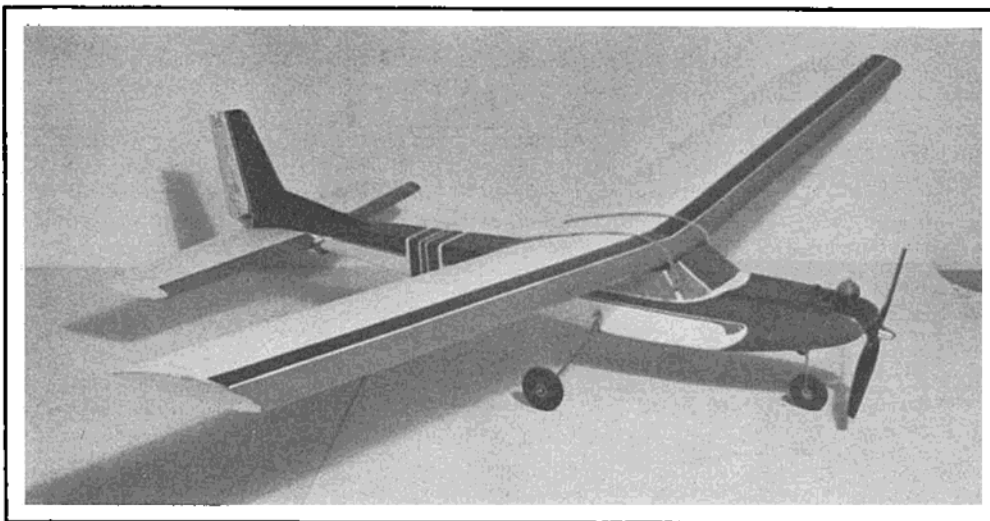


GETTING STARTED IN R/C



**WHIZ
KID**

AND

**CESSNA
150**



A STEP-BY-STEP PROGRAM FOR BEGINNERS

BY OWEN KAMPEN



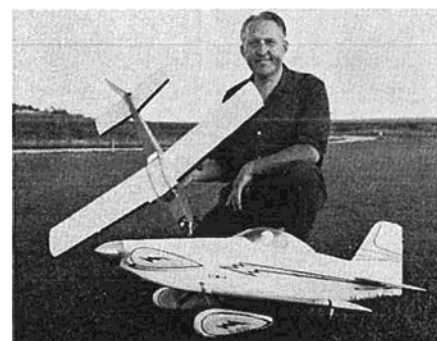
At the time of writing, this Lodi, Wisconsin, trio has made over 400 flights with their Whiz Kid's. L to R: Mike Zink, 11; Paul Knutson, 13; and Dan Knutson, 9. Their spot landings put many elders to shame. Proof positive!



17-year-old Steve Rife, assistant at RCM's editorial office, had never built or flown a model airplane. The Whiz Kid was his first . . . and completely successful!



Frank "Digitrio" Baker — flies multi scale and 4-engine types. This is his second Whizzer, a sort of semi-something Curtis Robin variation. Note QZ engine — this combo great for the schoolyard bit. Frank flies them till engines fall out.



Dad Knutson (Dick) flies scale propo — Goodyear, big bipes, and all. Has fun with a Whiz Kid.

IN almost every sport or hobby it is customary to start at the beginning. I say "almost" for radio control remains a stubborn exception! Here, the compulsive urge to begin at the top has been, and is, one of the greatest barriers to enjoying the rewards of R/C flying. A large part of this is due to adult ego which causes many otherwise intelligent grown-ups to shy away from anything labeled "for beginners," even though they have never built or flown anything more complex than a 10c glider. They soon learn, to their dismay, that age and money are no substitutes for experience, but by then it's too late and they are soon pursuing a new "lifetime hobby of the month." On the other hand, there are large numbers of would-be builders and flyers of all ages hanging on the fringe who are itching to get into "wireless control" but are held off by the confusing jargon, double talk, and conflicting advice volunteered from all directions. They are perfectly willing to start moderately with minimum controls, minimum building time, and minimum investment, but aren't quite sure just **where and how** to begin. If this latter description fits you, hang on for some straight words on the subject. And you old timers — don't go away, because there's something here for you, too — unless you're hooked on status symbols — in which case you'll have to seek success elsewhere. Now, let's get the proverbial show on the road with some specifics.

The Whiz Kid and Cessna 150 introduce a new approach to 1/2A R/C models. Each is designed to fit a specific step in a building program guaranteed to get you off to a flying start in single channel radio control. Both feature an unusual molded foam wing and stab which combine to give a flight response unique in .049 class models. Thoroughly tested in hundreds of flights by modelers of all ages and degrees of experience, they have proven to be exceptionally easy to build and fly, yet have a survival rate far beyond the average! While they lend themselves to the "trainer" category, it would be unfair to label them exclusively as such, for many advanced multi modelers have enjoyed the sheer "fun of flying simple" with this progressive pair. Let's take a look at them, individually, and learn the secret of their success as well as how they can be modified to grow with you as your flying skill increases.

WHIZ KID

Through the years many models have appeared offering themselves as the answer to a beginner's prayer. As a whole they have been (1) too complicated, (2) too fragile, (3) too fast, (4) too prone to warping, and (5) too many pieces. All too often the net result has been that the "first" model has had the effect of a revolving door in terms of getting new

people in and out of our R/C hobby in record time.

The Whiz Kid has been designed to welcome you to the group and keep you here coming back for more. Big words? You bet! Let's see how it's all accomplished and you can judge for yourself.

First there's the matter of the curved slab that keeps the whole business airborne — the wing. Note: **All wings are not alike.** Obvious? Well not so much as you might believe. If you are new to building and covering them, they are all alike — **DIFFICULT!**

We solve that in a hurry by using Midwest's new molded foam wing that eliminates building and covering. It also does a lot more than save time — it prevents **warps**, one of the most haunting voodooos to ever plague flying machines!

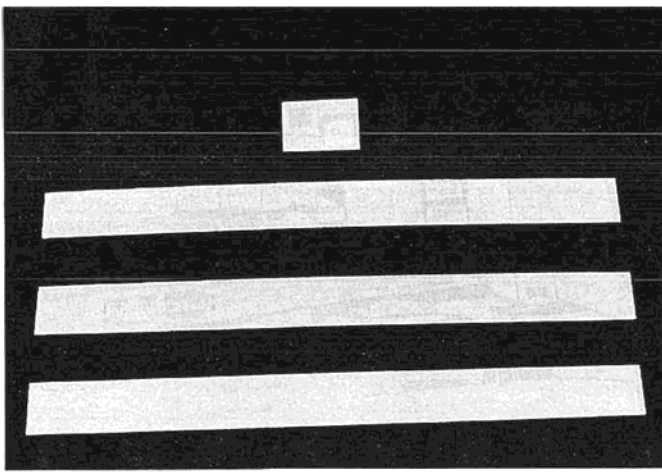
The foam wing and stab do not need to be covered — more on that later — yet they are strong through extra thickness and flexibility. "Thickness" is a key word in describing the flight characteristics of this pussy cat so let's pause a moment to see how and why it is important. This is not the time and place for an involved discussion on airfoils so we will keep it simple: (1) The more wing area the more lift. (2) The more area the more drag. (3) The thicker the wing (within limits) the more lift and also the more drag. (4) The opposite also holds true. In other words, lift and drag walk hand in hand and you can't have one without the other.

The use of thick airfoils is not new — being used by most large multi ships today. The common practice is simply to overpower them with large engines.

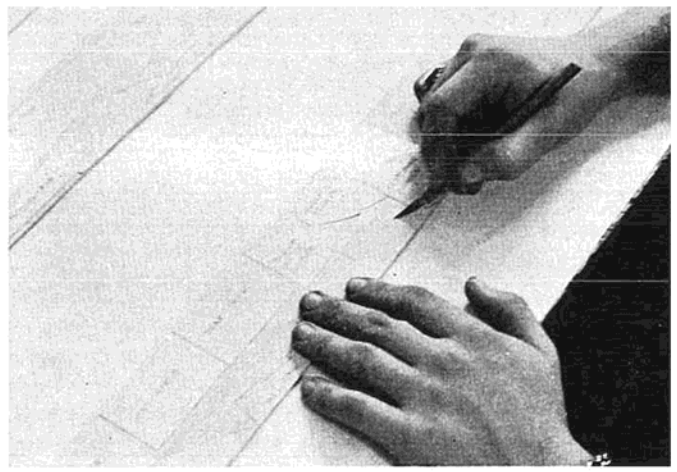
The Whiz Kid doesn't try to fight this combination but puts it to work with the following results. The thick 17% section gives high lift and high drag to keep flying speeds **down**. Reduced speed means more time to anticipate the action of the model and to give the proper control. It also results in a slow lazy glide from altitude after the engine quits to help you learn to set up proper landing patterns and get extra flying time from small engine tanks. (Under thermal conditions the Kid will soar and one flight was terminated after 11 minutes only because of low batteries.)

Another very important factor to be considered is airfoil shape. Most 1/2A jobs today use the reliable old flat bottom Clark Y section, or one of its descendants. A characteristic of this airfoil is its tendency to balloon when turning into the wind or when excessive speed is built up. Its high lift also makes it difficult to penetrate wind. The Midwest foam wing has a semi-symmetrical airfoil (convex curve on the bottom) which minimizes these problems, and as a result, ballooning is tamed and penetration is surprisingly good.

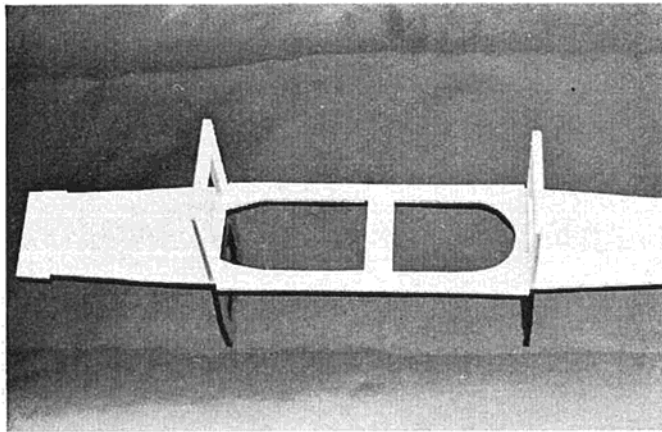
One final consideration is the shape of the wing leading edge. Sharp leading



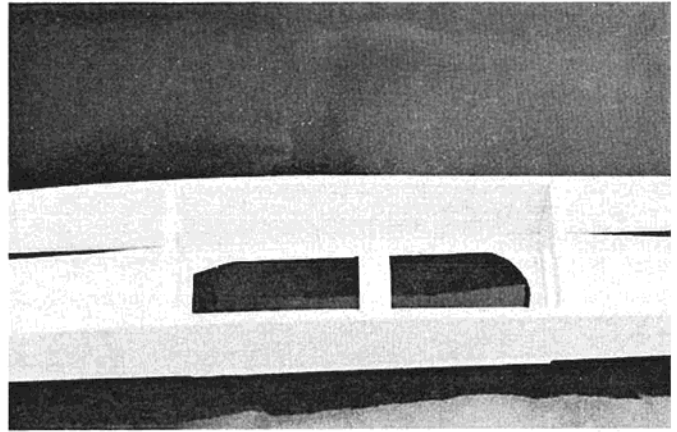
Templates rubber cemented to balsa sheets.



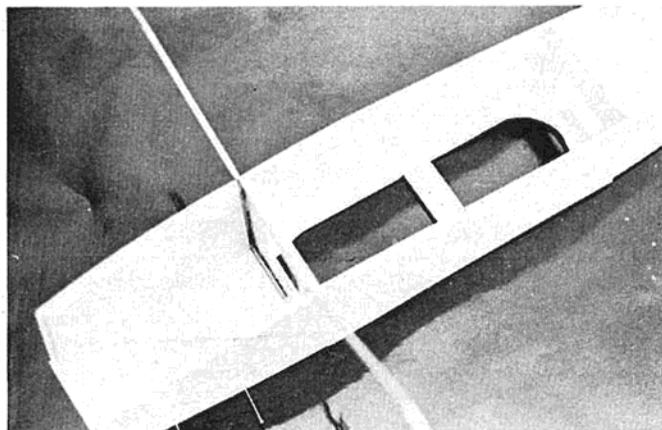
Cutting out the Whiz Kid parts.



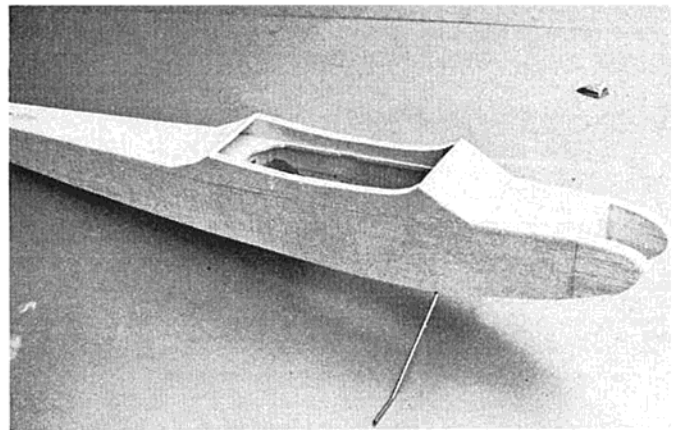
Formers glued to fuselage crutch.



Sides fitted to crutch and formers.



Two wheel gear in place behind doubler.



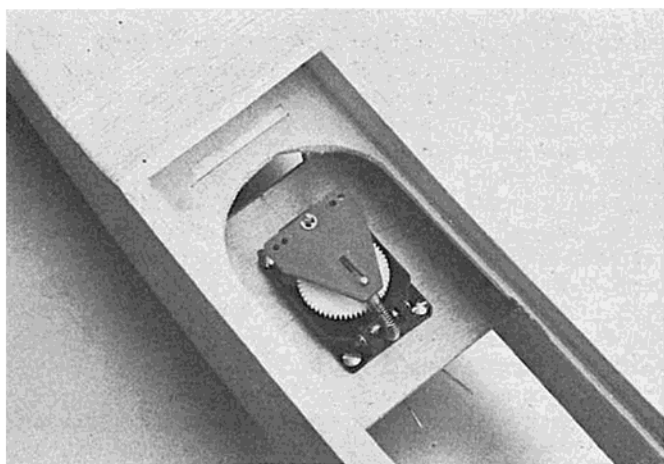
Basic fuselage completed.

edges affect stall characteristics tending to give an abrupt and sharp braking stall which we can do without. Ed Kazmirski's "Taurus" pioneered the use of a blunt rounded leading edge to tame this effect and it does the same for "The Kid." The thick semi-symmetrical stab also goes to work in stalling attitudes. It's quite surprising at first to watch the tail lift up allowing the ship to pick up speed and move out again without dropping off on a wing.

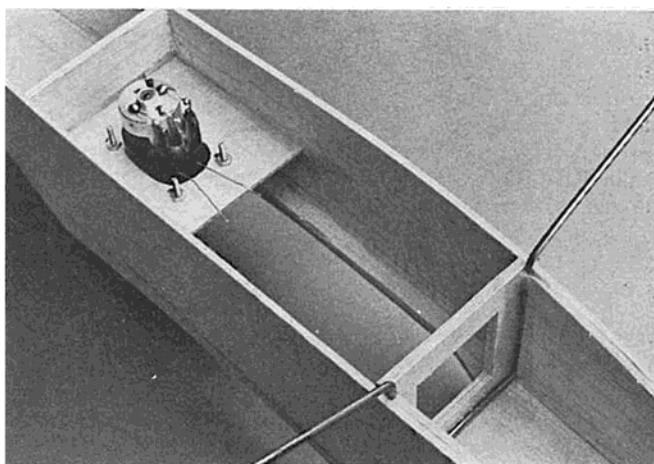
So much for flying surfaces — now

let's put them to work. The distinctive appearance of the Whiz Kid is the result of a couple of nagging questions which reared their round heads some time ago — to wit — why must models be built from plans? Why not patterns? Silly questions? Not at all! Those of you who have dressmaking wives — mothers — girlfriends or whatever, can ponder how far this billion dollar business would have gone if they sold dress "plans." So, included in this ball of wax are patterns showing how to cut a Whiz Kid from

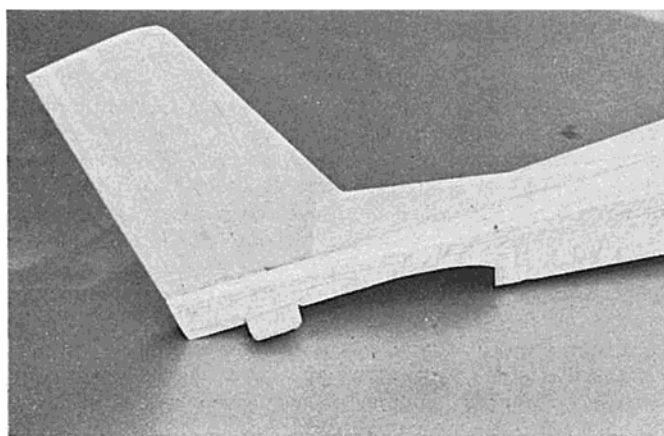
3 sheets of standard size balsa. How about that? If you've already peeked you might have noticed that the sheets are 50%-100% thicker than normally used on a 1/2A job. That's one of the ways the survival problem was solved. There's more to it than that, however. In addition to the extra strength the thicker wood allows a really meaningful keying of sides and formers to a central crutch. This, combined with both sides being cut from the same sheet of balsa, makes it impossible not to build a true



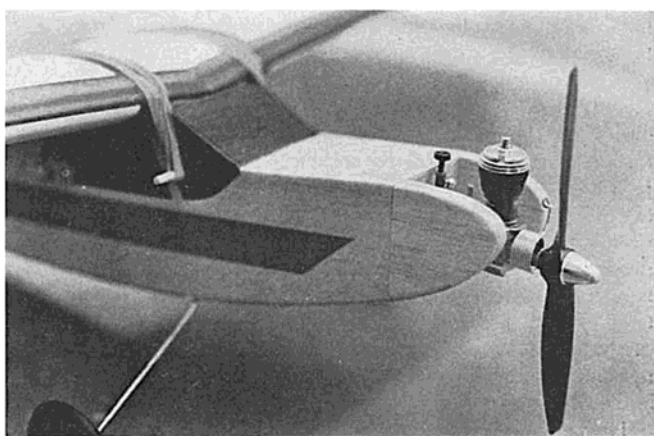
Rand HR-1 on plywood mount.



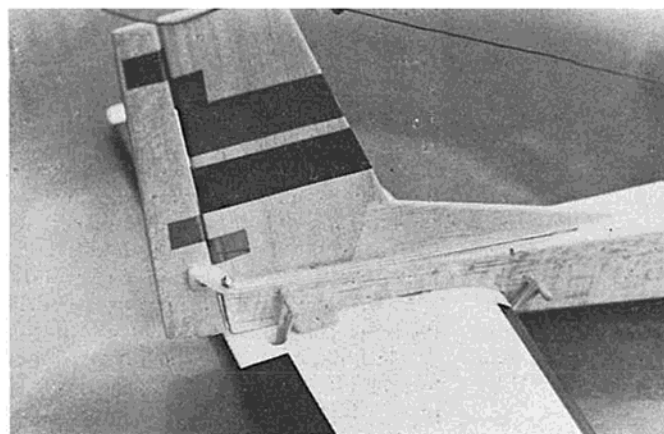
Underside of Rand actuator.



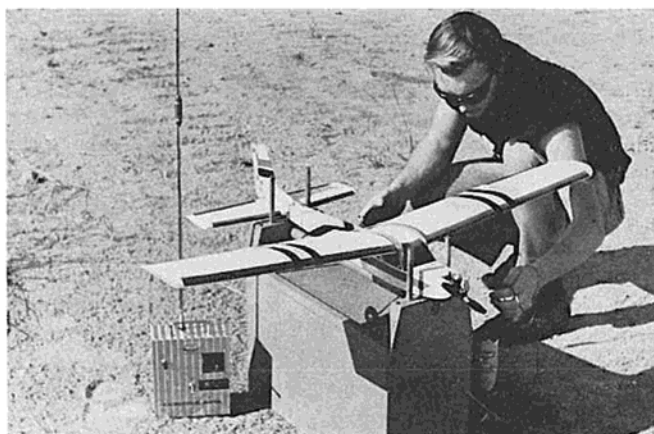
Tail assembly showing stab mount.



Golden Bee .049 in place.



Tail assembly with Midwest foam stab.



Steve Rife with Whiz Kid, ready to fly.

fuselage. Touche!

Another bonus is the ease with which repairs are made — more gluing surface makes stronger joints — right? All of this for an ounce or less of added weight. Our high lift wing won't even notice the 20 oz. all up weight and in fact flies better than when lighter. We're not flying free flight, men — remember? Also with today's lightweight equipment we can afford to put more of the overall weight back into the structure where it belongs.

Regarding equipment, a strong loud

pitch is hereby made for simple pulse proportional. Almost all of the hundreds of flights to date have been made using single channel receivers with add-on switchers or dual output rigs such as the C&S Finch, coupled with the Adams actuator. This deceptively simple magnetic actuator is the result of more than 16 years of development and for simple, reliable Rudder Only operation it's excellent. It has one moving part, three connections to solder, and that's it. Its big brother, the Adams Dual, can also

be used for more positive response and is definitely recommended for the Cessna. On the slow moving Whiz Kid, however, it's really not necessary.

The Whiz Kid has been flown on escapement but it is honestly not itself and tends to be jerky and jumpy, especially when the newcomer forgets how many times to punch the transmitter for a left turn when the plane is flying toward him!

A personal bias enters here, as time and time again, those who have been

having control problems on pushbutton, have been given the Whiz Kid and a Controlaire Galloping Ghost transmitter to try. Usually just three flights using proportional stick control and they are sold. The funny, wiggling rudder doesn't bother their aesthetic sense when in the air. In answer to your next question, let's hold off on the Rand LR-3 until the Cessna, OK?

Hang on readers — we'll get to the construction shortly. First, a comment on the long nose and tail moment arms which give you the smooth gentle maneuvers, and then the clincher on how to give the Kid a hotfoot! It is strongly recommended that you start out with the standard 40" version and fly it until both you and the plane know who is driving! When the easy, lazy flights have become cinchy and a yawn begins to creep in now and then, here's what you can do to stir up the action (but not all at once!). (1) Move the pushrod closer to the rudder for more throw. (2) Increase the size of the rudder $\frac{1}{8}$ " to $\frac{1}{4}$ " by adding a strip on the trailing edge. (3) Saw off some wing. That's right — or use a bread knife if you wish, or a razor blade, or a scout knife! Remember that lift-drag discussion a while back? Well, now we're going to get rid of some drag — some lift, too — the net result is faster airspeed, faster response, and faster butterflies in the stomach!

How much? Try a 38" span for a start, and if you feel bold, knock off a couple of inches more! You still want more go? Try a Cox Tee Dee, only be sure you know what you're doing! To give you an idea of the extremes to which some people will go just for kicks, Frank Adams has a 28" version that does consecutive rolls upwind — in 20 mph winds! Needless to say, this is not quite what we had in mind for our gentle trainer, but to each his own! Modifications are beginning to show up on the field and where it will all end, nobody knows, but for a couple evenings time and three sheets of balsa — what can you lose? Two wheel and three wheel versions add to your options. So, enough of this — let's cut and glue just like they say in the model mags. Oh — one final thought! If, for some unexplained reason the whole bit pales, build the fuselage anyway to take with you on your next vacation. It's great for driving tent pegs!

Wing Preparation

The Midwest wing and stab need little additional work other than a light sanding to remove any ridges or flashing. It is desirable, however, to seal the foam against oil and dirt. The easiest method is to give the raw foam a few coats of white glue which has been diluted about 50% with water. Another method, used by Fearless Leader, is as follows: (1) Two coats of thinned white glue. (2) Lightweight silkspan or Japanese tissue

applied damp, followed by two more coats of glue mixture. **NOTE: DO NOT USE MODEL AIRPLANE GLUE ON FOAM!** 'Cause it dissolves the foam, that's why! And if the white glue tends to burble and bubble during application, try the addition of a few drops of a wetting agent such as Kodak Photo-Flo. (Ed's Note: We have successfully used AeroGloss dope filler, clear dope, and colored dope over silkspan and white glue covered foam wings. Extreme caution must be used to be certain the surfaces are completely sealed inasmuch as butyrate dope will also melt the foam. If you use dope over the glue-silkspan surface, we recommend all coats be sprayed.)

The addition of $\frac{1}{8}$ " dowels notched into the center section of the trailing edge of the wing will give added strength to protect against crushing by the rubber bands used to attach the wing. $1\frac{1}{2}$ " wide cloth or plastic tape used along the leading edges will create additional strength as well as adding a nice touch of color trim.

A plywood brace (or a piece of flat popsicle stick) should be white glued in the notch in the stab bottom — also for rubber band protection. **ANOTHER NOTE:** A real bonus feature of the use of the foam is its ease of repair. On rare occasions a wing will break, but don't panic — the break is almost always clean, and the thick sections go back together real easy. **USE EPOXY GLUE ONLY FOR REPAIRS.** White glue tends to stay wet — the epoxy is self-curing and does not dry by air contact.

A final suggestion here regarding alternate covering methods. Each adds some weight and involves additional cost. (1) The use of contact shelving paper — this is particularly appropriate if you like red brick wings or perhaps yellow daisies or a nice plaid is to your taste. Now is the time to really express yourself! (2) A somewhat more conservative approach involves MonoKote. This can be applied to foam if you exercise some care to keep temperatures **LOW**. Some builders have used a hair dryer with success. **WARNING: HEAT MELTS FOAM.**

In addition to the above, a bit of experimenting has been done with thin contact sheets of Mylar. If you are the born experimenter type and come up with a better solution, by all means let's hear from you. So much for foam — now on to the balsa bit.

Fuselage

The "crutch" construction used here lends itself to a variety of building procedures. The fuselage can be built upside down, on its side, or holding it in your hands — it really doesn't make much difference as everything hangs on the crutch.

A word now about patterns. The assumption is made that you will order

real life size ones from Hobby House Plans Service, otherwise the whole point is lost. Notice that a standard sheet size is indicated, and all that remains for you is to transfer the patterns to the wood. Use tracing paper or rubber cement the paper directly to the balsa. The cement will rub off later. Please use a good steel straight edge for the straight cuts — no free hand work here! Many modelers have built more than one so you should consider the slight extra effort of cutting the patterns from cardboard for easy tracing. An all-out effort was made to get everything to come out of just three sheets, which accounts for the lamination of wing saddles and nose triplers. If you have some $\frac{1}{4}$ " scrap available, by all means use it. 'Smatter of fact, you can build the whole bird from leftovers if you so desire and have lots of new "littler" leftovers!

The only operation that might give you a little trouble is the bending of the nose wheel coil. Commercial gear is okay, although inexpensive bending jigs are available at most hardware stores. The alternate, and easier choice, is the two-wheel version. All this requires is shortening the fuselage nose doublers by $\frac{1}{8}$ " and sandwiching the gear against F1. A tail skid should then be added just forward of the stab. Stitch to a small piece of plywood and make the skid long enough so the tail doesn't drag. Now here we go, 1-2-3.

CONSTRUCTION

Fuselage

1. Glue formers F1 and F2 to the crutch.
2. Glue the two sides to the crutch between formers F1 and F2. Make sure the short side is on the right when looking at the top with the nose pointed away from you. Let dry.
3. Now glue the rest of the sides to the crutch working toward the nose — then the tail — hold with pins till dry.
4. Add the nose and tail doublers using contact cement such as "Weldwood."
5. While the fuselage is drying drill the holes for the engine bolts and install 3 x 48 blind nuts in the $\frac{1}{8}$ " plywood motor mount, then bolt the nose gear in place. Install using epoxy. Make sure it fits tightly against the nose doublers.
6. Add the wing saddles — measure carefully 3" back from the front of the left (longest) side as shown on plans.
7. Add fin and dorsal and plywood stab rest. Do not attach rudder yet.
8. Cut out the strip of the crutch between wing saddles — add front nose doublers and triplers.
9. Install equipment.
10. Line the battery compartment with foam. Add rubber hold down dowels and triangle L/G braces.
11. Glue on bottom sheeting — windshield and rear deck.
12. Sand and give 3 or 4 coats of clear dope, sanding after each.

13. Color dope using photos as guide or try your own design.

14. Attach rudder with nylon thread using a figure 8 stitch.

15. Bolt on engine and use rubber bands to strap on main landing gear.

FLYING

1. Make sure the model balances $2\frac{1}{4}$ " back from the leading edge of the wing when supported at each side of the fuselage. Do not try to balance holding the wing tips.

2. Test glide for a flat straight glide. If too steep add a shim $\frac{1}{32}$ " thick at a time on the leading edge of the stab. If the nose rises — add the shim at the trailing edge.

3. First flights should be made with the engine running rich — not at top speed. Do not signal turns until model has 30' or more of altitude. Make gentle turns until you have the feel of the plane. This model glides extremely well and being a slow flyer is best flown on calm days and evenings. Slow response is designed in to aid in learning to handle R/C painlessly.



Whiz Kid Material List

- 1 Midwest foam wing and stab kit (Midwest Products Co., 400 S. Indiana, Hobart, Indiana)
- 1 $\frac{1}{8}$ " x 3" x 36"
- 2 $\frac{3}{32}$ " x 3" x 36"
- 1 14" length of $\frac{1}{8}$ " dowel
- 1 18" length of $\frac{3}{32}$ " music wire (L.G.)
- 1 2" x 3" piece of $\frac{1}{8}$ " birch plywood
- 3 $1\frac{1}{2}$ " wheels or two $1\frac{3}{4}$ " and one $1\frac{1}{2}$ " dia. wheels
- 1 20" length of .040 music wire (push-rod)
- 1 pkg. 3/48 blind mounting nuts
- 1 pkg. 3/48 x $\frac{1}{2}$ " bolts
- 1 pkg. J-Bolts
- 1 rudder horn

R/C Equipment

Single channel transmitter with pulser, such as: Controlaire Galloping Ghost, Min-X Pulsmite, Controlaire Mule with pulser.

Single channel receiver, such as: Controlaire 5 with World Engines Add-on-Switcher, C&S Finch double ended receiver, F&M superhet (Vanguard or Pioneer), Min-X Pulsmite superhet.

Proportional actuator: Adams single or dual magnetic actuator, Rand HR-1 or LR-3. (The Rand actuators require a relay receiver, the Adams will work on relayless as well.)