MECCANO
DINKY TOYS AND TRIANG-HORNBY

MONORAIL IN MECCANO

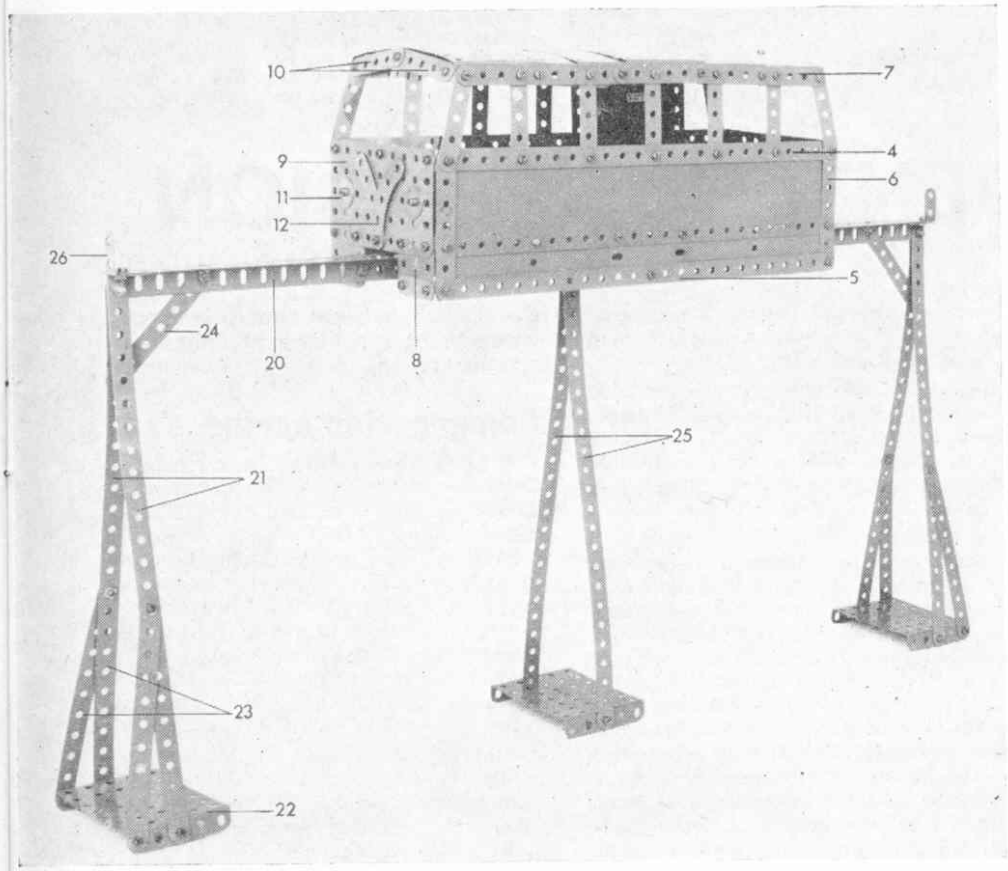
by Spanner

RECENTLY, on the front cover of Meccano Magazine, there appeared a photograph of the Disneyland/Alweg monorail. Although the model described here doesn't actually represent the Alweg vehicle, it was the Disneyland/Alweg photograph which inspired me into building the model.

The monorail is not by any means a brand-new idea, for in Wuppertal, Germany, a monorail has been running for over 30 years. However, it is only in the recent, traffic-congested years, that serious thought has been given to the monorail system in this country.

Undoubtedly, a major cause of congestion in cities are the cars of commuters and shoppers, who are forced to travel by car because of a slow public transport system. Monorails, however, running from the outskirts to the city centre, would not only provide a fast and efficient service, but would have the added advantage of being built above ground and so would not seriously impede existing road networks. Also, little actual groundspace would be required and it would only be necessary to demolish a little property to make way for the railway supports to carry the trains above the buildings.

The completed monorail carriage on a sample section of track



On the other hand, if high-speed motorways were built into the centre, a great deal of valuable property would need to be cleared away, chaos would be caused to traffic while work was in progress and parking space would still need to be provided for all the traffic still entering the city centre. With a monorail, people forced to travel part-way by car would leave their vehicles at the terminus, where parking space would be readily available, and finish their journey in comfort.

As mentioned, the Meccano Monorail is not based on any of the real-life systems already in use, but it works extremely well. It is easy to build and power is supplied by a No. 1 Clockwork Motor. Construction is as follows:

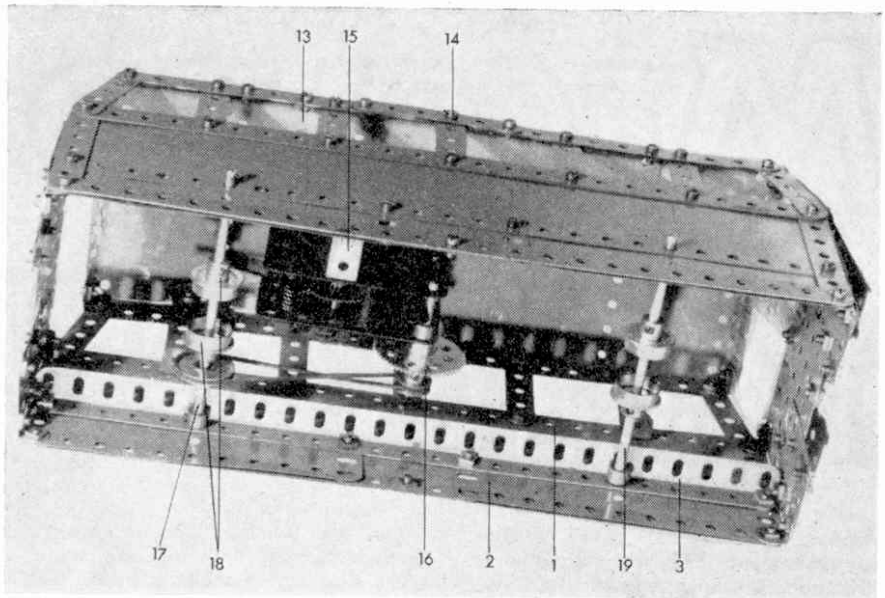
Body construction

Each side is similarly built. A 12½in. by 2½ in. Strip Plate 1 and a 12½ in. by 1½ in. compound strip plate 2, formed from a 2½ in. by 1½ in. and two 5½ in. by 1½ in. Flexible Plates, are fixed to a 12½ in. Angle Girder 3. The whole is then edged along the top and bottom by 12½ in. Strips 4 and 5, and down the sides by 3½ in. Strips 6.

The Bolts holding Strip 4 in position also secure, in order from left to right in the second illustration, a 2½ in. Strip, a 2½ in. by ½ in. Double Angle Strip, three 2½ in. Strips, another 2½ in. by ½ in. Double Angle Strip and a final 2½ in. Strip. All these are joined at the top by a compound 11½ in. strip 7, made up from a 3 in. and two 5½ in. Strips.

Both the front and back of the model are also similarly constructed. A 2½ in. by 1½ in. Flexible Plate 8 overlayed at the bottom by a 1½ in. Strip, is fixed to each side by Angle Brackets and the two are then connected by a 4½ in. by 2½ in. Flat Plate 9. In addition, this Plate is attached to the sides by Angle Brackets at its upper corners, at the same time fixing the windscreen in position.

At one end, the windscreen is formed from two 2½ in. by 2½ in. Transparent Plastic Plates while, at the other, it is



The underside of the monorail showing the drive motor

represented by a 4½ in. by 2½ in. Transparent Plastic Plate. Both screens are edged at the top by two 2½ in. Strips 10, joined to the sides by Angle Brackets.

Some detail can be added to the ends of the model. We bolted two ¾ in. Washers 11 and two 2½ in. Curved Strips 12 to one of the 4½ in. by 2½ in. Flat Plates 9 to represent headlamps and radiator-grille, but this is not essential.

Forming the roof

The roof is simply formed from a series of six 5½ in. by 2½ in. Flexible Plates, bent to shape and bolted between the sides, as shown.

Motor and drive

Two 1½ in. by ½ in. Double Angle Strips are secured to left-hand compound strip 7. One of these can be seen at 13 while the other is held by Bolt 14. A No. 1 Clockwork Motor is bolted to the spare lugs of the Double Brackets and is braced by a 1 in. by 1 in. Angle Bracket 15, connected to one Angle Girder 3 by a Fishplate.

A ½ in. Pinion on the Motor output shaft is in constant mesh with a 57-teeth Gear 16 on a 2 in. Rod, mounted in the Motor side plates and held by a Collar.

Also fixed on the Rod is a ½ in. Pulley connected by a 6 in. Driving Band to a 1 in. Pulley secured on a 5 in. Rod 17 held by Collars in Girders 3. Also fixed on Rod 17 are two ¾ in. Flanged Wheels 18. Another two ¾ in. Flanged Wheels are mounted on a second 5 in. Rod 19 held by Collars in Girders 3.

Elevated rail

The length of track is, of course, limited only by the number of parts you have available. For illustration purposes we built up a short section from four 12½ in. Angle Girders 20, two sets of two being formed into two 'T' girders. The two sets are 'butt jointed' by a 12½ in. Strip bolted between each side of the 'T' girders.

Each end support is obtained from two 12½ in. Strips 21 fixed to a 3½ in. by 2½ in. Flanged Plate 22. The Strips are braced at the bottom by two 5½ in. Strips 23 and at the top by a 3½ in. Strip 24. The intermediate support is simply built from another two 12½ in. Strips 25, bolted to a 3½ in. by 2½ in. Flanged Plate. All supports, incidentally, are secured to the rail by ⅜ in. Bolts. A stop to prevent the car running off the rail is provided at each end by a 1 in. by 1 in. Angle Bracket 26.

Parts required:—

11 of No. 1	4 of No. 20b	5 of No. 59
8 of No. 2	1 of No. 22	2 of No. 90
6 of No. 3	1 of No. 23a	3 of No. 111c
2 of No. 4	1 of No. 26	1 of No. 186a
14 of No. 5	1 of No. 27a	6 of No. 188
4 of No. 6a	112 of No. 37a	4 of No. 189
6 of No. 8	109 of No. 37b	6 of No. 192
1 of No. 10	2 of No. 38d	2 of No. 193a
17 of No. 12	2 of No. 48	1 of No. 193c
3 of No. 12a	4 of No. 48a	2 of No. 197
2 of No. 15	3 of No. 53	1 No. 1 Clockwork Motor
1 of No. 17	2 of No. 53a	

INDEPENDENT SUSPENSION

by Spanner

ONE of the advantages of modelling with Meccano is that you can reproduce many of the intricate mechanical details to be found inside the original object in the Meccano model. For example, the differential at the rear and the steering system at the front of a Meccano model car can be made to work just like the real units! Therefore, if you are building a model car, you will find this feature very useful. Full instructions are given for a combination of two very useful mechanisms, an independent suspension unit, coupled to a rack and pinion-type steering system, built by Mr. A. Macfarlane, of Godstone, Surrey.

Construction principles

It must be remembered, however, that the combined mechanism has been produced purely to illustrate the principles involved. It was not designed for a specific model and therefore, may need modifying if you wish to include it in any of your own constructions.

There are two chassis members, each formed from a 12½ in. Angle Girder 1, connected by a 2½ in. by ½ in. Double Angle Strip 2, a 3½ in. by ½ in. Double Angle Strip 3, and a 4½ in. Strip 4. A Channel Bearing 5 is bolted to Strip 4 and Double Angle Strip 3.

Both actual suspension units are similarly built. A Flat Trunnion 6 is bolted to Girder 1, at the same time fixing a 1 in. by ½ in. Double Bracket 7 and an Angle Bracket 8 in place. A 1½ in. Rod, carrying a Crank 9 and a Coupling 10 is journalled in the end holes of Double Bracket 7, then a right-angled Rod and Strip Connector 11 is attached to the other end of Coupling 10 by a Pivot Bolt held in the transverse bore. Fixed in the Rod and Strip Connector is another 1½ in. Rod which carries a second Coupling 12, mounted through its centre transverse bore, a ½ in. loose Pulley and a Collar 13.

Compression spring

A Long Threaded Pin 14, carrying a Compression Spring, a Double Bracket 15 and a Collar is secured to Flat Trunnion 6. Note that the Collar is positioned between the lugs of the Double Bracket in such a way that the Spring normally keeps the inside lug pressed against the Collar. A Bolt 16 is held in the arm of Crank 9 by a Nut and its shank is fitted through the hole in the back of Double Bracket 15, but it is not held by another Nut.

Also bolted to Flat Trunnion 6 is another Double Bracket 17. Lock-nutted to its rearmost lug is a 2 in. Strip 18, the other end of which is attached to Collar 13 by a Bolt screwed into one transverse