

Working together several years ago in response to the need for a sturdy, predictable trainer that would do more than just fly big circles in the sky, Don Dewey and Joe Bridi hatched the well-known RCM Trainer .60. Since then, requests from R/C flyers stimulated the development of the RCM Trainer .40, RCM Trainer .20, and the RCM Trainer .10 which can be built in either a high or low wing configuration. Now, their RCM Trainer 5 makes its debut.

The 5 is intended to be a flying for fun schoolyard type R/C model airplane. While a radio using servos (especially the new tiny jobs) fits easiest in the design, offers the greatest flexibility in installation, and is usually lighter than a brick, a brick can be used with a simple modification we'll discuss later. For power, a Cox QRC .049 or Cox Tee Dee .051 with a fuel tank/engine mount is recommended.

PREPARATIONS

Begin by building yourself a kit. That means cutting the fuselage sides, ribs, bulkheads, rudder, nose blocks, cabin sides — which are slanted at the front and back — the elevator halves, and wing center tapered piece. Don't cut the wing center tapered piece to the wing contour. That's more easily done later when the wing panels are joined. Also cut out the fin. When you do so, note that the bottom edge of the fin extends down into the slot provided in the stab for a strong glue joint.

Incidentally, if you have only one set of plans, an easy way to do the job of cutting out these parts accurately and easily is to Xerox the parts of the plans needed for the parts. Cut out the parts from the Xerox copy, coat the back side with rubber cement, and stick them to the wood. After the parts are cut out, simply peel off the paper and rub off any excess adhesive residue. Easy.

To assure that all of the ribs are exactly the same size from front to back after they're cut out, pin all of the ribs together aligned at the spar cut-out. Sand the leading and trailing edge of the stack with a sanding block. Then, stack up the smaller ribs, pin them together and use your sanding block lightly to make the airfoil contour exactly the same on all of the ribs. Do the same with the larger ribs.

Final preparations include marking and drilling the pilot holes for the engine mount screws in bulkhead #1 and the holes for the NyRod pushrods in bulkhead #3. Also mark and cut the battery compartment access hole in bulkhead #2. Two ways of bending the landing gear wire are shown on the plans. While the version with the 90° bend at the center is recommended to provide a more sturdy mount, the alternative version may be used if the battery compartment access hole must be larger than the cut-out shown on the

RCM 5 TRAINER Designed By: Joe Bridi

TYPE AIRCRAFT

1.2A Fun Fly

WINGSPAN

36 3/4 Inches

WING CHORD

7 7/8 Inches

TOTAL WING AREA

255 Square Inches

WING LOCATION

High Wing

AIRFOIL

Flat Bottom

WING PLANFORM

Constant Chord

DIHEDRAL, EACH TIP

1 1/4 Inches

O.A. FUSELAGE LENGTH

28 Inches

RADIO COMPARTMENT AREA

(L) 9 1/4" X (W) 2" X (H) 2"

STABILIZER SPAN

12 Inches

STABILIZER CHORD (incl. elev.)

5 1/8 Inches

STABILIZER AREA

58 1/2 Square Inches

STAB AIRFOIL SECTION

Flat

STABILIZER LOCATION

Top of Fuselage

VERTICAL FIN HEIGHT

3 5/8 Inches

VERTICAL FIN WIDTH (incl. rudder)

4 Inches (Avg.)

REC. ENGINE SIZE

.049-.051 cu. in.

FUEL TANK SIZE

Tank Mount

LANDING GEAR

Conventional

REC. NO. OF CHANNELS

2

CONTROL FUNCTIONS

Rudder & Elevator

BASIC MATERIALS USED IN CONSTRUCTION

Fuselage	Balsa & Ply
Wing	Balsa
Empennage	Balsa
Weight Ready-To-Fly	20 Ounces
Wing Loading	11.3 oz./sq. ft.

plans. Also cut the notch in the front edge of the rudder for the elevator hardwood piece. Cut the bottom of the front and back of the fin so it will fit into the slot provided in the stab. When cutting the bottom of the fin, note that the trailing edge of the fin should align with the trailing edge of the stab when properly installed.

If you're going to fly out of a grass or weed covered field, you may want to consider leaving the landing gear off and adding a 1/8" ply skid 1" wide on the bottom of the sheeted fuselage from the nose to the location of bulkhead #3 so the aircraft won't nose over when you touch down.

Bend the landing gear to the desired shape.

Building the Fuselage:

With the fuselage side view on the plans covered with plastic kitchen wrap, work over the plans to butt glue the cabin sides to the fuselage sides. Wipe off excess adhesive before it sets up. Mark the location of bulkheads #2 and #3 and the balsa stiffener aft of bulkhead #3 on the inside of both fuselage sides. Glue in the 1/8" x 1/4" balsa stiffener and the ply wing dowel plates on the inside of the fuselage sides. Then, after the adhesive has set up, you can remove the fuselage sides from your building board, drill the holes through the ply plates for the wing elastic hold-down dowels and the pushrod exit holes at the back end of the fuselage sides as shown on the plans.

Next you'll need to mount the landing gear wire to the front of bulkhead #2. Using the landing gear as a guide, drill the holes for the landing gear mounting wire and use non-stranded wire to tie it in place. Coat the landing gear and wire with 5-minute epoxy. Also coat the wire on the back side of the bulkhead as well.

Assemble the Fuselage:

With one fuselage side laying on your workbench, use 5-minute epoxy to glue bulkheads #1, #2, and #3 to that fuselage side. Because the landing gear is fixed to bulkhead #2, orient the fuselage side on your workbench so the landing gear wire hangs over the edge. Work very carefully to make certain that the bulkheads are perfectly aligned with the marks you made earlier on the fuselage side and are at 90° to it. This is critical to assure you will end up with a straight fuselage. Then, glue the other fuselage side to the upright bulkheads. Bulkhead #1 can be used to align the fuselage side at the nose. Use a carpenter's square to carefully align the fuselage sides at the wing saddle and at the tail. Using the plans as a guide, sand the wedge shaped tail block as necessary and glue it only to the bottom fuselage side.

After the adhesive has had plenty of time to set up, remove the fuselage from your building board. Re-orient the plans on your workbench so you will be able to pin the fuselage to the top view with the

RCM

By Joe Bridi

TEXT AND PHOTOS
BY BEN STRASSER



T R A I N E R 5

It finally happened, the arrival of the new born Trainer 5 from the long line of well-known RCM Trainers.

landing gear hanging over the edge. Pin the fuselage to the plans top view and glue the fuselage sides together at the tail. Then, add the 1/16" top sheeting cross grain and the front and back wing elastic hold-down dowels. Prepare the custom fit wedge shaped pieces that are to be installed at the top of the front and rear of the cabin. Glue them in place. Add the 1/16" sheeting to the front and rear of the cabin.

With the fuselage still pinned in place, add the triangular stock along the fuselage sides behind bulkheads #1 and #2. If you are going to use a brick receiver/servo configuration, the triangular stock shown on the inside of the fuselage sides at the wing saddle is to be glued to the outside — so there will be enough room for the unit. Glue the wing saddle triangular stock in place. If you are putting the triangular stock on the outside of the fuselage sides, add a piece of triangular stock along the sides of bulkhead #3 for additional strength. Add the triangular stock stiffeners on the outside of the fuselage sides in the area under the stab. Prepare and install the balsa battery compartment top piece.

Remove the fuselage from your building board and turn it upside down. Block up the tail. Add the triangular stock along the bottom back of bulkheads #1 and #2 and along the bottom edge of the fuselage sides between these bulkheads. Install the outer NyRod pushrod tubes and glue them in place to the bulkhead and to the fuselage side at

their exit. Wrap and tie the pushrods together at the point at which they cross, and coat the thread with some epoxy.

Add the bottom sheeting, cross grain. The sheeting will have to be notched out a little at the location of the landing gear. Drill the hole for the tail skid. Add the 3/8" balsa nose blocks. Relieve the top of bulkheads #2 and #3 in a gentle "V" shape to fit the wing dihedral as shown on the plans.

Building the Stab & Elevator:

Build the stab over the kitchen wrap covered plans. Use the fin as a spacer when gluing the two center blocks in place. Lay the elevator halves up to the back of the stab when gluing them to the hardwood connector piece. Use a piece of kitchen wrap between the elevator and stab so you won't glue the elevator and stab together.

Building the Wing:

First, the right wing panel: Begin by covering the plans with some kitchen wrap and pin down the spar. Glue the larger ribs #3-#7 in place onto the spar. Add the leading and trailing edge. Use one of the smaller ribs as a spacer to get the proper spar to leading edge distance at the location of ribs #1 and #2 and pin the leading edge down. Do the same for the trailing edge. Add the bottom center section sheeting between the leading edge and spar and between the spar and the trailing edge. Add the smaller ribs #1 and #2 and the top sheeting. Trim the leading and trailing edge flush with the tip rib. Do the same with the spar

and add the triangular stock wing tip. When sanded to the rib contour, the tip will assume the desired top view.

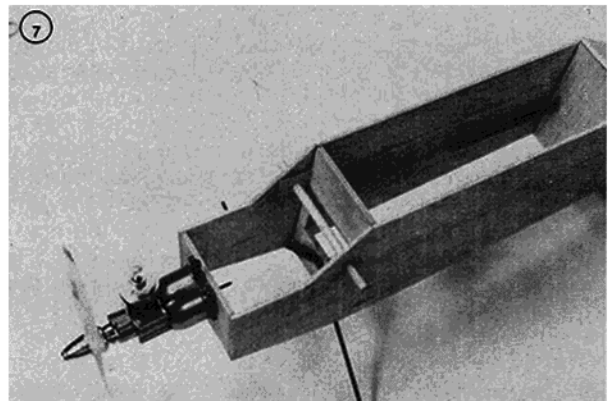
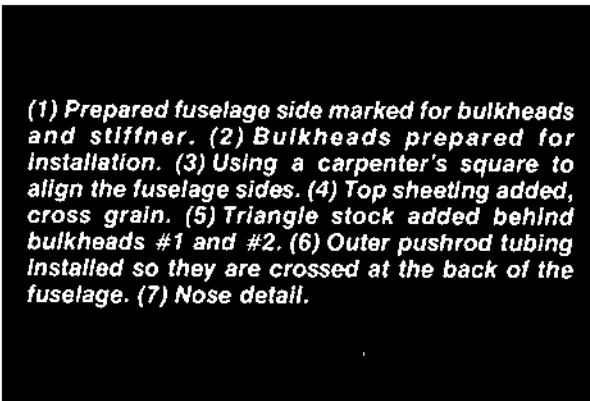
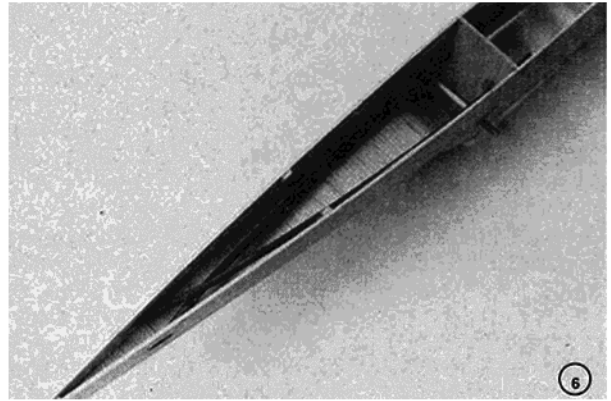
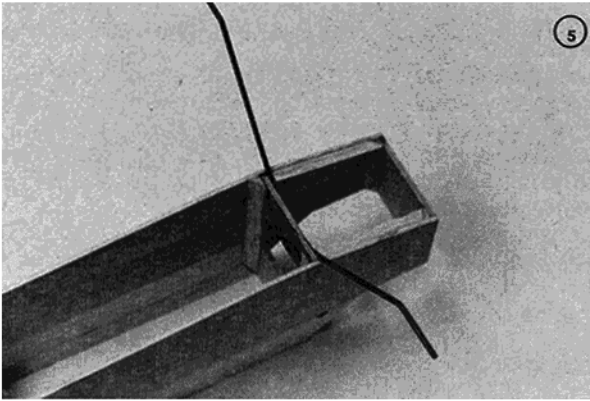
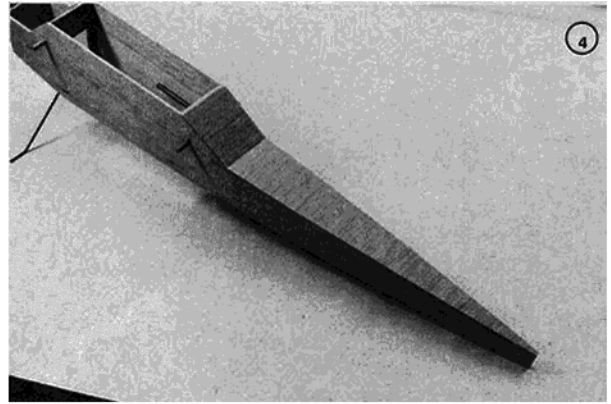
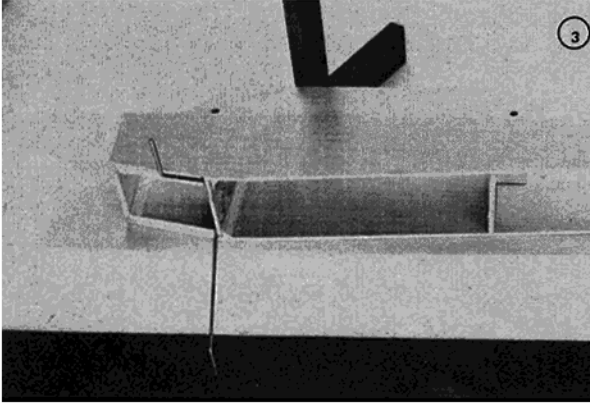
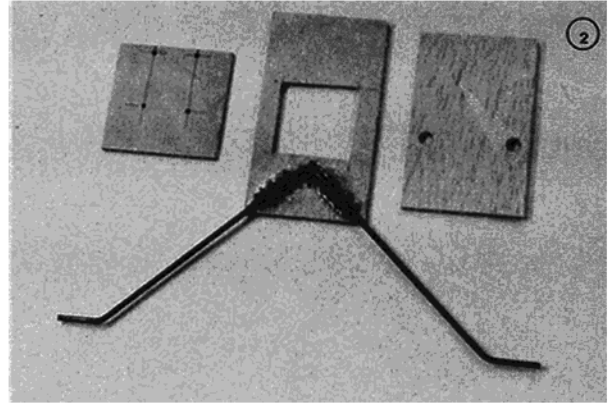
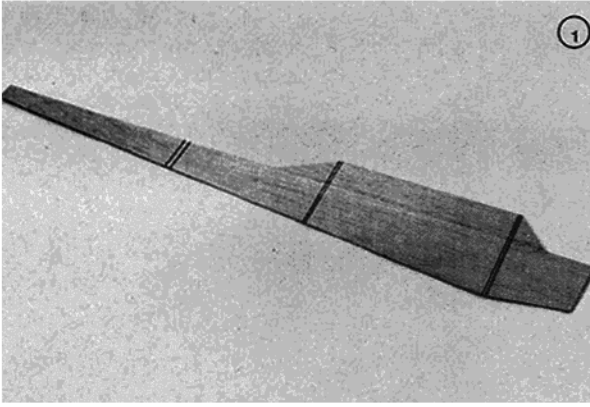
After the right wing panel has had overnight to set up, remove it from your building board and sand the leading edge and tip. Do not feather the wing trailing edge; just smooth off the sharp corners.

To build the left wing panel, turn the plans over and wipe them with an oily rag in the area of the wing panel. That should make the paper transparent so you can see the wing plans through the paper. With the plans pinned down, cover them with kitchen wrap and build the left wing panel in the same way the right wing panel was built.

Prepare to join the wing panels by cutting the spar, leading and trailing edge on each wing panel flush with the root rib. Glue the wedge shaped wing center piece to the root rib of one wing panel and sand it to the wing contour. Glue the wing panels together using 5-minute epoxy with one wing panel flat on your building board and the tip of the other blocked up 2 1/2" for the proper dihedral. After the adhesive has had plenty of time to set-up, reinforce the wing center section with Celastic, glass cloth and epoxy or resin. The width of the center section reinforcement should extend 1/2" beyond the fuselage sides to offer protection from the elastic bands.

Finishing:

Finish sand the fuselage, stab, fin,



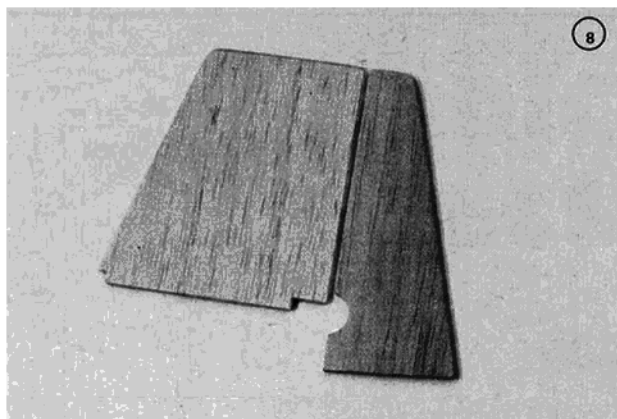
(1) Prepared fuselage side marked for bulkheads and stiffner. (2) Bulkheads prepared for installation. (3) Using a carpenter's square to align the fuselage sides. (4) Top sheeting added, cross grain. (5) Triangle stock added behind bulkheads #1 and #2. (6) Outer pushrod tubing installed so they are crossed at the back of the fuselage. (7) Nose detail.

rudder, elevator, and wing as necessary. Cover the fuselage, wing and tail pieces. Remove the covering in the areas where the stab and fin will glue to the fuselage. Use 5-minute epoxy to glue these parts in place, carefully checking their alignment as you do so. Hinge the elevator and rudder and install

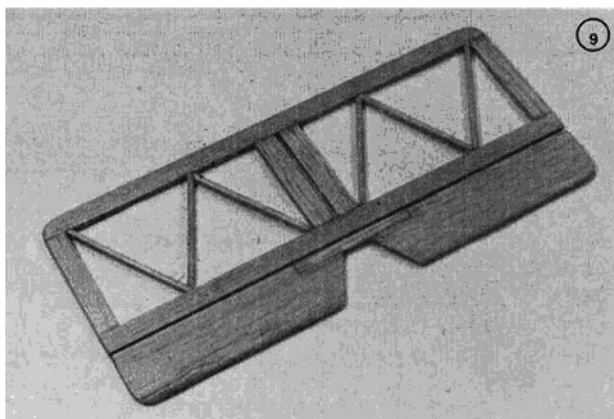
the control horns. Check the operation of your servos as you install the horns to make certain which NyRod end goes to which control surface so the control horns can be properly aligned.

Paint the front of bulkhead #1 and the inside of the balsa nose blocks with resin or fuel proofing dope to prevent fuel

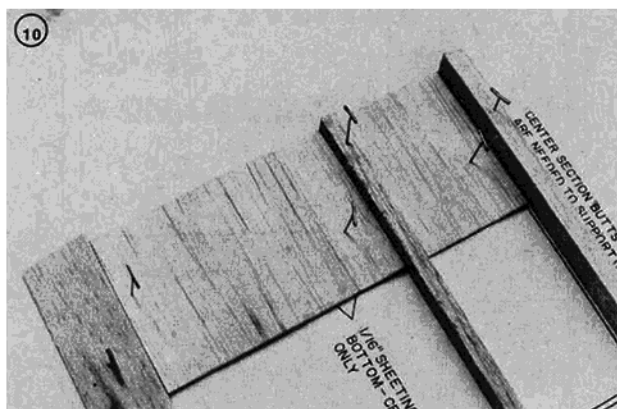
penetration. Install your R/C equipment and engine, control horns, tail skid, and wheels. The battery pack and receiver should be installed in a nest of foam rubber to protect them from vibration. Check the C.G. as you install the R/C equipment. It is better to move the battery, receivers, or servos forward or



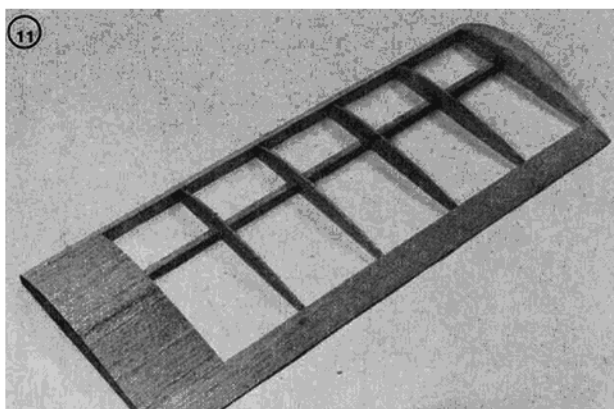
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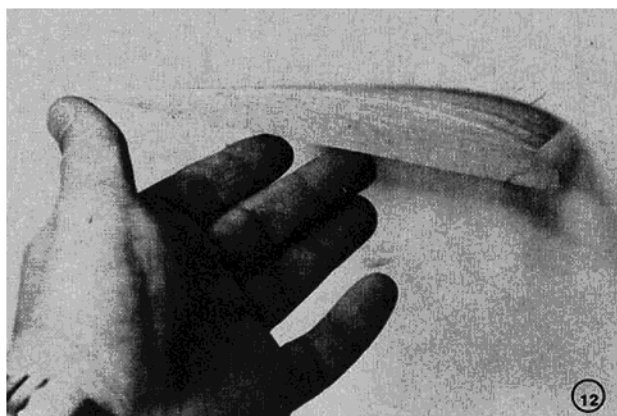
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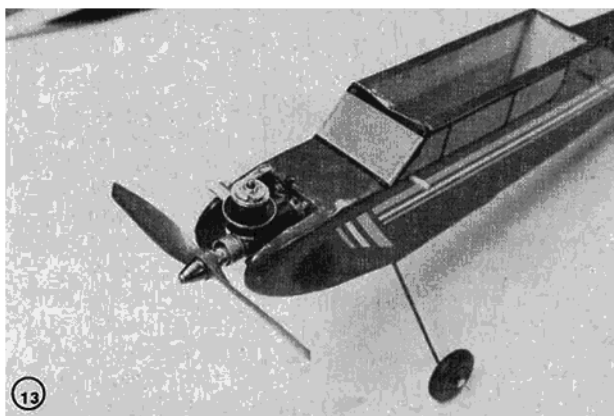
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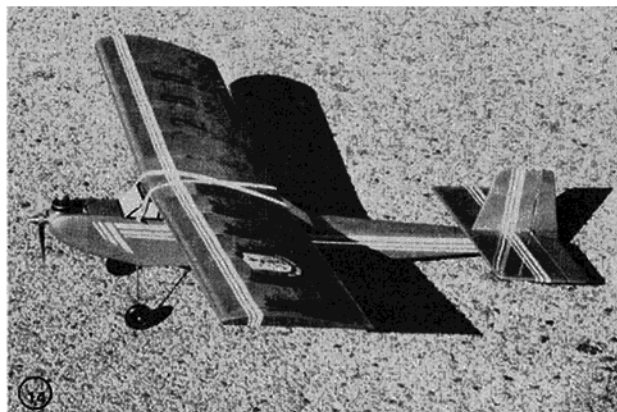
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14

(8) Prepared fin and rudder showing notches cut in the fin and rudder. (9) Built stab. Note the slot for the fin between the center blocks. (10) Adding bottom center section sheeting between the leading edge, spar, and trailing edge. (11) Completed wing panel. (12) Wing leading edge and tip sanded to the rib contour. (13) Completed fuselage showing the top of bulkheads #2 and #3 relieved for the wing dihedral. (14) The completed RCM T 5.

back to achieve the proper C.G., than to have to add weight.

Check your wing, stab, elevator, fin, and rudder for warps. Reheat the plastic film covering as necessary and straighten out any warps you discover.

First Flights:

With the fuel tank empty, recheck the

C.G. Perform the radio distance check as recommended by the manufacturer. Check the operation of your control surfaces: pushing the elevator control stick forward should give you down elevator, pulling it back should give up elevator. Pushing the rudder control stick to the right should cause the rudder

to move to the right, and vice versa. Recheck your hinging job by tugging slightly on the elevator and rudder. Recheck the engine mounting, servo mounting, and servo arm screws to make certain that they are snug. Start up the engine once or twice so you'll know

what to do when you get out to the field.

And that's it. If this is your first R/C model aircraft, we urge you to find the help of an experienced R/C pilot to help you out in your first flights. If you find that the aircraft needs right trim to fly straight under power, then needs to be re-trimmed to neutral when the engine quits, add some right thrust — a little at a time — by putting a slightly wedge shaped piece of plywood behind the engine mount, increasing the right thrust until you correct this condition.

For detailed information about your first flights, see RCM's Flight Training Course, Volume One. Good flying. □

**By H.E
RCModeler
Aug. 1978**