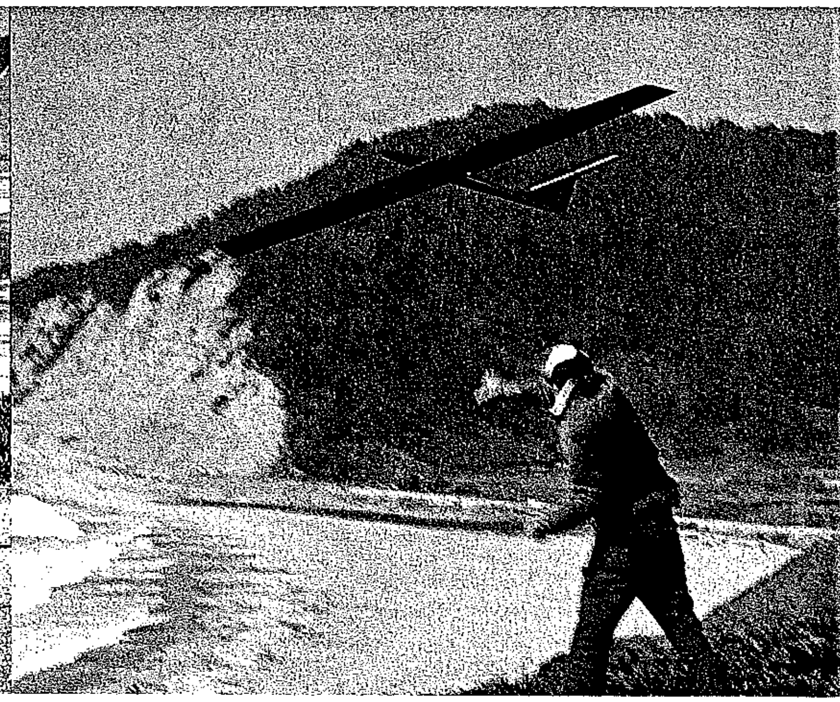


Beginning on the left page is the flight sequence from ready to launch (as designer/author Ken Willard is shown in the first picture) through the first racing turn at the pylon in the last picture on the right page. Second picture shows Dave Bridges launching the model into its element—the wind and sky. The photographer had to pan with the racer because of its speed, making Dave and the background blurred

THIS DESIGN for the Unlimited class of Slope Soaring Racing was created to win. Though some qualified observers have opined that, with some minor modifications, it would also be competitive in FAI F3B events, I don't know. All I want to do is race with it.

Slope Racing is one of the most exciting events in RC model competition, even though it is not well known. A typical heat involves four sleek racers speeding through the air with absolutely no engine noise at speeds ranging from 30 mph in light winds to well over 100 mph in strong winds. Add to that the shot of adrenalin pilots get from being able to hear the spectators cheering them on, and you have exhilaration from everyone involved.

All of the racers have exactly the same power available to them—the updraft created when the wind blows up the slope. There's no tweaking of the needle valve, no carving away part of a prop blade, no adding nitro to the racing fuel—just the wind. Even so, by carefully selecting a flight path which takes advantage of the currents, some pilots get more power out of the wind than others. More about that later.

For those of you who are new to, or unfamiliar with, RC Sailplane Racing, here's how it works.

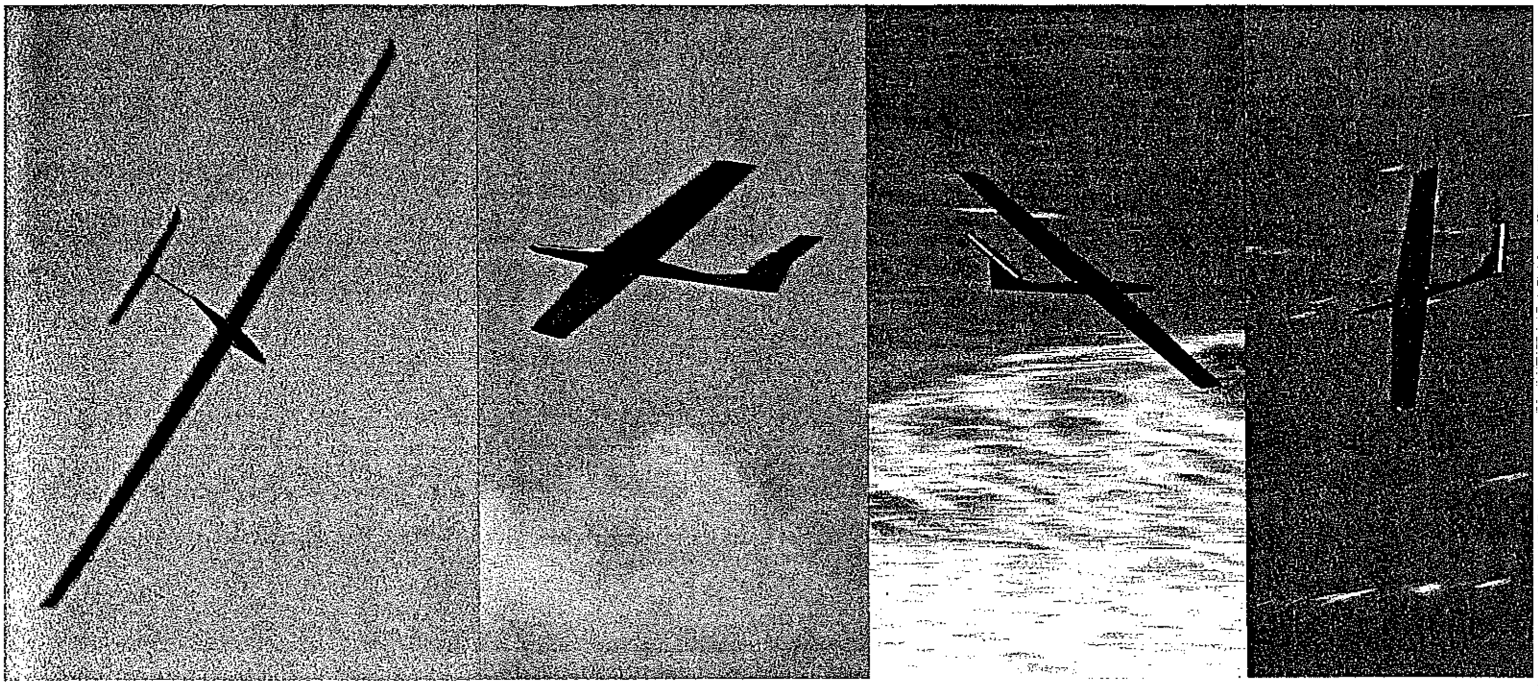
The first requirement, naturally, is to have a hill site against which the wind blows. The ideal condition is with the wind blowing perpendicular to the slope (straight into the hillside), though other angles will still create a vector component against the hill that will provide lift. If the wind strikes the hill at an oblique angle, the result is that you will have an upwind leg and a downwind leg on the course. When that happens, the timing of your turns will be even more delicate and demanding.

Ideally, the hill should present a stretch of 600 ft. or more to the oncoming wind. Although shorter courses of around 400 ft. can be set up, the shorter the course, the more important it is for your racing design to have a fast roll rate and turning radius. The longer course is advantageous to the racer with a high straightaway speed, but courses of over 600 ft. make it difficult for the pilot to see the turn at the far end; for that reason, 600 ft. is considered to be the best compromise.

Staging a Sailplane Slope Race takes considerable manpower and planning. At

Silent speed (sometimes reaching over 100 mph) with RC Slope Soaring Racers is amazing, to say the least. With up to four models on the course at the same time, the excitement is just as great as in Formula I Pylon. In any racing, it's the winning that counts; this design incorporates many features to prevent it from being an also-ran. ■Ken Willard

Black Be



compared with the sharpness of the plane. Next, the model begins to climb out, gaining speed. Once it settles in, the model is flown by, as shown in the fourth photo, for a quick trim check. With everything okay, the model is taken through the course low and fast. Finally, we see the diving turn at the far pylon. Bud McCrary's airstrip, where these pictures were taken, has to be one of the most beautiful sites in America.

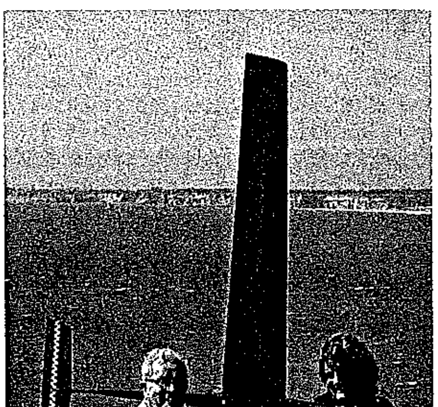
each end of the course you need four flagmen and a pylon judge. At the start line you need the official starter and finish judge. A communication system is necessary between the pilots' area and the far pylon line, and a "whip" man is needed to get contestants for upcoming races into the ready area. A "weight" man is needed to check the weight of the racers against their allowable maximum at the end of each race—or, if the racer has jettisonable ballast, before the race. Each pilot must have a copilot or pitman to call the turns for him at the far end of the course.

Yes, some of these tasks can be performed by pilots who are not competing in an immediate race, but you can see that much manpower is needed.

Let's take a look at the course as shown in the schematic diagram, Fig. 1. Note that all flying is done out in front of the pylon aiming stakes; you do not fly around the pylon, but past the aiming line at the pylon. Since all turns are made into the wind, the flight path is a Figure 8, and that can present problems when two aircraft are flying the course, one going upwind and the other, downwind. Some guys like to call that a "demolition derby," but surprisingly enough, most of the midair collisions are at the turn rather than at the crossover point.

"Sailboat" race starts are used, and they can be quite exciting. One minute before the actual start of the race, a countdown begins. The aircraft can be launched at any time prior to 15 sec. before the start. The pilot then orbits his model wherever he chooses in order to gain altitude, but when the countdown ends, the racers must be behind the start line.

Pilots in these events have developed numerous strategies and techniques in an attempt to get a jump on the competition. Some stay well back of the start line and approach it in a timed dive; others get right above the start line, headed out away from the hill, and make a diving turn to the line; still others position their models ahead of and high above the line, coming downwind to do a Split-S into the start. With all of these methods, timing is a split second sort of thing, as the diving speeds are right around 100 mph.



Pictured with Ken Willard and Nancy Lowe is not only a race-winning model, but a winner of the International Design Award, as well. Nancy is president of Magnum Imports, sponsor of the award. An accomplished Sailplane pilot, Nancy earned tenth place in the 1984 League of Silent Flight Tournament.

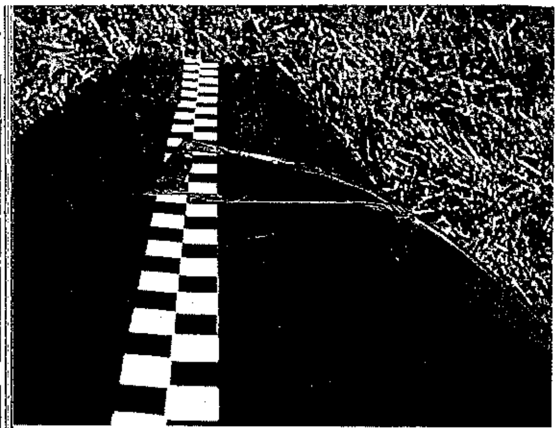
Flagmen on the pylon line are critical to the success of the race. Each one has a different flag which has been identified to the pitman of a specific racer. When the race starts, flagmen at the far turn hold up their flags; when the nose of the racer crosses the sighting line, the flag is dropped, and the pitman calls "Turn!" to his pilot. Some skilled pilots can even judge the distance and begin a turn before the flag drops; that's all right so long as the racer goes past the pylon line.

If no part of the racer passes the sighting line, the flagman waves a cut, and the pilot has to fly an extra lap. That usually results in a last-place finish if the race is really close.

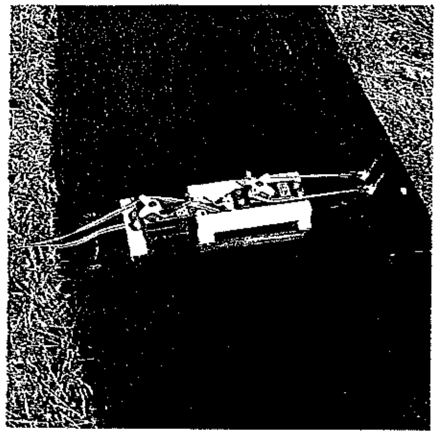
The near pylon is only about 30 ft. from the pilots' box, so most pilots execute the near turn without prompting. Nonetheless, flagmen operate in the same manner as at the distant pylon.

The pylon judge at each pylon can overrule the flagman if in his judgment a cut has been incorrectly called in the excitement of a race. Another point is that the flagman must wait until the nose of the racer is past the sight line; any sooner (even though the racer would have to pass it with an earlier turn execution) would give an unfair advantage.

Races can be five, eight, or even 10 laps, depending on conditions and the Contest Director's decision. The end of the race

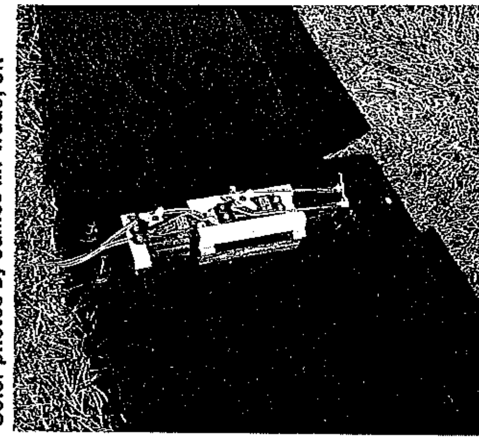


The flex-rod connector to the elevator horn runs up the leading edge of the fin to the top and then over the T-tail fin/stabilizer setup.



The sliding servo tray setup. As shown here, the servo is all the way back to shape the airfoil for minimum lift/drag and max speed.

Color photos by James M. Wade, Jr.



Sliding the servo tray forward extends the flaps in the down position for extra lift when the wind dies—or for slow, gentle landings.

must be made with the Sailplanes going in the same direction as at the start, so a final turn is made just before crossing the finish line. As you might guess, many a race has been decided on that turn.

The matrix for Sailplane Slope Racing is established in the same manner as for the engine-powered Pylon Races. I won't go into the details except for a variation used in the International Slope Races. On the second day there usually is some seeding done so that pilots with top scores who, through luck of the draw, have not competed against each other are purposely put into races together to balance out the element of luck.

Over the years the International Slope Races have set a rule that at least four rounds of flying must be completed; if more than four rounds are flown, one round may be selected by each pilot to be dropped from his score. This provides some compensation for the bad luck of a midair collision or not finishing the race because the wind dropped (while others managed to stay aloft).

Scoring is pretty simple: one point for first, two for second, three for third, four for fourth, five for a DNF (did not finish), and six for DNS (did not start). The one with the lowest score is the winner, and ties are flown off.

FAI limits are used. In English equivalents, this means maximum total weight of 11 lb. and maximum surface loading of 24 oz./sq. ft. (combined wing and tail surface area).

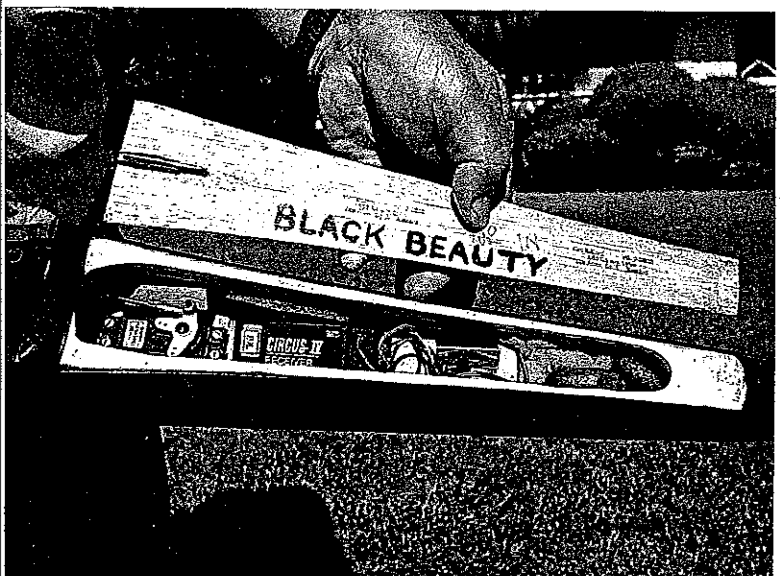
Wind conditions can vary from a light wind in which a typical competitive racer can barely remain aloft to winds as high as 50 mph. With this in mind, it is imperative that the racer be competitive throughout the complete spectrum of wind conditions.

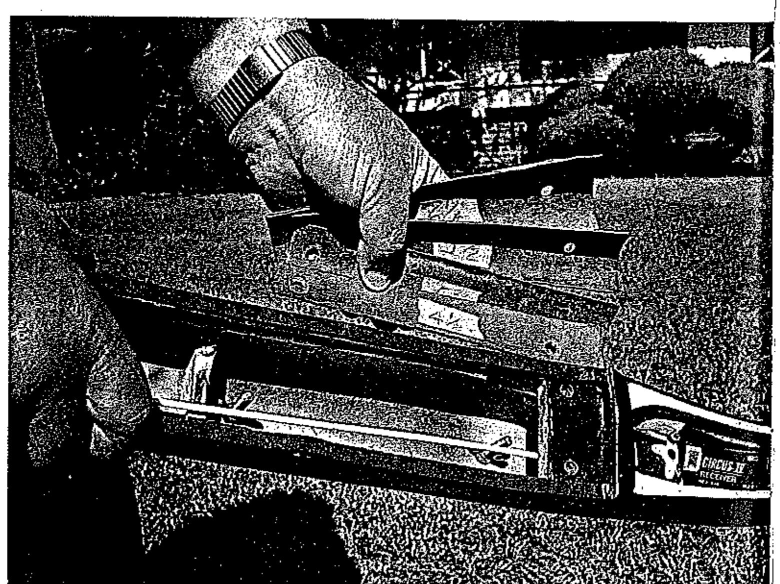
In addition to being able to handle a wide range of wind conditions, a Sailplane Slope Racer has to be rugged enough to take some rough landings and keep going. Most slope sites do not have a smooth stretch of landing area, and when the wind is blowing hard, turbulence makes smooth landings difficult at best.

How do you go about designing a racer to meet all these conditions? It's a real challenge, and there are several ways to go. The design of the Black Beauty is the one I came up with. Theoretically, it should meet all of the requirements for a completely versatile racer. The only race it has been in (when this was written) was the 1984 International Slope Races; as luck would have it, wind conditions were such (from 20 to 50 mph) that its potential light-air performance was not demonstrated in competition. I do know, however, that it can stay aloft even in the lightest winds.

Let's look at some of the features of this design. The arrangement which provides the performance envelope required is incorporated in the wing. The use of a flaperon setup has, in effect, created a variable-camber capability. The relatively wide flaperons when trimmed to a full trail are set to produce an Eppler 182 airfoil, excellent for high speeds. Positioning the flaperon is done by using what is normally the throttle control, Full throttle with full throttle trim is used to establish the 182 airfoil. Drop the throttle trim to the idle position and the slight reflex of the 182 section is dropped to essentially a flat trail which is characteristic of the Eppler 180 section. This airfoil is marginally slower than the 182, but it has a wider "drag bucket" and will turn a bit sharper without a corresponding drop in speed.

Both Eppler sections are fast, but in light winds they have a problem maintaining sufficient lift to keep a relatively heavy racer aloft. Dropping the flaperon a bit





Left: Removing the hatch from the equipment section of the fuselage reveals the elevator servo, receiver battery (under foam padding), and nose weights for balance. Right: Ballast compartment and some of the lead sheets used. Model can carry 3 lb. internally. Note the ¼-in. bolts and wing nuts which allow quick, easy changing of ballast as needed. White tube contains the Rx antenna which runs inside to the tail.

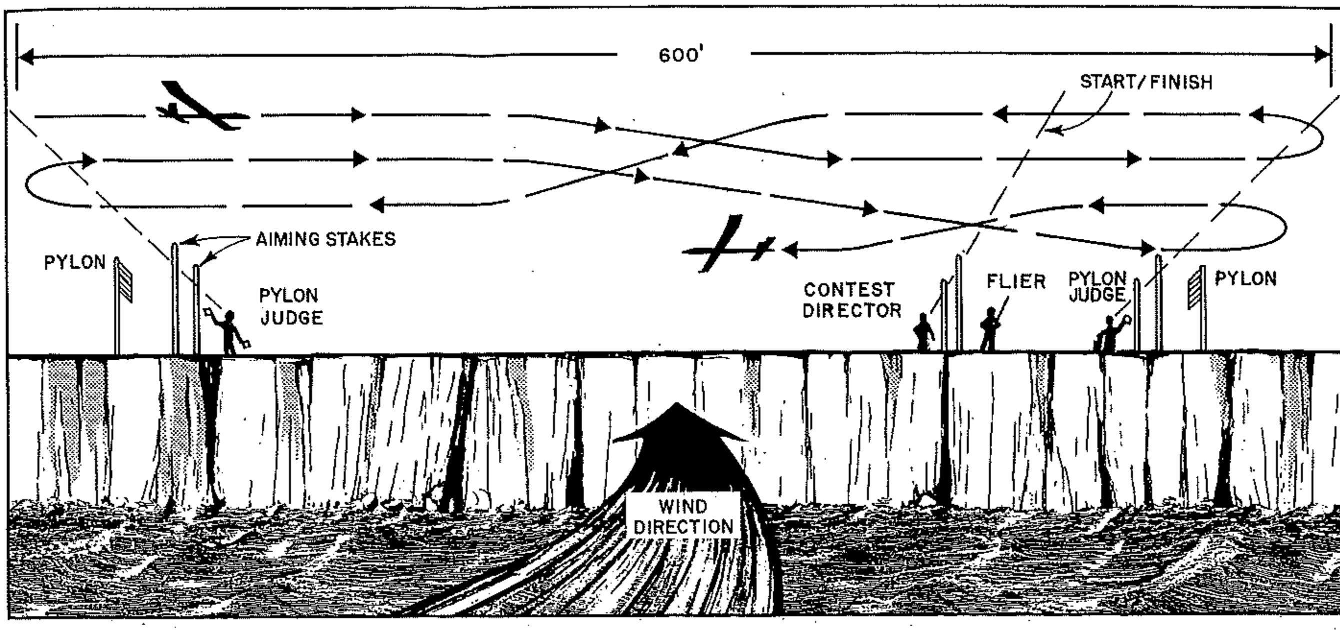


Fig. 1. This shows how an RC Slope Soaring race operates. You'll need to refer to it to follow the discussion in the text. All turns are made into the wind (except at the start). The course, thus, is flown in a Figure 8 pattern. Turns are made in line with the pylons, not around them.

more, however, creates an undercambered section similar to the NACA 6709—not too fast but able to stay up when other racers are struggling.

Finally, when landing, the flaperons can be dropped even further until, just before the touch-down, they are at about 45°. This slows the landing speed drastically, but at the full-down position there is noticeable adverse yaw when you apply aileron control. Just be careful not to drop the flaperons too far too soon. It takes some practice, you can be sure.

I use the T-tail for two reasons. First, it results in only two joining angles (instead of four) between the fin and the stab. That gives less drag. The other reason is that the high-mounted stab is less likely to be knocked off on landing.

The fuselage is designed to be rugged and to provide ready access to the radio equipment and ballast compartments. The fiberglass cloth-over-balsa structure could be replaced with a simple fiberglass shell if you have the equipment (I don't).

Black Beauty is not a beginner's project, though it's not really hard to build—just a bit tedious. The hardest part of the whole building process is the enclosed flaperon hinge line, and perhaps the most tedious part is making the nose cone. Broad general guidelines that will be given for building the Black Beauty are just that—guidelines. Most of you will undoubtedly find your own way to go. Just a couple of things: don't skimp when applying the fiberglass cloth and resin, and be sure to sand the finish to a shiny, glasslike surface.

The bare weight of the original Black Beauty was 7 lb. Though it can legally be ballasted to 11 lb., it appears to perform best in strong winds at 9½ to 10 lb. When ballasted to over 10 lb. the turns are a bit sluggish, but this may change as I learn to locate the best center of gravity (CG) position. I am told by experts that the Eppler sections work best if the CG is located at about 40% of the mean aerodynamic chord, but I haven't had the chance to experiment.

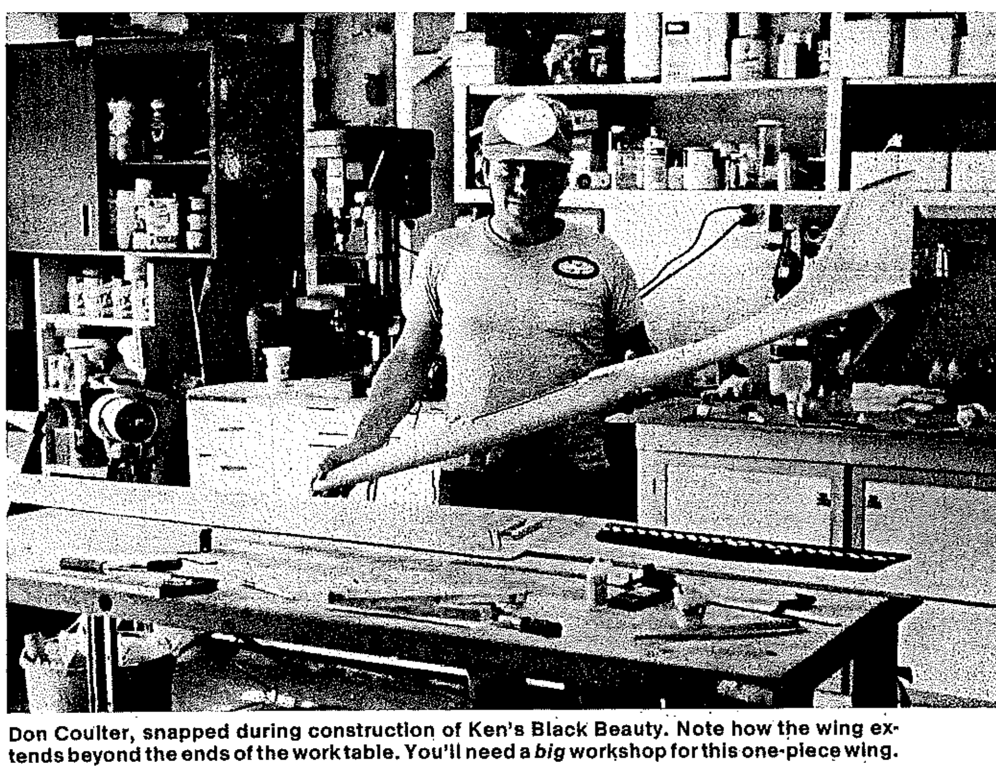
Based on its design features, Black Beauty was given the International Design Award at the 1984 International Slope Races. This award is sponsored by Magnum Imports, owned by Nancy Lowe, and is determined by the vote of all the pilots and workers who participate.

All I need to do now is to learn to fly it!

Wing construction. It is a standard foam core covered with 1/16 balsa sheeting and reinforced with fiberglass cloth and resin. Due to the span, the foam core is cut in four sections which must be carefully mated in the center and at midspan. The sheet balsa covering will also have to be spliced. Left and right panels are butt-joined at the center section, and the joint is reinforced with full-depth ⅛-in. plywood extending out 2 in. on either side of the centerline. The wing is absolutely flat with no dihedral.

The plans show the extent and weight of each layer of fiberglass cloth. The layers can actually be put on in any sequence since the resin and intermediate sanding will make them all blend together. The glass cloth layers will have to be overlapped because of the span, but the main thing is to have the number of layers as described on the plans: four in the center, then three, then two, and finally one layer at the tips.

You will need a spacious work area. The finished wing will be a one-piece unit of almost 10 ft. span. It will be very cumber-



Don Coulter, snapped during construction of Ken's Black Beauty. Note how the wing extends beyond the ends of the work table. You'll need a *big* workshop for this one-piece wing.

some to handle, but the great strength is worth it.

I shouldn't need to tell those of you who undertake to build the wing that as each layer of fiberglass cloth is applied, it is impregnated with resin and then sanded. When the main structure is completed, you'll have a 10-ft. fiberglassed board to move around as you cut out the flaperons and make the closed hinge line. Take careful note of the angles at which the flaperon hinge line structure is cut; the cross-sectional photo shows it best. How you achieve this cross section is a matter of individual choice.

My friend Don Coulter, who built the original wing to my specifications, cut the trailing edge angle carefully from the bottom up, leaving the overlap at the top untouched. He then cut away the top at the angle shown on the plans until the flaperon separated, and he finally cut away the leading edge of the flaperon to match the angle needed to allow for the required amount of up-aileron travel. Finally, he installed the balsa leading and trailing edges on the flaperon and wing, respectively. Don's comment: "There has to be an easier way, but I don't know what it would be." If you know of an easier way, by all means use it. Just make sure the hinge line is close; it is vital to the overall effectiveness of the wing.

The sliding servo system shown on the plans is the best system I know of for flaperons which incorporate differential aileron travel. Note that the pushrods are attached at a 45° offset to the center of rotation of the servo; in addition, the aileron pushrod control arms are slanted back to provide more differential. Differential aileron travel reduces adverse yaw, and this is important on a model that doesn't have a rudder.

Let me emphasize that the contour of the hardwood leading edge must be as faithful to the airfoil drawing as possible. If it is more blunt, then straightaway speed is affected. If it is sharper, the turning ability is reduced—maybe only a little, but every little bit counts. It is also important that the trailing edge be as sharp as possible for maximum performance.

Finally, note the hardwood fairing at the center section. It fairs the wing to the fuselage and provides a firm mount for the wing bolt. Make it from ⅛-in. hardwood, then sand it to shape. Use microballoons to fillet the edge to the sheeting.

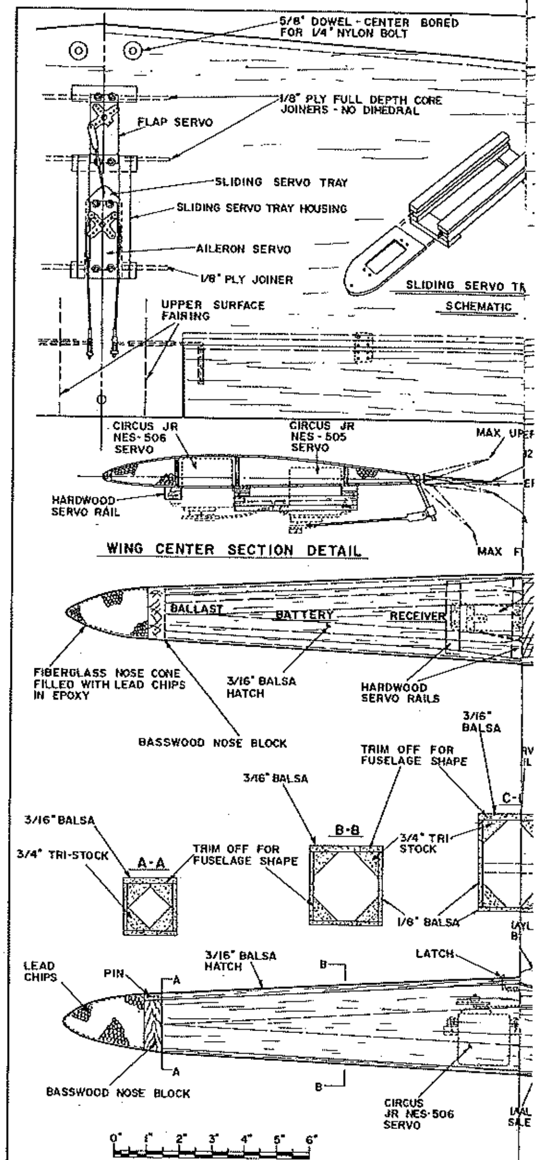
Fuselage. This is nothing more than a conventional box structure with triangular braces at the corners; the fuselage box is carved to a rounded final shape. Only the nose cone takes a bit of doing. Here's an approximate sequence for constructing the fuselage box:

Make the ⅛-in. sides. Add the ¾-in. triangular corner braces and the ¼-in. wing cradle doubler. Install formers at C-C and E-E. Join the sides to the formers. Pull the sides together at the nose and tail. Add the nose and tail blocks. Install the vertical fin (note that the basswood members go down inside the fuselage to the bottom).

Install the wing mounting blocks. Mate the wing to the fuselage, and add fairings to the fuselage at the leading edge (LE); shape the wing fairings at the trailing edge (TE) to flow smoothly with the fuselage. Carve the fuselage to a contoured shape. Cut away the hatch. Make the nose cone from Styrofoam, and tack-glue it to the nose block. Cover the fuselage, nose to tail, with a layer of 2-oz. fiberglass cloth. Install the elevator flex rod at the LE, then cover the vertical fin with .6-oz. fiberglass cloth.

Add a second layer of 2-oz. cloth on the fuselage from the nose to approximately 3 in. aft of the TE of the wing. Add a third layer of 2-oz. cloth on the fuselage from the nose to 3 in. aft of the wing LE. Wrap 4-in.-wide strips of 4-oz. fiberglass around the fuselage—one centered on the LE former, the other on the TE former. Make fillets at the fin/fuselage joining line using microballons and epoxy.

Add ⅜-in. triangular stock at the top of the fin for the stab platform. Sand the complete assembly to a smooth, glassy surface—using several coats of thin fiberglass resin and 400-grit wet/dry sandpaper. Carefully cut the nose cone from the nose block. Melt or gouge the Styrofoam out of the fiberglass shell; fill the shell with lead chips or shot imbedded in epoxy. Reattach the nose cone to the nose block with epoxy, and sand it smooth. Paint to your taste; the original was sprayed with acrylic enamel.

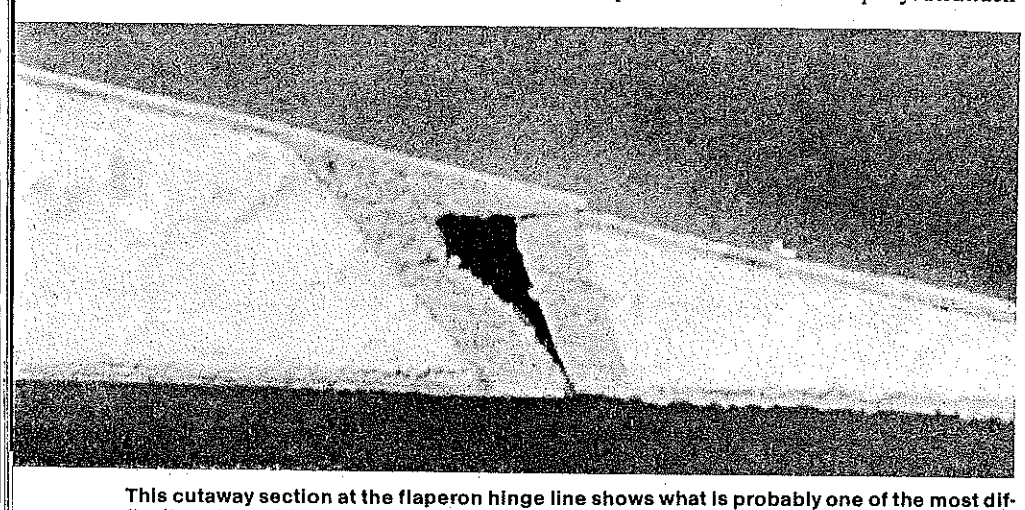


This structure can take rough landings without breaking at the points of heaviest stress—where the wing mounting bolts can (and will) get heavy side loads if a wing tip hits the ground first.

Tail surfaces. The stabilizer and elevator are simple sheet balsa structures. The elevator, as shown on the plans, can easily be made from 2-in. Sig aileron stock—same as shown on the TE of the vertical fin; this saves a lot of sanding. Cover the surfaces with Super MonoKote for minimum weight.

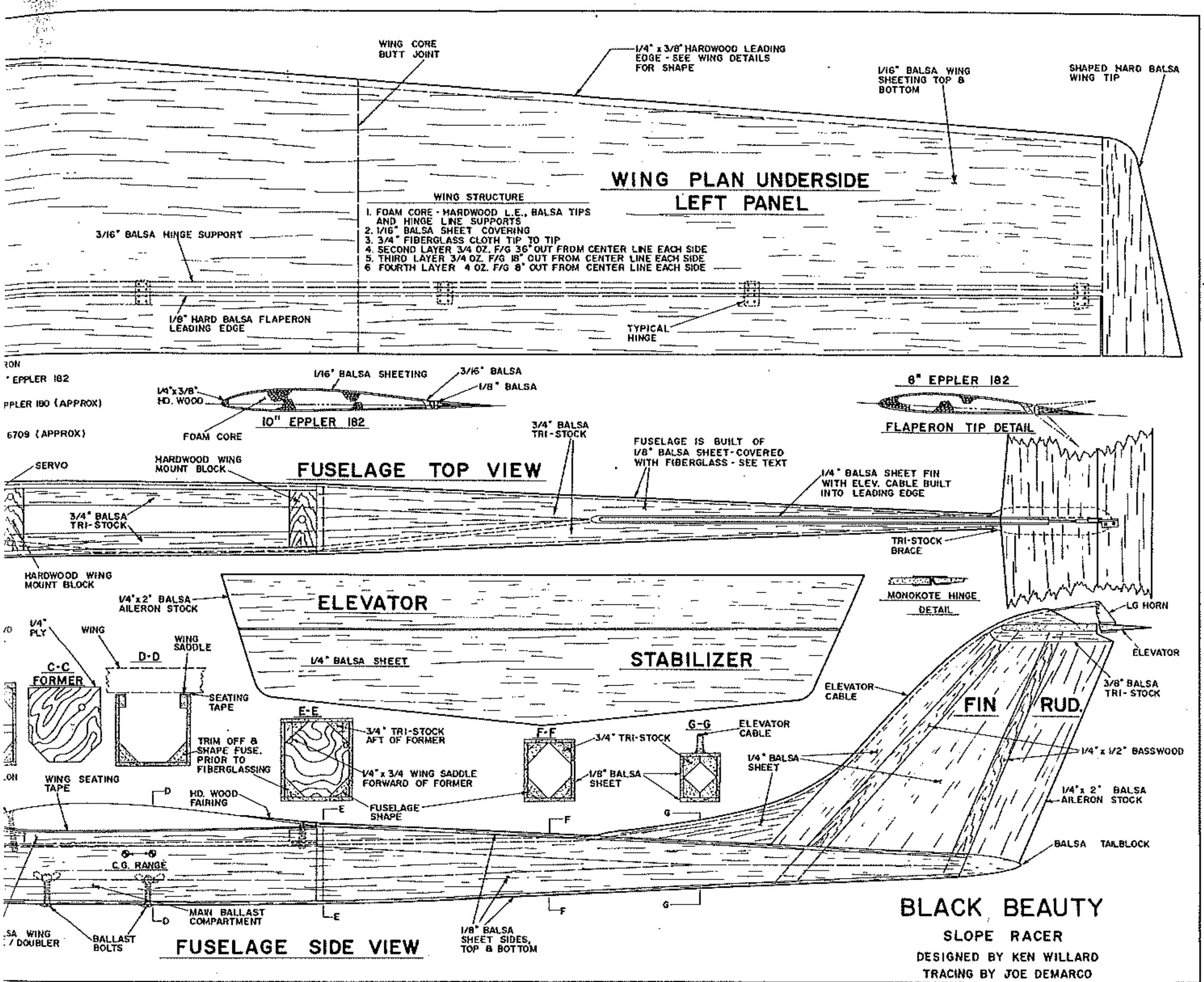
If you have the time and energy, you can shape the stab to a thin symmetrical section. Doing so will result in a small amount of drag reduction.

Note the hinge line at the elevator. It is cut so that a simple MonoKote hinge can be used for the full length of the hinge line. This closes the gap and prevents flow-through when the elevator is deflected during vertically-banked turns. No doubt a stabilator system could be devised, instead, which would lower drag a bit; but it would be a weaker structure and might not be able



This cutaway section at the flaperon hinge line shows what is probably one of the most difficult parts of this model. Sealing the hinge is essential for good performance, though.

Full-Size Plans Available . . . See Page 180



to withstand hard landings in strong winds.

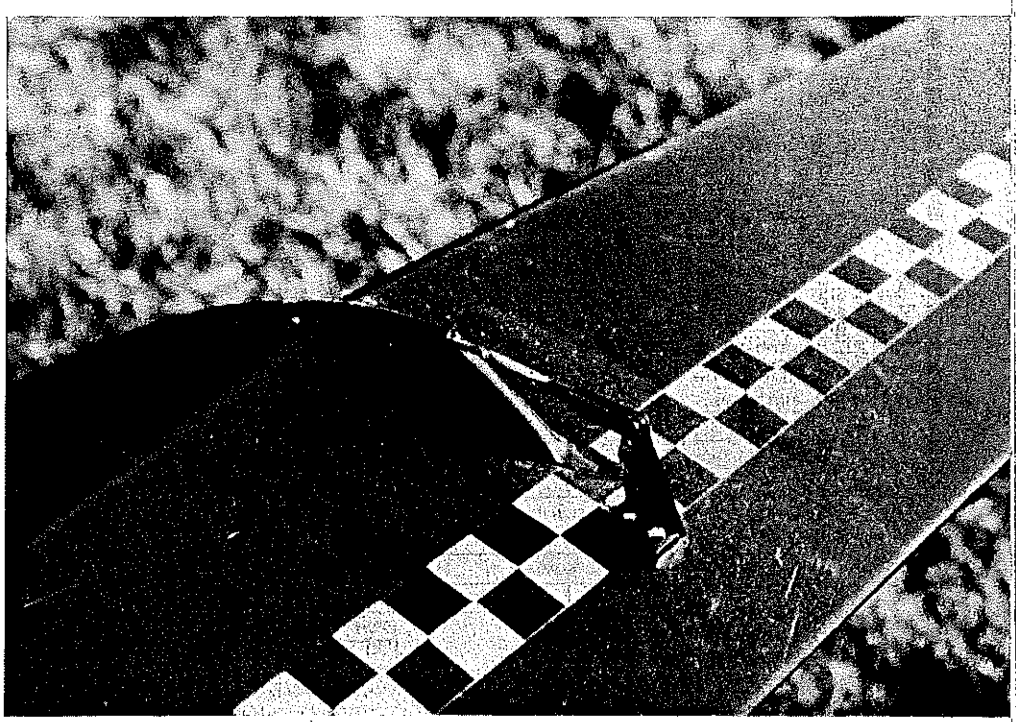
Radio installation. Servo installation in the wing and fuselage is shown on the plans. The battery is forward in the nose, with the receiver just ahead of the servo for the elevator. Wrap both in foam padding for protection.

The flex-cable runs from the servo along the side of the fuselage to a point just aft of the TE former, then is routed up the leading edge of the fin and over the stab to the elevator horn. Note how the fin LE is cut out to accept the cable housing as shown in Section G-G. Install the cable before applying the .6-oz. fiberglass cloth to the fin; it will make the LE smooth.

The hatch, which was cut away from the rest of the fuselage after it was shaped, needs only to be covered with one layer of fiberglass cloth for smoothness. The plans show how it is held in place with a simple aligning pin at the front and a sliding wire bolt at the rear. This provides quick access to the radio and forward ballast area.

Ballast is used in two places: at the nose (to set the balance position at the desired location) and directly under the center of

Continued on page 180



Another view of the elevator horn and connection. Checkered strip is a MonoKote hinge. It joins with a second strip on the underside. This provides a strong and sealed hinge line.

FULL SIZE PLANS

No. 509 Roscoe 18 . . . . **$1.50**
FF Outdoor Hand-Launched Glider features curved 18-in. wing, DT.

No. 510 Stomper **$1.50**
FF Outdoor Hand-Launched Glider has angular 18-in. wing, DT.

No. 511 F-16 . . . . **$2.00**
CL ½A profile scale fighter spans 17 in., has tricycle landing gear.

No. 512 Extra 230 . . . . **$16.50**
RC Giant Scale aerobatic spans 8 ft., uses Quadra engine. Two sheets.

No. 513 Black Beauty **$7.50**
RC Slope-soaring racer has foam wing, 2-channel RC. Spans 114 inches.

No. 193 **Stilletto:** CL Stunt model (McDonald) winner 1976, 1980, 1982 FAI World Champs . . . . $ 3.75
No. 239 **Blue Birds:** RC Ken Willard's formation plane, 4-channel, .10-power . . . . $ 3.75
No. 262 **Crashmaster:** CL Crash-proof trainer, two sizes—.15-.30- and .35-.40-power . . . . $ 1.25
No. 302 **Mini F-16:** RC Sarpolus' .049 ducted fan sport flier for 2-channel. Balsa wings, tail, fuse structure . . . . $ 2.75
No. 310 **1930 Fleet Biplane:** RC Sport Scale for .35-.40, 4-channel. Wingspan 56 in. ⅙ scale. Two sheets . . . . $ 6.25
No. 314 **Drake II:** RC Ken Willard's flying boat for 3-channel, .15-power. Fly from land with removable gear . . . . $ 3.75
No. 326 **Taylor Cub:** RC Don Srull's Schoolyard-Scale for .049s, 2-3 channel. Spans 50 in. . . . . $ 3.50
No. 332 **Zephyr:** RC Small, 2-channel glider for hand-launch or tow, thermal, or slope soaring . . . . $ 2.00
No. 386 **Laser 200:** RC Sport Scale replica of championship Aerobatic flier. Uses .40 power, 4-5 channel. Two sheets $10.75
No. 398 **Gee Bee R-1:** RC Halfke's latest ¼-scale spans 75 in., weighs 15 lb., flies on .90 or larger. Four sheets (no doc.) $22.25
No. 414 **Electric Sparky:** RC electric-powered fun flier for 05 motor, 3-channel RC is scaled up 1939 rubber-power favorite . . . . $ 8.50
No. 422 **Scooter:** RC Two-Meter Sailplane has won Nats event in 1982, 1983, plus many other contests . . . . $ 5.50
No. 430 **Ironside:** RC Zippy little sportster for .10-.15 power and 3-channel RC . . . . $ 4.00
No. 433 **Watts Up:** RC Electric-powered glider for 2-3 channels, 035 motor spans 52 in. . . . . $ 4.50
No. 438 **Cruiser:** FF Embryo Endurance rubber-power fun ship has big-model characteristics . . . . $ 2.00
No. 440 **Cavalier:** RC Old-Timer-like new design has a huge wing for slow, easy flights. For .35 power, 3 channels. Two sheets $17.25
No. 444 **Firebolt:** RC pusher canard sport/pattern uses .40 pusher engine and 4-channel. Has swept-forward foam wings . . . . $ 6.50
No. 447 **½A Miss America:** RC Old-Timer ½A Texaco model for .049 glow, 2-channels . . . . $ 6.50
No. 452 **Gee Bee Z:** RC Quarter-scale spans 71½ in., uses .90 power. Four sheets $16.00
No. 453 **Smoothie Profile:** CL Profile rendition of Bob Palmer's super-Stunter of the early Fifties for .35 power . . . . $ 5.50
No. 454 **Sweet P-30:** FF Neat, stick-and-tissue Outdoor Rubber P-30-class model is a contest-winner . . . . $ 2.00
No. 457 **Spectra:** RC Electric-power for 05-size motor uses 3 different wings for sport, soaring, or aerobatics . . . . $ 7.00
No. 460 **4-40:** RC Shoulder-wing sport flier for 4-cycle, .40-size engine, 4 channels . . . . $ 6.50
No. 461 **Trixter Barnstormer:** CL Famous, unflapped Stunter of the late Forties. Uses .35 engine . . . . $ 6.50
No. 462 **Pomilio PE:** FF Jumbo Rubber Scale of WW I Italian observation plane . . . . $ 4.00
No. 463 **Platyhelminthes VI:** RC ½A Pylon racer uses lots of lite ply in built-up structure for strength, lightness . . . . $ 4.75
No. 465 **Blue Max II:** RC Fun-fly sportster for .40-size engines spans 52 in. Lightweight structure . . . . $ 7.00
No. 467 **Alco Sport:** FF Rubber Scale design won at the '83 Nats for designer Don Srull. Wingspan is 26 in. . . . . $ 2.50
No. 468 **Smoother:** CL Stunter for .29/.35 power. Design is based on hybrid Smoothie/Nobler . . . . $ 6.75
No. 470 **Stroker:** RC Mid-wing sportster uses .40/.45 four-stroke engine, spans 50½ in., tail-dragger . . . . $ 6.50
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Black Beauty/Willard

Continued from page 101

balance (so that weight can be added for high-wind conditions without changing the CG location). I use lead sheet cut into various sizes and weights; this is held in place with bolts and wing nuts, permitting rapid changes in ballast as wind conditions dictate.

Flying. What a thrill! With all systems checked out and working, have a qualified associate launch your Black Beauty into the wind with the nose slightly down so that it will pick up speed rapidly. Be ready. The racer will dive slightly if the wind is light; then, as it reaches flying speed for level flight, the nose will come up, and the racer will be sliding through the air silently and swiftly.

You may have to make some minor trim adjustments. Fly it each time to check out the control responses. As you get used to the sight of the model flashing through the air, you can start making some pylon turns, putting the nose down and going to high-speed flight.

Sensitivity of the controls is a matter of individual taste. I set mine up so that when my pitman calls, "Turn!" I can use full throw on the ailerons without over-rolling into the hill. Also, the elevator is set so that when a vertical bank is established in the racing turn, full-up can be used without causing a high-speed snap. (The reason for this is obvious: in the heat and excitement of a race, I have on several occasions seen pilots over-roll into a Split-S or, alternatively, pull such a tight turn with their elevator that a snap roll results. If the surfaces are set so they won't go that far, then the danger is materially reduced.)

Flying a slope race course is a skill in itself. Each location will have its own characteristics, but there are several general concepts which apply. Under normal wind conditions if you fly out too far from the hill, the vertical component of the wind will be less, and you can't "push" it. If you fly too close to the hill, surface turbulence can throw your racer off course. Only practice time can help you locate the area of best lift.

If the wind is blowing at an oblique angle to the hill, you usually can improve your lap speed by flying the upwind leg farther out and the downwind leg closer in. Reason: the closer to the hill an "angled" wind gets, the more it tends to go parallel to the hill. True, this reduces lift, but at the same time it increases the tailwind vector. Which aspect is the more important depends on the particular site. Again, practice is the answer.

Slope racing is the most exciting RC event that I know of, and Black Beauty is the most exciting racer I've ever had. I hope you enjoy yours as much as I do mine.