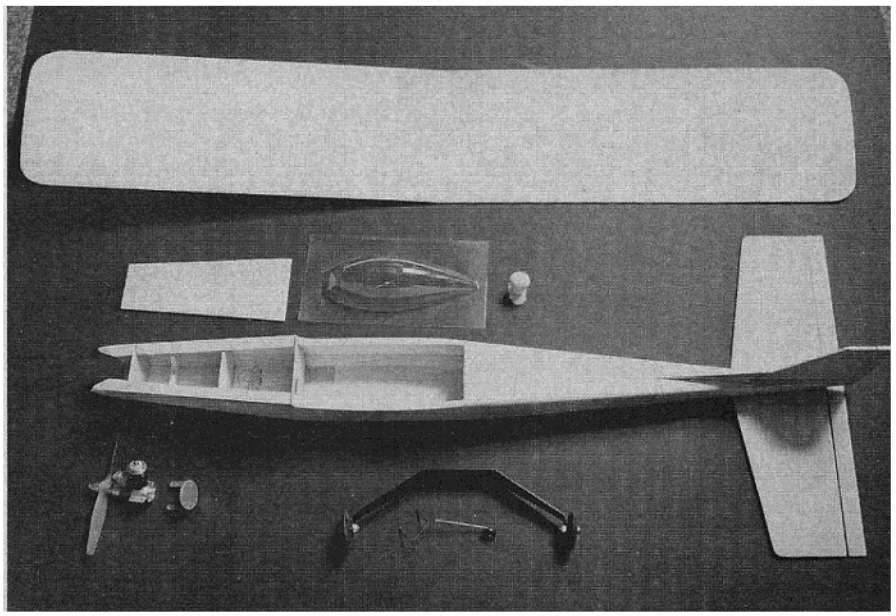
Third, the unusually high tail wheel strut makes the model sit on the ground more nearly level, and helps to keep the take-offs from getting "squirrely."

Fourth, using rudder and elevator control, with dihedral to induce the bank, is a combination of structural and aerodynamic factors. Structurally, you don't have to figure out an aileron linkage – or repair it after a crash (and there will be crashes). With a proper match of fin area and dihedral, the aerodynamics are such that the turns are just as smooth as ailerons would provide.

Speaking of dihedral, Paul Runge of Ace is stocking a special set of wings, called the Sunday Wings, which have exactly the right amount of dihedral pre-cut in the tips of each panel. All you need to do is butt join two panels at the center with epoxy and the







Top construction photo shows slots at break points in triangular longerons to accept bulkheads. Middle photo shows 'kit parts' and semi-completed fuselage. Photo at right shows principal parts of entire aircraft.

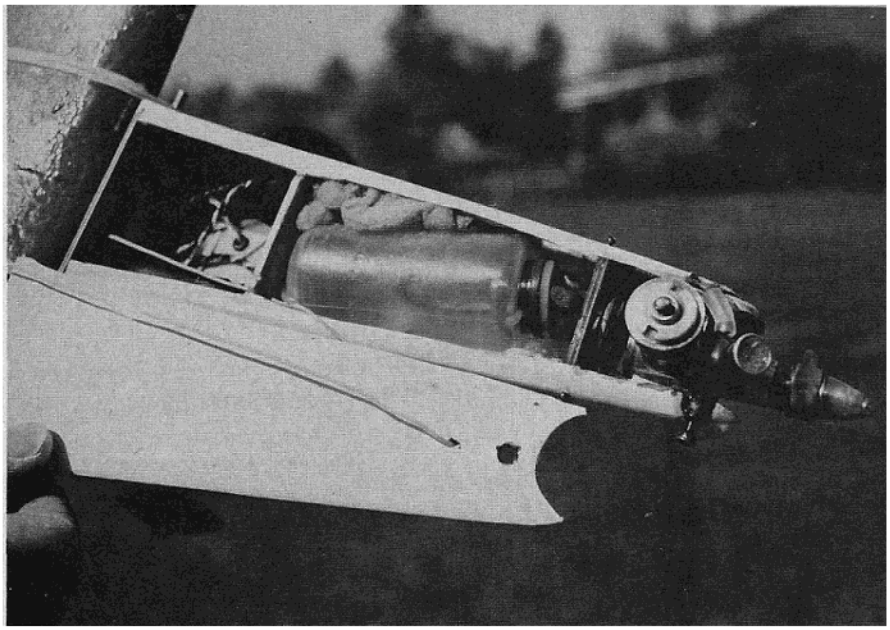
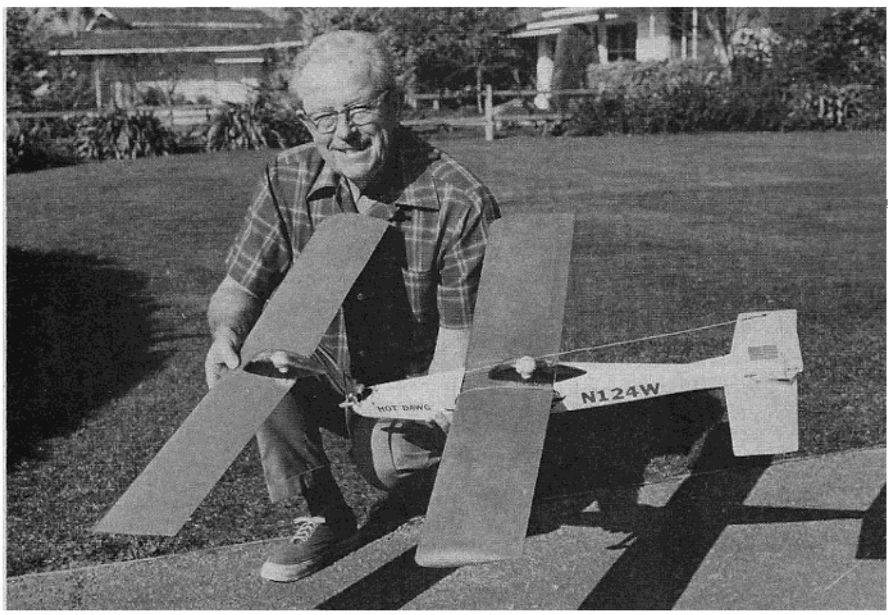


Photo at left shows top front of fuselage including tank and battery compartment. Note cut-outs to accommodate fuel line and needle valve. Antenna comes forward from receiver and doubles back. Center photo shows author with two wings – the extra wing reshaped as described in text. Lower photo shows Chief Sunday Flier with Sunday Racers.

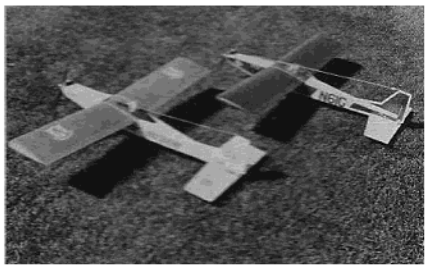


dihedral is pre-set for you. Incidentally, when you do this, you'll find a very slight difference in the airfoil section. When joining the wings, align the bottom curve. This will assure uniform incidence in the wings. The small discrepancy along the top of the airfoil isn't noticeable anyway after the canopy is added. And you must add the canopy. Otherwise the model doesn't meet the specification of 8½ square inches cross section.

Another nice thing about the Ace Sunday Wing sets. For $6.50 you get two sets of wings for the Hot Dawg. Ask for Catalog No. 13L65.

I made some interesting tests with these wings. In my first race with the Hot Dawg, it was apparent that the model was slower than some of the specially designed bombs. That bothered me. So, I put together another wing, but this time I used a razor plane and reshaped the wing airfoil – being careful to maintain the required 7/8" thickness, but sharpening the leading edge curvature. Then I covered the wing with Solarfilm, which doesn't have to be heated quite as hot as MonoKote for shrinking.

With this specially built wing – which took several hours to make – I went out with my friend Bob Andris to make some comparative speed tests. He has an audio tack that reads rpms in the air. The results? At 19,500 rpm there was no difference in the speeds attained by substituting the streamlined and glossy wing! However, on one run, the engine sagged to 18,000, and the speed dropped eight mph. Now I knew why my Hot Dawg looked slow its first time out - - - because at that time I had an engine which only turned 17,000. Conclusion? Within reasonable aerodynamic streamline design, optimizing the re-



HOT DAWG

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finements is of negligible effect compared to another 500 rpm on the engine. So, there's no need to rework the Sunday Wings – just lightly sand them smooth. And to color them, Testors Pla enamel works fine – so long as you spray it on lightly and from about six to eight inches away from the foam surface.

When I say "within reasonable limits" with reference to aerodynamic design refinements, don't misinterpret this to mean refinements aren't worth it. They are – but at the expense of considerable work – like scrapping the foam wing entirely and using a different airfoil with a different chord. Naturally, if you design a wing especially for this racing event, where the rules specify a minimum thickness of 7/8" at the point of maximum depth for the airfoil; if you go to a 7" chord, or even 7¼", you can reduce the relative thickness of the airfoil, and get a faster section. But that's for the dedicated, determined type of racer – not us Sunday Racers.

I have purposely refrained from detailed building instructions; the plans tell you all you need to know to put one together. Jim Georgeson, who took those beautiful photos, built his right off the plans with no problems at all. Except he did have to add some weight to the tail to counter the weight of his big battery pack. I suggest that if you can get one, use a 225 ma pack. You'll save a couple of ounces, at least.

If there is any instruction required, it could be up at the nose. You may have to route out the doublers a bit to accommodate the fuel line so it can make the 90° turn to fit on the spray bar. Also, the needle valve may rub against the top of the fuselage side, and you'll have to cut it away to fit.

For racing, the throw of the rudder should be about 3/16" to either side of neutral; same for the elevator, about 3/16" up and down from neutral. This gives plenty of action, and will prevent the turns from being too violent.

Note that a two ounce tank is used. You don't need that big of a tank to run the race, but sometimes another racer will have trouble getting started, and you'll be sitting there with your engine running for about a minute. Better to have too much fuel than not enough; nothing is more frustrating than to be leading a race and run out of gas.

Since the tank holds more than it has to for racing, there's a simple way to shut it off. Instead of using a "clunk" in the tank, run the brass tubing to the back of the tank at the bottom. You'll have a steady fuel feed for racing, and when finished, just go up a bit, turn inverted, and fly that way until the fuel in the line runs out. It takes about ten or twelve seconds.

For those of you who would prefer just a sport model for fun flying, the Hot Dawg has enough room in it to accommodate another servo for engine control – even a fourth servo for aileron if you want – but take out the dihedral for aileron control. Personally, for fun flying I think they're unnecessary. Oh – and don't forget to go back to the clunk tank for stunting. And finally, if you want to really tear up the sky, increase the rudder and elevator throw a bit.

The Hot Dawg is a good Sunday sport flyer with a Medallion .049 with engine control, but I'll just bet that after you've flown it a while, you'll get a hot Tee Dee, find a couple of other enthusiasts, set up the 1/2A course as described in the May 1971 RCM, and . . . . . .

"Hot Dawg! Let's race!" □

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