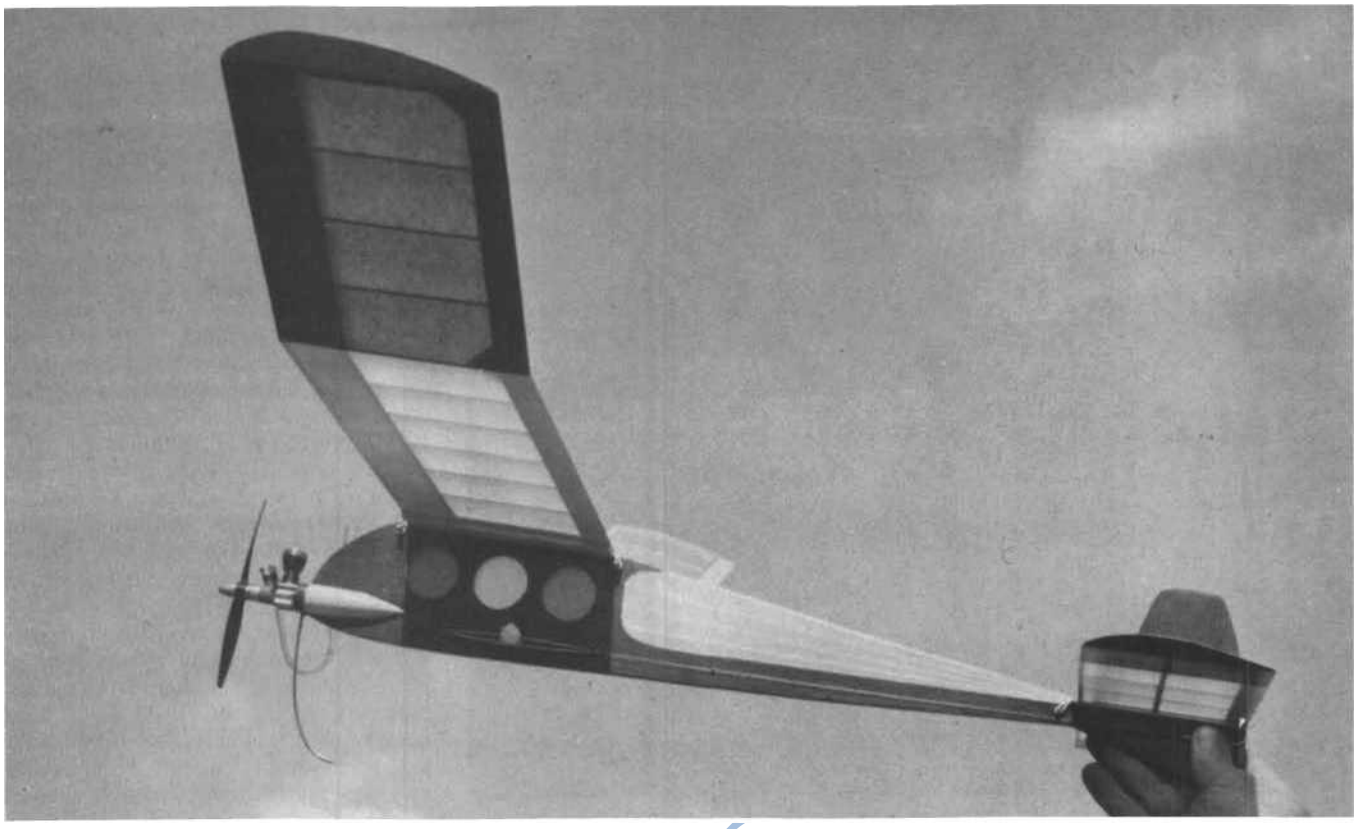


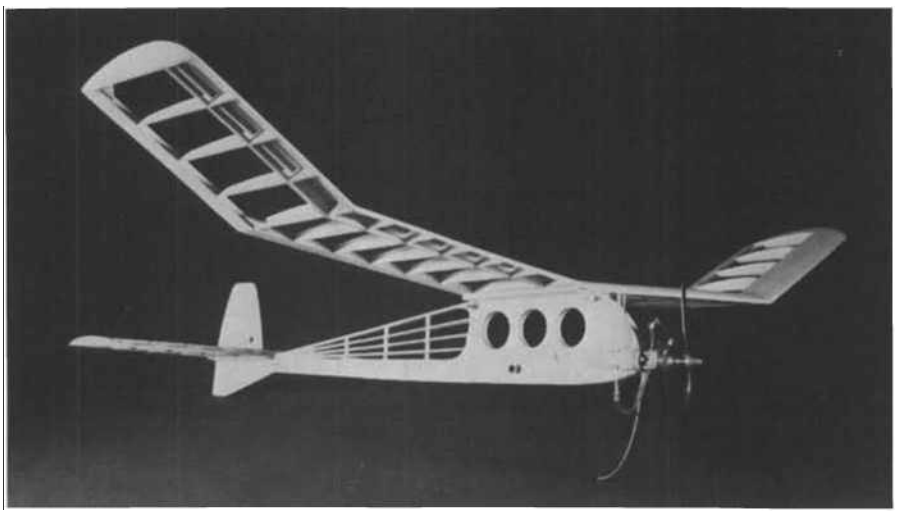
BRIAN'S BULLET

Here's an excellent advanced trainer for the budding competition free flighter. For smaller field competition, why not a new event for 1/4A? By LOREN WILLIAMS

• Eight years ago this model was designed for my then, nine year old son Brian. Assured performance and simplicity were the design goals for his first gas model. The Bullet is strange looking; not a pylon, not a high thrust, and not a cabin job. No kits available look like this. And why the hodge podge of different construction? These things were done on purpose; to embody in a beginner's model the potential of learning as many construction techniques as possible and to enjoy flying a model that was different from the regular standards.

A total of four models have been built to date; my son's original, one by 15 year old Larry Li China, one by another flying buddy, Bill Reid, and the one presented in this article. All of the Bullets built fly consistently with a steep right power pattern and a right glide circle.

Don't let the special backing plate for your Cox TD .020 stop you. It is available from the author for $5.50. See plans for address.



The uncovered framework discloses the basically simple structure of Brian's Bullet. Designer believes in preparing all parts before beginning construction. Make your own kit.

CONSTRUCTION:

Beginners . . . attention: All successfully concluded ventures start with sound planning and proven principles. Your first gas model is no different. FIRST: Study the plans and read the construction article, until you understand how each component is made and in what sequence it goes together.

Wouldn't it be great to open a kit box on your work bench and have all parts cut and shaped to their finished sizes ready to glue together? Well! Make a list of all materials and head for your local hobby shop. Make your selection critically, for straightness, light weight and proper hardness. Get a box and you are ready to pre-fab your own kit.

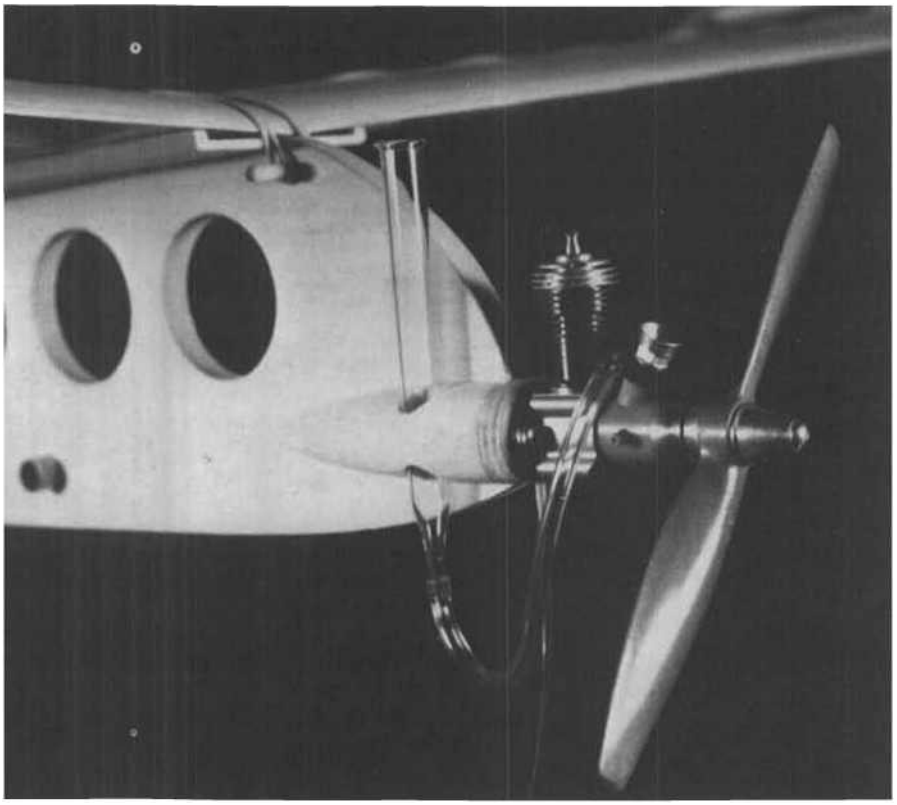
Although this article will be broken into basic assemblies, read each one carefully and pick out all the components that can be pre-fabricated. When your kit is finished you will find the actual construction time is very short, because there is always something to glue together, while something else is drying.

Ambroid fast drying cement was used for all balsa joints, except sheeting (see below) and Hobbypoxy Quick-Fix Formula 4 for epoxy joints.

FIREWALL AND SKID:

Cut three 1/16 plywood laminations to shape down on plan.

Form landing skid from .062 music wire



With enough trial and error, you can pretty well determine the correct amount of fuel to obtain the desired motor run. After more tests, designer suggests reducing left thrust to 2 degrees.

to match sideview and fold over top end as shown in firewall detail. Remove area for skid in the center plywood lamination. Epoxy skid and all laminations together. When dry, drill two .093 dia. holes to match engine backing plate. Epoxy 2-56 nuts on rear of firewall.

NOTE: Because of the left thrust the skid will be slightly askew, this can be straightened by hand forming after model is completed.

WING CONSTRUCTION:

Most model shops may not carry this specific size T.E. stock. If not, cut 1/8 of trailing edge off of standard 3/16 x 3/4 T.E. stock and block sand to finished dimensions.

Cut 24 basic ribs oversize, pin together, block sand to final shape, trim for front sheeting and notch for spars. The center ribs must have an additional 1/32 removed from bottom and aft of top spar for sheeting. Also the four center, tip, and tip dihedral ribs are not notched into T.E. so 1/16 should be removed from rear of these ribs.

Shape leading edge to a sharp, pointed section as shown in center section view. Cut out all dihedral and triangular gussets.

Cover plan with Saran Wrap, cut T.E. stock to proper lengths, notch for ribs and pin to plan. Pin down L.E. and bottom spar, cut four pieces of 1/32 sheet for center section, cement to L.E., T.E., and spar, but not together. Now cement in all ribs except four center section and tip dihedral ribs.

When dry', remove wing panels from plan, bevel L.E., T.E., and bottom spar of each panel to mate with adjoining panel, using dihedral gusset as a guide. Pin down one main panel, block up adjoining main panel to correct dihedral (1 1/2"), cement L.E., T.E., bottom spar, and center section sheet together, then add dihedral gusset.

Check center section view and you will see we must cut the four center and tip dihedral ribs off just forward of the spars, plus another 1/16 off for the dihedral gusset, then cement four center section ribs in place. Block up tips one at a time, using same procedure.

Top spars, triangular gussets, and leading edge sheeting are now added. An easy way to install the sheeting, after they are all cut to size and fitted, is to cement (slow dry Ambroid) only to L.E., top spar and dihedral ribs, pinning to spar first then L.E. When all sheeting is complete turn over and cement all other ribs from underside. NOTE: To build in 3/16 wash-in in right main panel, block up leading edge 3/16 before added sheeting.

Cut tip block to plan shape, bevel 45 degrees as shown, cement in place, then carve top to rib outline.

STAB CONSTRUCTION:

Same as wing construction, except L.E. is carved after assembly is complete. Add tips, epoxy D.T. retainer hood, made from pin, noting offset.

FUSELAGE CONSTRUCTION:

Shape main fuselage from straight 1/4 x 3/4 med. balsa. Cut top, forward piece from med. 1/4 sheet to shape and make lightening holes. Cement these pieces together. Fabricate wing and stab platforms. Bevel 3/32 rails on wing platform to match wing dihedral. Cement wing platform in place. Sand top rear of fuselage for stab platform tilt. Check by laying stab in position. Cement stab platform in place. Carve rear stringer block from 1/4 scrap to fit forward of stab platform as shown. Add 1/16 x 1/4 cap strip and cement in 1/16 x 1/8 uprights, then add 1/16 stringers to both sides. Finish sand assembly at this point leaving all edges square.

Drill holes for snuffer tube and wing and stab dowels for a snug fit. Do not install at this time.

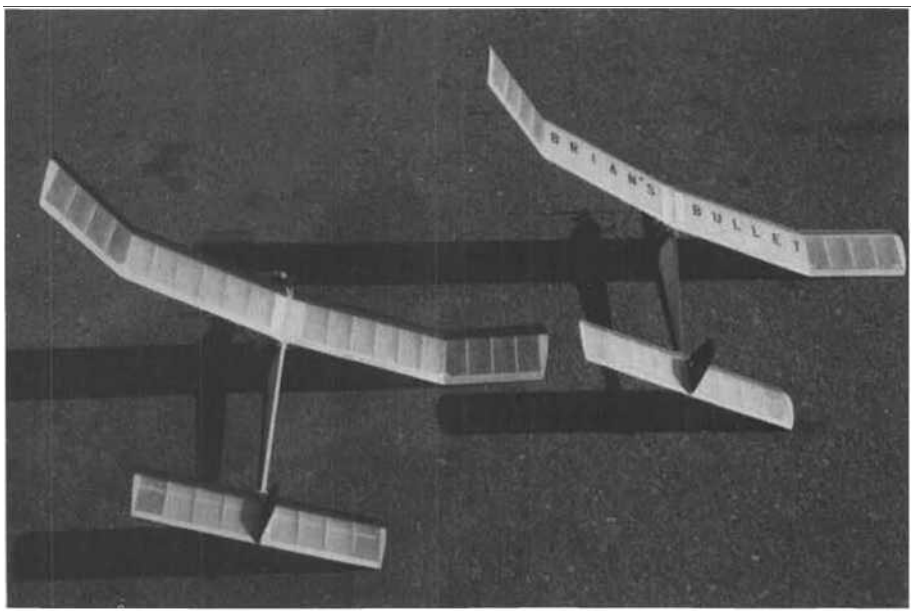
Pre-carve cheek cowls and make sub rudder and rudder. Smear thin coat of epoxy or cement around D.T. rubber band hole on rudder. Now check front end alignment for proper thrust adjustments and epoxy firewall assembly and cheek cowls in place. Drill hole in right cheek cowl for eye dropper tank.

Temporarily assemble wing and stab on fuselage, check all alignments and cement rudder on top of stab, lining it up vertically with fuselage and sub rudder {even though stab is tilted).

COVERING AND FINISHING:

Prior to covering, give wing and stab parts, which tissue will touch, three coats of 50/50 dope, sanding lightly between coats. Cover wing, stab, and rudder with Japanese tissue, dry.

Apply the tissue to the wing and stab with thinner, which soaks through the tissue and softens the previously applied dope for adhesion, or if desired, utilize 50/50 dope in



The Bullet will teach a beginner all he needs to know about building and flying competition free flight models. Maybe we need a new class for school yard competition. Hmmmm.

the same manner. Spray wing and stab with water to tighten the tissue. During this drying process hold right wing panel to assure required wash-in. Brush on two coats of 50/50 dope and then apply tissue numbers or trim with thinner. Finish doping by adding three more thin coats to the wing and two on the stab and rudder. Let the wing and stab season for at least a week in a warm place. Pin the stab down during this period.

Pre-dope fuselage with at least three coats of 50/50 dope tilled with talcum powder, lightly sanding after each coat. Now apply two thin coats of clear dope and tissue cover. Author did not cover wing, stab platforms, or cheek cowls. Shrink tissue and apply three to four coats of thin dope over entire assembly.

Install forward D.T. hook and guide, rear alum D.T. line guide tube, snuffer tube, eyedropper, and dowels with epoxy. Then give entire model one coat of fuel proofer.

FINAL ASSEMBLY:

Install engine, connect surgical tubing or clear tubing from eyedropper to engine. Rig D.T. line, rear rubber band hook is shown in exact position on plans for 45 degree stab pop-up. Strap on wings and tail. And now hand form the landing skid for straightness, sighting from the front.

TRIMMING AND FLYING:

Check all flying surfaces for proper alignment and install split 1/16 dowel keys to fit snugly against wing and stab platforms. Balance model at arrow point shown on plan by using clay which can later be replaced by lead slivers. Test glide for 80 - 100 foot right circle, shim stab as required.

Familiarize yourself with your fuel duration by marking eyedropper with graduations and timing various engine runs. Prop should be on backwards for initial power trials. First release should be at about 45 degrees and straight away, with a 4 to 5 second engine run. Power pattern should be steep and to the right. If pattern is too tight, add more left thrust and use rudder trim for final fine adjustments only. Remember, always light fuse and don’t stick your fingers through the tissued lightening holes!