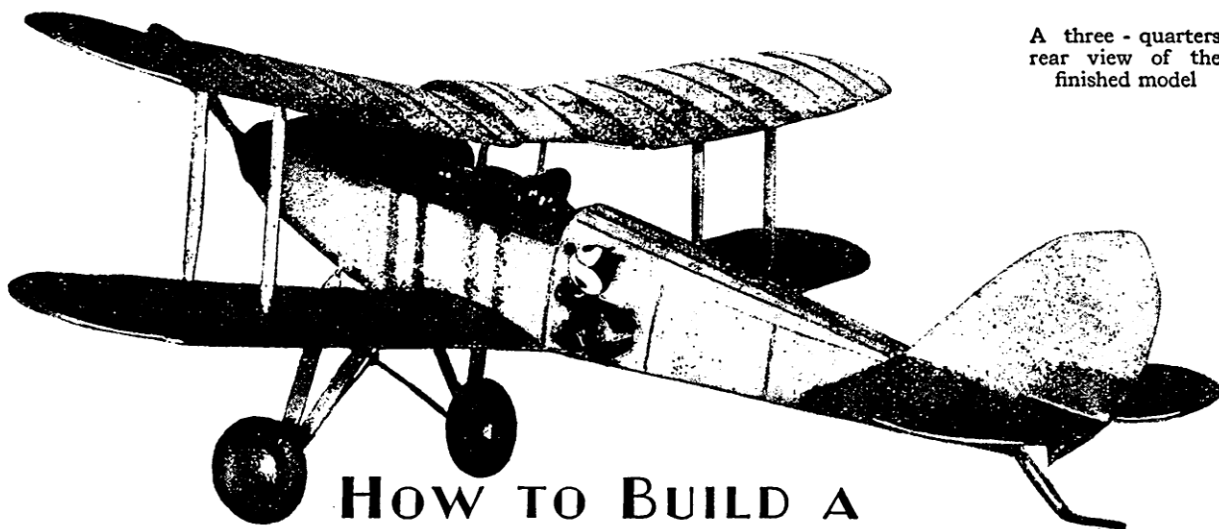




A three - quarters rear view of the finished model

# HOW TO BUILD A D. H. "Moth" Bi-plane

A Natty 2 ft. Flying Scale Model of a Popular Plane

**H**ERE is another famous light sport plane of English make, the D. H. Gypsy Moth, which was designed by Capt. G. de Havilland. Among the planes produced by this aeronautics pioneer the most popular is the Gypsy Moth. It is powered with an 85-100 h. p. Wright Gypsy engine and is truly a remarkable machine in performance and speed. The present model was built by Jesse Davidson.

Before starting construction, make sure that all materials listed are at hand and read the directions carefully.

## FUSELAGE

This is constructed in two parts. The nose is made separate, although not detachable. For the fuselage, use 1/8" square balsa. Model making pins are used to retain the right shape, taking care and time when doing this. Formers 7, 8, 9, 10, 11, 12 and 13 are cut from 1/16" thick balsa and glued in position. For stringers on the top of the fuselage 1/16" balsa is used. Construct according to plans and specifications.

## WINGS

You will need 1/16" balsa for the ribs. First cut out the thirty-two wing ribs. Make the holes for the center spar. Use 3/16" square balsa for the leading edge, 1/8" x 1/4" balsa for the center spans and 1/16" square bamboo for the trailing edge. Make them as shown in drawing.

It will be necessary to make four half wings; two right and two left. The center section is easily made from the drawings.

## TAIL ASSEMBLY

The Moth has nicely shaped control surfaces. These are built from 1/16" balsa used for elevator and rudder ribs. To give the curved effects, use 1/16" square bamboo.

Use glue sparingly. Cover and set aside to dry properly.

## Necessary Material

|           |                       |                   |                      |
|-----------|-----------------------|-------------------|----------------------|
| 4 strips  | 3/16" x 3/16" x 12"   | balsa             | leading edge         |
| 4 strips  | 1/8" x 1/4" x 12"     | balsa             | center spar          |
| 3 strips  |                       | bamboo            | trailing edges, etc. |
| 2 strips  | 1/8" x 1/4" x 18"     | balsa             | struts, etc          |
| 2 strips  | 1/16" x 3" x 18"      | balsa             | ribs, tail, rudder   |
| 1 piece   | 1/3" x 2" x 6"        | balsa             | cockpits             |
|           |                       | veneer            |                      |
| 5 strips  | 1/16" x 1 7/16" x 12" | balsa             | stringers            |
| 1 strip   | 1/16" x 3" x 12"      | balsa             | nose formers         |
| 6 strips  | 1/8" x 1/8" x 18"     | balsa             | fuselage longerons   |
| 1 strip   | 1/8" x 1/4" x 18"     | spruce            | motor stick          |
| 1 piece   | 1/8" x 1/2" x 12"     | balsa             | landing gear struts  |
| 1 large   |                       | thrust bearing    |                      |
| 1 foot    | No. 14                | wire              |                      |
| 1 pair    |                       | Forest wheels     |                      |
| 6         |                       | copper washers    |                      |
| 4         |                       | wheel bearings    |                      |
| 1 package |                       | model making pins |                      |
| 1         | 1-1/4" x 3/4" x 10"   | propeller block   |                      |
| 3 sheets  |                       | Japanese tissue   |                      |
| 1         | 2 ounce bottle        | banana oil        |                      |
| 1         | 2 ounce bottle        | dope              |                      |
| 1         | 2 ounce can           | Unitite cement    |                      |
| 12 feet   | 1/8" flat             | rubber            |                      |
| 1 piece   | 3" x 3"               | celluloid         |                      |

See Plans on Pages 8 to 14

## COCKPITS

The cockpits are made with 1/32" veneer balsa cut to shape as shown in drawing. Make the instrument board and glue in place.

These add no weight and make the model look more complete. Celluloid is used for windshields.

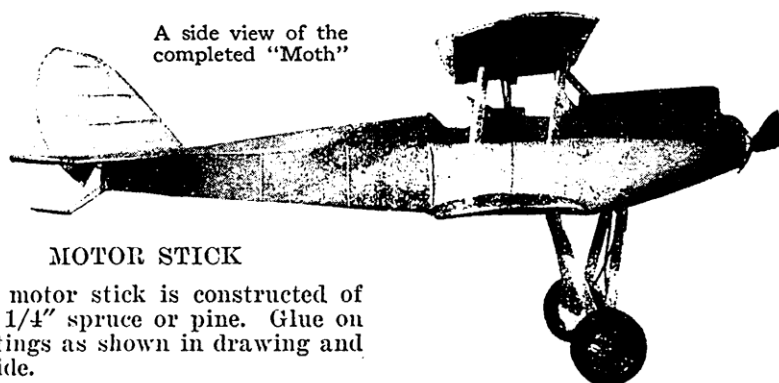
## NOSE

This is not as difficult to make as may appear but it does require patience and careful work. Use 1/16" balsa for formers 1, 2, 3, 4, 5 and 6 cut to proper shape and size. Use a sharp razor blade for this operation. All stringers are made from 1/16" square balsa. The motor stick clip is fastened, as shown in drawing, to former 1. When the nose is complete, attach to the fuselage with glue and fasten with pins. Set aside to dry.

(Continued on page 49)

## How to Build a D. H. "Moth" Biplane

(Continued from page 7)



A side view of the completed "Moth"

### MOTOR STICK

The motor stick is constructed of  $1/8" \times 1/4"$  spruce or pine. Glue on all fittings as shown in drawing and set aside.

### PROPELLER

This is carved to shape from a block of white pine or spruce as shown in drawing. This propeller is a low pitch, high speed one. Make sure to carve carefully and balance it perfectly. Insert the shaft and lay aside to dry.

### FINAL ASSEMBLY

Note that there are two walls of  $1/16"$  balsa glued to the side of the fuselage. These serve as a base for the setting of the wings. However, before this is done, the landing chassis must be constructed. Make this according to the plans, using pins for reinforcement and plenty of glue.

Incidentally, the glue is colorless and will help to make a neat job. Allow at least two hours for the landing gear to dry. Now glue to the fuselage the balsa wing bases as shown.

### COVERING

The wings are covered with Japanese tissue. Banana oil is used for pasting, making sure to use a soft brush for applying this. Pull the tissue covering very tightly to remove wrinkles. Cover all four wings and center section. The fuselage is also covered in the same fashion.

To obtain the model's center of gravity and best gliding angle, one must find the balancing point of the fuselage. The tail surface must be

glued tightly in position, also the motor stick and propeller. When the balancing point has been found, work it back and forth and set the wing one-third forward of it.

Attach lower wing as shown in drawing. Give the correct amount of dihedral and incidence angles as specified, allowing plenty of time to harden. In the meantime, glue the two upper half wings to the center section. Insert the center section struts. Glue the upper wing in position. Cut the wing struts of balsa to size, streamline and glue in position.

### FLYING

Now that all is in readiness, try gliding the model. Hold it firmly, nose it down slightly and let go gently. It will make a neat three-point landing. If it stalls, the wings should be set back slightly. If this change is not needed, weight can be added to the nose by wrapping rubber bands around it. Should the plane dive, set the wings slightly forward.

Take the plane out in the open if possible. Wind the motor at least twenty-five to fifty times for a trial hop.

Then wind it up full, hold the tail slightly off the ground, push gently as the propeller is released and watch it go.