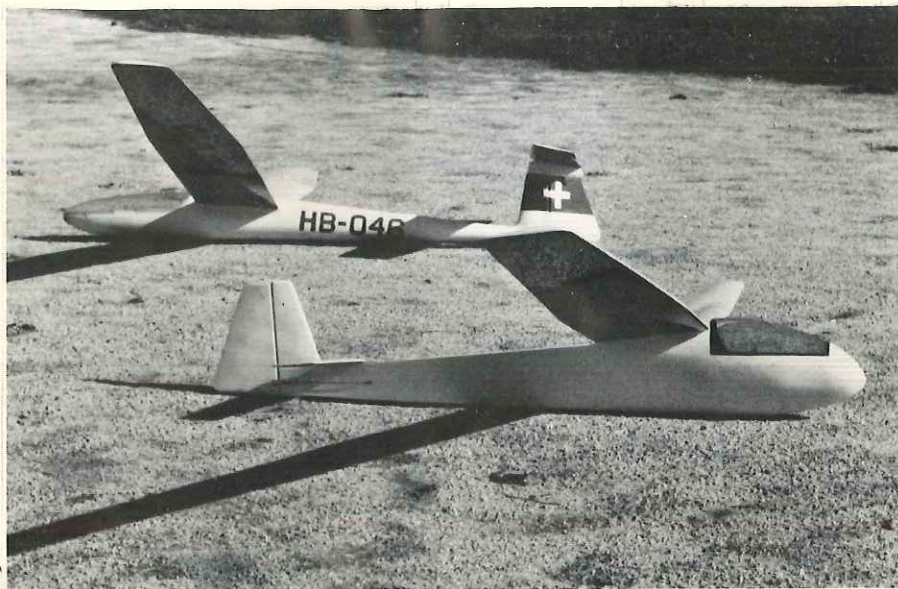


BRIEGLER BG-12

Following the simple basic structure of its full size counterpart, this 100" scale model sailplane doesn't have to compromise performance for appearance or vice-versa. By CHRIS CHRISTEN



Clean simple lines show up well in this picture. Ship in the background is a Diamont.

● The BG-12, a single-seat high-performance sailplane, is the twelfth in a series of famous designs by William G. "Gus" Briegleb. Briegleb, one of the Grand Gentlemen of Soaring, headquarters his Sailplane Corporation of America on El Mirage Field, near Adelanto . . . on the desert North of the L.A. magalopolis . . . California.

The BG-12 first took wind over its wings in 1956, and 17 years after that prototype flight, the design is still popular with sportsmen pilots and offers competitive performance as well as 1973-sleek appearance. The all plywood construction was designed especially for the home-builder, and is quite similar to

model airplane practice.

The design specifications claim an L/D max of 34 at 56 mph and a minimum sink rate of 2.25 fps at 47 mph. In comparison, the latest Schweizer . . . the 1-34 . . . is quoted at an L/D of 34 at 55 mph, and a minimum sink of 2.1 fps at 47 mph. Little wonder that more than 200 kits for the BG-12 have been sold, and that many are still active throughout the world. It is quite a basement project.

Briegleb's BG-12 has logged an enviable record for any single design, and especially for an amateur built configuration, having established records for distance, duration and altitude at var-

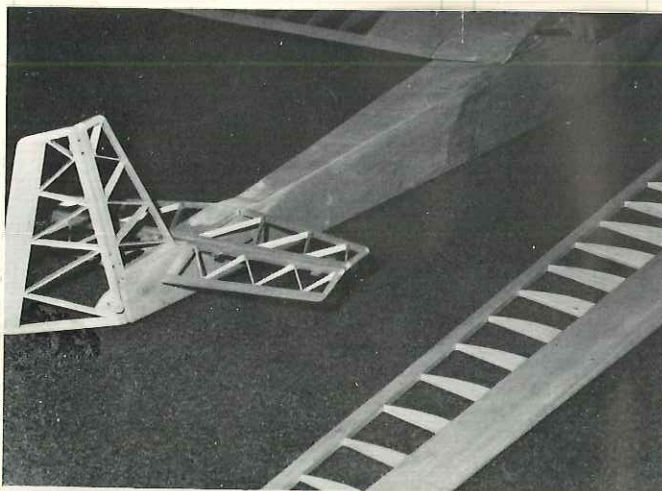
ious times in various countries. But perhaps the most important records are those of safety and longevity. Almost every issue of Soaring . . . SSA's magazine . . . lists BG-12's in the "For Sale" columns at prices to near \$4,000.

The original BG-12A utilized a three-piece wing. This was later revised in the -12B and subsequent versions to a two-piece with conventional center joining arrangement. Most BG-12's were and are assigned to Open Class competition with wing spans 9 1/2 inches greater than the maximum 15 meters allowed in Standard Class. Also, all but one BG-12 incorporated center section wing flaps for glide path control, which is a feature not allowed in Standard Class.

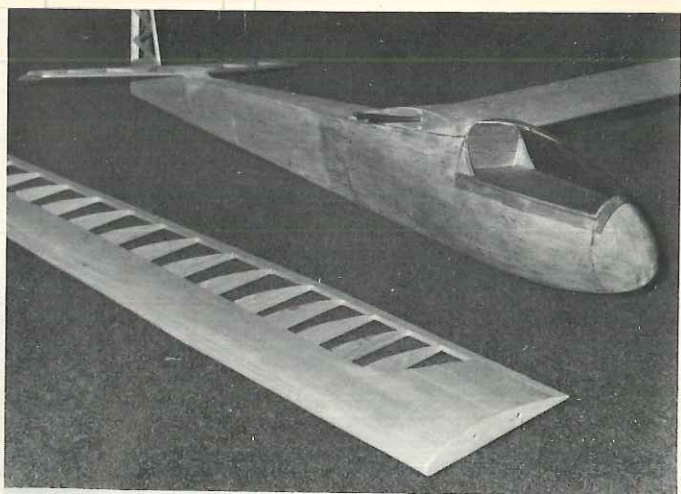
The single Standard Class BG-12 was a -12C modified to 15 meter span . . . 49 feet-2 1/2 inches . . . with dive brakes (spoilers) and no flaps. These changes made it legal under FAI/OSTIV Standard Class requirements.

Gus Briegleb's "Briegleb Glider design Number 12" is an excellent modeling subject for all-around sport flying or for a serious scale project. It's no floater, but its light weight and clean lines give performance beyond what might be expected. Penetration is quite good, and if there's any thermal action worth working, it'll go up.

Exact scale outlines are noted on the drawings for the scale enthusiast, and many full size machines are still around and available for documentation purposes. The BG-12 is unique . . . literally a modern classic.



Zig-zag ribs in tail surfaces provide strong, light, warp-proof structure. V sectioned fuselage is built upside down over top view.



Canopy is portion of a 16" Sig unit. Forward half of fuselage is strengthened by fiberglass cloth and resin. Wings plug in.

-CONSTRUCTION-

WING

Begin construction of the wing by cutting all necessary ribs from straight grain medium weight 1/16 balsa. Make 6 Number One ribs from 1/16 plywood and 2 Number One ribs from 3/32 plywood. Drill all plywood ribs for wing wires. Make trailing edge stock by planing and sanding 1/4 x 3/4 balsa sheet stock . . . leave trailing edge about 1/16 thick.

Assemble the six 1/16 plywood ribs on two full length brass tubes and pin over wing plan at first six rib stations. Be sure everything is square . . . epoxy tubes to ribs. When set, remove from plan and cut tubes flush with two No. 1 ribs in center . . . you now have a perfectly aligned center section.

Build wing and fuselage on a flat surface such as a second-hand two foot wide door . . . these are inexpensive and very solid. Pin a 48 inch sheet of 1/16 balsa over plan . . . be sure to use wax paper or Saran Wrap. Add spruce spar

to rear edge of sheeting and while this is drying, fit lower center sheeting and glue. If 48 inch wood is not available, shorter sheeting with splices may be used. Be sure to keep all splices near tip and not overlapping.

Add all ribs, root assembly and shear webs to wing, capping with 1/8 x 3/8 subleading edge. Wing is finished by splicing and adding trailing edge and gussets . . . allow to dry over night. Remove wing panel and shape 1/8 x 3/8 subleading edge strip to ribs. Then fill area between spars and tubes with a mixture of resin and micro balloons . . . chopped fiberglass may be substituted . . . the main thing here is to achieve no root flex.

Repin wing assembly to board and finish by adding all top sheeting and a 3/32 facing rib to root of wing . . . this will later be sanded to match dihedral with wing saddle.

After all this has dried throughly, trim top sheeting at leading edge and add 1/4 x 1/2 balsa leading edge. The wing is finished by adding tip block and shaping leading edge.

The left wing panel is constructed over the back of the plan which is made visible by rubbing a small amount of cooking oil on the paper where the wing is located.

WING SADDLE

Bend the two wing wires to the angle shown on the plan . . . be sure that they match. Make up a sheet of 1/16 balsa 6 1/2 inches wide by 4 inches long (grain parallel to 4 inch side) and pin to plan against trailing edge. Glue both

bottom spars and 3/32 ribs to this. Add 1/8 x 3/8 subleading edge.

Fit both wing wires, noting that rear lower spar needs to be notched to clear wire. Add both top spars and shear webs with wire fitted. Temporarily add wing panels to saddle . . . support panels on board and be certain everything is square . . . now is the time to fix any misalignments. When you are sure everything is right, epoxy wires to ribs and let set.

Remove wings and saddle from building board. Mix some more resin and micro balloons and fill area between spars and wires.

Now complete saddle by adding top sheeting and leading edge . . . do not shape leading edge until saddle has been epoxied to fuselage.

TAIL SURFACES

When building both the stab and rudder, be careful to shim leading and trailing edge material to be in center of 1/16 rib stock. Rudder outline shown on plan is scale and works very well with the wing dihedral shown.

The scale outline for the stab is also shown, but is not recommended for beginner pilots or sport flying. The scale stab is only 10% of the wing area and requires very attentive piloting.

After the surfaces have been assembled and allowed to dry thoroughly, sand both to the symmetrical airfoil shapes shown.

FUSELAGE

Begin construction of fuselage by cutting all frames from clear, medium grade 1/8 balsa sheet. The cutouts shown on frames D, E, F, & G may be omitted if you prefer to use Nyrod push rods. If cutouts are retained, be very careful in cutting so that they may be refit

during construction . . . see plan

Entire construction will be done on material . . . yes, Super-Monocote will stick to fiberglass. When covering wing frames C through G, and J at location panel, be sure to warp in at least 1/4 inch shown . . . check for squareness. Install special cockpit stringers, "K," w

at rib No. 8.

frames A and B. Prop securely

proper height above building board. Adjust rudder throw to maximum for initial flights; the elevator needs only 1/4 inch throw. As you become used to flying the short tail moment, pitch sensitivity may be increased.

Install 1/8 x 1/4 top diagonals between frames and corners of side stringers . . . be sure these are flush w building board. Now locate diagonal side braces in the following sequence . . . top right "D" to bottom "E" to top left "F;" top left of "F" to bottom "G;" bottom "G" to top right "H;" top right "H" and bottom "J."

If you wish to add wheel detail to

the fuselage, see the "Yankee Gull" in March/April, 1972 Model Builder, and install mounting plates now but do not cut keel until sheeting has been completed.

Add 1/16 sheeting to sides now . . . curvature in area of nose, forward of frame "C," is best done with several narrow sheets.

When dry, remove fuselage and add nose block. Install 1/16 sheet to top of fuselage under wing saddle only, using epoxy or resin . . . be liberal.

Build wing incidence block using scrap 1/4 sq. and 1/4 x 3/8 balsa . . . attach on sheeting using epoxy or resin.

Prepare some additional resin to be used to install wing saddle. Mount wing panels onto saddle when epoxying saddle to fuselage in order to give greater length for triangulation in aligning wing to fuselage center line. Secure saddle to fuselage with pins when properly aligned. Remove panels as soon as center section is pinned, before epoxy sets up.

Build 1/8 sheet canopy tray to outlines shown on plan and shape nose block and filler on wing saddle to match . . . allow for canopy thickness.

Complete fuselage by adding pushrods, top sheeting and tail surfaces . . . add shims to stab to maintain it parallel to top sheeting . . . check squareness with wings mounted. Install tow hook block or support and complete wheel detail, if installed.

Fiberglass the fuselage from the nose lined in Model Builder (February 1972).

The canopy is fabricated by trimming it to fit from the rear portion of a Sig 16 inch canopy.

FLYING

Cover entire airplane in your favorite material . . . yes, Super-Monocote will stick to fiberglass. When covering wing panel, be sure to warp in at least 1/4 inch washout in each wing tip, beginning at rib No. 8.

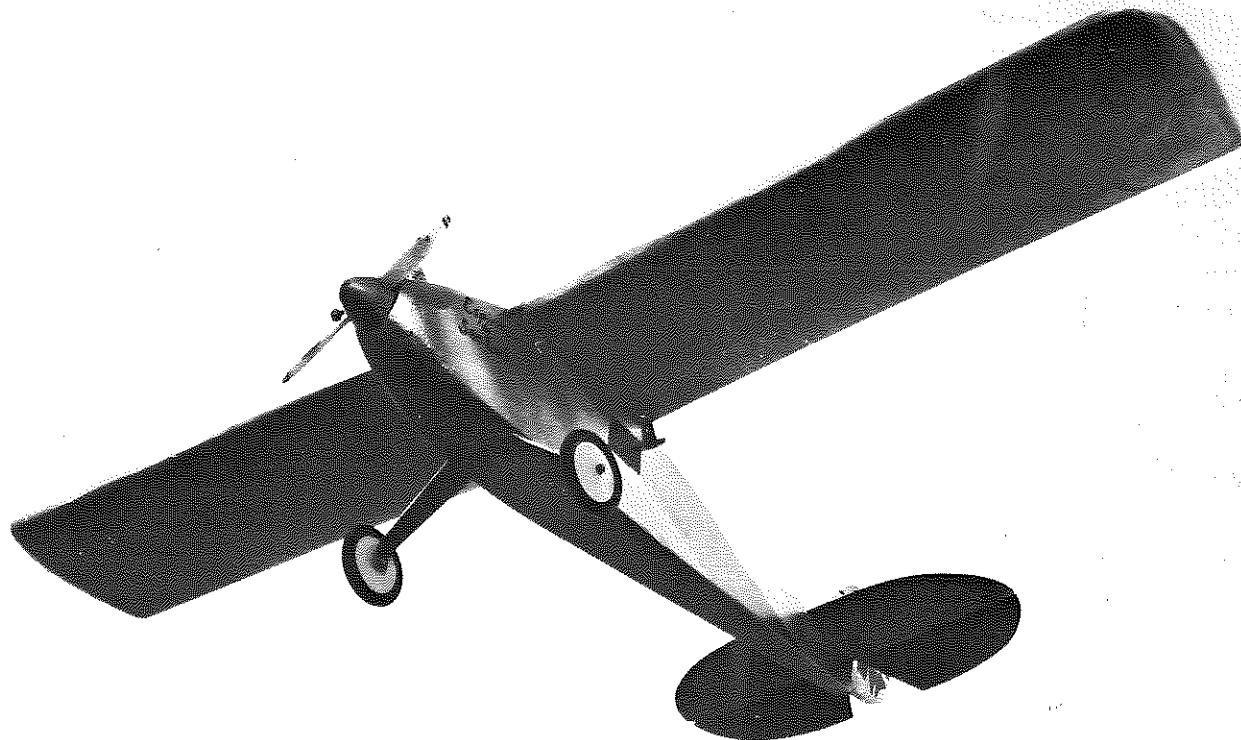
FLYING

Adjust rudder throw to maximum for initial flights; the elevator needs only 1/4 inch throw. As you become used to flying the short tail moment, pitch sensitivity may be increased.

Check all controls for proper operation and their return to neutral. If wing incidence is correct and C.G. is as shown, the model will exhibit a straight and fast glide from a firm running hand

launch . . . caution, fuselage is difficult to hold.

Take your time in these first flights and I'm sure that you will enjoy many flying hours with your Briegleb.



ESPIRITU DE SAN LUIS

DAVE THORNBURG brings us the little-known story of a famous south-of-the-border aeroplane of yesteryear. Lines of the small craft may look vaguely familiar, but scale is scale, and never the twain small meet.

● The year 1972 was a memorable one for the small Central American country of Burlazon: it was the year of the Carloston, a dance craze that swept the small republic like a Caribbean hurricane; it was the year that Enrique Ford, father of the country's vast and profitable sandal industry, finally dropped the venerable all-leather Model T (for trasto, "antique") in favor of the radically new Model A (for abaratar, "to improve") a sandal made entirely from used automobile tires. And it was the year that a little-known stunt pilot, Carlos Aguila, captured the imagination of the entire western world by flying his small single-engine monoplane, the Espiritu de San Luis, across the Caribbean to San Juan, Puerto Rico, alone and singlehandedly (his left hand was in a sling, having been caught the week before in a hydraulic retractor at the Ford Sandal Works, where he moonlighted.)

Aguila warmed the stout hearts of

newspaper readers everywhere by modestly insisting to the San Juan reporters that he had had no intention of performing so celebrated a feat. "I was merely flying formation with a flock of seagulls," he said, "when my omni shorted into my autopilot and I found myself hopelessly jammed onto a skip signal from San Juan. I slept most of the way." Newsmen who heard this explanation merely laughed and dubbed Aguila maze of wing and undercarriage struts than in its entire empennage. Unfortunately for the exacting scale modeler, no drawings were ever made of this intricate strut pattern, and the originals were claimed by the fans and well-wishers of San Juan. In other respects, however, the model presented here is a roughly accurate copy of the original Espiritu, the skeletal remains of which "The Lone Seagull;" then, stuffing their notepads into their pockets, they pitched in to help the admiring crowd save

the airplane from posterity.

And what an airplane it was, before the crowd reworded it! You could tell at a glance that it must have been designed by a modeler. Its tail moment was daringly short, its rudder and stabilizer petite . . . it had more area in its were destroyed in a museum fire during Burlazon's Glorious Revolution of 1929-1968.

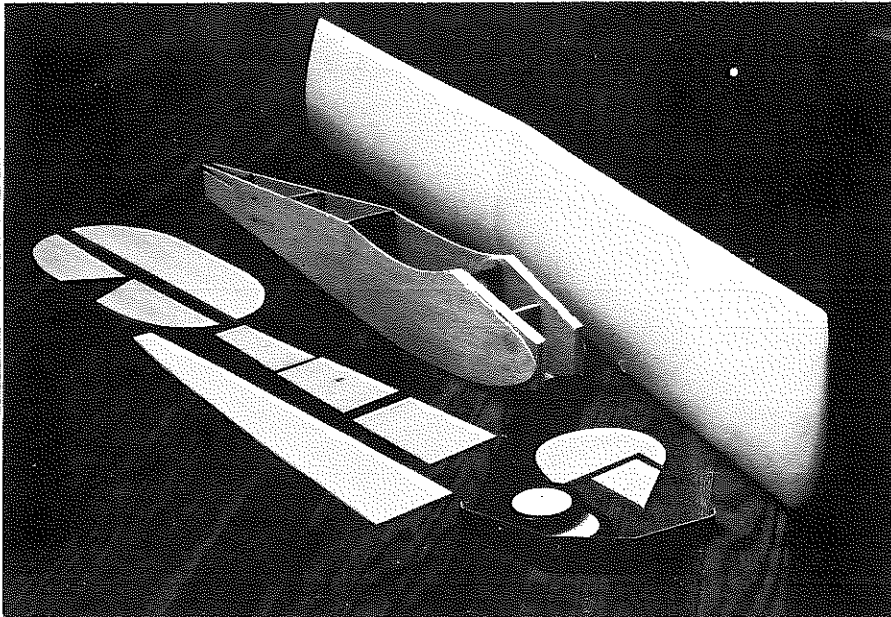
As a nostalgic, sentimental, history-minded, forward-to-yesterday sort of person, you will probably want to build a model of this famous airplane. The editor will like that; for a trifling sum he will send you full-size plans (be advised that trifling is now more expensive than it formerly was.) Meanwhile, assemble for your convenience the following materials, borrowed or bought:

A 45 inch Sig foam wing;

Two pieces of hard 3/32 x 4 x 36 for the fuselage sides;

A sheet of even harder 1/16 x 2 x 36

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The Sig foam wing contributes a big short cut to the construction. Cutting out all parts prior to the start of building also makes things go faster. Newest silver Monokote would look great on it.

for the top and bottom;

A sheet of incredibly hard 1/4 x 3 x 36 for the noseblocks;

A piece of medium 1/8 x 4 x 36 for the empennage;

A scrap of 1/8 plywood for the firewall and two smaller scraps of 1/16 ply for the landing gear mounts;

A foot of 3/16 dowel;

Epoxy and white glue;

A dural landing gear blank;

A pair of 2-1/4 inch Williams Bros. antique wheels;

An appropriate (hot .049 to meek .09) engine;

And a couple of hundred bucks worth of radio!

A small 3-channel digital and an .09 make the optimum combination; for two channel (one hundred bucks worth), use rudder and elevator and an unthrottled .049. Try to stay under 12 ounces radio weight, to avoid scale flying characteristics. If the entire airplane, ready to fly, can be kept under 27 ounces, then you too will be able to fly it singlehandedly -- instead of singlemindedly, as most small RC's have to be flown.

If you're new at this business, begin construction with the wing to gain confidence. Hold a 45 inch Sig foam wing in your left hand and paint on one coat of Sig white Plastinamel with your right (*A brush is neater. WCN*). When this is thoroughly dry (usually 2-3 days) spray it lightly with aluminum-colored butyrate dope. This completes the wing construction -- don't RC planes go together easily? . . . Wait 'till you see them come apart!

The fuselage is only a bit more com-

plex. Cut out one side by the plans, then use the first side to cut out the second . . . that way, even if they don't look like the plans, they'll look like each other. Whack out two 1/4-inch doublers from good hard stock, and while the wood's handy cut out the top and bottom cowl pieces as well. Cut the formers from 1/8-inch balsa, keeping the grain horizontal for maximum squeeze-prevention.

The firewall is 1/8-inch plywood. It's not really for preventing fires . . . it burns very well when it becomes fuel-soaked . . . but it comes in handy for mounting engines. That's why it's called a firewall. If you plan to use an engine without an integral tank, you'll want to cut an additional hole in Former A for a 1-ounce nylon clunk tank, which will almost certainly leak on your battery pack . . . but that's what you get for not flying sailplanes (*If you insist on going through with it, put the battery pack in a Baggie to protect it. WCN*). Plan your engine installation now, drilling the appropriate holes in the firewall for engine mounting, fuel line, throttle pushrod, etc.

Glue the doublers to the fuselage sides, then assemble the sides around the firewall and Former A, aligning things over the top view on the plans. The downthrust isn't too critical unless you are planning to fly the plane rudder only, but the right thrust is good for everybody. When the firewall is dry, pull the tail together around Formers B and C. Don't omit the doublers in the rear section: the triangle beefs up the wing dowel and the one in front of the stabilizer slot is a must for preventing

split fuselages in hard (ie, vertical) landings.

Glue the bottom nose cowl in place and, after checking alignment over the top view again, add the 1/16-inch sheeting to the aft end. Spot-glue the upper cowl block in place (you'll want to remove it later for engine mounting) and carve the nose into a reasonably rounded, streamlined shape. Now pop off the cowl block and give the entire nose area, inside and out, a thorough fuelproofing. Clear Hobbypoxy or fiberglass resin is great for this purpose . . . the average plane can always use a little extra weight in the nose. Mount the engine and tank, glue the upper cowl in place permanently, and cover the fuselage with aluminum Monokote . . . or a half dozen coats of nasty, smelly, heavy old dope. (Rubbing talcum powder into the grain between coats helps fill the wood with less dope.)

Cut out the rudder and stabilizer from medium 1/8-inch balsa; Monokote or paint them before adding the hinges. Bolt the landing gear in place; add the tailskid and wing dowels; install the radio and start looking for a balance point. Wherever it is now, it's got to wind up within 1/2-inch of the point shown on the plans for your plane to fly. If this means adding noseweight, do so -- scrap tireweights glued into the cowl below the engine work well. A spinner helps. Don't forget the prop, but don't count on the tank of fuel . . . the stuff has a way of disappearing in flight. Generally speaking, the farther forward the CG lies, the easier the plane will be to fly.

If you're a rank beginner, try to find help at this point. Very few people are able to keep their first plane together long enough to learn to fly it, when they go it alone. If it's just not possible to obtain help, here are a few things to check before that first flight: engine thrust line (does it point down and right, as the firewall drawings on the plans indicate?); rudder throw (it should be no more than 1/8 to 3/16 inch each way); elevator throw (1/4 inch each way is enough); point of balance (it should be NO MORE than 1-3/4 inch behind the wing leading edge.)

Don't throttle the engine back for the launch, especially if you're using an .049. Slow-flying power jobs tend to stall and snap-roll into the ground very easily. Throw her fairly hard and straight into the wind . . . with any luck she should fly off with wings level and climbing. Make those first turns very gingerly . . . Caramba! You are on your own, my friend! ●

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