Pop's models both big and small are quite outstanding. Son Donald is quite proud of chance to pose with Schoolboy, note typical R/C dress, crease in trousers and shine on the shoes.

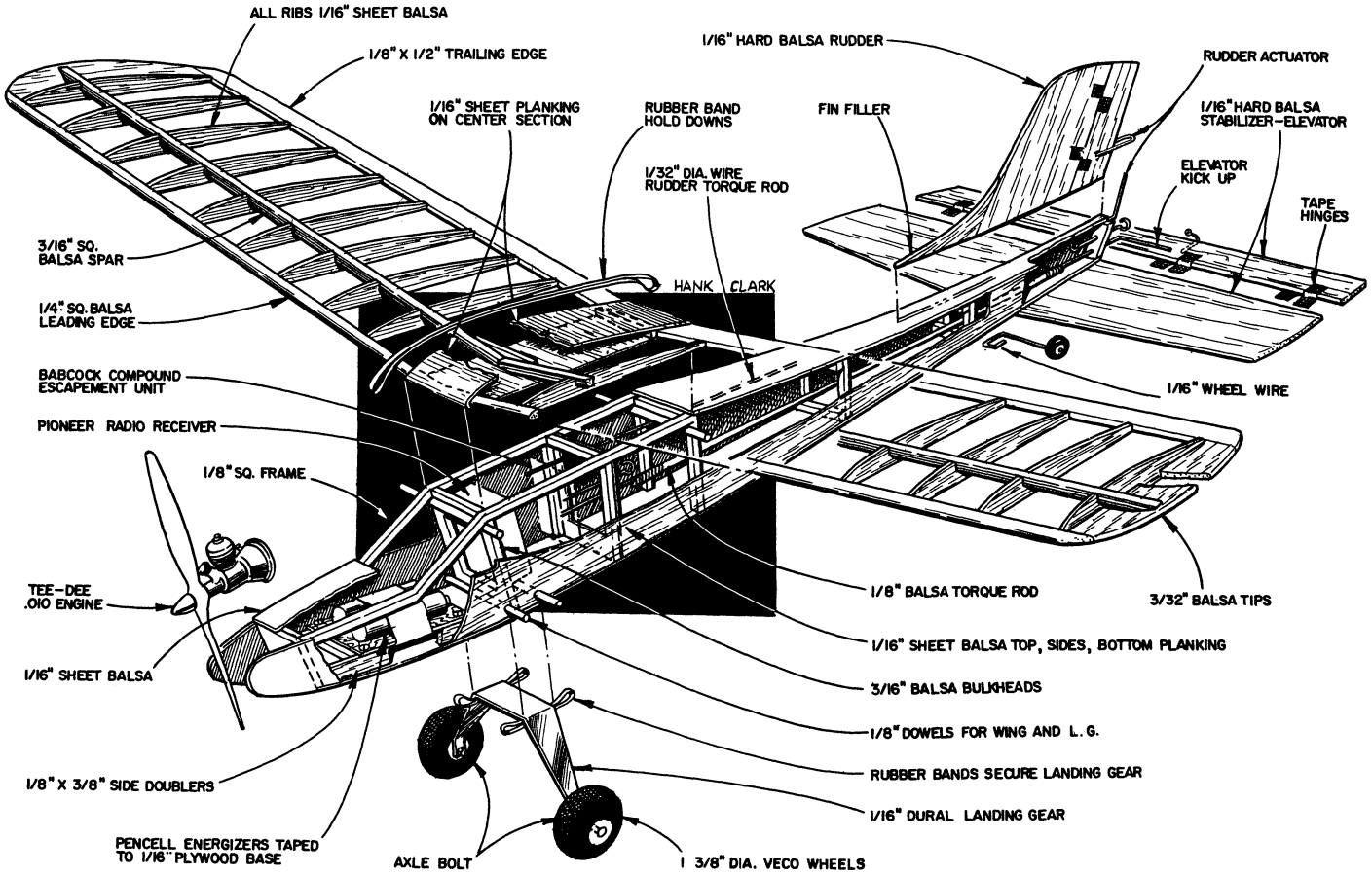
by KEN WILLARD

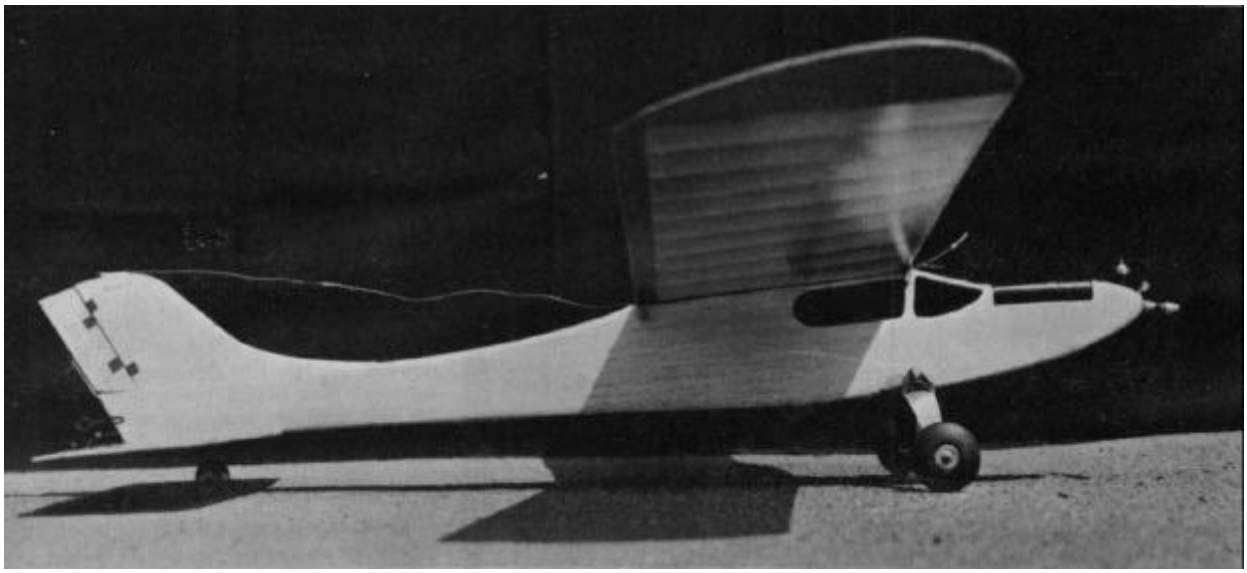
Small R/C is really big—good power coupled with assured reliability of the small-transistorized receivers make the small one a must for every dedicated radio control man worth his salt.

As any Schoolboy will show you, the new Cox Tee Dee .010 glow engine puts out more than enough power to fly a hot little radio job. That is, of course, if the airplane is designed so that the power of the .010 is converted into useable thrust rather than a big blast against a firewall. So let's see how the Schoolboy figured this out and got into the air so soon after the engine was available.

The Schoolboy is designed with a long tapered nose, since the 3 inch diameter prop for the .010 Tee Dee has to have a fairly clear area behind it for the blast from that small a blade to have any effective thrust. Aside from this feature, the rest of the model is so conventional and straightforward that it almost *(Continued on next page)*

THE SCHOOLBOY





In profile the Schoolboy exhibits many well known design traits—long thin lines, rakish tail assembly, generous moment arms and straight forward wing.

SCHOOLBOY . . . continued

needs no construction directions at all. It's about as simple as you'll ever see, but the pleasing lines and the hot performance will give you a real source of fun while you're building that big beautiful monster with 'steen channels—and it'll keep on giving you a thrill or two even after the big one is done.

The name is derived, of course, from the fact that the model can easily be flown in any normal sized schoolyard—although you should get permission first, naturally.

When I first heard that the L. M. Cox Company was going to market an .010, I naturally—along with a lot of others—wanted to see if I could come up with a successful R/C model for it. I'd experimented with the .020 a lot, had several successful designs, and knew the engine characteristics pretty well. I'd found out, for example, that with the little 3 bladed prop on the .020 flew my little seaplane with far more power than was required. This was a function of the engine placement up on the pylon above the wing, where the entire propeller disc was exerting effective thrust. I could probably have used that design, but I wanted something more along the classic lines of R/C.

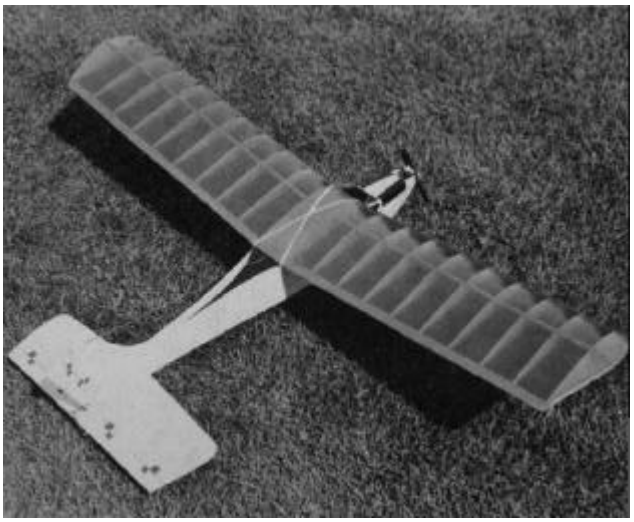
So, using the basic layout of the proven cabin monoplane high wing design, I just stretched it out a bit, tapered the nose, swept the tail for the modern look, and in no time at all the Schoolboy was designed. The dimensions were set so that the fuselage would accommodate a standard Babcock compound escapement, a standard F & M Pioneer receiver, and two pen-cells for receiver power.

I built the model up rapidly, installed the radio gear, and mounted an .020 in the nose. All ready to fly, it weighed in at 10 ounces. There was no question of whether it would fly or not—I'd flown a similar model back in 1958 which weighed 15 ounces but needed a pretty-hot engine run to perform well.

The first flight on the Schoolboy proved the soundness of the design—both aerodynamically and structurally. Frankly I forgot, in my usual first excitement, and neglected to put the prop on backwards. I launched the model, it screamed up and over in a tight loop and banged into the ground—hard. It was easy to replace the prop and glue the firewall back in place. The tough part was trying to heal my wounded pride—somehow these models always have a way of whittling you down to size when you get overconfident, don't they?

The next flight I used *(Continued on page* 38)

Don't let the general wing area worry you— ample power of the TEE DEE .010 is more than enough to pull the Schoolboy straight up.



Kick-up elevator helps through many maneuvers— R/C editor has flown the Schoolboy both .010 and .020 and satisfied with both

The Schoolboy

(Continued from page 12)

better sense, put the prop on backwards (a 5 1/4 x 3 prop) and this time I was rewarded with a very nice flight. The model still needed some down thrust, and after I put that in it was a real joy to fly. Take offs were straight and fast, and the model handled very well. The only thing sensitive about it was the elevator. It does have to be adjusted carefully to the right neutral setting.

With this experience under my belt, I figured I had it about made. With the prop on backwards, the .020 was only developing about half power insofar as thrust was concerned; yet I had ample thrust. I put the model away until I could get one of the new .010's.

Since the .020, when it came out, amazed everyone with its power, which approached some of the old .049's, I figured the new .010 would probably do the same thing.

During a trip to Los Angeles, I was able to get to the Cox plant and tell Bill Selzer, the plant manager, some of my plans. They were shipping the .010's for release to the hobby shops, and he agreed that it would be good publicity to have an R/C job, so he presented me with one for my experiments.

The following weekend I had the .010 mounted in the Schoolboy and ready to go. Sunday morning, March 19th, I called my flying buddy in the Bay Area, Jim Wade, and put we went-7:30 A.M.—to our "private" field. I'd checked everything—radio, trim (reset to accommodate the slightly lighter weight of the .010 under the .020) and the engine, which really turns up like they say it will.

So what happens? Nothing! My booster battery is low, and I don't have a spare. I cuss, Jim commiserates, we confer. Solution—we head for Baylands park, where all the R/C guys fly, in hopes there'll be some other "nut" out that early from whom we can borrow a booster. Naturally, there is— several, in fact. We had to wait our turn, although as soon as they saw what I had, they cleared the air. I don't think they really expected that little .010 to pull this "big" 36" model.

With a borrowed booster, then a prayer, the engine fired up like an angry mosquito. Jim took the model from me, went out about fifteen feet to avoid any swamping, I checked the controls, and Jim launched the Schoolboy. Off she went on as pretty a flight as you'll ever see. The .010 R/C was no longer a dream. I flew it around, looped it, rolled it, did everything I could think of, then when the engine ran out, brought it in easily. After that, we flew it until I had to leave to catch a plane to New York. For the record, we took some snaps with a Polaroid, which you saw in the June '61 issue of MAN.

Well, briefly, that's the history of the first .010 R/C. As for constructing it, you'll find it so conventional as to almost eliminate the need for explanation.

WING

The wing is standard single spar construction. Build it flat on your bench, cut it in two, glue it back together with dihedral braces at the center section, cover the center section top and bottom with 1/16" sheet, shape the leading edge, cover with silk, dope with butyrate dope, and it's done. About four coats of elope, slightly thinned, with a couple of drops of castor oil for each ounce of dope, yields a good finish. I used red silk with clear dope. Medium grade balsa is used throughout— wing, fuselage and tail.

FUSELAGE

This is the most complex part of the building process. Even so, it's simple. Cut the sides out of 1/16" sheet, glue the 1/8" square braces in place as they show on the plans along the top of the sides back to the rear of the wing mounting area, and the vertical braces at the respective stations. Next glue in the bulkheads at the wing leading edge and escapement mounting and let them dry. Then glue in the cross braces at the trailing edge location of the wing. Be sure that the sides are glued together with the bulkheads at right angles so you'll have the right alignment.

Next press the forward ends of the fuselage sides together and glue the firewall in place. Note the slight right thrust and the down thrust which the plans automatically set on the firewall. You may have to make some minor adjustments, but the angles, which show, on the plans were the best for my model, and should be very close to what you will need.

Now you can add the skin doublers at the bottom of the sides from the firewall back to the leading edge bulkhead station, then pinch the tail together and glue the tail bulkhead in place.

Before closing in the sides with the top and bottom skin, add the dowels for mounting the wing and the landing gear, and mount the escapement and the torque rods for the rudder and elevator. This way you check to make sure they clear the sides and top of the fuselage like they are supposed to, and then close in the top and the bottom with 1/16" sheet balsa.

Since I was using a radio mounting that is interchangeable with another model, I had it set on a base that could slide out of one model and into the other one. However, I've shown on the plans a bulkhead mounting, which one of my friends used and which really is best if you plan to use the radio in the Schoolboy exclusively. The batteries are taped together, then taped to a 1/16" ply base which you can screw to scrap balsa crosspieces glued to the bottom of the fuselage as shown. If necessary, you can move the batteries forward for balance.

The battery leads are soldered on. This saves the weight of a box, and the drain is so low you'll get a lot of flights before you have to change batteries. For a switch, I used a small single socket and prod connection in the battery and lead, conveniently brought out under the leading edge of the wing at the top of the windshield.

The engine bolts directly to the firewall, which already has built in down thrust and right thrust.

For convenience, the top covering of the fuselage from the firewall back to the windshield is removable. Make it into a sort of hatch, and you can hold it in place either with tape, like I did, or make some fasteners if you're the meticulous type.

TAIL SURFACES

These need no explanation at all. Cut them out of 1/16" sheet, dope and glue in place, and mount the moveable surfaces with cloth hinges.

LANDING GEAR

This can be made of spring wire or aluminum sheet — whichever is handy to you. In fact, I used both, aluminum sheet with wire bracing.

FINISHING

For simplicity, I finished my Schoolboy with clear dope on the balsa, then added a little decorative trim in black dope. This, when combined with the red silk covering on the wing, made a simple yet effective trim. If you're so inclined, you can add a lot more, because the flight experience Droved that the weight which a few trim lines would add would hardly be noticed.

FLYING

Unless I miss my guess, most of you will add your own little modifications to the basic design. I've never yet seen one that was a copy of the original. For example, you may want a longer flying model and add a tank for that purpose. Or maybe you'll trim a Bonner escapement to fit. Possibly, you'll mount one of the new Citizenship receiver escapement combos for a rudder only job.

In any event, stay pretty close to the wing and tail angular settings, and the thrust settings. This model, with a wing loading of about seven ounces per square foot, is fairly sensitive to trim—particularly elevator settings, but once you get it, trimmed out, you'll find it completely reliable. Because of the comparatively long span, be sure your wing has no warps in it. Use the medium rudder throw setting shown.

Adjust the model for a fairly fast and penetrating glide. If the glide is slow and the plane sinks near the stall, it will probably stall under power.

And that about wraps it up. You'll be amazed at the performance, and I think you'll agree with me that the .010 Tee Dee opens a new era in small R/C fun.

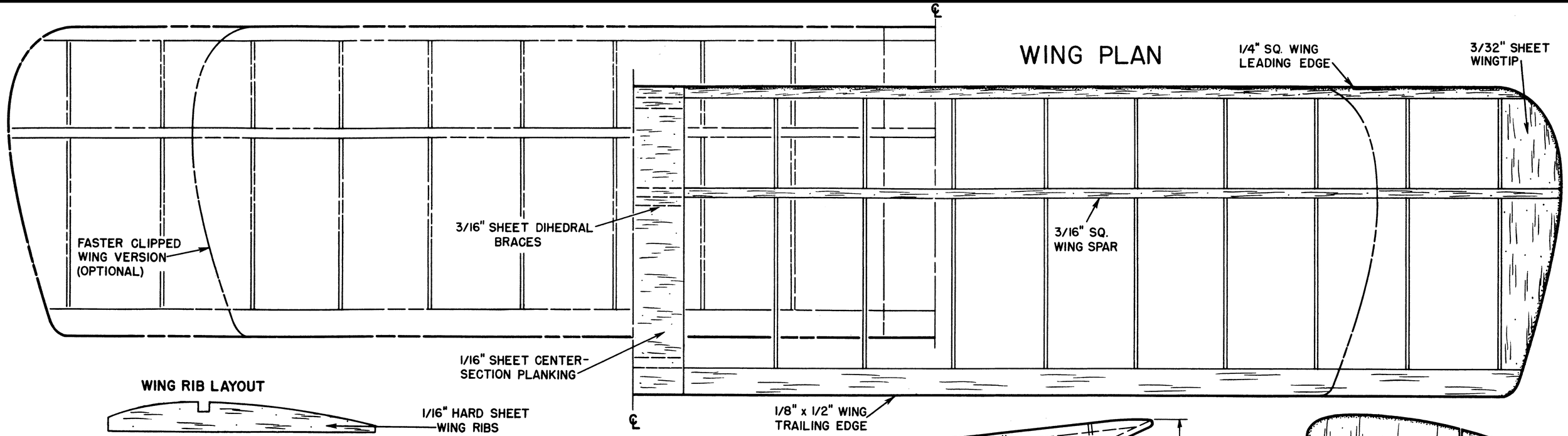
EDITOR'S NOTE: *We have been advised by Top Flite Models who are kitting the Schoolboy that they have made the following modification to the Schoolboy and they were certain that you appreciate knowing of it. The information arrived too late to include in the plans, therefore we will outline the change.*

The wing, instead of the conventional built-up and tissue or silk covered structure, is now all sheet balsa construction. Sheet balsa .040 thick x 6" wide is used for the top and bottom covering. Construction is basic, simply pin the bottom sheet, which is die cut to receive the ribs, and then, cement the ribs in place. The shaped leading edge is then added and the top covering is applied by cementing it to the leading edge and then forming it down over and cementing it to the top of the ribs and joining at the trailing edge to complete the structure.

Messrs. Schlesinger and Axelrod of Top Flite advise that the structure is completely warp-free and increases the already good flight stability of the Schoolboy. Overall weight of the model is increased only 3/10ths of an ounce and the strength-to-weight ratio is increased considerably with this small weight addition. Another advantage is the considerable reduction in the over-all building time of the model.

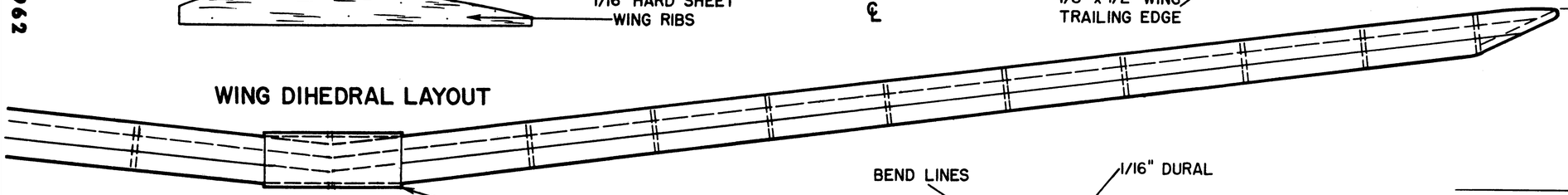
Top Flite's research department has flown both types, tissue covered and sheet balsa covered, and feels that the sheet wing offers much better flight characteristics and they recommend it to all builders of the Schoolboy.

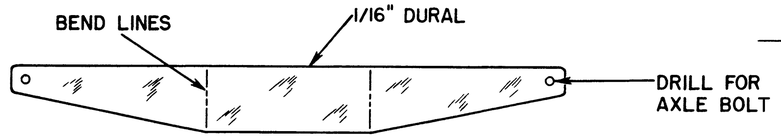
WING PLAN



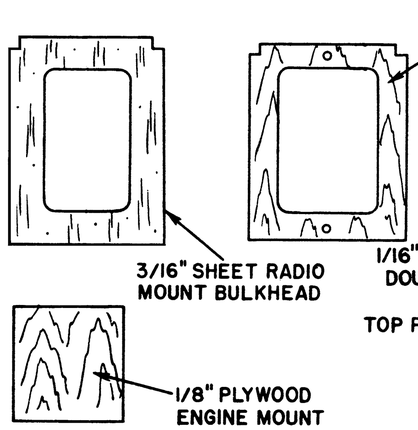
WING RIB LAYOUT

WING DIHEDRAL LAYOUT

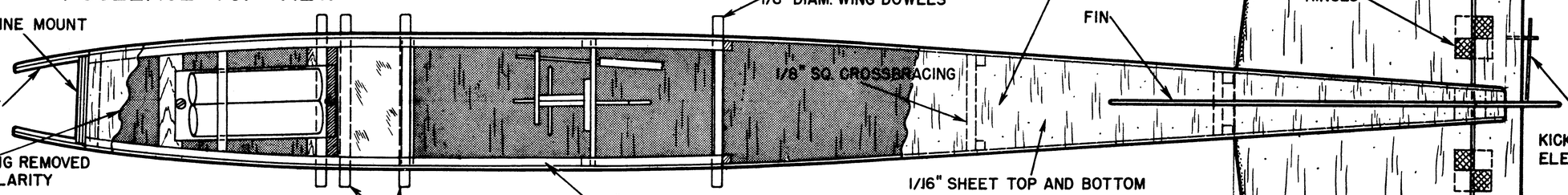


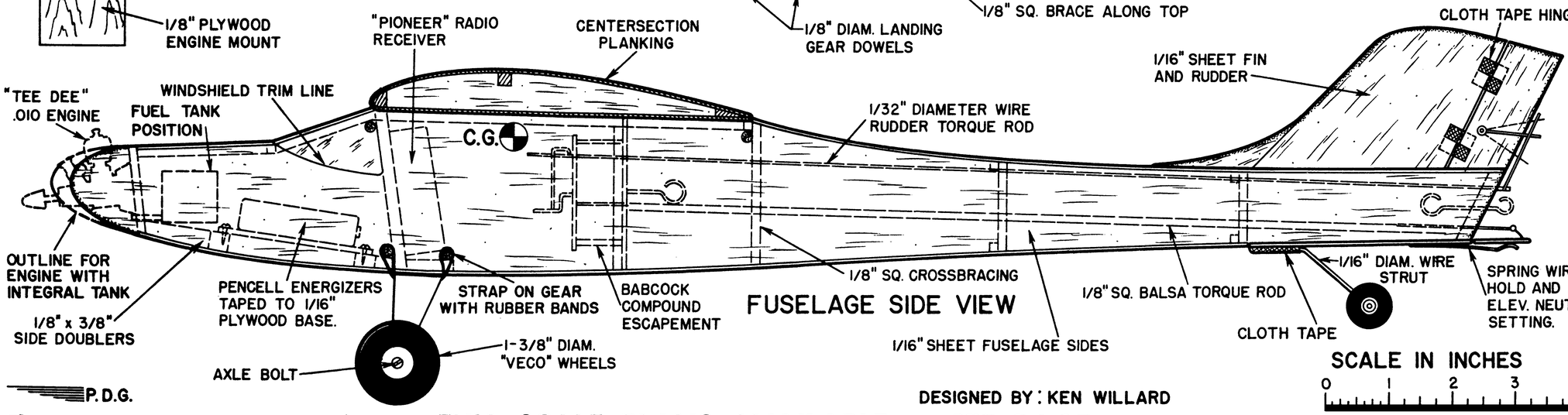


LANDING GEAR LAYOUT

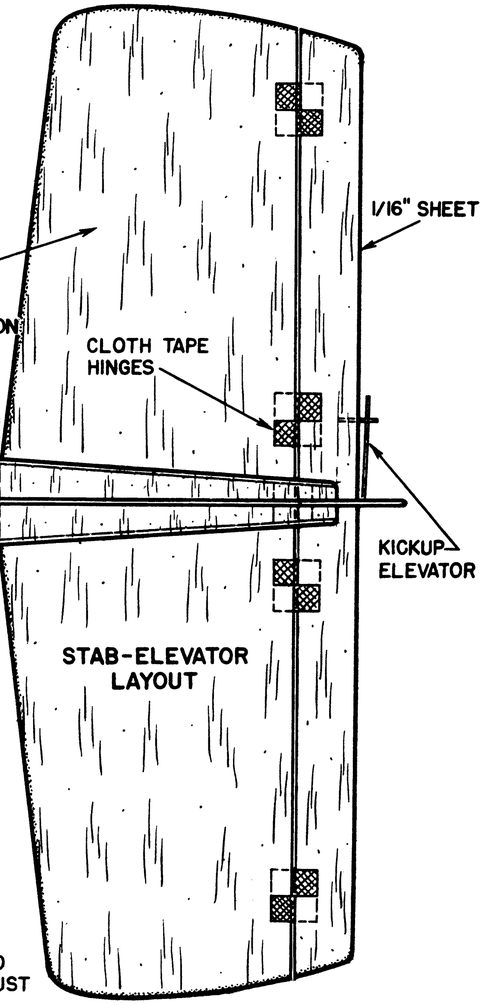


FUSELAGE TOP VIEW





FUSELAGE SIDE VIEW



STAB-ELEVATOR LAYOUT

NOTE: USE BALSA UNLESS OTHERWISE SPECIFIED.

P. D. G.

DESIGNED BY: KEN WILLARD

SCALE IN INCHES

0 1 2 3 4 5 6 7 8 9 10

FULL SCALE PLANS AVAILABLE. SEE PAGE 60