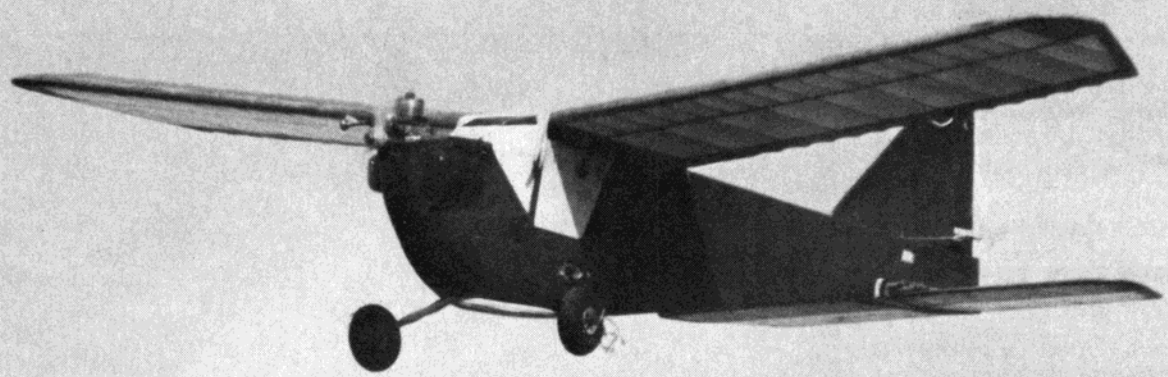
The Airknocker . . . Revisited



Veteran designer rediscovers an old friend in this two channel scale-like funster.

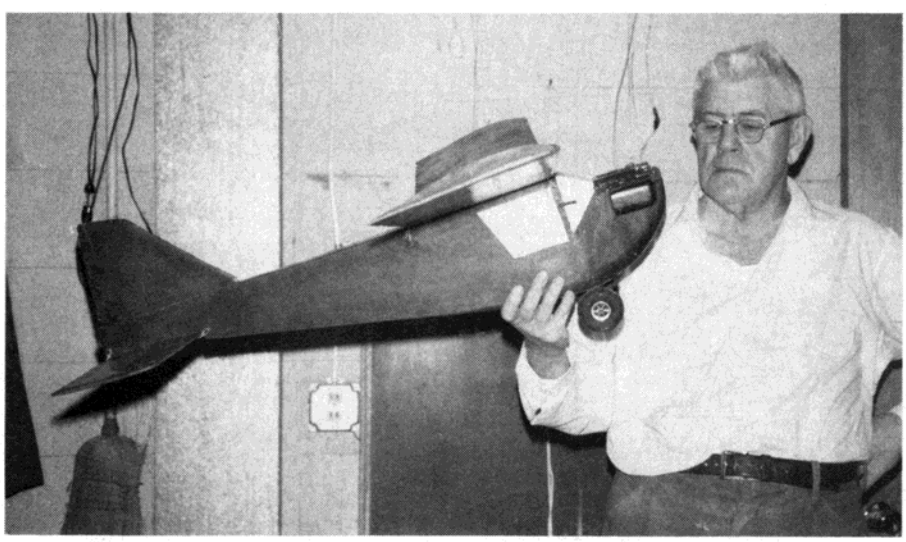
By Bill Winter

PHOTOGRAPHY: JOHN PRESTON

The ship you'll see in the pictures is more than 20 years old, and is powered by an old Enya .09 of even more ancient vintage. Not really a scale model (Hurst Bowers swears we stole it from a Welch *Owl*), it was an escapement airplane with a Fox .10. And, after passing through many hands and wearing out sundry engines . . . like a strange diesel and a Cox .15 . . . it was returned to us by Norm Rosenstock who had been flying it with a receiver from an old race car. You might say it has paid its dues. If it looks familiar to a few sharp-eyed old men, that's because it appeared in FLYING MODELS back in 1963! Now it is airborne again on a pair of Futaba servos.

It's such a fun airplane that I drag it with me to every flying session and always get off a few putt-putt flights that never fail to entrance the watchers. Throttled back, it is a genuine putt-putt that all but stands still in the wind and, if there is no wind, you can fly it right past your nose to admire its old-fashioned configuration. Put it high and set up a trimmed right circle and you often catch lift . . . something I love to do.

I remember sketching its odd configuration in the late Paul del Gatto's shop on a rainy afternoon. The prime purpose was to use a different structure to lend interest for bored builders of boxes. Like many of my designs, it was intended for a highly specific kind of performance and it must be flown precisely as described if you want to experience its special magic. It spans about 52 inches and, oil soaked and often repaired (some real scars testify to mysterious encounters in its past), it flies on that ancient .09 using a 7-4 nylon prop. A present day Enya .09 puts out much more power, so one must throttle back early in the flight. Even though the *Airknocker* is only rudder and engine control, I frequently skim the runway, trying for touch-and-go's, sometimes becoming entrapped in unshorn grass, but sometimes hitting it just right. Incidentally, it has a Perfect #8, 1 1/4 ounce wedge tank with repositioned pipes and, in low cruise, will wear you out with just two flights, sometimes three, on a summer's evening. It runs forever; the plan now shows a modern one-ounce Sullivan slant tank.



It started life with a Fox .10 and a single escapement. The **Airknocker** is back again, starting life at 20+ years with a modern two channel (rudder and throttle) radio and a vintage, but trusty Enya .09.

The profile is one I would not even consider for higher power. By using low power I knew I could get away with the high tail profile. Even a wood 8-4 prop on that weak old engine-which likes 10% nitro by the way (but don't go over 5% with a new Enya)-begins to detract from that delightfully sedate flight envelope.

When this crate was pristine new, it had a nice tread on its Du-Bro wheels which now are treadless, not truly round, and so spongy from fuel, that one must pull it off the bench! It actually sticks. One interesting change from then to now was a shift in the C.G. with the heavier servo-equipped version, and the addition of almost 3/8 inch negative incidence in the stabilizer. The C.G. is well forward and there is just-right, built-in down and right

thrust. Engineers may cry "for shame" at our odd adjustments but, believe me, this thing flies like a dream.

Many people fly this ship. I pass it around. Don Srull, who has taken numerous Nats placings, many firsts in rubber scale, and a couple of seconds in R/C Sport Scale, cried out: "Now that's the way a plane ought to fly. There is nothing that beats, for fun, a well set-up rudder-only job with throttle." Herb Clukey, an old time full-scale pilot, lost himself for 20 minutes flying precise-and we do mean precise-military rectangles with really sharp, 90-degree corners.

We won't detail construction. Who needs that? But we will explain a couple of fine points. Don't be alarmed by the fact that the sides are cracked at the front cabin bulkhead. Draw on each side the floor and bulkhead locations. Consider that you are putting dihedral in a piece of sheet balsa. Press down with the corner of a piece of wood, or a straightedge, etc. and crack the wood, blocking up the "tip" as per plan detail. Run some Hot Stuff™ into the crack (it is on the inner side only) and the balsa holds its jigged position.

Note that the "floor" automatically jigs the sides for accuracy on the centerline, both fore and aft. First, attach the floor to one of the sides, install the rear cabin bulkhead, then the other side, followed by the ply front cabin bulkhead. Also note that the landing gear is wire sewn and epoxied to the front cabin bulkhead after it is installed. Remember to pre-drill holes for it. The U-shaped portion of the gear pushes up through the crosswise slot in the floor (slot cut after floor in place). The laminated blocks that form the belly can be notched, where necessary, as they are glued to the bottom of the floor. (You can use any combination of blocks—I show 1/4 sheet for convenience.)

It's gained a few ounces of oil in its long life but it has its original, captivating flying qualities. It's an old-fashioned configuration with quite a bit borrowed from the Aeronca C-3 *"Bathtub"*.

I should say something about wood. Good selection is the key to a decent airplane. The 3/32 sides should be on the soft, light side. Blocks are very soft. Spans and edges are hard. Ribs and stabilizer cross pieces are medium hard. The vertical tail is medium, just a bit softish.

Servos are fastened to the cabin walls by servo tape, sticking it to the ply doublers shown in those areas. (Use a 225 mAh battery pack.) I had trouble with servo tape on the rudder servo. Uneven neutrals began to appear and made it necessary to almost constantly pilot what had been a hands-off airplane. It was found that the rudder servo was "working" on the tape, causing the ran-

Before you fly, check for exact C.G. position. Balance it right on and spare yourself the contortions of uncontrolled flight.

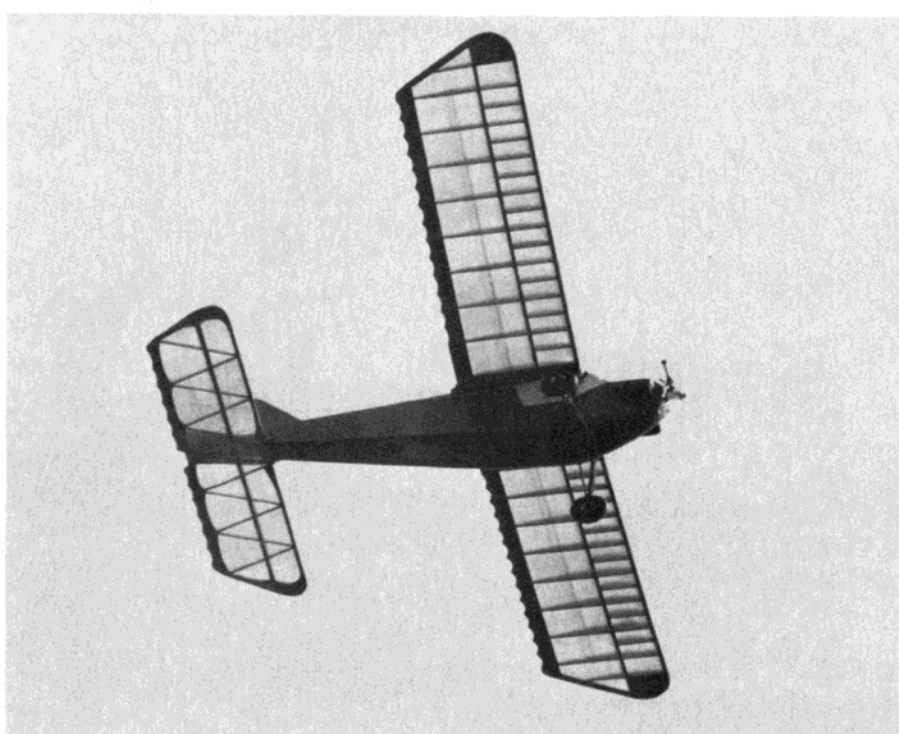
Launch technique is always all important. Toss the ship parallel to the ground, let it climb out for 100 feet at full throttle, then begin to throttle back so it doesn't hang on its nose and stall.

dom neutrals. This explains the cabin cross piece at the rudder servo, which presses against a small piece of ply that is attached to the outer side of the servo with servo tape.

Another point: Capillary action will bring raw fuel through the tubing which carries the wire throttle pushrod. Therefore, I used some cyanoacrylate to fasten a tiny piece of cloth to that pushrod in the cabin, in such a place that it does not hinder servo action.

For proper results, I urge that you test all push rod travel, removed from the servos and horns. You don't want any binding, or even slightly felt drag, because that ultimately spells higher battery drain. Take pains with the throttle set-up. There cannot be any evidence of servo jamming-that can drive current drain up to 400 mils or so on just one servo! And you'll get all kinds of buzzing noises as the poor servo fights to a precise neutral or its full travel position.

To avoid troublesome fits, we strongly suggest the use of either Goldberg or Du-Bro servo connectors. If you use certain flexible cable on the throttle pushrod you may have trouble getting it through the hole in the connector. If the strands are loose or crushed-as after cutting with pliers-put solder on the offending end and file it down. Or, drill out the connector by an additional 1/64, by holding it in a vise. Of course, normal music wire presents no such problem. And Sullivan flexible cable is thinner and stiffer.



With such docile characteristics, the *Airknocker* lends itself to many modifications. Perhaps a third, elevator, channel. Or, transparent MonoKote instead of silk. That way, you still catch the sun through the ribs.

The original plane was covered with silk; yellow on the wing and stabilizer, the remainder painted dark blue. The windows are white, apply the white first, then mask it for application of the blue. There is no reason why MonoKote™ should not be used. It is easy to apply, comes in many colors, and is much lighter—something very desirable.

Before you fly, check for exact C.G. position. I purposely didn't supply a range. If you want this thing to fly like mine, balance it right on. Also be sure of specified alignments from both side and top view. Check wing/tail carefully for warps. No plane will fly properly with any warp present. Remove all of them, either by holding a silked wing over a tea kettle and twisting it, or by jigging and weighing down the MonoKoted surface to the bench and softening the film until it pulls tight again, with your MonoKote iron.

Speaking of warps, you can minimize these dangers with silk, by applying a first coat of butyrate or two if thinned, followed by Sig's Lite Coat, which is low shrink. (All Sig colored dope is low-shrink.) Nitrate dope-harder to find-stabilizes much more quickly than butyrate which continues to do so over many months, shrinking and causing warps later on, even if not present at the time of the first test flights.

The *Airknocker* has always been hand launched, since I've never had a paved runway to try it on. When you hand launch be positive that you are tossing the ship exactly parallel to the ground, or with the nose slightly up. Your arm motion should be in the plane of your body center line (how's that again?); that is, from head to toe. Any sideways arm motion may hook the launch.

As the ship climbs out on full throttle for the first, say, 100 feet, begin to throttle back until you reach the point where the plane does not threaten to hang nose-high on the prop. Use gentle corrective rudder action to maintain straight flight until altitude permits the first very wide turn, preferably to the right. This turn is merely established so that the ship will come around on its own. If too steep, use a tad of opposite to achieve desired bank angle. When it does that, as it comes back into the wind, it will pick up altitude handily.

Continue a straight-out climb and another such sweeping turn if necessary. By now you should be high enough to throttle back to level flight cruise, after which you steer about as you wish for a long, long time, occasionally adding a click or two of power if some altitude appears lost in the cruising turns. If it is windy, keep the entire flight in front of you.

If you do get into nose-high attitudes which threaten progressively deeper stalls, simply knock the plane off the nose-up path as it appears, by using rudder to turn. In a pinch, just throttle back to full idle until you get headway straightened out again. It's back to basics with these rudder-only slow pokes! Let the throttle be your "panic button."