



Hard out at the end of the Hi-Start lines and about to release—author shows how it's done.

• With the ghost of a whistle, 17½ ounces of balsa, MonoKote and electronics leaps from my grasp. Climbing steeply, trailing a spidery, sunlit strand of nylon, 64 inches of wing rapidly recedes towards the great vanishing point in the sky. Like a spaceshot lift-off, its almost vertical flight path arcs over towards the horizon, changing my view from plan-form to practically invisible dot and line. Moments later, my handiwork bounces upwards, as a spot detaches itself, blossoms into a parachute and starts its downwind drifting descent. Looking up against the clouds, while trimming for floating flight, I hear the sound of footsteps approaching through the weeds. Here we go again. Prepare for the barrage of questions, which by now I can almost anticipate, query by query . . . the antagonistic "What are you doing here? Who told you you could fly in the field? Haven't you heard of the noise pollution regulations in this town?"—Quite the contrary, in several years of model glider flying, I have never had other than friendly encounters with the local populace. "What makes it go up? Is there some kind of a motor over there in the woods? Can you make it come back to you? How long will it stay up? Did you make it yourself? How much did it cost?", and more often than not, "Where can I get one?"

Not only is this form of model flying soothing to the nerves, but can you suggest a better demonstration of public relations and good neighborliness for our hobby?

Answering these questions in depth would not only be an article in itself, but would also explain why the owner of a full size sailplane spends about as much time staring up at a miniature aircraft as he does soaring aloft himself. Furthermore, it would justify the dropping of enough hints over a period of years to result in an invitation to do a Field and Bench on Airtronics' new Questor, launched by their Launch Pail Hi-Start, and glided by Cannon Electronics' minute Tini-Block, altogether an ideal combination for introducing any eagle-eyed individual to the joys of model soaring. ("Eagle-eyed" because the Questor can climb very quickly to the limits of even the sharpest vision).

Filling in the spectrum stretching between the Mini Olympic and the forthcoming Super Esprit, Lee Renaud of Airtronics has come up with the Questor. Small in size, relative to current trend, it bears a marked resemblance to the Olympic, but with dihedral rather than polyhedral wing. The degree of prefabrication is remarkable, and for a ship of this size, the performance is outstanding. In light wind conditions, I now have a ship which, while almost matching the Cirrus in performance, still fits in my compact car fully assembled.

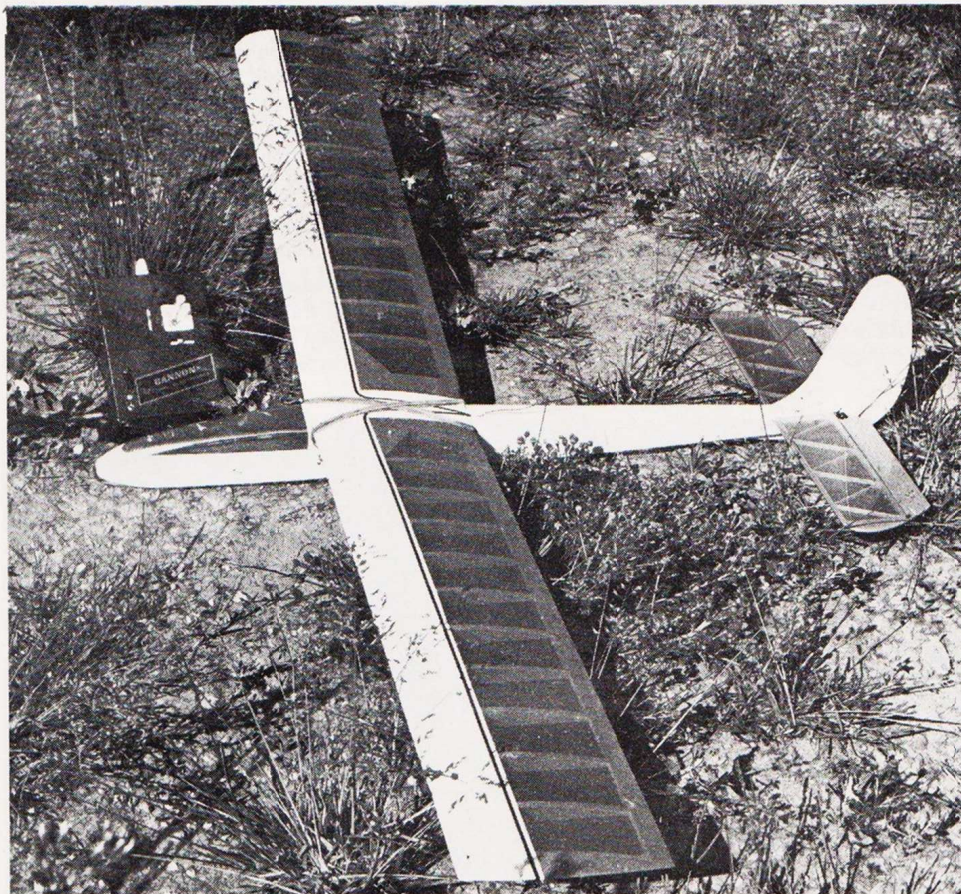
A first glance at the plans and illustrations conveys the impressions of boxiness. A low aspect wing, coupled to an easily constructed fuselage (rendered in a line-drawing), is not likely to sweep one off his feet. Spend a little time contemplating the paper-work, lay out the parts (as I did for photographic purposes), and the functional simplicity of the Questor becomes readily apparent. Exercise a little care in construction and finishing, and you will be delighted with its final appearance.

Moving deeper into the box, beyond the

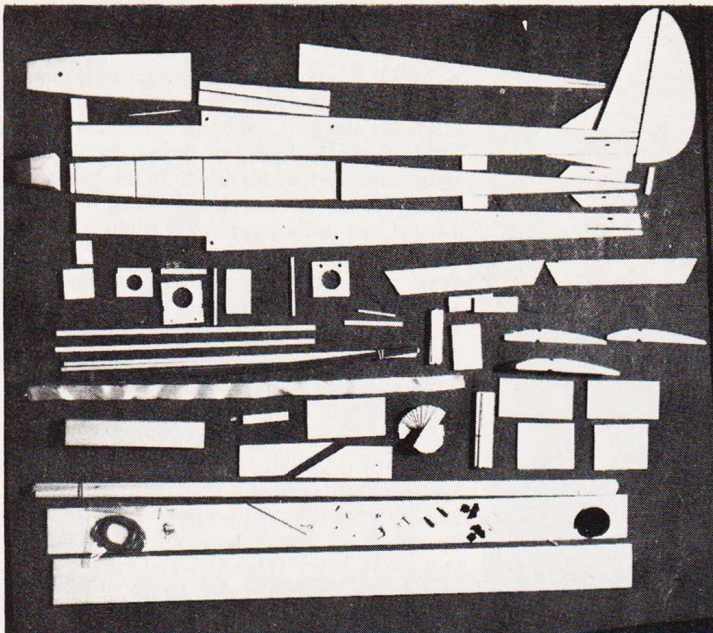
Field and Bench

AIRTRONICS QUESTOR AND LAUNCH PAIL CANNON TINI-BLOCK R/C SYSTEM

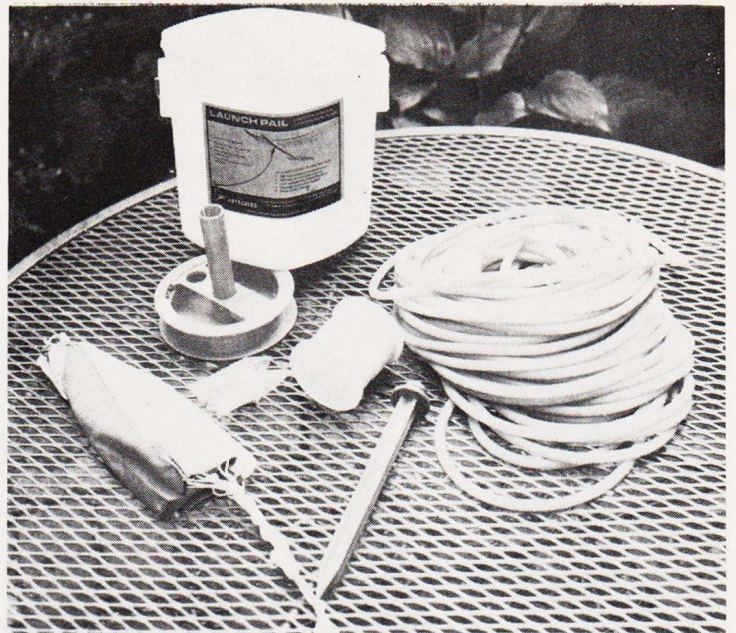
Combination of a small but not too small hi-performance R/C glider and the smallest of the small radio systems, with added attraction of a ready-to-go Hi-Start, necessary for a one-man fun and games project.



Most of the project at rest in the scrub grass of Long Island—transmitter lost in grass.



Bits and pieces as they come right out of the box—plenty of them, too!



Complete Launch Pail project: surgical rubber, monofilament, pail & reel.

FIELD AND BENCH . . .

plans, one cannot help but be impressed not only with the quality of the wood, but also by the clean cutting of the various pieces—not the hairy ink-stained sheets and brittle sticks of yesteryear, but a collection of precision-cut balsa and spruce, sanded ribs, contemplable wood, balsa grained to make a modeler's thoughts turn to transparent covering, or even to no covering at all. The parts for each substructure are separately packaged in transparent bags. All hardware, without exception, is included along with servo mounting tape, vinyl landing skid, wing hold down rubber bands. One-piece fuselage sides, pine nose-block, spruce spars and plywood fuselage bottom all contribute to a strong but light design which, despite my initial misgivings, has been able to take anything my Hi-Start can dish out. (Anyone who has stood holding a fragile fuselage attached to a fully extended Hi-Start, will appreciate not feeling that the woodwork is about to explode.)

Where the scratch builder has complete freedom in his choice of wood for each part, the kit constructor must rely upon the manufacturer to choose correctly for him. Furthermore, when dealing with the degree of pre-

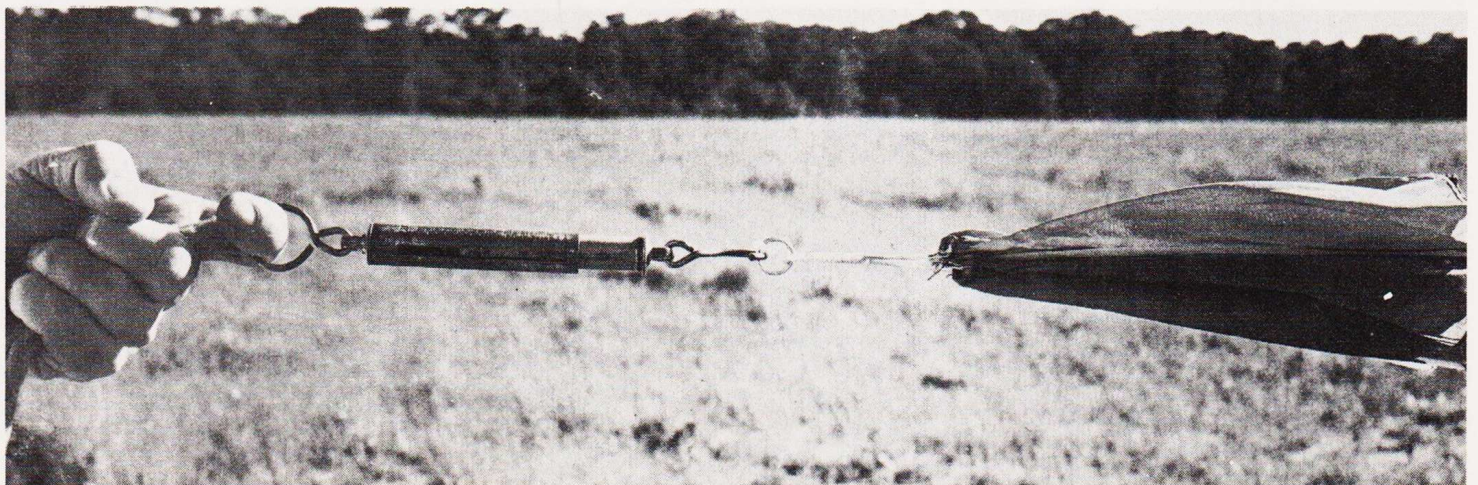
fabrication found in this particular kit, there is no latitude for error in picking the correct pieces for the correct places. By drilling slanted exit holes for pushrods, both in sides and doublers, by cutting each doubler and cross member to exact shape and size, Lee has removed a good deal of labor for the builder. Consequently, one finds himself in the unusual position of not only being sure not to construct two left sides, but also having to identify the only left side as well as separating the left and right doublers from each other. With that one *caveat*, fuselage construction is straightforward and quick. A pre-drilled hole in the plywood removes any doubt as to tow hook placement.

Moving on to the wing, you will note that the construction is again quite straightforward and rapid. Root-ribs are not interchangeable. The side towards the center of the wing are precisely cut to the dihedral angle and should be identified and marked before construction is begun. Dwelling on the center of the wing for the moment, lack of any dihedral braces is somewhat disquieting. It is reassuring to know that as of this date, there have been no reported failures of a Questor wing at the center joint

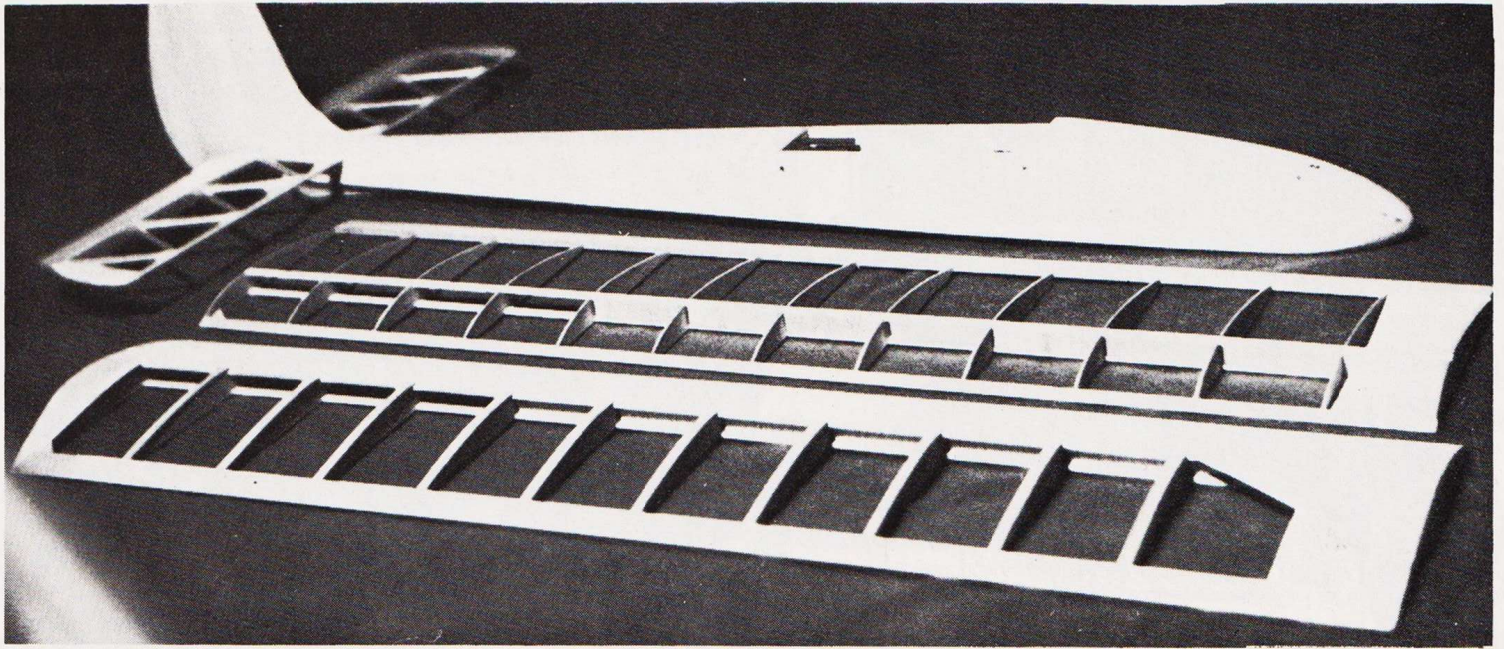
when construction was as directed. Epoxy between the root ribs, music wire at the trailing edge, and a wrapping of epoxy-saturated nylon tape around the entire center joint, provides more than enough strength.

As further testimony to the precise cutting of parts at the factory, my whole wing, up to the point of sheeting and tips, was built *without the use of a knife*. Only two slight inaccuracies were noted. The spars are about 1/16" too short and the pre-cut vertically grained spar-webbing pieces lack about 1/8" of being a perfect fit between the ribs. These two problems were solved on the one hand by placing the outboard tip rib 1/16" closer to its neighbor, and on the other, by butt jointing the inboard edge of each webbing piece to a rib and leaving a slight gap on the outboard side. Subsequent launches in strong wind, even using heavy duty Hi-starts, have quelled any suspicious as to the integrity of the overall wing structure despite my remembering the gaps, invisible within the wing.

The empennage group is a snap to fabricate. Vertical stabilizer and rudder are cut to shape and need little more than basic sanding. The horizontal stabilizer is a built-up



Author takes a poundage pull test using a conventional fish weight scale to ascertain amount of pull—note parachute at the end of the line.



Three main elements of the Questor, prior to joining the wing panels and covering the finished structure—it's light but very sturdy.

structure containing 17 parts, including W ribs. Each of these is precisely cut, even to the bias angle at front and back. Envelope opening to completion, including gluing, took only 11 minutes. The elevator is in two parts, connected by a small piece of spruce. Lee mentioned that later kits have a more substantial tie between the two and, at his suggestion, I beefed mine up with a short length of 1/16" music wire. This carries the load from the one side of the pushrod and control horn to the other.

Although hinges are provided for all control surfaces, I decided to MonoKote the joints, thus eliminating any gaps. This proved quite successful for the rudder, but on the elevator, I found that a tight seam of that length resulted in too stiff a hinge. I went back and fitted the nylon hinges provided. It is interesting to note that a second Questor, constructed with nylon hinges and resultant gap between vertical stabilizer and rudder, requires a larger control movement to achieve the same rate of turn as mine.

As in all of my model gliders, Super MonoKote was used to provide that slick, easy-to-clean finish which, I feel convinced, adds a great deal to performance. I used transparent orange on the wings, with white covering on the sheeted leading edges and

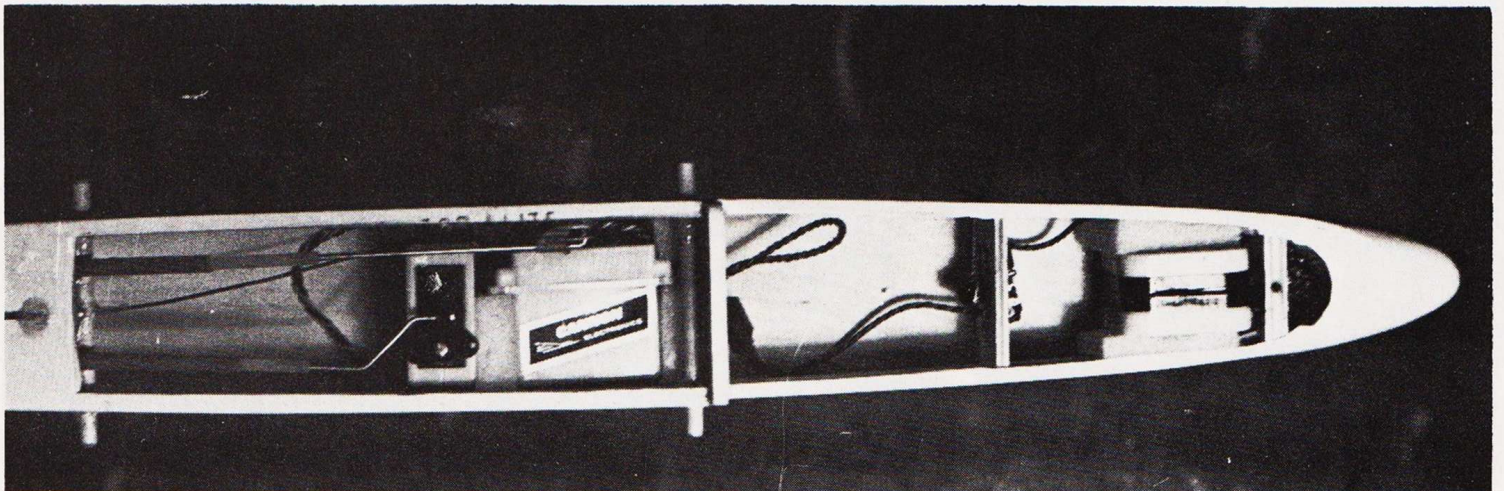
fuselage to come up with a highly visible combination. Silver MonoKote over the canopy block not only simulates glass, but provides a very effective reflecting beacon which flashes in the sun when little else of the model is visible. A little effort, using D.J. trim multi-stripe, sets the whole job a full cut above the average finishing job.

Although Lee provides a fuselage obviously wider than is aerodynamically necessary for most of the small brick-type receivers to be used, this is obviously a model where miniature equipment is called for.

For flying serious competition in my full scale Cirrus, it has been proven most advantageous to have as light a pilot as possible and thereby be afforded the maximum latitude in varying wing loading with disposable water ballast. A 200 pound pilot can match wing loading in heavy conditions with a 150 pound competitor carrying ballast, but when conditions lighten, he cannot get rid of that extra 50 pounds of beer and potato salad. Similarly, in order to fly when the lift is marginal, I prefer to use the lightest equipment available. (Lead is easy to come by when the wind picks up). Consequently, I entered an order for Cannon Electronics Tini-Block and discovered that either Bill was making very few of the units, or their

popularity was outpacing the supply. In retrospect, I can see that the latter case prevails and the six week wait, although exasperating, is worth enduring. The complete Questor, ready to fly, weighs in at 17-1/2 ounces.

The basic Tini-Block comes with one receiver-servo block, a separate C-E3 servo, either 225 or 500 ma. battery pack, separate charger, and compact single stick transmitter. Factory conversion is available, stepping the set up to either three or four channels. (The latter necessitates utilization of a larger size transmitter, similar to the more common Cannon sets.) Weighing 5.1 ounces with one separate servo and a 225 ma. battery pack, the Tini-Block is good for about one and a half hours of flying time per charge. Its circuitry, basically similar to the more expensive Cannon units, using Field Effect Transistors (F.E.T.), is said by the manufacturer to retain the selectivity of double-tuned front ends even though single tuned. This, in part, explains how Bill Cannon fits the receiver-servo block into such a small package. To date, I have experienced no interference problems, even in flights almost out of sight. Centering is excellent, and the servos, D & R Bantams in Cannon cans, are extremely fast. On the bench, following a full charge,



A look inside the fuselage with wing and front hatch off—more than enough room to accept receiver/servo combination with batteries up front.

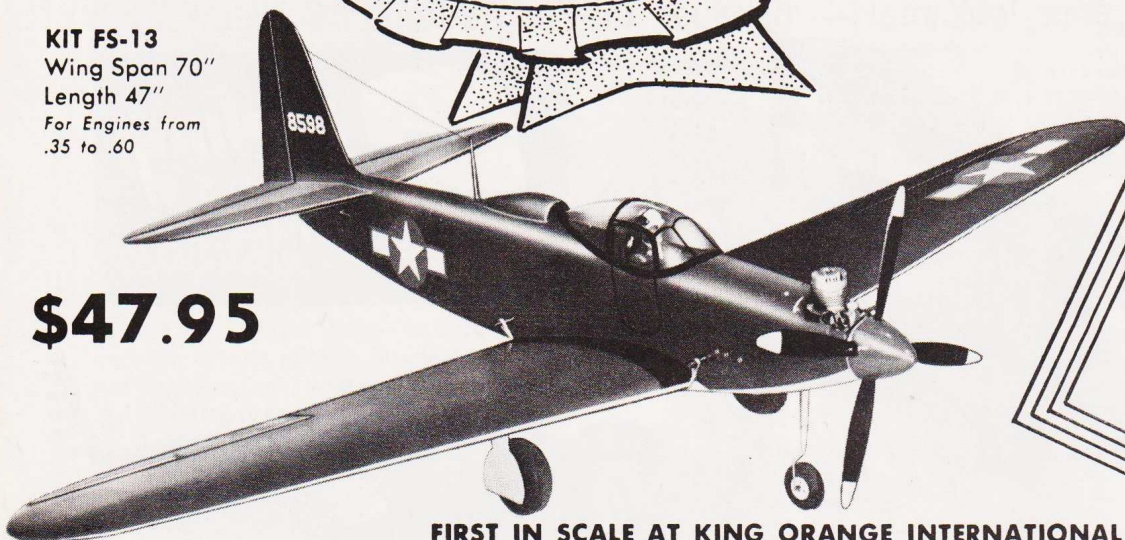
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Field and Bench

the servos characteristically jitter until voltage drops down to normal levels. There is a warning in the instructions never to use dry cell batteries (and consequently higher voltage) with the flight-pack. The transmitter comes set up for dry cell operation but is easily converted to nickel cadmiums either by the factory or the owner.

Without major surgery, it is impossible to reverse the direction of rotation for a brick-type servo. With the Questor built exactly as designed, I was faced with a puzzle of how to get rudder motion in the correct direction without going into the transmitter stick-pot wiring. As seen in the photo, this was solved by mounting the Tini-Block on its side with the servo arm moving in a vertical plane. All components were mounted with servo tape left over from the landing skid. The 225 ma. battery pack was installed on edge with a recess carved into the underside of the canopy block to provide a very snug fit.

Not having a handy precipice from which to chuck my models, I had been using a power pod plus Windex and cleaning rags on most of them. The exception was my Graupner Cirrus which is constructed like a brick outbuilding and more than capable of withstanding the many "G" launches on my cloth-covered exerciser cord Hi-Start. This being the only one I had been directly exposed to, I assumed that all such launches normally resem-

bled a bolt leaving a crossbow and consequently had never used it on lighter models. After talking at length with Lee Renaud, I decided to try using surgical rubber tubing, specifically the "Launch Pail" put out by Airtronics.

Attractively packaged in a white plastic bucket, its components are a parachute, clips, swivels, anchor peg, reel, 400 feet of 40-pound test monofilament line and 100 feet of either light, or heavy duty surgical rubber tubing. The whole shooting match is slightly larger than the "Can Winch" and therefore able to hold the heavier weight rubber. Unless your sailplane is of extremely ephemeral construction, I would recommend this heavy duty package for all applications. I currently use mine in all wind conditions to launch everything from my 17-1/2 ounces Questor to a hefty ASW 17.

One addition I have found most helpful is a small spring scale, available in any fishing tackle store. It should read at least up to 15 pounds pull. Trial and error has shown a load of eight pounds to be about right for a still-air launch of the Questor. Any wind permits a lower powered launch. As wind velocity increases and launch tension decreases, you reach a point where the model rises more than vertically, stretching the Hi-Start enough to produce a stiff neck as it not only moves rapidly upward, but also drifts backwards behind you.

Despite Lee's apology for lack of instructions, I found a booklet in the Launch Pail which is the most comprehensive discussion of Hi-Start launching I have ever seen. Even if this package were not as excellent as it is, one might almost consider acquiring one just to get a copy of the instructions.

All in all, the Questor, Cannon Tini-Block and Airtronics Launch Pail not only provide an excellent, and surprisingly high performance soaring package, but also the inspiration to you and many of those who observe your flights, to move further into the sport of R/C Soaring. ■