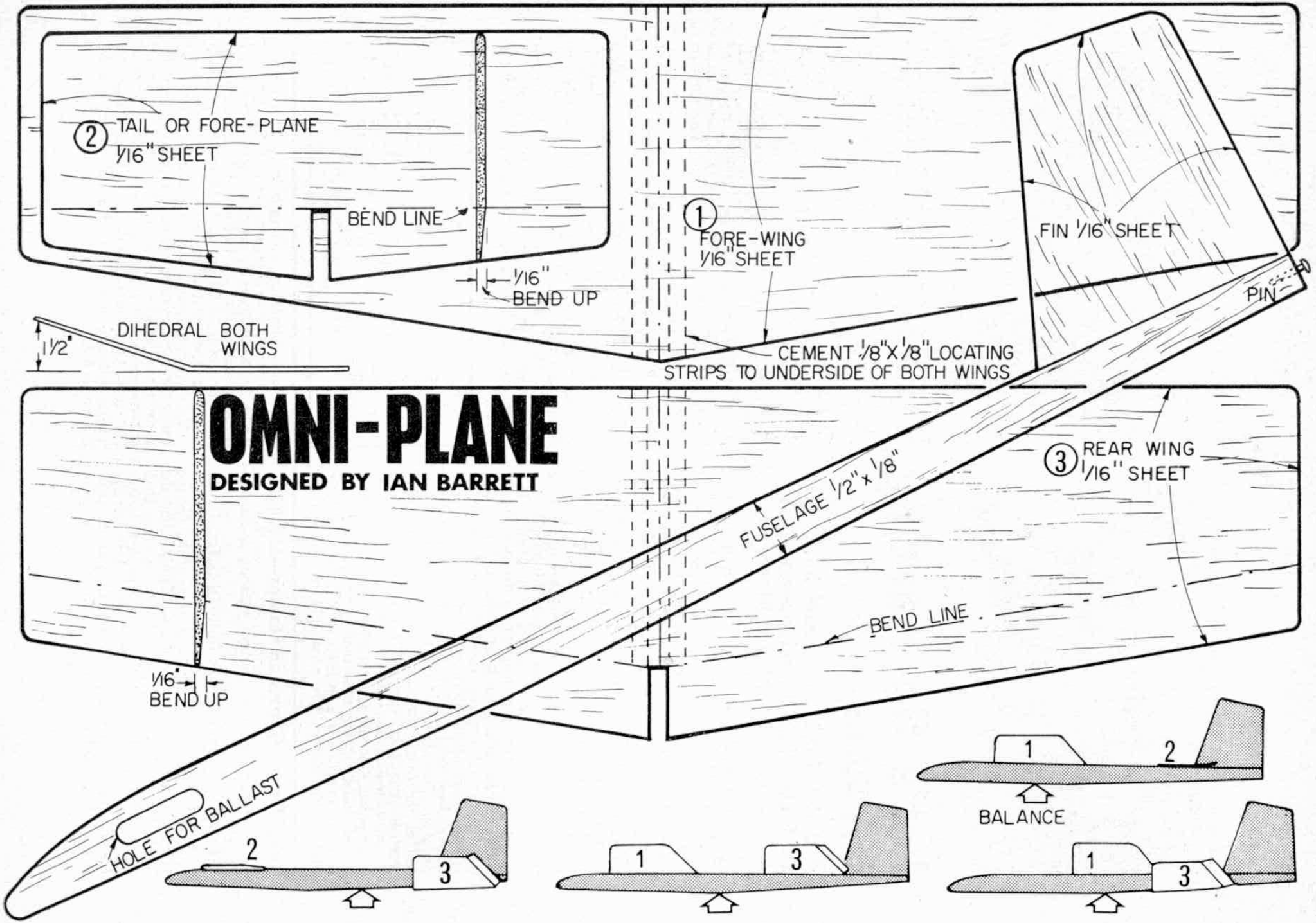

OMNI-PLANE
DESIGNED BY IAN BARRETT
2 TAIL OR FORE-PLANE 1/16" SHEET
BEND LINE
1/16" BEND UP
1 FORE-WING 1/16" SHEET
FIN 1/16" SHEET
PIN
DIHEDRAL BOTH WINGS
1 1/2"
CEMENT 1/8"X 1/8" LOCATING STRIPS TO UNDERSIDE OF BOTH WINGS
FUSELAGE 1/2" x 1/8"
3 REAR WING 1/16" SHEET
BEND LINE
1/16" BEND UP
HOLE FOR BALLAST
1
2
BALANCE
2
3
1
3
1
3

MODEL AEROPLANES can be made to fly successfully in a variety of configurations, and this little glider design demonstrates this point.

The model is basically of conventional design, but with its detachable wings and tailplane and an extra pair of wings, several combinations can be constructed.

Using $\frac{1}{16}$ in. sheet for flying surfaces, and $\frac{1}{8}$ in. sheet for the fuselage, construction is quick and simple. Notice, however, that the trailing edges of the tailplane and one of the pairs of wings are raised $\frac{1}{16}$ in.

When all the parts have been cut out and sanded smooth, the model of your choice can be assembled, noting particularly which way up you mount the tailplane, if used, and the position of the wings.

By referring to the sketches and photographs, try and make the following combinations.

Conventional Layout

Mount the tailplane (item 2) either above or below the rear fuselage, with its trailing edge bent up. Fit the wing (item 1) on top of the fuselage approximately mid-way between the nose and tailplane. Squeeze modelling clay through the hole in the nose until the model balances level when supported about half-way back under the wing. Launch the model and note its behaviour. If the nose lifts and the flying speed falls, and then the nose drops suddenly, add more nose weight. If the model dives, remove some weight and so on until you can get a long straight glide. This method of adjusting the flight path is standard for all the other models; only the position of the balance point (centre of gravity) will vary.

Canard (Tail-first)

Fit item 2 (now the fore-plane) onto the top of the fuselage nose, with the trailing edge bent down. The rear wing (item 3) goes underneath the rear of the fuselage, with its trailing edge bent up. The balance point is about $\frac{1}{3}$rd of the distance between the flying surfaces forward of the rear wing.

Tandem Wing

Mount the two wings (items 1 and 3) on top of the fuselage, item 3 to the rear and with the trailing edge bent up. The balance point is just behind the trailing edge of the forward wing.

Staggered Wing

Mount the wing with the bent trailing edge (item 3) under the rear fuselage, and the other wing (item 2) above the fuselage with its trailing edge above the leading edge of the lower wing. The balance point is about half-way back from the leading edge of the top wing.

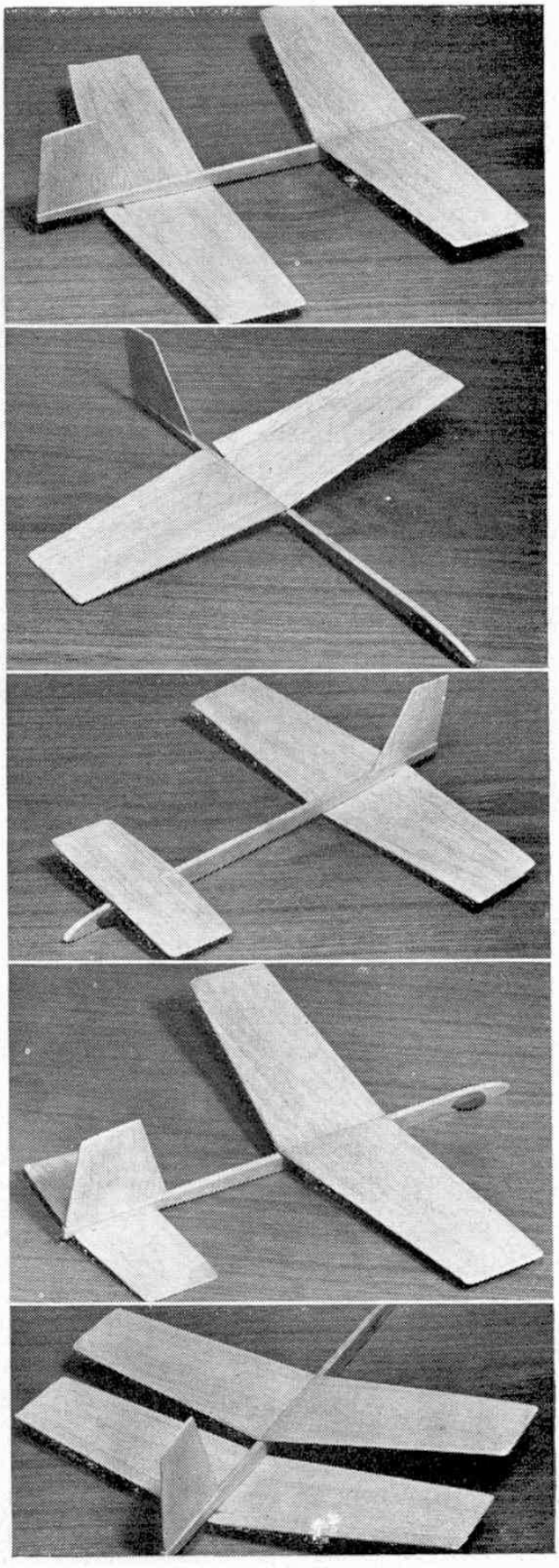
Flying Wing

Put the wing (item 3) on top of the fuselage just forward of the fin. The balance point should be on the leading edge of the wing.

In all the models described above, the balance point positions are only approximate, and will require adjusting to suit each individual model.

When each model has been trimmed for straight flight, turns can be accomplished by launching in a slight bank.

Now see if you can make up any more combinations.



The five configurations of Omni-Plane. Top to bottom they are Tandam Wing; Flying Wing; Canard (tail first); Conventional Layout and Staggered Wing.