

## New Meccano Model

# Revolving Fly-Boats

IN publishing the details for constructing the Meccano model Revolving Flyboats we feel sure that readers will agree that we have selected a singularly appropriate subject. It would be hard to find a more fitting example of the holiday spirit that overtakes all of us at this season of the year, than this splendid model of a large pleasure wheel that may be seen towering above the booths and sideshows of most "amusement parks" or fairs adjoining popular seaside resorts.

No doubt many of our readers will be able to number amongst their holiday recollections a ride in one of these machines and the thrills occasioned by this enjoyable experience. It is indeed exhilarating to step into one of the little cars, and to be carried high into the air and then, as the car descends to the ground, to see the earth apparently rushing up to meet it.

Although often disguised in a cloak of gaudily-painted wood and canvas, the machines to be found in pleasure parks form in many cases unique examples of engineering construction. The design of the many varied and distinctive movements incorporated in the various types of oscillating swings, big wheels and roundabouts has occupied the attention of the most capable engineers and the mechanical features of many of these devices are of a highly ingenious nature.

When the construction of a massive structure such as a revolving wheel is undertaken the utmost care is required in calculating the stresses and strains that will be created when the wheel is in motion, and the strength of the materials employed must always exceed the maximum required. In the correct estimation of these factors lies, of course, the safety of those seeking amusement by riding in the cars of the machine.

A remarkable example of the engineer's work in this direction stood for many years at Blackpool, in Lancashire, but unfortunately it has recently been condemned as unsafe and has had to be dismantled. It was known as the "Big Wheel" and during its long life it has been a source of pleasure to countless thousands of holiday makers. It formed a very conspicuous landmark that could be seen from many miles around.

The construction of the Blackpool Big Wheel was commenced in February, 1896, and the following August saw the giant structure thrown open to the public.

The erection was carried out by Lieutenant W. B. Bassett, R.N., and a staff of 250 men. Most of the metal used in the various ties and struts was Scotch Steel, while the spokes and driving cables were manufactured from Lancashire steel cable. From the ground to the topmost girder the height of the structure was 220 feet—the tip of the wheel being 260 feet above sea level! The total weight of the wheel with its 30 cars attached was 1,000 tons, while its superficial area for painting purposes was estimated at 2,000 square yards!

The vast size of this great wheel may perhaps be better realised when it is learned that 2½ tons of paint were necessary in order to apply two coatings to the steelwork! Each of the carriages weighed 3 tons 3 cwt., and was capable of carrying 30 passengers—giving a grand total of 900 passengers that could be carried at one time on the wheel.

The rim of the wheel itself was built of steel girders bolted together and was suspended from the axle by 120 wind ties and spokes of steel cable. For rotating the wheel giant steel cables were used, the total length of which was 3,132 feet, or  $\frac{3}{4}$  of a mile! The splicings on these two cables were recognised as the longest spliced joints in the world. The huge wheel was mounted on a massive steel axle, the circum-

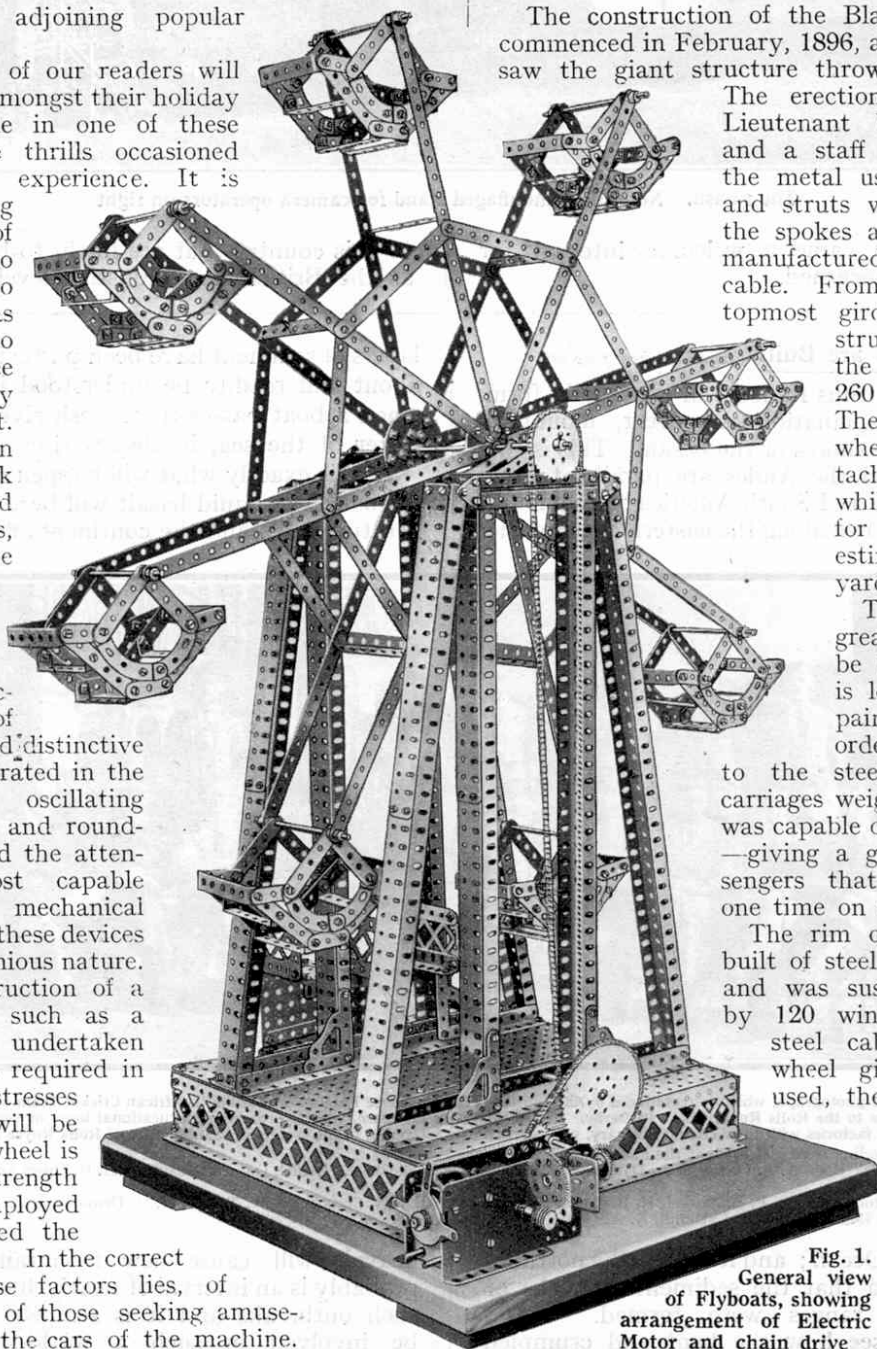


Fig. 1.  
General view  
of Flyboats, showing  
arrangement of Electric  
Motor and chain drive

ference of which measured 6 feet 10 inches, the axle having a weight of 30 tons!

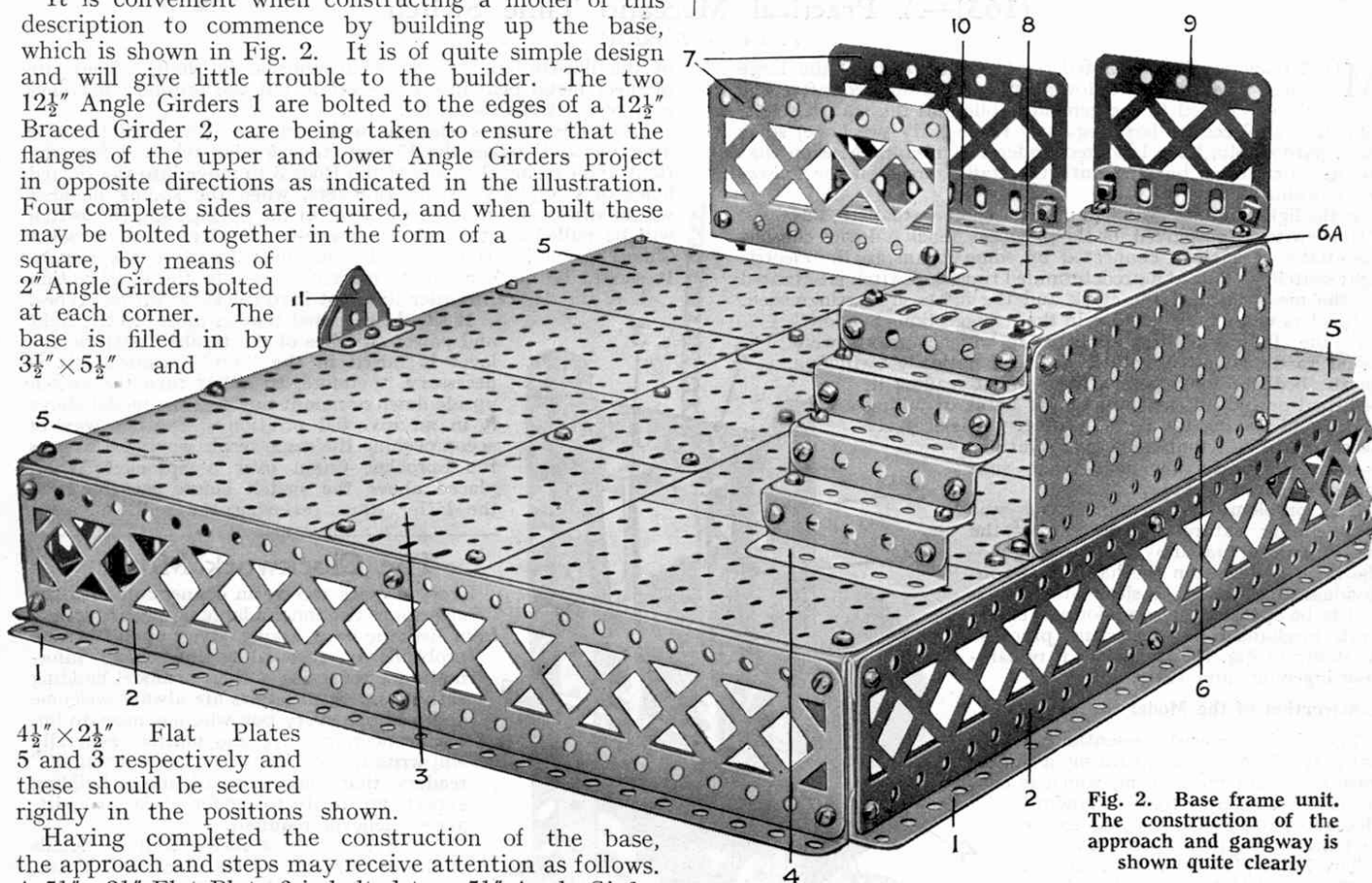
Although the Meccano model Flyboats differ in some respects from the structural design of the Blackpool Wheel the underlying principle is the same as that on which most Big Wheels and Flyboats are designed. We would refer those boys who wish to build a more accurate model of the Blackpool Wheel to the Meccano Instructions Manual, which contains illustrations and constructional details for building a model that is fashioned to a great extent on this famous pleasure wheel (see Model No. 6.6).

### Construction of the Base Frame

It is convenient when constructing a model of this description to commence by building up the base, which is shown in Fig. 2. It is of quite simple design and will give little trouble to the builder. The two  $12\frac{1}{2}$ " Angle Girders 1 are bolted to the edges of a  $12\frac{1}{2}$ " Braced Girder 2, care being taken to ensure that the flanges of the upper and lower Angle Girders project in opposite directions as indicated in the illustration. Four complete sides are required, and when built these may be bolted together in the form of a square, by means of  $2\frac{1}{2}$ " Angle Girders bolted at each corner. The base is filled in by  $3\frac{1}{2}$ "  $\times$   $5\frac{1}{2}$ " and

It will be convenient for the constructor, before commencing to assemble the Main Standards and Wheel Frame, to build up the flyboat cars. These may then be set aside in readiness for the final assembly of all the main units, which will be described next month.

As will be seen in Fig. 1, eight identical cars will be required, the construction of these being as follows. The sides of each of the cars are built-up from two  $2\frac{1}{2}$ " Strips joined at their lower ends by means of  $2\frac{1}{2}$ " Strips, while  $2\frac{1}{2}$ " Curved Strips are bolted together and attached to the sides by means of  $1\frac{1}{2}$ " Strips. Each car side is spaced the correct distance apart by means of six  $2\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strips, these Strips at the same time forming the seats and back-rests. Each car is suspended



$4\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flat Plates 5 and 3 respectively and these should be secured rigidly in the positions shown.

Having completed the construction of the base, the approach and steps may receive attention as follows. A  $5\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flat Plate 6 is bolted to a  $5\frac{1}{2}$ " Angle Girder that is in turn secured to the base. To the upper edge of the Plate 6 a second  $5\frac{1}{2}$ " Angle Girder is bolted and this in turn carries a  $5\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flat Plate 6a. At the rear end of the Plate 6a is a  $2\frac{1}{2}$ " Angle Girder supporting a  $2\frac{1}{2}$ " Braced Girder 9, and a second  $5\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flat Plate 8 bolted in the position shown carries two  $3\frac{1}{2}$ " Angle Girders 10. To these latter the  $3\frac{1}{2}$ " Braced Girders 7 are to be bolted.

The approach steps 4 are built up from eight  $2\frac{1}{2}$ " Angle Girders bolted together in the manner shown, the upper end Angle Girder of the stairway when complete being bolted to the Flat Plate 6a.

from the wheel arms by means of two pairs of  $2\frac{1}{2}$ " Strips as can be seen in Fig. 1.

Although the cars shown fitted to the model in Fig. 1 are all of the same pattern there is no necessity for the constructor to adhere to this plan, and if the cars are varied in type the finished appearance of the model will be enhanced considerably. The boats incorporated in the Meccano Big Wheel (Model No. 6.6) for instance, could be used with good effect. They represent the type of completely-enclosed car that was fitted to the Blackpool Wheel, and can be quite easily adapted to fit the model Flyboats.

(To be continued)

### PARTS REQUIRED

|             |              |             |              |              |                 |             |              |
|-------------|--------------|-------------|--------------|--------------|-----------------|-------------|--------------|
| 16 of No. 1 | 32 of No. 6a | 4 of No. 9e | 2 of No. 27a | 8 of No. 48b | 32 of No. 90a   | 2 of No. 97 | 4 of No. 113 |
| 20 " " 2    | 16 " " 7a    | 1 " " 13    | 2 " " 30     | 8 " " 52a    | 4ft. 2 in. " 94 | 1 " " 98    | 1 " " 126    |
| 1 " " 2a    | 15 " " 8     | 8 " " 15a   | 1 " " 32     | 3 " " 53a    | 1 " " 95        | 4 " " 99    | 2 " " 161    |
| 32 " " 4    | 3 " " 9      | 2 " " 16a   | 37 " " 37    | 37 " " 59    | 1 " " 95b       | 16 " " 103a | 6-Volt Motor |
| 32 " " 5    | 2 " " 9b     | 2 " " 17    | 41 " " 38    | 3 " " 70     | 1 " " 96        | 4 " " 108   |              |
| 20 " " 6    | 9 " " 9d     | 1 " " 26    | 48 " " 48a   | 8 " " 77     | 1 " " 96a       | 2 " " 109   |              |