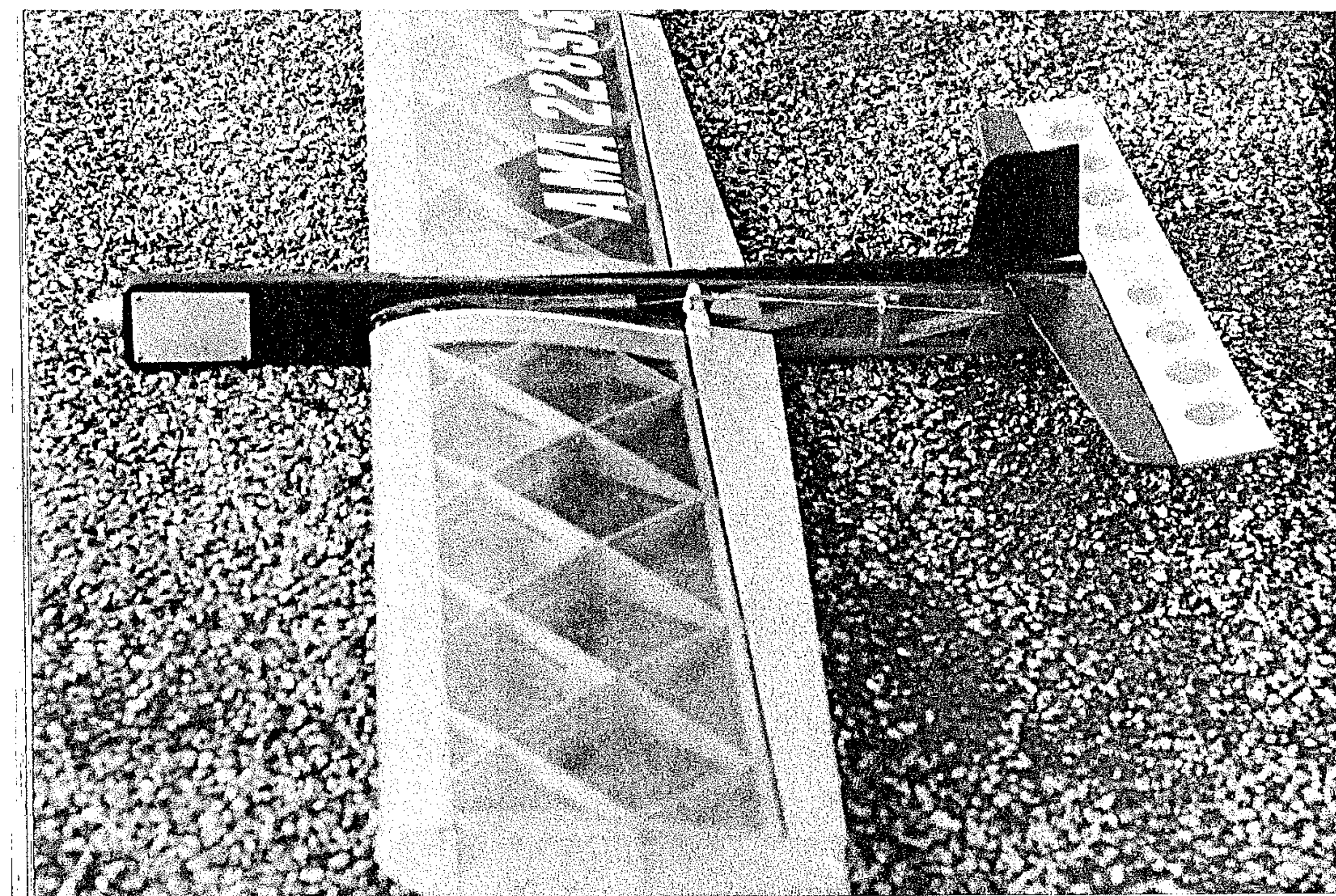


If high winds have ever put an early end to your Control Line flying sessions, try this model to keep you in the circle performing maneuvers on nothing but the power of a strong breeze.

■ Design by Hugh and John Hunton
■ Text by John Hunton

Top Picture: Shown with its for-effect-only spinner, this model was designed specifically for flying on the power of the wind, though details for engine installation are included on the plans. Above: Fortunately, this model seems to attract lots of kids with the strong legs and arms needed for launching. Craig McManamay is in the middle; other names unknown. Standard launch procedure is to run as fast as you can and throw as hard as you can *downwind*. Controls must remain neutral to minimize drag until the flier has whipped enough flying speed.

WHEN THE NORMALLY oppressive, bright, glaring sun becomes fuzzy in Saharan Africa—and the wind begins to pick up speed—people begin running around gathering children and posessions and seeking cover. One word is on everyone's lips: *haboob*, the terrifying African storm.

This model, the Haboob, is not terrifying. However, if such a wind comes up and other modelers stop flying, then you can bring out this wind-powered model and really have fun. With a strong wind, you can perform almost any maneuver in the AMA Precision Aerobatics routine. Even with a light breeze, you can fly for as long as you wish, do many maneuvers, and finish flying with an airplane just as clean as when you began. There is no engine to start, no fuel to buy, and no oil to clean off. Altogether, it's pure fun.

Whip flying has its genesis in the U-Control kits designed by Jim Walker back in the Forties. The two whip power kits, an Aircobra and a Mustang, have been reissued and are available again. What wonderful Control Line trainers Walker's models made. They were not efficient fliers, though, and had to be "whipped" or led through flight and could do little maneuvering.

Really maneuverable wind flying became possible with the introduction of lightly loaded and efficient Stunt designs, such as the Veco Chief and subsequently the classic Nobler. My brother, Hugh (co-designer of this model), discovered this quite by accident during a practice Stunt flight when a sudden storm hit. He found that, with the wind at his back, he could perform most any stunt and fly as long as he wished, *without*

HABOOB

the engine running, as long as he kept a good head of speed and the wind kept blowing.

The Haboob came from that flight. It was designed specifically for wind flying and utilizes the lightest and most efficient structure possible, geodesics. The first design even had built-up wing flaps and elevator, and it was covered with Japanese tissue. This was too much trouble for the limited benefit, so the current design uses stock balsa sizes and is relatively easy to build.

Two power options are available for this model. The ½A engine can be used for getting the model up to wind-flying speed (but the model will not wind-fly as efficiently with the drag of a propeller and engine). A .15 engine will provide spectacular performance (but of the ordinary kind, which isn't the purpose of this article).

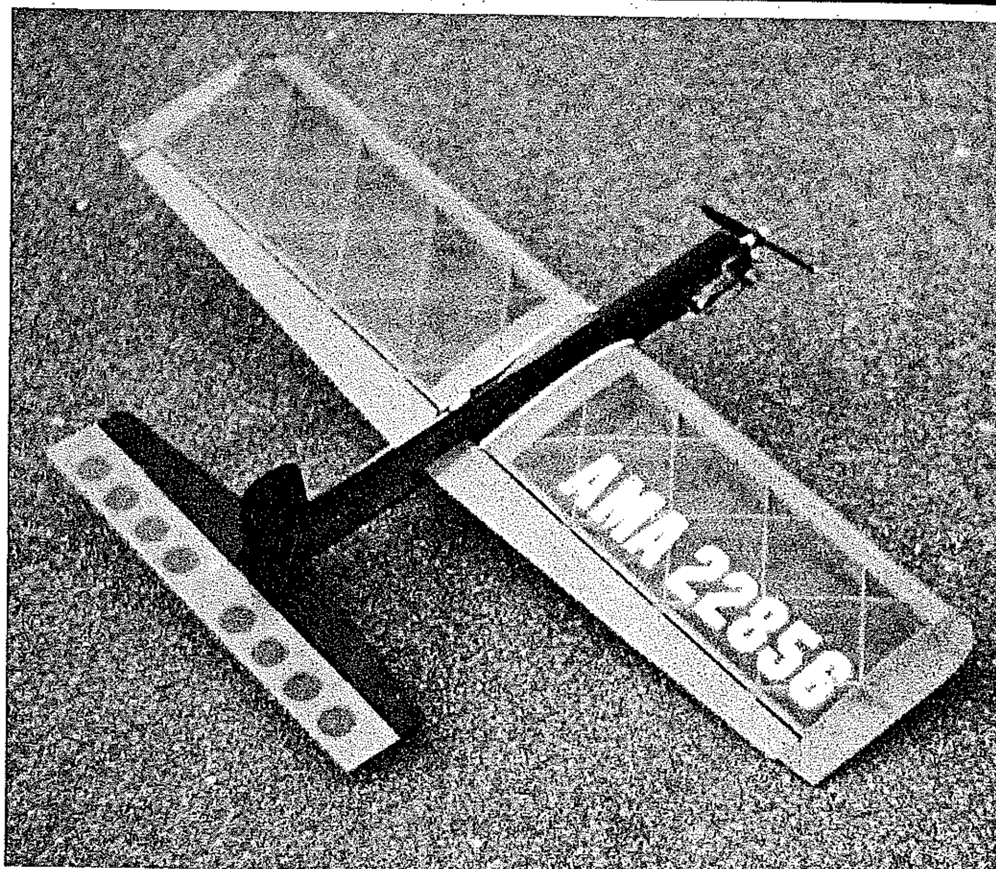
How can the wind provide power for a Control Line model? How does a kite fly? Perhaps the answer to the first question is similar to the second one—but with the effects of "whipping" thrown in. Here, the theory won't be pursued any further. However, I can tell you what to do to make it work. After building and flying your Haboob, you will be able to tell me why it works.

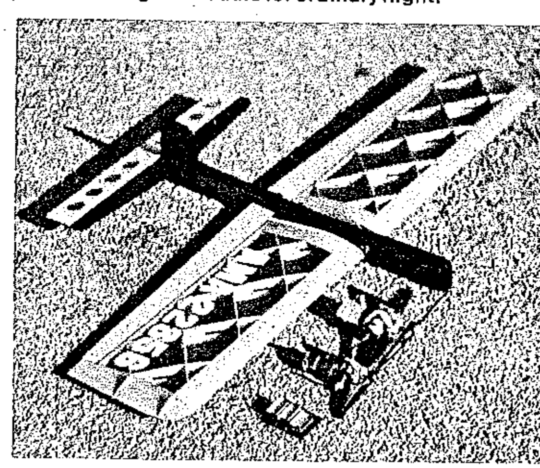
Follow these steps in learning how to wind-fly. First, determine the line length for initial flight testing as being the height you can reach by holding the lines at midpoint with the outboard wing tip on the ground. This length will enable you to take off easily without assistance. Fly a few times with the short lines. You will be turning fast and getting dizzy easily, but you will become familiar with how the Haboob handles. You will find it to be responsive and light on the controls. You will see that you can determine the desired airspeed by leading ("whipping") the model. Get used to flying low and smoothly, for control inputs add drag and slow down the model.

(The new "non-conductive" control lines by Sullivan Products are ideal for wind flying, and they are safer to use than steel control lines.)

Next, go to moderate control line lengths, say 25 to 30 ft. You will need a person to launch the model, but the lines will be long enough to learn how to use the wind and to perform some basic stunts. Begin on a day with a light breeze. Have your helper run as fast as he can and throw the model as hard as he can (while still being able to get the model airborne smoothly). It is very important to have the airplane released with the wind (downwind) and with the controls in neutral.

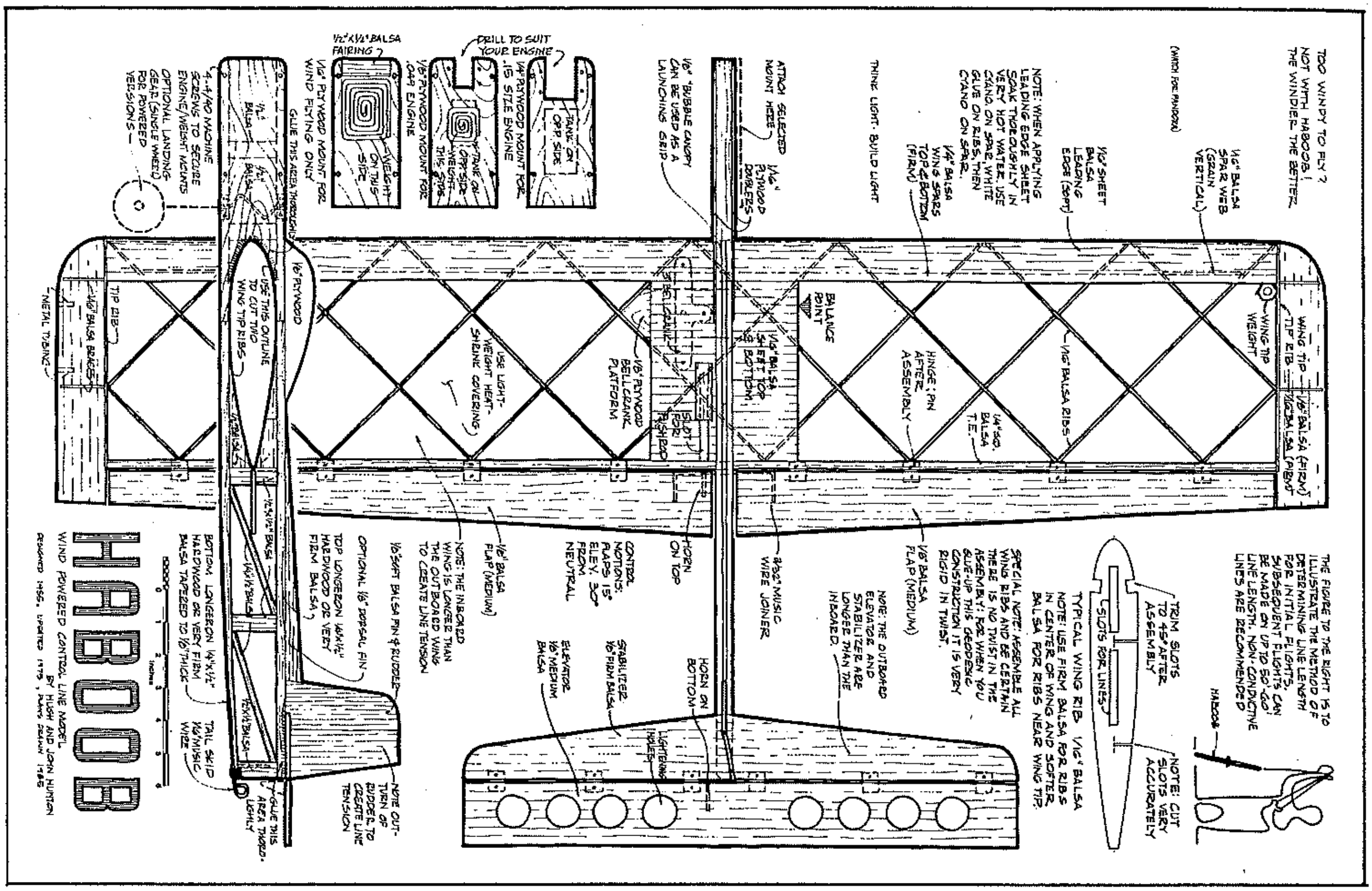
The first step for you, the pilot, is to get the plane down low. Fly very smoothly, and start whipping as hard as you can. Once you have passed through the upwind side of the circle safely, you have it made. Build speed by whipping hard through the downwind side again. After a few laps like this

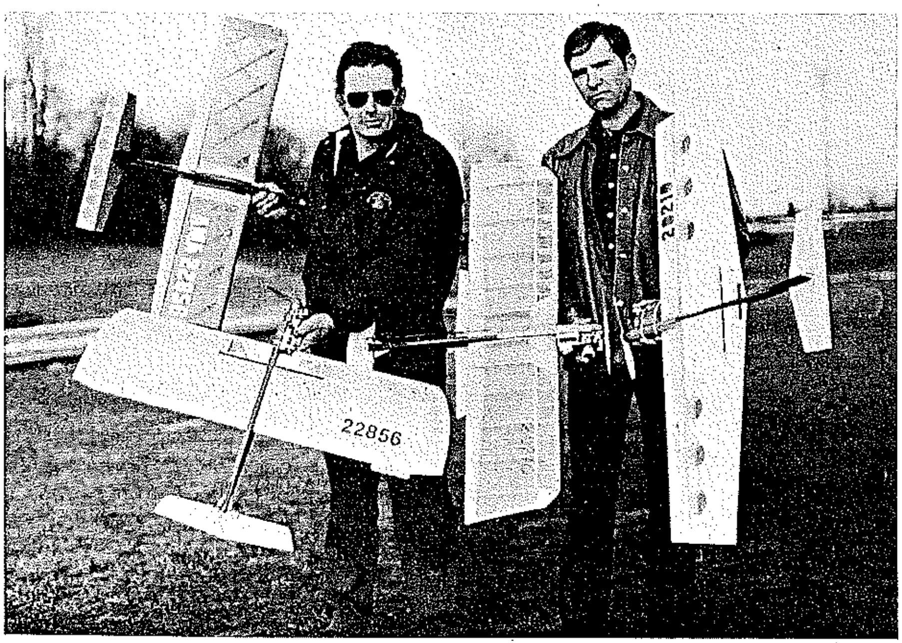




Above: The ½A-engined version is intended to be used with a stooge for self launching. Wind-powered flight begins after the engine quits (but the prop/engine add drag). Below: The wind flier with its modules for three possible power sources: (L-R) weight unit for pure wind flying, ½A power for launching assistance, and a .15 engine module for ordinary flight.

Full-Size Plans Available . . . See Page 180





John Hunton (L) holds the Haboob and Geophysical while Larry Driskill, noted designer and top MACA pilot last year, poses with two of his Combat planes. Haboob really gets to show its stuff when the wind becomes too much for powered models. Photo: Bernie Stuecker.

you will be reaching the limits of your endurance, but the Haboob will be whizzing along actually much faster than if it were powered by an engine. It's time to let the wind do the work.

If you are an experienced Control Line flier, the next step will go against your training. Here is what you must do: pull up smoothly going into the wind! Perform a smooth, shallow wingover with the highest point into the wind and the lowest point directly downwind. This wingover is your basic speed-building maneuver. Keep control inputs smooth and to a minimum.

After you have built up a good reserve of speed, make alternate laps of level flight and wingovers. Remember that every time you do a wingover without turning, you are twisting the lines one turn. Don't twist in

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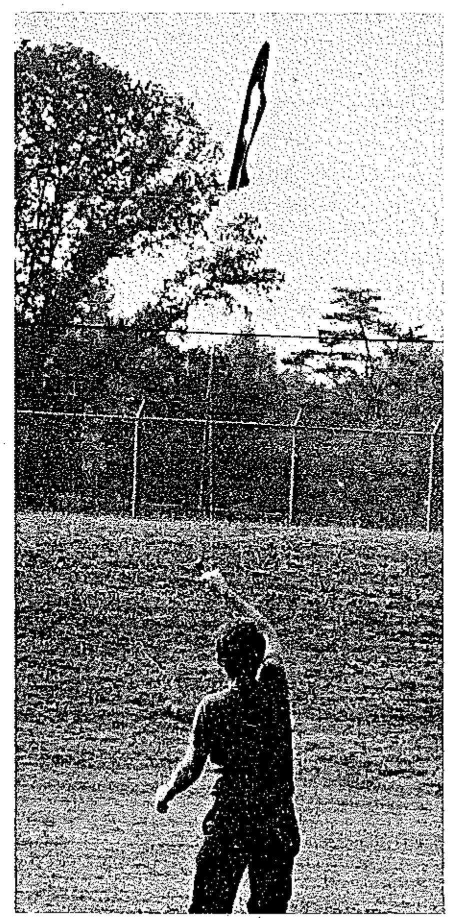


Our author, flying a wind-powered Sig Banshee, starts up into a silent loop. Wind flying isn't new, though it isn't well known to many of today's CL fliers. Photo by John Dent.

sleeve bearing .35. These engines are produced and available from K&B Manufacturing and have a floating Dykes piston ring. They have an excellent double-bushed rod and, of course, have the old-style baffled piston. With just a minor refitting of this engine, plus getting an excellent ring seal, they seem to perform quite well on 10%-nitro fuel. The speeds seem to be between 15.5 and 17.5, with the majority of the airplanes around the 17-second performance level.

Once a year, the Chicago area has a 700-lap Sport Race event. Generally, the large profile tanks will run approximately 80 laps, so around eight or nine pit stops are required. This is a lot of fun, in that they do run three-up racing, and no problems develop with the reduced speeds. Generally, the races are won or lost by the team able to avoid burned out plugs and getting excellent pit stops.

We finished running the final 700-lap races here in September of this year, and the winning time was just around 33 minutes. I recommend this Sport Race event to any of the individuals who have Racing interest in the local clubs, since it does seem to bring out a lot of competitors which the sophisticated Racing events would eliminate from the competition. Stranded or solid .014 wires are permitted.

One very positive advantage to long races is the practice the pilot and pit man receive from working as a team for 700 laps.

Plug problems. With the reduction in nitro in our fuel, we are seeing much fewer glow plug problems with racing engines. In the past, seals have blown out; and, in many cases, the wires become distorted or break, causing pitting problems and erratic running. In one of our recent Midwest contests in Sugar Grove, IL, I found Rat, Goodyear, and Slow Rat competitors using the K&B 1L plug as well as the Fireball standard plugs. Most of the competitors in both Rat and Scale Racing are still using the Glo-Bee 1L or 4L. But, with some minor modifications, the standard glow plugs may be used. We have found that by using a heat-curable, two-component epoxy resin in the seal area of both Fireball and K&B, the post and/or seal will remain intact for even an overly-lean run on 10% nitro. The only problem seems to be the proper rheostat adjustment on the Glo-Bee Fireplug battery so that the elements on the K&B and Fireball plugs are not burned out by turning the battery too high.

Richard Bynum (Scottsdale, AZ), has sent me a note indicating that the annual Buckeye Southwest Regionals will be held again January 18-19, 1986 at Buckeye Airport; and this will feature the majority of Racing events including Rat, Slow Rat, Scale Racing, ACLA Slow Rat, Mouse, and Formula Unlimited Racing. I have attended this meet, and anyone who is interested in flying during the winter months will find this event to be an excellent racing contest.

As always, your comments and suggestions are solicited.

John C. Ballard, 10102 Kimblewick Dr., Louisville, KY 40223.

Haboob/Hunton

Continued from page 82

too many turns, or you will lose the ability to control the model.

Another good speed-building maneuver is the "lazy" horizontal figure eight. It is performed wide open and smoothly, with the wind directly at your back.

When you have mastered the arts of launching and building speed, you can go to lines up to 50 ft. long (or as long as is comfortable for you). From the basic speed-building maneuvers, you can go on to almost any maneuver in the AMA routine —and then some. Then the world of silent Control Line flight is yours.

Construction. Do not be intimidated by the geodesic wing. This type of wing is self aligning; therefore, it can be built without pinning the ribs over the plan. I suggest you start with the wing, as all other construction is normal.

Cut all the required wing ribs, being very careful to cut the slots accurately and to the proper depth. Slots for the control lines can be cut in all the ribs for lightness. Assemble the firmest ribs in the mid-wing section and the lighter ribs toward the tips. Pin on the spars and trailing edge, checking for proper rib spacing and alignment over the plans. Check that there is no twist to the wing, for once you glue this structure, it stays. Now, use cyanoacrylate (CyA) to cement the assembly.

Select soft balsa for the leading edge, and soak it well in hot water. Pre-curve this sheet over a broom handle, and soak it again. Pin the wet sheet along the length of one wing spar, and use CyA to anchor the edge. Apply aliphatic resin (white glue) to all ribs, curve the sheet tightly around them, and CyA-glue it to the other spar.

Install the plywood bellcrank mount, all wing tip parts, and the line guide tubes. Fasten the guide tubes well with epoxy. Install 1 to 1½ oz. of weight in the outboard wing tip (note that the outboard wing panel is longer than the inboard panel).

Trim the required ribs at the center section for the sheeting that goes there. Install the bellcrank with wire lead-outs and a 3/32-in. pushrod of the length to reach the flap horn. Now, install the center section sheeting. Sand the entire wing with fine-grit paper glued to a long, flat block (to get a smooth contour).

Select hardwood or very firm balsa for the fuselage longerons. Taper the lower longeron as shown on the plans (the object being to remove all possible weight at the tail), and assemble the built-up profile fuselage frame over the plans. After this assembly is dry, smooth both sides with the sanding block, and add the plywood doublers. Round off the fuselage edges with sandpaper except for where the stabilizer will be mounted. Cut out the desired engine or weight mount modules, and sand them.

Cut out all tail parts, cockpit, dorsal fin, and wing flaps, and sand them smooth. Sand in some taper in the flaps and elevator if desired.

Cover all parts with a lightweight heat-shrink material. Japanese tissue and clear dope could be used for covering, but it will probably require more maintenance. Add color dope trim as desired.

Final assembly begins with the wing-fuselage intersection. Slip in the outboard tip, cleaning the wing opening with sandpaper on a stick as required. Slip the wing off its centered position temporarily, and coat the center section, top and bottom, thoroughly with white glue. Slip the wing back to the proper final position. Force white glue into any voids. Align the wing properly, then apply thin CyA to the entire joint. This unit will then be strong enough to handle. Make a fillet of baking soda around the leading edge of the wing on both sides, and apply CyA to it.

Clean any covering material from surfaces to be joined, and install the horizontal stabilizer on the fuselage, being careful to align it with the wing. As on the wing joint, use white glue, CyA, and the baking soda/CyA fillet. Similarly install the fin and rudder.

Slip the flap joiner wire through the fuselage. Drill the flaps. Cut slots for all of the hinges. Install the flap and elevator hinges where shown on the plans. Be certain to run pins through the hinges to make sure they won't come out.

Install the control horns. Rig the pushrod from the bellcrank to the next to last outside hole on the flap horn—and a pushrod from the last hole on the flap horn to the elevator. Check the plans for control surface deflections.

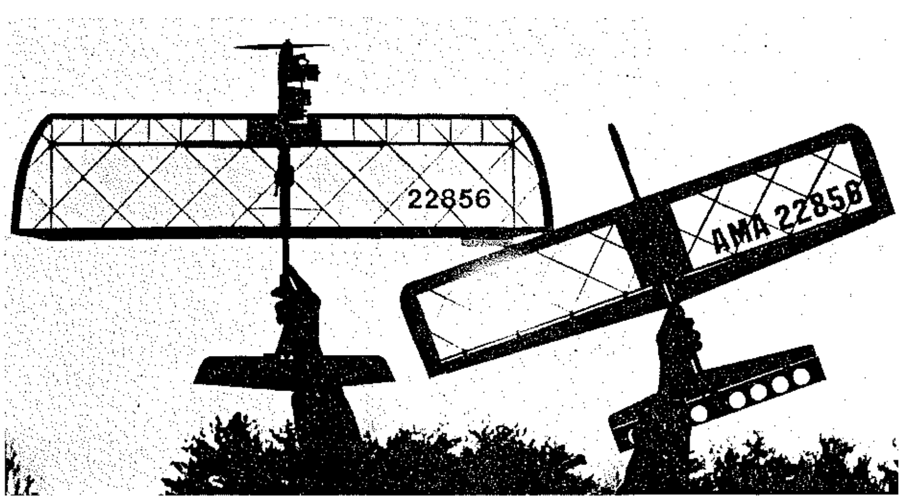
Balance the model as shown on the plans. For more sensitive controls, move the center of gravity (CG) rearward. For less sensitive, move the CG forward.

May your flying days be windy!

Weight/Poffenbarger

Continued from page 93

heavy. In retrospect, a non-metallic MonoKote variety also should have been tested. According to this experiment, if every square inch of a .60-size (2,100 sq. in. sur-



This photo (by Stuecker), taken from the Geophysical article that appeared in the May 1985 issue of *Model Aviation*, was noticed by a reader who then wrote to *MA* requesting more information on the wind flier (which had served as the structural format for the Geophysical). From these simple and innocent beginnings came the end product in the form of this article.