



SUPER WHIZ KID

By OWEN KAMPEN

Big Brother to the famous Whiz Kid, this version is for .049 through .15; Rudder-only to "Full-house" with ailerons. A host of options include a foam or built-up wing.

When the original Whiz Kid made its appearance in the December 1966 issue of RCM, it started something. In fact, it started many things, but mostly it triggered an unprecedented response by hundreds of modelers who wanted to get into the R/C act simply, economically and with more than the usual assurance of success. They and most of the thousands that built the Midwest kit were not disappointed, and many took the time to express their enthusiasm and report their growing number of successful flights. At our field in Lodi, Wisconsin alone, some dozen models have logged over 2000 flights... we stopped counting!

All of this adds up to a large group of fliers who have gained control, confidence and enthusiasm and as a result have stayed with the sport to grow and move on to larger and more complex planes and gear. This is a fact sometimes overlooked by those 'sophisticated' modelers and manufacturers who tend to minimize what they feel is a Mickey Mouse approach. I am still not convinced that the majority of newcomers to the hobby are ready and willing to part with \$300 and \$400 just to see if R/C is their bag. For that kind of money there are LOTS of alternatives.

Meantime, back at the ranch, most of the Whiz Kid builders didn't get into the discussion; they were too busy flying. I say 'most' because here and there was heard a discouraging word, and the words began to follow a pattern.

In general, the critics evidenced a total disregard for the design limitations of this purposely light, slow .049 single channel trainer. Reasonable weight limits were wildly exceeded with a corresponding lack of performance, while others tried the powerhouse approach, .09 and even .15 size engines were bolted on, upsetting all weight and balance logic. This group wasn't terribly thrilled either. (One notable exception was a .35 powered 5 foot version which responded with all the gentle traits of its little brother.)

A third area of complaint was heard from those who tried to cram a gang of servos into a space designed to hold one small single channel actuator. The 'reasoning' behind this is not clear as a multitude of roomy boxes are available for use with big iron. Perhaps they just liked the quick easy way the W.K. went together, and there IS something to be said for that.

Crutch construction for perfect alignment, thicker wood and fewer parts adding up to fast easy building in a minimum of time and space. This, plus the Midwest foam wing and stab for warp free performance and epoxy-quick repairs. The foam wing and stab were, at the time, something of a novelty but, in the months to follow, became an integral part of a growing number of designs by a variety of modelers and manufacturers of ready-to-fly packages. So the original design concept proved out, but perhaps it could be improved so that past objections could be overcome.

A larger, roomier version able to hold a variety of R/C gear and capable of handling larger engines was obvious, but it took the constant urging (nagging) of friend and fellow modeler Frank Baker before the Super Whiz Kid became a reality. Frank's contagious enthusiasm is an awesome thing and I finally ran out of excuses and got cracking.

Within a week the new one was flying and it has been flying ever since. For over a year and a half it has served as a basic test bed for a variety of engines and radio systems. Power has ranged from Cox T.D. .049's through .051 and .09's, rudder only, Galloping Ghost and miniature multi proportional. Proof of the Super's capacity to survive all this is evidenced by the photos of the original model on these pages as all were taken at the end of the 1968 flying season after two summers of hard flying. There have been the usual (for me) number of chaotic moments ending in what normally would be disaster but the rugged one keeps coming back for more. A number have been built by other modelers and all have lived up to the original in terms of consistent performance and survivability.

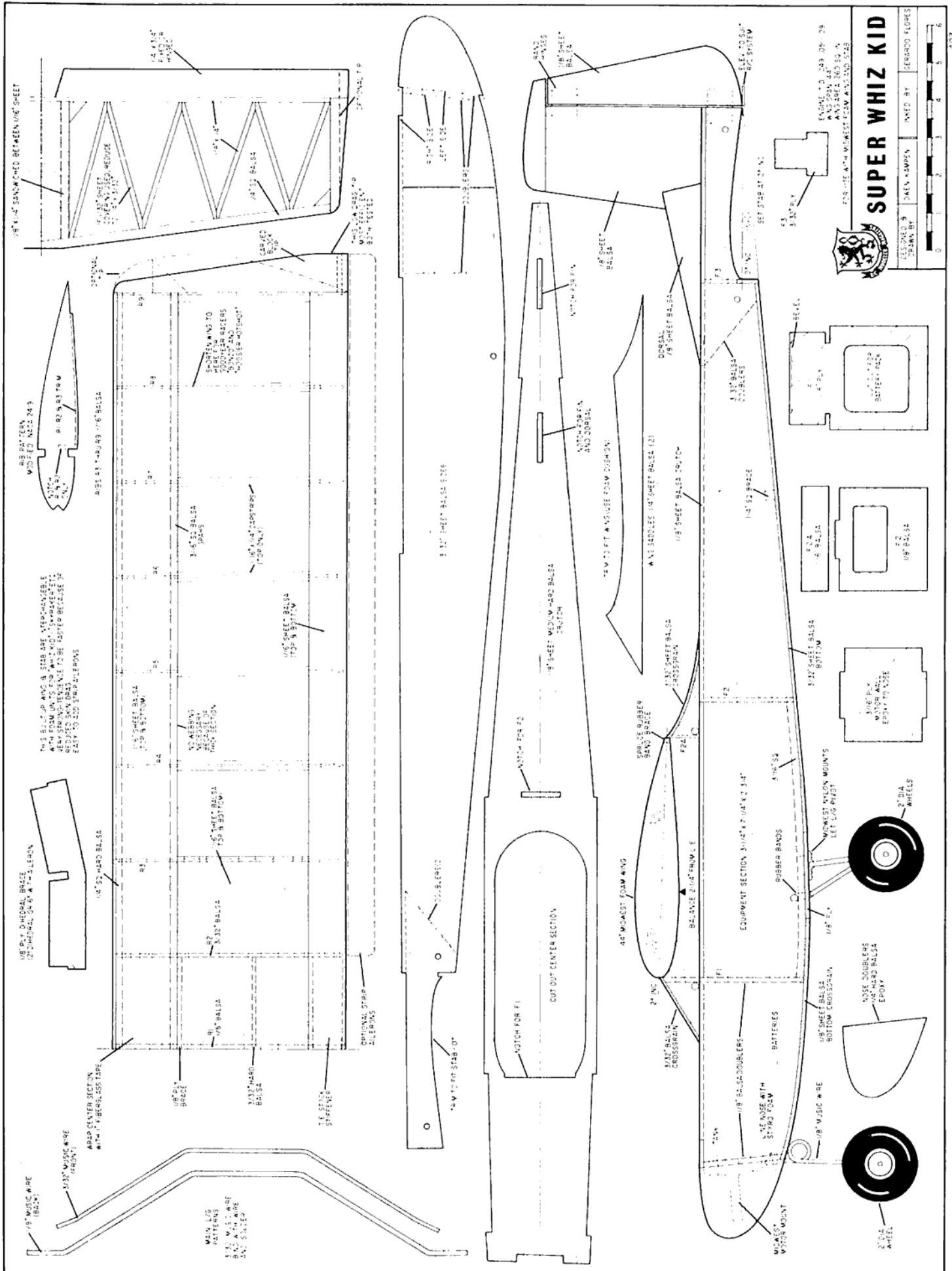
Because of the test bed function of this craft - a few observations will be passed along to give you a better idea of its versatility. All original testing and flying was done using the Cox T.D. .051 engine and the Adams Twin actuator. Performance was great with solid response and 100% reliability. Loops and rolls are a cinch with a nice flat glide on power off landings. Later, a Halco "103" was installed and flown with excellent results using both the .051 and .09 Cox engines. Here the addition of elevator and motor control gave added dimensions of performance. The Halco rig is a dandy, beautifully made, and a boon to those who prefer a plug-in, all in

one system. Modifications on the transmitter, namely a die-cut plastic plate, prevent stick movement into the corners thus minimizing the rudder-elevator interaction inherent with the Rand GG Actuator. The Halco unit was also flown using only rudder and motor with the pulse rate increased to about 18 cycles/second to eliminate rudder waggle. The increased rate has no effect on the motor control but is not compatible with elevator use in the single actuator system. A bonus was discovered about this time by Carl Vogt whose curiosity got the best of his pocketbook and he combined a Cox Reed Valve Throttle Assembly with an .049 T.D.

Mr. Cox will probably hate me for this but the unit is too good not to mention. The part number is 2460 and lists currently at \$3.98 - a bit less than the .049 Medallion throttle. But here's the deal. For your 4 bucks you get not only a restrictor throttle, but also T.D. glow head, cylinder, piston and con rod. The combination works like a charm, needing only the addition of a small arm on the restrictor to connect to. Exhaust ports can be filed a bit for slightly higher top rpm's, but it is not necessary. It's quite a combination and in all honesty, I like it better than the Medallion rig because it's freer, less prone to binding and far more crash resistant. This combo is shown, if not too clearly, in the photos. Another mod, also shown, is the use of a 2 oz. clunk tank to give more flying time, particularly with the .09 size engine. For greater convenience in frequent fueling, no hatch cover is used.

While I was going the single channel route, friend Roman Bukolt put together another Super Kid and installed his then new Bonner 4RS proportional system on rudder, elevator and motor, powering it all with a Max .10. Flight performance was excellent at the rather startling all up weight of 40 ounces. However, some lessons were learned the hard way. It soon became apparent that there is a limit to the number of G's a foam wing will take, and this can be reached when increased power and weight are combined with abrupt maneuvers. Net result - two folded wings and two trips to the Bonner hospital for major and minor surgery.

In view of this, an observation: In the past year, a number of ready-to-fly and A-R-F planes utilizing the 44" Midwest foam wing have reached the market. Some of these are quite heavy



SUPER WHIZ KID

 DESIGNED BY DAVID ASPHEN

 DRAWN BY BERARDI FLORES

 ENGINEERING: 209-209-29

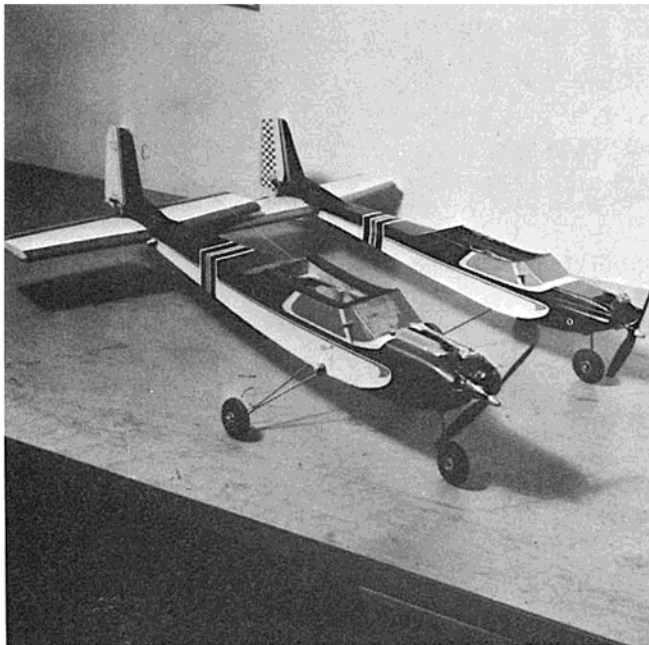
 ADDRESS: 209 S. A.

 PHONE: 209-209-29

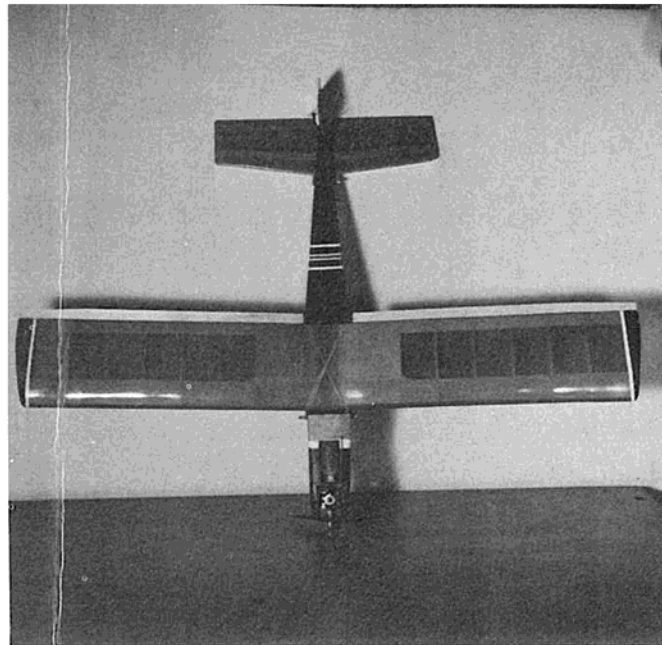
 FAX: 209-209-29

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FULL SIZE PLANS AVAILABLE - SEE PAGE 71



Comparison of fuselage size to original Whiz Kid. Super Whiz Kid in foreground. Deeper, wider fuselage suitable for G.G. and small digital proportional.



Left: Whiz Kid with Adams twin actuator, Golden Bee .049, rudder only. Right: Halco 103 REM with Cox reed valve throttle unit, 2.02 tank.

and recommend the use of .10-.15 engines to get them airborne. While under normal flying conditions the combination can be quite satisfactory, a word of caution seems in order. (The foam wing Goodyear racers are less prone to extreme wing flexing because of their reduced span - 36"-38".)

Following his experience, both Roman and I built up constant chord wings using the foam airfoil. Span was reduced to 40" while retaining the same approximate area of the original.

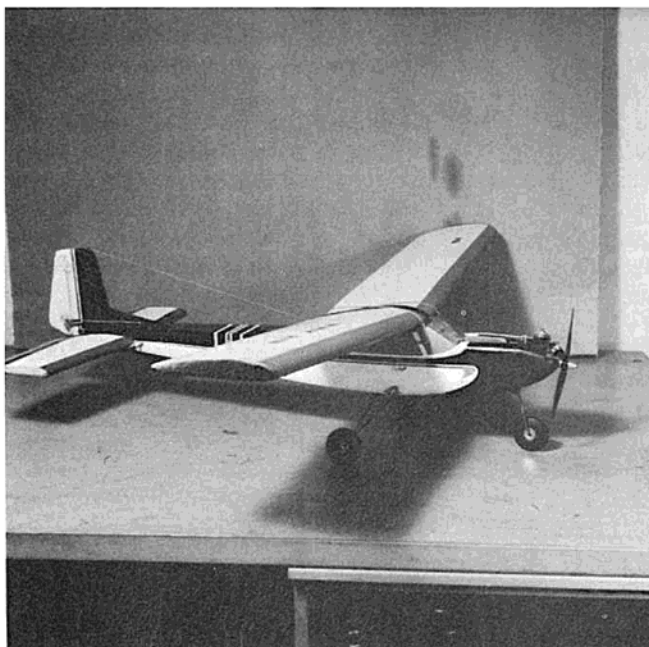
They proved to be lighter and stronger than the foam and because of a smoother finish, slightly faster in flight. Plans are shown and this wing is recommended for use when the plane weight exceeds 2¼ pounds and also if ailerons are to be added. This is not intended to knock the reliable foam wings in any way - but merely to acknowledge their limitations.

Roman also did some experimenting with his wing using plug-in wing tips. The raked back variety with a

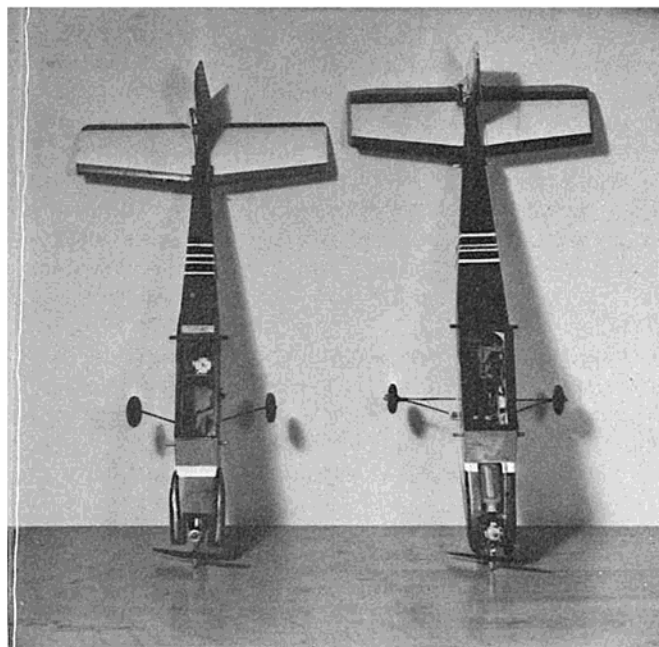
flattened trailing edge appeared to have definite lift advantages as evidenced by take off runs 20% to 30% shorter than with conventional rounded tips. While not conclusive, the tests seem to confirm my belief that this type of tip tends to reduce tip vortices and increase effective span. (Some extensive research is in order here - any volunteers?)

While we're on the subject of wings, I'd like to comment on Ken
(continued on page 27)

Super Whiz Kid with Midwest foam wing and stab.



Super Whiz Kid with built-up 40" wing and strip ailerons.



RCM - Feb 1969) Ken attributes this to the tapered wing and implies that it is a natural characteristic of this kind of wing. If I may take issue with my friend, I'd like to disagree. Having designed and flown close to a dozen Midwest foam wing models, I have yet to experience this phenomenon. In fact, quite the opposite has been true, stall characteristics have been amazingly gentle, a direct result of the large radius leading edge.

Now while it is generally true that tapered wings tend to stall at the tips first, it takes a rather extreme amount of taper in planform and thickness before this really becomes a problem. The foam wing taper is quite modest, the tip being almost 85% of the root chord.

For these reasons I believe the fault lies elsewhere and the elsewhere is in wingloading. All of my designs have been flown with relatively light loadings in the range of 12 to 18 ounces per square foot. Ken doesn't say what the Seafoam weighed in at, but with full propo equipment I'd guess his wing was loaded fairly heavily. Another possibility, untreated foam can absorb water, resulting in unwanted weight acquired during extended flying sessions off water. In any event, better tip design will help solve tip stalls even when heavily loaded, as our tests have shown. Ken is now welcome to equal time.

This digression, in turn, leads to the finishing of foam wings, and after three years of hacking away at the problem some summing up is probably in order.

1. The simplest approach is to do nothing - fly as is. Dirt, oil, and dented leading and trailing edges are the result but if the wing loading is light - the only harm is aesthetic.
2. Seal with 2 coats of clear polyurethane varnish (brush on only) and plastic or Mystic cloth tape on all leading edges. The clear varnish can also be colored with dyes for transparent results. This is my first choice. Don't use spray cans - the solvents melt foam.
3. Testor's SPRAY-PLA enamel will add color but leaves foam texture quite apparent. Most other enamel spray finishes contain solvents dangerous to foam, so when in doubt always test first on a foam drinking cup. Watch out for weight build up. (*Not on the cup. -Ed.*)
4. Contact shelving paper (vinyl), available for about 49 cents a yard. This will stick better if the foam is

first sealed with polyurethane varnish. I've gone this route often. The vinyl is resistant to dirt and grease but does not have a gloss finish. It can be easily cleaned and can be spray varnished but NO DOPE!

5. Colored polyurethane enamel is available from Valspar and some other manufacturers - good if you don't get carried away and wind up with too much weight gain. All the varnishes can be wet sanded and waxed for gloss smooth finishes if desired.
6. MonoKote can be used if you are VERY careful. Foam melts at a temperature close to its bonding temperature but it can be done, THOUGH RISKY. A fan type hair-dryer has been used with some success.
7. Other methods of sealing and adding a ground coat for smoother sanding have been tried including HobbyPox STUFF. This is solvable in alcohol and will not harm foam but can become too heavy if allowed to build up. Use it as a filler only - sand most of it off.
8. Super Solarfilm is excellent and can be easily bonded to the foam with no danger since it requires less heat than MonoKote.
9. Sheeting with balsa and a variety of cardboards have been tried but tend to come out too heavy for low powered jobs. The raw wing weight can vary as much as an ounce or so but for best all around use the range should fall between 7½-8½ ounces when finished. One final comment and we'll move on. It has been my experience that a number of wings have broken as a result of 'prangs' or assisted ground contact, but not for the reasons I thought. While extreme flexing can occur in violent air maneuvers, the ground effect damage I'm referring to is usually the result of hard head-on impacts. (Yes, I have them, too!) Here the fracture appears to be the result of the forward momentum of the wing and it begins at the trailing edge. This is the weakest part of the wing and once it fails, the rest follows. A solution with some fringe benefits has occurred to several of us and I believe this problem can be remedied in the following way:

Using a steel straight edge, cut back the trailing edge to a point where it is 1/4 inch thick. Then white glue, Titebond or epoxy 3/4 inch trailing edge stock in place. This hasn't been tested

yet but would prevent trailing edge separation plus giving a cleaner, sharper, more efficient trailing edge plus several square inches of added area. Try it. This about exhausts my foam wing store of knowledge so let's get into some brief construction notes and wrap this up before Spring comes or whatever season is next by the time you read this.

Fuselage

If you haven't tried this method before, you're in for a pleasant surprise as it goes together fast, true and strong and can be assembled on its side, upside down or holding it in your hands. As everything hangs on the crutch, cut this with care using a steel straight edge. Glue formers F1, F2 and F3 in place and then the sides can be added and held in position with tape or pins till dry. Front and tail doublers come next using contact cement. Install all necessary blind nuts for the motor mounts and attach the nose gear (fixed or steerable) to the 3/16" ply motor wall and EPOXY it in place. Add the 1/4" hard sheet wing saddles and cabin front and back. With the addition of the dorsal and fin, it begins to look like an airplane. Save the rudder till all doping is completed. Install the fuel tank - if fixed, or a hatch can be cut out for the removable type. Epoxy the main landing gear plate in place and finish the bottom sheeting. Use strong hard wood under the batteries - even go to 1/16" plywood here if desired - it also keeps the nose wheel from entering the battery compartment. 3/8" hard nose doublers wrap it up and you can dope, MonoKote, spray or HobbyPox the finish of your choice. Hold down dowels keep the flying surfaces attached, so include them if you haven't already.

Wing

The built up wing is like all other D-TUBE wings. The airfoil is flat bottomed for most of its length for easy building flat on the board. Use trailing edge stock or balsa strips to shim the leading edge in position. A wing jig is highly recommended if one is available. Titebond is the glue to use and, again, choose the covering of your choice. Mine was colored silk and clear Aero Gloss. Whatever you do - build noble and true and you will be rewarded with one of the most stable, rugged, dependable airframes around.

May the winds of Sunday blow gentle on your wings. ●