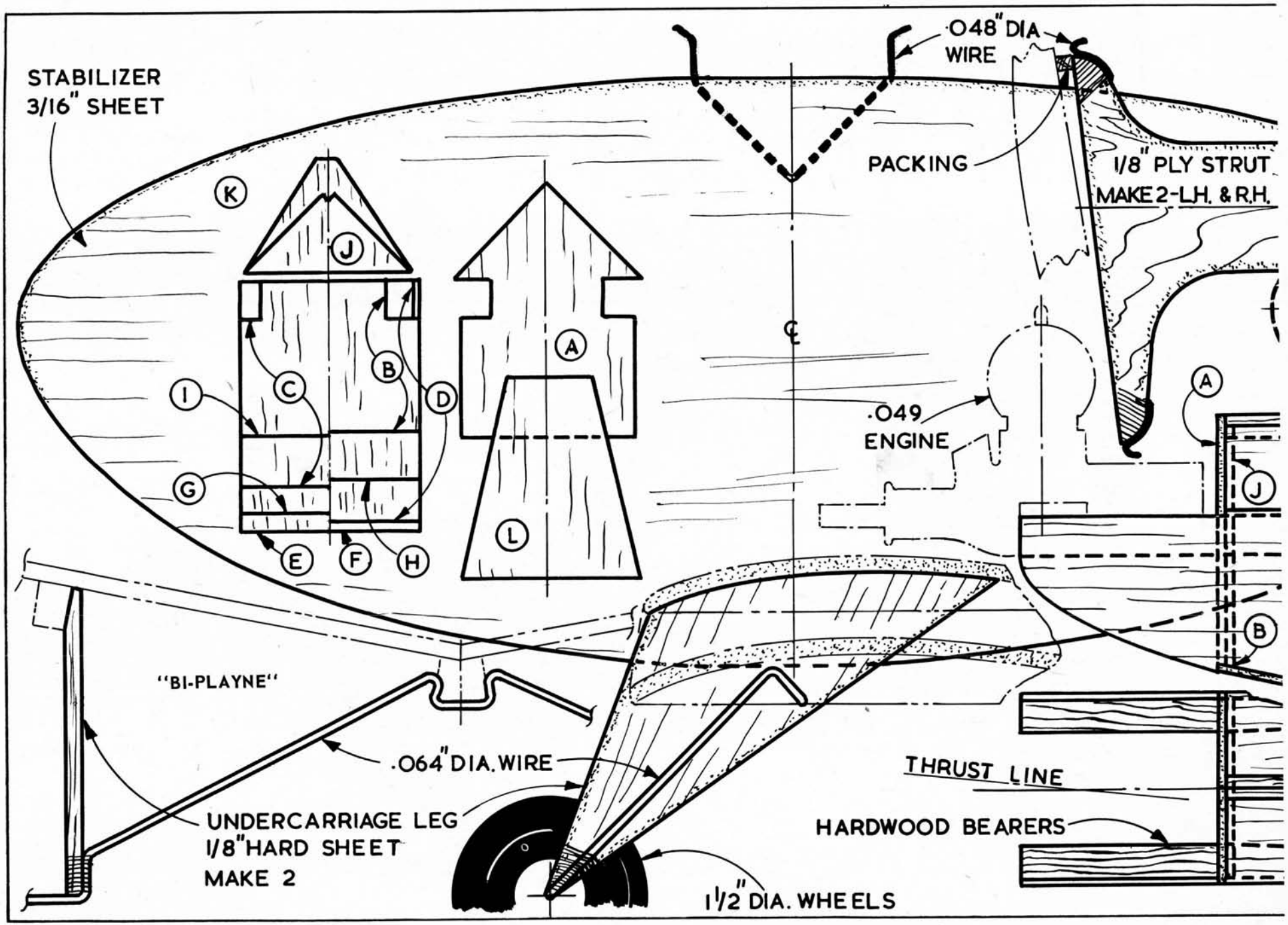
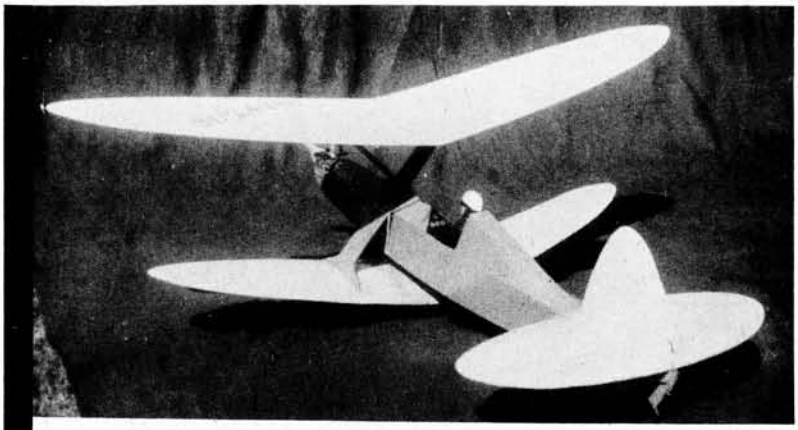

STABILIZER
3/16" SHEET
.048" DIA
WIRE
PACKING
1/8" PLY STRUT
MAKE 2-LH. & R.H.
K
J
A
B
C
D
I
G
E
F
H
L
℄
.049
ENGINE
A
J
B
"BI-PLAYNE"
.064" DIA. WIRE
THRUST LINE
UNDERCARRIAGE LEG
1/8" HARD SHEET
MAKE 2
HARDWOOD BEARERS
1½" DIA. WHEELS

BI-PLAYNE

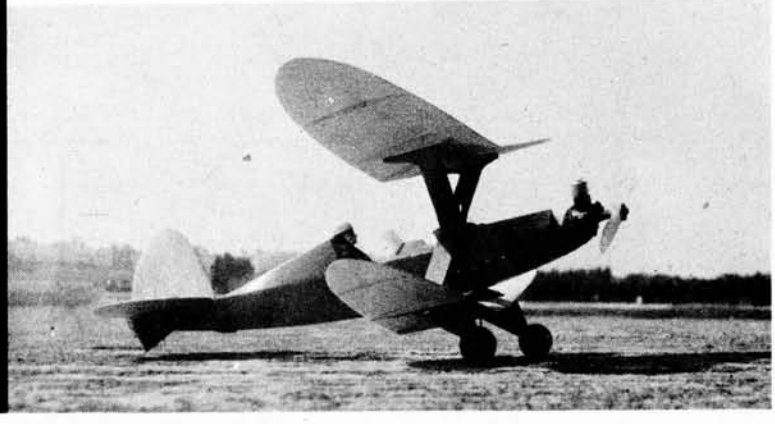
Full-size plans — for a racy sport bipe! Rugged all-sheet construction. Takes .020 to .049 glow or diesel.

GEORGE WOOLLS



Two hundred square inches of highly efficient wing area do not spoil racy lines.

(Above) Rugged all-balsa construction does not detract from realism of Bi-Playne. (Below) "X" interplane struts support wing and fuselage. Rubber bands take shock.



"Bi-Playne" is a scaled up version of a little 10" span all balsa rubber powered bipe that, despite being built some 3 years ago, still provides a lot of fun.

Powered with a .049 engine, this all sheet sport design has a contest-like performance in keeping with its racy lines, but a Cox "Pee-Wee" should provide ample power for steady flying in confined areas.

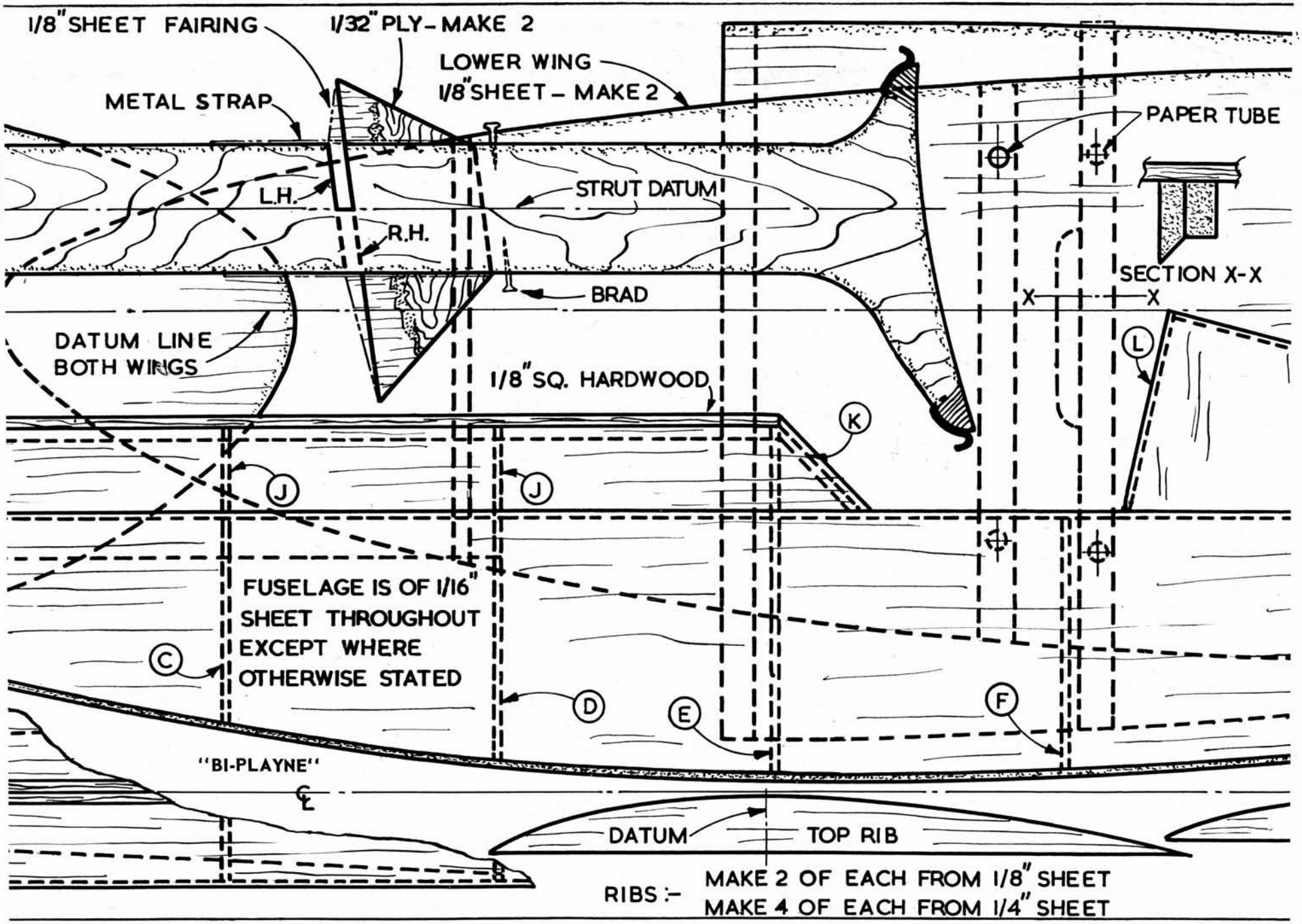
The all sheet construction and extensive use of rubber band fixings adds up to an extremely rugged model which will take the hardest knocks with a minimum of damage. Repairs are easy to make when necessary due to the generous sheet sizes called for.

Thorough test flying of the prototype has borne out the above statement, for until the original undercambered 1/16" sheet stabilizer was replaced by the flat bottomed section shown on the plan, flights were somewhat erratic, due to the fact that the stabilizer developed too much lift under full engine power. Several full power dives into the ground resulted in only minor and quickly repaired damage.

We would hasten to say that this bug has been ironed out in the "production version" presented here.

A small snag remaining in our model, a tendency to nose over on landing on anything but surfaces of putting

(*Continued on Page* 37)


1/8" SHEET FAIRING
1/32" PLY - MAKE 2
LOWER WING
1/8" SHEET - MAKE 2
METAL STRAP
PAPER TUBE
L.H.
STRUT DATUM
R.H.
SECTION X-X
X X
BRAD
DATUM LINE
BOTH WINGS
1/8" SQ. HARDWOOD
K
L
J
J
FUSELAGE IS OF 1/16"
SHEET THROUGHOUT
EXCEPT WHERE
OTHERWISE STATED
C
D
E
F
"BI-PLAYNE"
DATUM
TOP RIB
RIBS :-
MAKE 2 OF EACH FROM 1/8" SHEET
MAKE 4 OF EACH FROM 1/4" SHEET

BI-PLAYNE

(*Continued from Page 24*)

green smoothness, would be remedied by advancing the wheel position slightly and this modification has been incorporated on the accompanying full size plan.

So, with all the development that we have carried out ensuring that you have a well tested and proven airplane to provide you with lost of fun, why not make a start on the construction.

FUSELAGE: This, less the top decking, is built upside down on the building board.

The 1/16" sheet backbone is marked with the former positions (ball point pens are ideal for marking balsa) and the engine bearers firmly cemented in position. It is convenient to drill these to suit your engine at this time.

Temporarily pin the backbone to the building board and add the 1/16" sheet lower formers, cutting the forward ones to fit snugly around the engine bearers. Check that all these formers are at right angles to the backbone.

Now add the 1/8" sheet underfin complete with .048" dia. piano wire tail skid and then cement the 1/16" sheet fuselage sides in position, ensuring plenty of cement around the engine bearers.

When dry, remove the pins holding the backbone to the building board and using a sandpaper block sand off any formers that may project beyond the sides. Any formers that are below should be built up level with scrap sheet.

Cement on the 1/16" sheet fuselage bottom using plenty of rubber bands to ensure good contact with the sides and formers.

The triangular top decking formers are now cemented in place and the 1/8" sq. hardwood top edge added.

The 1/16" sheet forward top decking sides can now be added chamfering their lower edges to enable a snug fit between the top edge and backbone.

Add the extra 1/16" sheet firewall, the 1/16" sheet top former at rear of cockpit, the 1/16" sheet rear deck spine, and the 1/32" sheet sides in that order.

Sand the fuselage smooth, add sanding sealer, sand again and then color dope and fuelproof. Finally a thin acetate windshield, dashboard, and a soft balsa pilot may be added if desired.

INTERPLANE STRUTS: Cut a pair of struts to the shape shown from 1/8" plywood and mark the datum line clearly on them. Take care that the center slots are cut on opposite sides so that the struts will fit together properly. Knock in brads as shown on plan to act as hooks for retaining bands.

Cement the struts together, at the same time adding the 1/32" plywood platforms to the inner surface. Use rubber bands to retain the struts in position on top of the fuselage while the platforms are drying.

When dry cement and bind the .048" dia. piano wire hooks to the ends of the struts and bind two 1/8" wide by 2" long strips of tin can metal across the slots at front and rear of the struts.

Fill in between the platform and struts with scrap 1/8" sheet and sand off to form a smooth fairing and finally round off the edges of the struts paying particular attention to their tops and bottom adjacent to the wing surfaces.

WING SURFACES: Top and bottom wings are similar in construction and material and vary only in area and dihedral angle, although the actual tip rise is the same on both.

Cut the wings from medium 1/8" sheet and mark the datum line on them with the ball point pen.

Cut out the ribs from 1/8" and 1/4" sheet (or two thicknesses of 1/8" cemented) and mark them with the datum line. **NOTE:** During building all ribs are kept full center-section chord. They are trimmed to correct length after assembly.)

Pin or tack cement the ribs to the plan and then cement the wing sheet on top ensuring that the center lines marked on wings and ribs coincide. (The upper surface of the wing may be dampened to ease the cambering). Use plenty of pins to hold the sheet to the ribs while drying. Ensure that right and left hand halves of both wings are produced.

Each pair of wing halves should be joined so as to produce 2 1/2" dihedral under each tip. This is done by beveling the root ribs with a sanding block in a similar method to that used for chuck glider wings.

Firmly cement the center-section ribs together.

Remove the excess material from the bottom of the wing ribs sanding them to form a straight line joining leading and trailing edges. Round off the front of the leading edge and sand the top rear surface until the trailing edge is about 1/16" thick. Cement thread around the wing outline to prevent nicking and splitting.

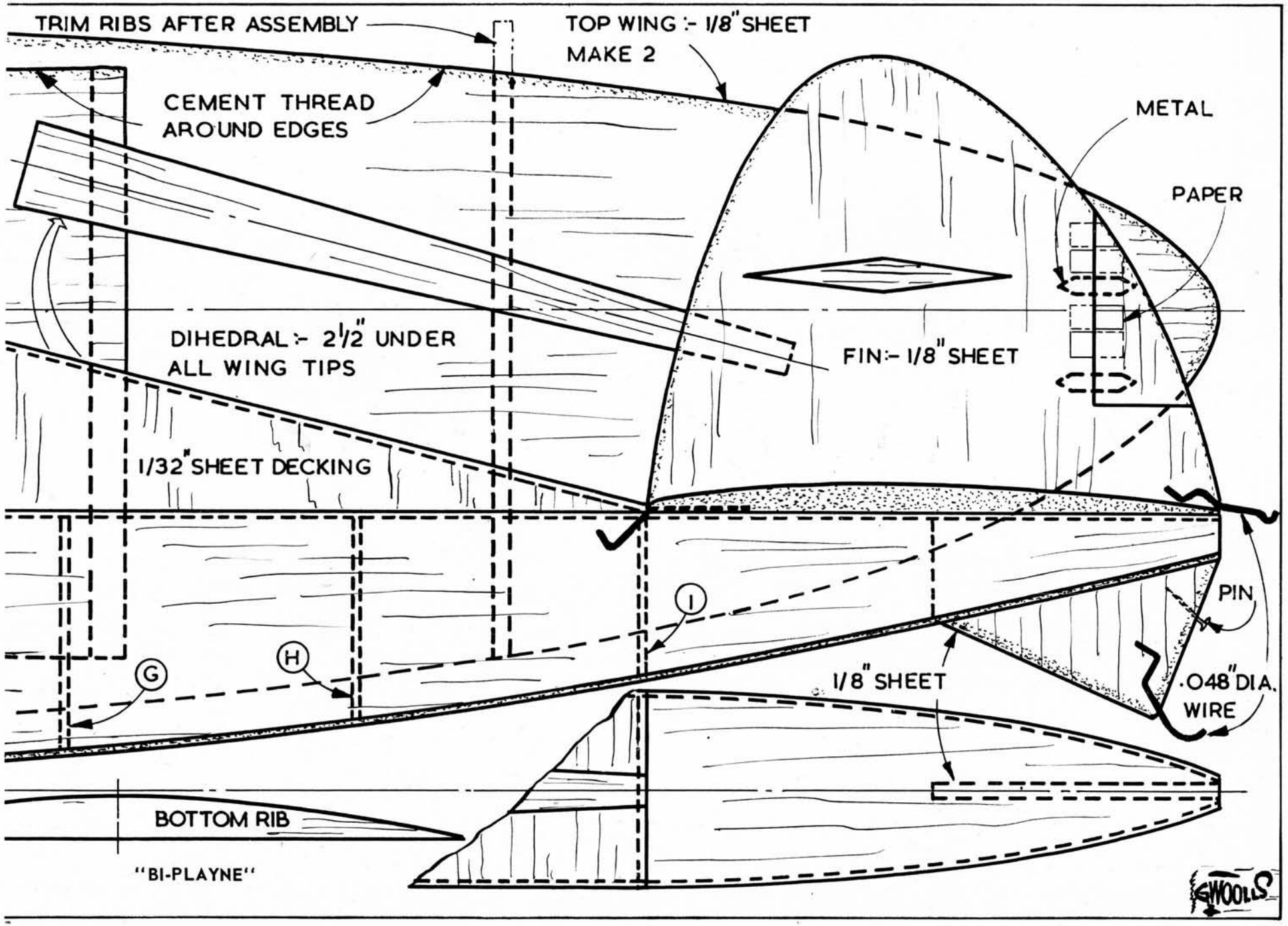
Take the completed interplane strut-assembly and place it on the wings in its correct position with datum lines coincident, and mark off the positions of the holes through the wing ribs. Drill the holes and bush them with paper tubes cemented in place.

Add the 3/16" sheet "steps" to the inside faces of the inboard ribs and shape them to fit snugly against the tops of the interplane struts.

UNDERCARRIAGE: This is permanently attached to lower wing.

Cut out the pair of legs from 1/8" hard sheet and slightly bevel the upper edges so that they will be parallel to one another when in position on the

(*Continued on Page 39*)


TRIM RIBS AFTER ASSEMBLY
TOP WING :- 1/8" SHEET
MAKE 2
CEMENT THREAD
AROUND EDGES
METAL
PAPER
DIHEDRAL :- 2½" UNDER
ALL WING TIPS
FIN :- 1/8" SHEET
1/32" SHEET DECKING
PIN
I
H
G
1/8" SHEET
.048" DIA.
WIRE
BOTTOM RIB
"BI-PLAYNE"
WOOLLS

BI-PLAYNE

(*Continued from Page* 37)

wing. Cement them in place, and then sand them to a roughly streamline section.

Bend the .064" dia, piano wire spreader to fit between center-section rib and legs as shown on plan, and bind and cement in position. Sand and dope as required, finally add wheels, and test rotation.

TAIL UNIT: Cut stabilizer from soft 3/16" sheet and sand the upper surface to form a camber as for a chuck glider wing.

Bend the .048" dia. piano wire "hold down" hook as shown and cut a channel in the underside of stab to receive the hook. Cement and sew into position.

The fin is cut from 1/8" soft sheet and the anti-warp insert cemented into place. Sand the fin to a streamline section and cut out the trim tab.

Cut the tab hinges from tin can stock and push them into both fin and tab firmly, retaining the tab by means of paper hinges.

Finally cement the fin firmly to the stabilizer adding the rear hold down hook at the same time. Sand, seal, and dope as required.

ASSEMBLY: Retain the inter plane struts to fuselage by means of rubber bands.

Attach the upper wings by means of rubber bands hooked on to strut hooks and passed through the tubes in ribs and upper wing surface. A length of strong thread looped on to the bands simplifies the passing of the bands through the tubes .

The lower wings are attached in similar fashion to the upper wings.

The stabilizer is attached by means of bands at front and rear. The special shape of the front hold-down hooks cause the tail to tip into dethermalizing position when the rear band is cut by a burning fuse. Slip scraps of 1/8" hard balsa between the rib and front of strut on upper wing to provide incidence.

With the engine in place, and model fully assembled, move the wings until the airplane balances level when supported at the extreme tips of the top wing.

No downthrust is used on the prototype but about 3° left side thrust is incorporated.

Check the wings for warps and if you do see any, correct them by steaming over a kettle or by inserting packing between struts and wing.

FLYING: Test glide until a fairly fast flat glide is produced, with no stall following a quite powerful heave. Aim the airplane at a point on the ground some 30 feet ahead. A gentle left hand turn is recommended.

Now try power. Have the engine running a bit rich and not too much in the tank, launch level and keep your fingers crossed.

A slow climb to the left or straight ahead should result, and if that is what happens, then gradually tune the engine to peak revs. Don't forget to fit and *light* a D/T fuse, for "Bi-Playne" can get very high and small in the sky quite quickly and those efficient wings let her down very reluctantly. ●

MODEL BUILDERS

(*Continued from Page* 33)

lent. technical reports available: #1, Basic Rocket Trajectory Calculations; #2, Building a Range Firing Panel & Communications System; and #3, Project Eyeball, an Optical Tracking System. Write the NAR at 6180 Fairfield Dr., Littleton, Colo.

Currently the Association is working with commercial firms on the possibilities of creating competition classes for their products and the utilization of solid propellants in rocket motors.

● **BRIEFS: Bill Johnson,** Berkeley, Mo., is to be credited with what is possibly the quickest double-kill in Combat history. At the McDonnell Aircraft annual picnic, Bill got up with two other guys and found himself sluggish with a poor engine run. Playing it cool, Bill held 'er just off the deck, letting the other two fight it out overhead. His engine leaned out just as the other two ships went by and Bill went up and over to make the double kill. It took less than two seconds . . . **Tom Deleskis,** 110 Platt St., Waterbury, Conn., is all hepped-up over slope soarers, vane steering and compass steering, and would like to hear from others with similar interests . . . *Mark Twain Barnstormers* is new club in Hannibal, Mo., contact **Frank Genovese,** 1247 Market Street . . . **EXCHANGE BULLETIN** from Sweden, *Modellflygbladet,* contact **Peter Wanngard,** Bellmansgatan 15 II, Stockholm So. . . . That exchange list we promised you club editors will be mailed out shortly . . . Cheers. ●

Control at Canadian R/C Nats. J. S. Watson is timekeeper and Art Roberts in on microphone.