

# LONG JOHN

The Long John is a sport aircraft and intermediate trainer that is easy to fly and yet combines excellent performance with aesthetically pleasing lines, a combination often hard to find in trainers and sport aircraft.

BY  
IAN  
MITCHELL

The Long John ready for covering.



## LONG JOHN

Designed By: Ian Mitchell

**TYPE AIRCRAFT**  
Sport & Intermediate Trainer

**WINGSPAN**  
60½ Inches

**WING CHORD**  
11 Inches

**TOTAL WING AREA**  
666 Square Inches

**WING LOCATION**  
Shoulder Wing

**AIRFOIL**  
Symmetrical

**WING PLANFORM**  
Constant Chord

**DIHEDRAL, EACH TIP**  
1½ Inches

**O.A. FUSELAGE LENGTH**  
47¾ Inches

**RADIO COMPARTMENT AREA**  
(L) 9¾" X (W) 2¾" X (H) 2¾"

**STABILIZER SPAN**  
20 Inches

**STABILIZER CHORD (Incl. elev.)**  
5½ Inches (Avg.)

**STABILIZER AREA**  
103 Square Inches

**STAB AIRFOIL SECTION**  
Flat

**STABILIZER LOCATION**  
Top of Fuselage

**VERTICAL FIN HEIGHT**  
8 Inches

**VERTICAL FIN WIDTH (incl. rudder)**  
6¼" (Avg.)

**REC. ENGINE SIZE**  
.40 Cu. In.

**FUEL TANK SIZE**  
8 Ounce

**LANDING GEAR**  
Conventional or Tricycle

**REC. NO. OF CHANNELS**  
4

**CONTROL FUNCTIONS**  
Rud., Elev., Ail., & Throt.

**BASIC MATERIALS USED IN CONSTRUCTION**

Fuselage	.....	Balsa and Ply
Wing	.....	Balsa and Ply
Empennage	.....	Balsa and Spruce
Weight Ready-To-Fly	.....	76 Oz.
Wing Loading	.....	16.4 Oz./Sq. Ft.

The Long John is a ship that was originally designed to bridge a gap — that same slot that is used to bury a load of low wings! After cutting my teeth on the RCM "Southern Gentleman", I looked to the RCM "New Era II" to become the flagship of the fleet. After many hours of waxing and polishing, a nagging little doubt began to emerge — "wouldn't it be a pity if . . ."? The flagship was shelved for a while. Something was needed to cut the anticipated low wing mortality rate.

The range of ships in this intermediate area was found to be surprisingly limited and, in fact, very few suited the general requirements which seemed to be applicable. These characteristics were:

(1) A wide power range (.35 through .60) to provide scope for improvement in the pilot's ability.

(2) A maneuverable ship, yet one which, if necessary, will fly hands off.

(3) Rugged enough for cow pasture flying and "beginner's bumps".

(4) Straightforward and quick construction.

(5) A relatively low wing loading without loss of penetration.

(6) Trike and taildragger options.

(7) Able to show a fair turn of speed.

(8) And, finally, not look like an intermediate ship.

The prototype is a 60½", 4 lb., 12 oz. shoulder winger which is powered by the fabulous OS H40P engine which, with a 10/6 prop, develops a useful output comparable to many .45-.50 engines.

Flying the Long John is a snap. Beautifully realistic take-offs may be achieved on 3/4 throttle and up trim; the pilot has

only to keep the wings level. In fact, it was found that the ship displayed absolutely no tendencies to fall off on a wingtip on take-off, idle flying, or landings. Interested? Well, more on this after construction details.

Before diving for the glue tube, cut all components to make a "kit" — this will speed building later.

#### Fuselage:

(1) Glue 1/16" ply doublers (front and rear) to 1/8" sheet sides.

(2) Install 1/4" square longerons, 1/16" ply wing brace triplers and 1/4" square diagonal braces.

(3) Jig up the fuselage sides and epoxy pre-drilled formers F2, F3, and F4. Fit the 1/16" ply wing dowel triplers and the 1/2" triangular firewall reinforcement.

(4) Join the fuselage sides at the rear and install the 1/4" square cross braces.

(5) Epoxy the stab and fin in place.

(6) Fit the 1/4" square turtledeck spar



ment and epoxy the 3/8" leading edge and 1/4" square hinge reinforcement strips in place.

(2) Repeat (1) for the other wing half.

(3) Epoxy the four 1/8" ply dihedral braces to the wing halves being sure that you have 3" dihedral with one panel flat.

(4) Position the ailerons and hinges (do not install as yet) to locate the 1/8" ply servo mount and make the necessary cut-outs. Install the control fittings if a bellcrank system is used.

(5) Remove the servo, ailerons, and hinges and sheet the leading edge, center section and trailing edges with 1/16" x 3" sheet (bottom first to locate the servo access hatch).

(6) Complete the 1/16" sheeting and install the 1/2" sheet tip plates and 1/16" x 1/4" capstrips.

(7) Sand the leading and trailing edges to shape.

(8) Reinstall the ailerons and pin the hinges. Fiberglass the center section

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and uprights. Position the 3/32" sheet turtledeck half from the fuselage side up to the spar; mark and trim the turtledeck half to the centerline of the spar and to the fairing line marked on the fin. Repeat for the other half and glue in position. The result will be an attractive oval section from F4 to the fin.

(7) Install the pre-tapped motor mount and trial fit the motor to locate F1. Draw the fuselage sides together and epoxy F1 and the lower cowl block in place.

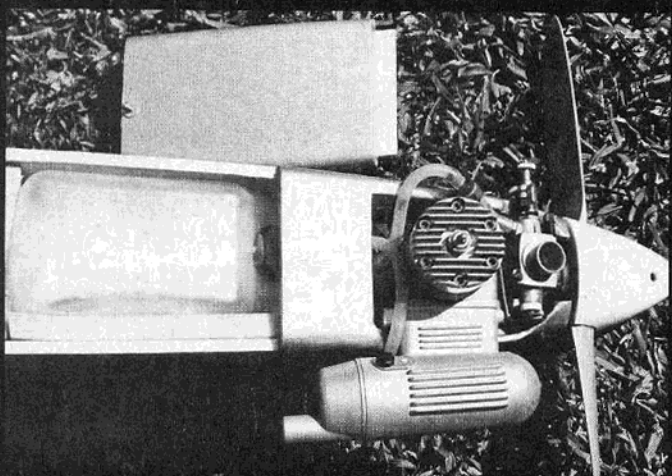
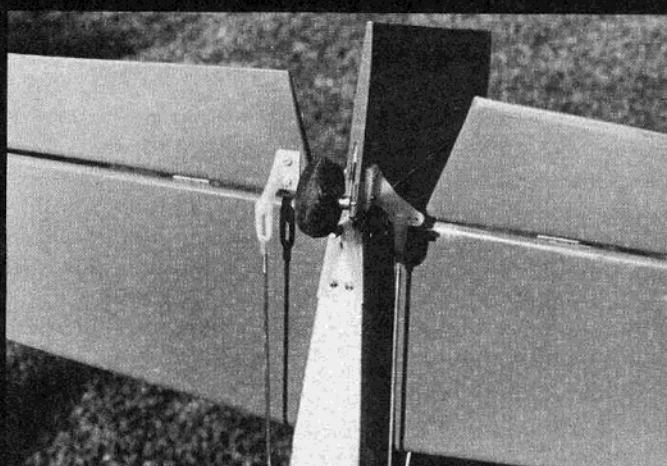
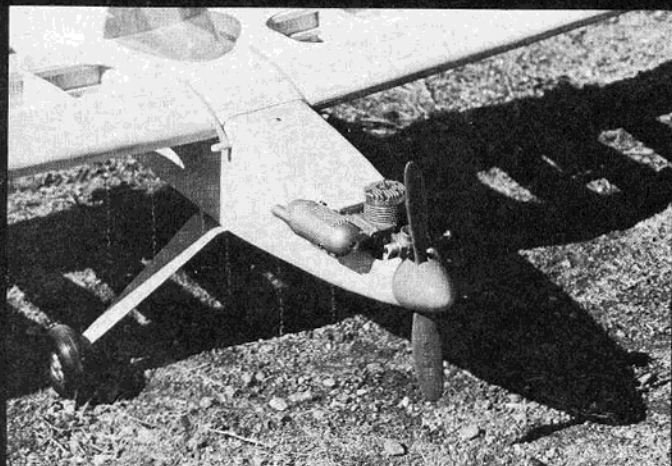
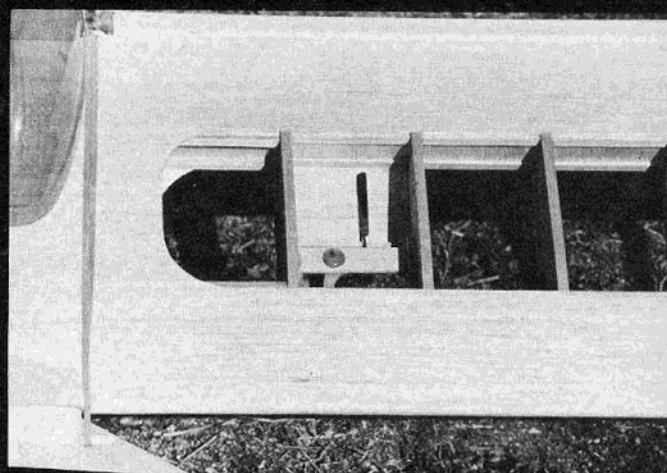
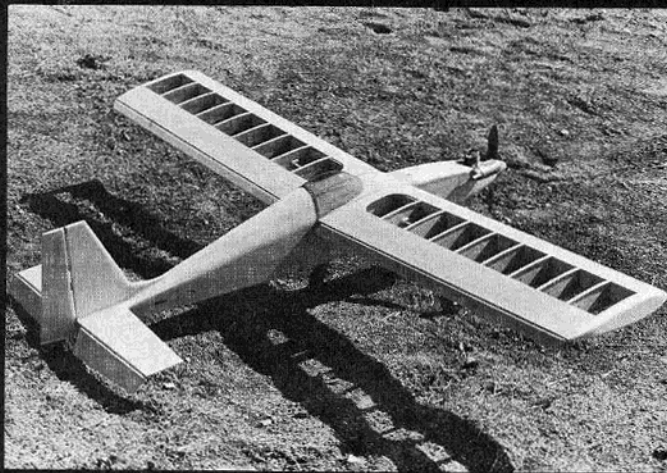
(8) Block in the nose section and install the hatch. Remove the motor and sand the cowl to shape.

(9) Trial fit the servos to fix the linkages in position. Remove the servos and epoxy the 1/8" ply cabin floor and 1/8" sheet cross grain flooring.

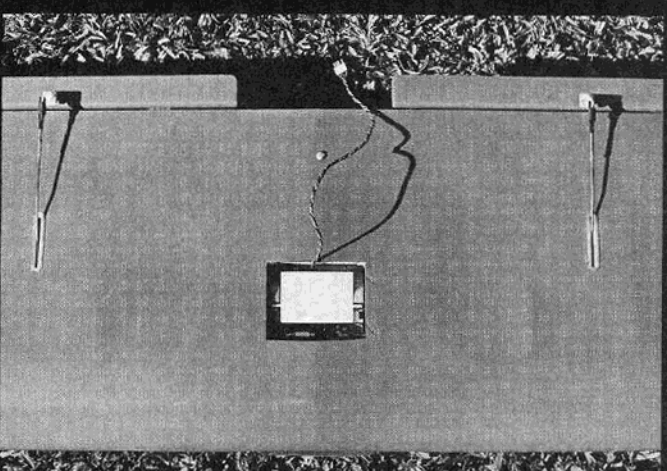
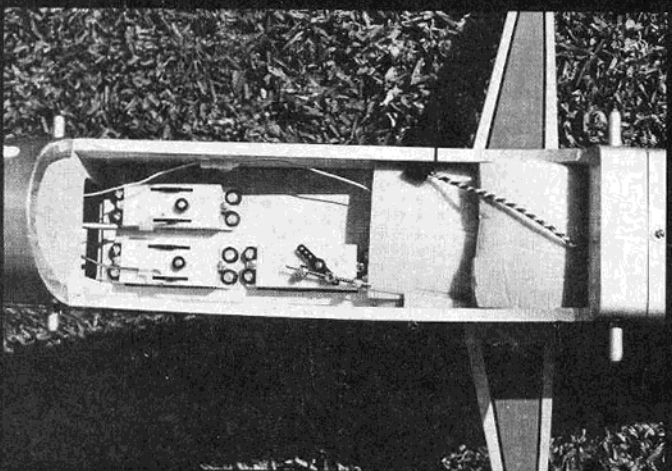
#### Wing:

(1) Jig up the ribs (or use building tabs) and fit 1/4" square upper and trailing edge spars. When dry, turn over the wing half and complete the spar place-





**TOP ROW, LEFT:** 3/4 rear view of Long John ready for covering. Wide spread landing gear make easy ground handling. **TOP ROW, RIGHT:** Close-up of aileron bellcranks mounting. Note vertical grain spar webbing. **ABOVE, LEFT:** RCM's prototype with upright O.S. Max .40 engine. Could be mounted 90° with muffler at bottom. **ABOVE, RIGHT:** View showing tail wheel assembly and control horns. Tail wheel bracket screwed into ply insert. **LEFT:** Hatch removed showing ample room for a Pylon SS-8 tank. Hi Johnson fuel filter used in line. **BELOW, LEFT:** Large Heath servos used in prototype. Room for any size R/C equipment. Note Du-Bro throttle over-ride. **BELOW, RIGHT:** Bottom of completed wing showing aileron servo and linkage. Screw head showing holds pilot inside canopy. Torque rod linkage could also be used.



with 4" tape, if desired.

(9) Trim fit the wing to the fuselage to trim and epoxy F4A as well as to secure the cut-down canopy in place.

**Finishing:**

The Long John has no compound curves, etc., and should prove quite a simple model to finish with any of the iron-on coverings. The original was completed the "old-fashioned" way with plenty of silk and dope. A light and glass-like finish may be achieved by rubbing back successive coats of dope and talcum powder — but I am told that this, too, is old fashioned.

Install your radio and juggle the battery pack to achieve the correct Center of Gravity position. With my Futaba gear, the battery is immediately in front of F3.

**Flying:**

The Long John has flown in quite strong winds, so picking a day for that first flight is no real problem. The prototype is a taildragger and has exhibited virtually no torque drift on take-off. As mentioned earlier, the Long John will depart gracefully on up trim only. The use of ailerons close to the ground is not critical so don't be afraid to steer the ship into the air.

The actual flying of the Long John is a little difficult to describe. It can be stooged around in circles as a trainer as docile as you like, or be sent barrelling through a top hat. In fact this is the virtue of the ship - - it has a great "pilot range" and would probably make a good club project.

Final approaches may be made quite slowly for such a fast ship. Remember that, with the inherent stability of a comparatively large wing area, ailerons again may be used all the way in and those spot landings should not be so elusive.

So, if your personal "state of the art" lies somewhere between the beginner and the expert, try the Long John, and find out what relaxed flying is all about. □

## **From RCModeler July 1977**