as shown by means of two 2½" Strips and Angle Brackets. The net is made from cord.

The figure is composed of a 2½" × ½" Double Angle Strip to which two Curved Strips are bolted as shown, the same securing Bolt carrying a Reversed Angle Bracket that fixes the figure to the Plate. Two Angle Brackets carry Flat Brackets representing arms, and a 1" Pulley is fixed in position for the head. The ball is represented by a 1" Pulley Wheel.

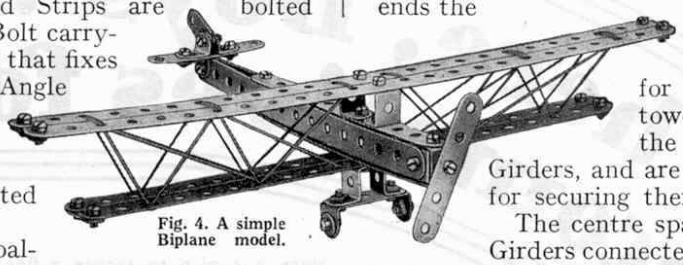

Fig. 4. A simple Biplane model.

Parts required for Goalkeeper:—2 of No. 2; 6 of No. 5; 2 of No. 10; 6 of No. 12; 2 of No. 22; 19 of No. 37; 1 of No. 40; 1 of No. 48a; 1 of No. 52; 2 of No. 90a; 1 of No. 111c; 1 of No. 125; 2 of No. 126a.

A Simple Model Biplane

The fuselage of the model biplane illustrated in Fig. 4 is made up of 5½" Strips extended by 2½" Strips to form the sides, and with additional 5½" Strips for the top and bottom. At the front the Strips are bolted to Angle Brackets, and the upper Strip carries two Double Brackets to which two 12½" Strips are bolted for the upper mainplane. The ends of the Strips are connected by Flat Brackets. The lower mainplane is composed of two pairs of 5½" Strips with Flat Brackets bolted across the ends.

The tail unit consists of a 2½" Strip secured in place by Angle Brackets, and carrying further Angle Brackets that hold a Flat Bracket forming the fin and rudder. An undercarriage is formed from a Double Bent Strip and 1½" × ½" Double Angle Strip. To complete the model a 2½" Strip is pivotally attached to the nose for the propeller, and cord is added to represent bracing struts and wires between the upper and lower mainplanes.

Parts required for Biplane:—2 of No. 1; 4 of No. 2; 4 of No. 5; 5 of No. 10; 2 of No. 11; 8 of No. 12; 27 of No. 37; 4 of No. 37a; 6 of No. 38; 1 of No. 40; 1 of No. 48; 3 of No. 111c; 2 of No. 125.

Vertical Lift Bridge

In bridging navigable rivers and canals sufficient height must be allowed for the masts of vessels passing under at high water mark. To construct the usual type of bridge to meet these conditions involves making long approaches, which are costly to produce and are also an inconvenience to traffic. To obviate these a type of bridge is generally employed that opens to allow vessels to pass. Swing bridges and bascule bridges are common, and another type of bridge is the vertical lift bridge in which the entire centre span across the waterway can be lifted bodily to sufficient height for the vessels to pass under.

Fig. 5 shows a model of this type of bridge. Two vertical towers are each made from two 12½" Angle Girders bolted to the end flange of a 3½" × 2½" Flanged Plate, and connected across the top by a 2½" × ½" Double Angle Strip to which two 12½" Strips are bolted. At their lower ends the Strips are secured by Angle Brackets to the Flanged Plate, and 5½" Strips are used for bracing purposes. The two towers are connected together at the base by a pair of 12½" Angle Girders, and are provided with Angle Brackets for securing them to a baseboard if required.

The centre span is made of two 12½" Angle Girders connected across the ends by 2½" Strips, between which three 12½" Strips are bolted for the roadway. Two 1½" × ½" Double Angle Strips are bolted vertically in the centres of the side Girders, and each carries a 1½" Strip to which two 5½" Strips are bolted to form arch girders. The outer ends of the Strips are secured to the Angle Girders by Flat Brackets and Angle Brackets. The spaces between the arched Strips and Angle Girders are interlaced with Cord to represent bracing struts and ties. Thus the complete centre span is in the form of an arch bridge.

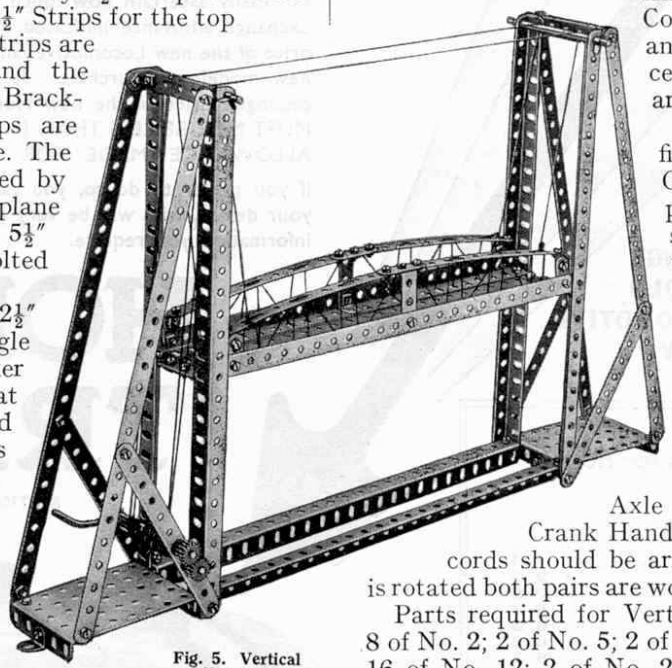

Fig. 5. Vertical Lift Bridge.

The ends of the centre span fit between the vertical Angle Girders of the towers, and if properly constructed the entire span should be free to slide up and down. Two cords are attached to each end and passed over 3½" Axle Rods journalled at the top of the Angle Girders. One pair of cords is tied to the Crank Handle that can be seen on the left of the illustration, and the other pair to a 3½" Axle Rod that is driven from the Crank Handle through two ½" Pinions. The cords should be arranged so that as the Handle is rotated both pairs are wound in, and the bridge is raised.

Parts required for Vertical Lift Bridge:—7 of No. 1; 8 of No. 2; 2 of No. 5; 2 of No. 6a; 8 of No. 8; 4 of No. 10; 16 of No. 12; 2 of No. 26; 6 of No. 35; 67 of No. 37; 1 of No. 40; 2 of No. 48; 2 of No. 48a; 2 of No. 53; 2 of No. 59; 2 of No. 125.

Aircraft Carrier

The neat model shown in Fig. 6 represents the type of vessel used for carrying aircraft at sea. The upper deck is designed to form a runway to enable aeroplanes to alight and take off, and space below decks is allotted for use as hangars. Such vessels are provided with large and well equipped workshops for carrying out repairs to machines, and in addition to accommodation for the usual personnel of the ship, there are quarters for the officers and men of the aircraft squadrons.

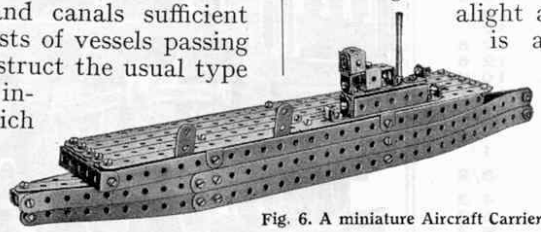

Fig. 6. A miniature Aircraft Carrier.

The construction of the model can be seen quite clearly from the illustration, and description is not necessary.

Parts required for Aircraft Carrier:—10 of No. 1; 6 of No. 2; 6 of No. 5; 2 of No. 6a; 7 of No. 10; 4 of No. 11; 7 of No. 12; 2 of No. 12a; 1 of No. 16; 1 of No. 35; 60 of No. 37; 3 of No. 37a; 2 of No. 38; 1 of No. 48; 6 of No. 48a; 3 of No. 111c.