

# A Meccano traction engine

ONE OF the most popular categories with Meccano model-builders is the road-vehicle group and one of the most interesting, as well as the most unusual, vehicles in that group is the traction engine. I set out below the building instructions for small and comparatively simple Meccano version of such a machine.

This model admirably illustrates the main features of the old-type vehicle which it represents. Power is supplied to the rear driving wheels and the crankshaft from a Meccano Emebo Motor by means of Driving Bands. A  $5\frac{1}{2}$  in by  $2\frac{1}{2}$  in Flanged Plate, to each side flange of which are bolted two  $5\frac{1}{2}$  in Strips 1 and 2 spaced nine holes apart, forms the base of the body. Strip 2 is compound, being made up from a  $3\frac{1}{2}$  in and a  $2\frac{1}{2}$  in Strip. A  $4\frac{1}{2}$  in by  $2\frac{1}{2}$  in Flat Plate 3 and a further  $5\frac{1}{2}$  in Strip 4 are bolted between the Strips 2, Strip 4 projecting two holes to the rear. The resulting angle is filled in by a  $2\frac{1}{2}$  in by  $1\frac{1}{2}$  in Triangular Flexible Plate 5. Both sides are joined by two  $2\frac{1}{2}$  in by  $\frac{1}{2}$  in Double Angle Strips and, these, in turn are joined by a  $2\frac{1}{2}$  in by  $2\frac{1}{2}$  in Flexible Plate 6.

The boiler is built up, as shown, from three small cylinders made up of—working from the front—a  $5\frac{1}{2}$  in by  $2\frac{1}{2}$  in and a  $4\frac{1}{2}$  in by  $2\frac{1}{2}$  in Flexible Plate, two  $5\frac{1}{2}$  in by  $2\frac{1}{2}$  in Flexible Plates and, lastly, another  $5\frac{1}{2}$  in by  $2\frac{1}{2}$  in and a  $4\frac{1}{2}$  in by  $2\frac{1}{2}$  in Flexible Plate. Strength is added by a compound  $6\frac{1}{2}$  in strip 7, comprising a  $5\frac{1}{2}$  in and a  $2\frac{1}{2}$  in Strip, bolted along each side of the boiler. The foremost bolts holding this Strip also hold two right angle Rod and Strip Connectors 8 in position as well as a  $2\frac{1}{2}$  in by  $\frac{1}{2}$  in Double Angle Strip 9. Two Semi-Circular Plates 10 are bolted to Double Angle Strip 9.

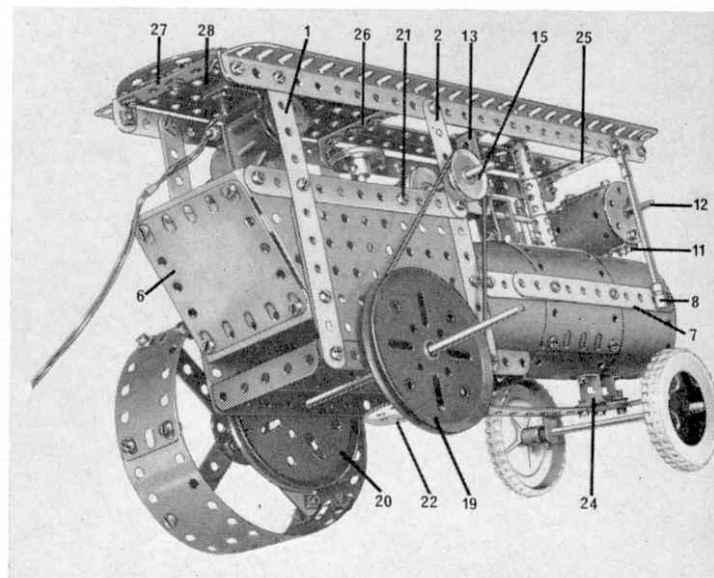
Before bolting Plates 10 in position it is better to fit the generator which is composed of two  $2\frac{1}{2}$  in by  $1\frac{1}{2}$  in Red Plastic Plates, bent to form a cylinder, to which two-6-hole Wheel Discs are fixed by Angle Brackets 11. A 4 in Rod 12 carrying a 1 in fixed Pulley is journaled in

the centre hole of these Wheel Discs and is held in place by Spring Clips. The generator is fixed to the boiler by a  $\frac{3}{8}$  in Bolt, with a Nut and a Washer being used as spacers. An Angle Bracket to which a 1 in by  $\frac{1}{2}$  in Double Bracket is bolted is fixed to the boiler to form the basis for the valve gear and to this, in turn, is bolted a  $1\frac{1}{2}$  in by  $\frac{1}{2}$  in Double Angle Strip 13 that later forms a support for the canopy. The piston is a 2 in Rod, carrying a  $\frac{1}{2}$  in Pinion 14, and the connecting rod is a compound  $2\frac{1}{2}$  in strip, built from two  $1\frac{1}{2}$  in Strips which is pivotally connected to the Pinion 14 by a bolt in one of its transverse tapped bores.

The crankshaft is constructed from two 2 in Rods, each passing through one or the other of the compound strips 2. The right-hand side Rod carries two 1 in fixed Pulleys 15 and 16 while the left-side Rod carries a 2 in and a 1 in fixed Pulley 17 and 18. An Angle Bracket is tightly fixed to the bosses of Pulleys 16 and 18 by a nut, on a bolt, clamping the Angle Bracket to the boss. The Pulleys are turned until the Angle Brackets are in line and then fixed in that position. Finally, the compound strip forming the connecting rod is lock-nutted to the Angle Brackets by a  $\frac{3}{8}$  in Bolt.

Two  $3\frac{1}{2}$  in Rods, joined by a Rod and Strip Connector, form the rear axle which is journaled in the flanges of the  $5\frac{1}{2}$  in by  $2\frac{1}{2}$  in Flanged Plate, two 3 in Pulleys 19 and 20 securing it. Each rear road wheel is made up from one  $2\frac{1}{2}$  in by  $1\frac{1}{2}$  in and two  $5\frac{1}{2}$  in by  $1\frac{1}{2}$  in Flexible Plates. Spokes are provided by one  $4\frac{1}{2}$  in and two  $2\frac{1}{2}$  in Strips

Another view of the model showing the drive from the rear axle to the valve gear.



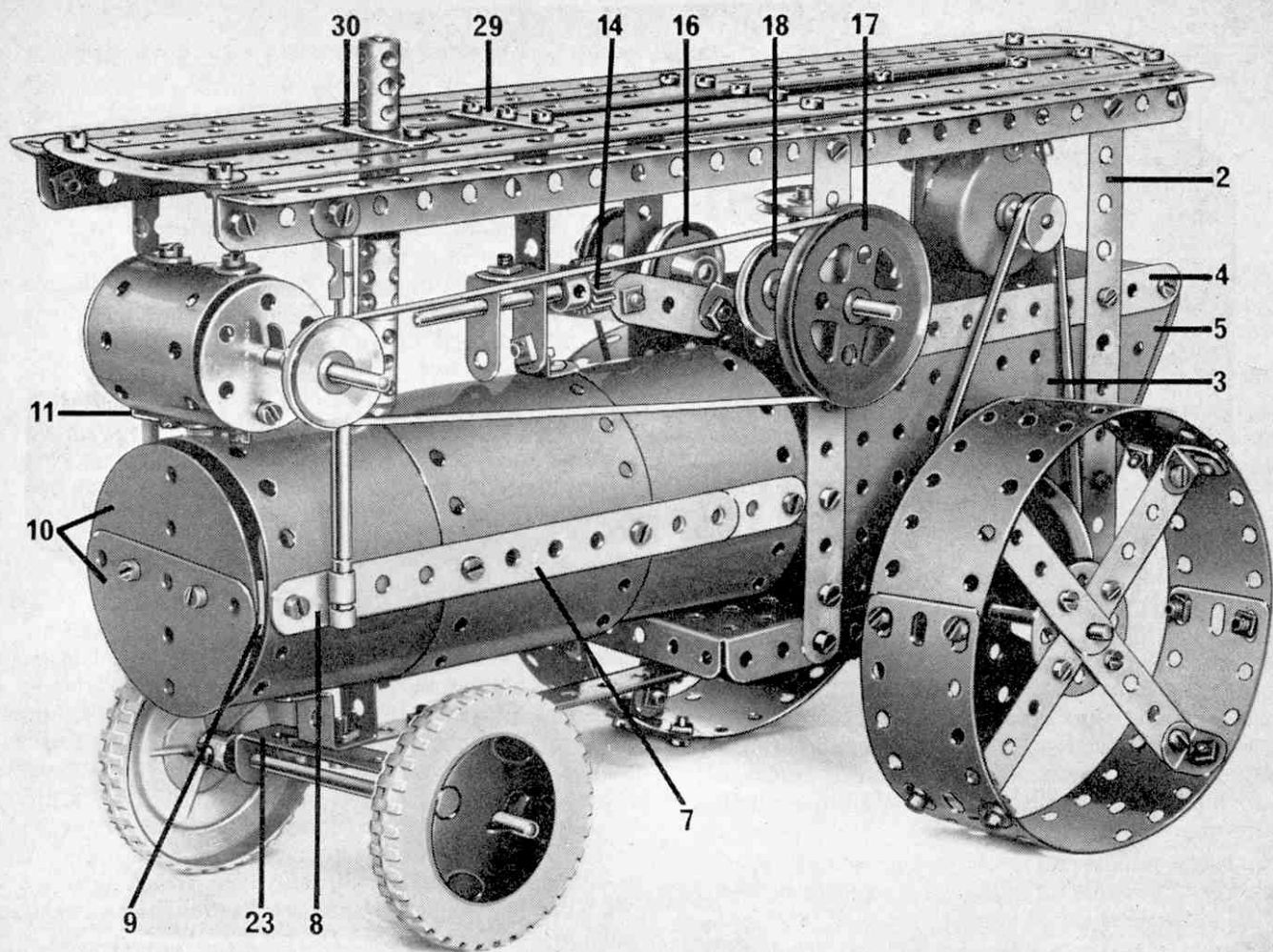
## Results of our latest Model-building contest

**Section A** (Competitors under 14 on January 31, 1964): First prize, Cheque for £5 5s: Ian Sanders, Chester; Second prize, Cheque for £3 3s: Nigel Tuersley, South Wanstons, Nr. Winchester; Third prize, Cheque for £2 2s: Andrew Day, Whitchurch, Cardiff.

Ten Prizes of 10s 6d:—Hatim Kaderbhai, Mombasa, Kenya; John Radford, Uppingham; Leslie Thompson, Uitenhage, Cape Province, S. Africa; Simon Herrick, Wotton-U-Edge; Ian Clover, Stowmarket; Donald Stewart, Elgin; Larry McEwan, Deep River, Ontario, Canada; Andrew J. Hill, Watford; Ian Reid, Gloucester; Aidan O'Hogan, Monkstown, Co. Dublin.

**Section B** (Competitors aged 14 or over on January 31, 1964):—First prize, Cheque for £7 7s: Michael Brookfield, Newcastle, Staffs.; Second prize, Cheque for £5 5s: Dr. G. Gingras, Montreal, Canada; Third prize, Cheque for £3 3s: Brian W. Rowe, Newton Abbot.

Ten Prizes of £1 1s.: G. Servetti, Piacenza, Italy; E. G. Frost, Birdingbury, Nr. Rugby; H. Smith, Port Elizabeth, S. Africa; Michael Penrice, Huddersfield; F. Pattison, Street, Somerset; H. J. Van Wijngaarden, Amsterdam Zuid, Holland; Brian Calvert Lurgan, Co. Armagh; A. R. Gough, Hamilton, New Zealand; H. W. Henry, Strood; T. J. Taylor, Manchester.



bolted to an 8-hole Bush Wheel at the centre and connected to the Plates by Angle Brackets. The Bush Wheel is fixed on the Rod forming the axle and a Driving Band is run between Pulleys 19 and 15.

Journalled in a 1 in by 1 in Angle Bracket, held by Bolt 21 and the Flanged Plate is the steering column which is a 5 in Rod held in place by a Spring Clip above the Angle Bracket. The steering wheel is a 1 in Pulley with boss. A 57-teeth Gear Wheel 22 is fixed to the bottom end of the steering column and a compound 7 in strip, built from two  $5\frac{1}{2}$  in Strips, is lock-nutted to this by a  $\frac{3}{8}$  in Bolt. At its other end, the 7 in strip is lock-nutted by another  $\frac{3}{8}$  in Bolt to a  $2\frac{1}{2}$  in by  $\frac{1}{2}$  in Double Angle Strip 23, through its second hole. This Double Angle Strip is, in turn, lock-nutted to a Double Bent Strip 24, bolted to the boiler. A 5 in Rod forming the front axle is mounted in the lugs of Double Angle Strip 23 and is held by Spring Clips. The off-side front wheel is tightly fixed to the axle but the near-side is free on the axle, being held by a Spring Clip (see illustrations).

Next, the canopy is built from two  $12\frac{1}{2}$  in Angle Girders connected by  $2\frac{1}{2}$  in by  $\frac{1}{2}$  in Double Angle Strips 25, 26 and 27. These Double Angle Strips are joined by four  $12\frac{1}{2}$  in Strips, as shown, so that there is a space the width of one Strip in the centre. Between Double Angle Strips 26 and 27 this space is filled in by a  $5\frac{1}{2}$  in Strip 28 to the underside of which an Emebo Motor is attached by two

$\frac{1}{2}$  in Bolts. Two  $1\frac{1}{2}$  in Strips 29 and 30 are bolted across the remaining space in the canopy which is then connected to the traction engine proper by two  $3\frac{1}{2}$  in Rods at the front, by Strip 2 in the centre and by Strip 1 at the rear. A  $2\frac{1}{2}$  in Stepped Curved Strip is bolted at each end of the canopy.

The chimney is a 4 in Rod, on which are four Couplings, which passes through Strip 30 and into the boiler. It is held in place by the two Couplings which are clamped each side of Strip 30.

Finally, a Driving Band connects the  $\frac{1}{2}$  in Pulley on the Motor to 3 in Pulley 20.

**Parts required.**—4 of No. 1; 9 of No. 2; 2 of No. 3; 12 of No. 5; 4 of No. 6a; 2 of No. 8; 2 of No. 10; 1 of No. 11a; 13 of No. 12; 1 of No. 12a; 2 of No. 15; 2 of No. 15b; 4 of No. 16; 3 of No. 17; 2 of No. 19B; 1 of No. 20a; 5 of No. 22; 2 of No. 24; 2 of No. 24b; 1 of No. 26; 1 of No. 27a; 7 of No. 25; 120 of No. 37a; 109 of No. 37b; 19 of No. 38; 1 of No. 40; 1 of No. 45; 1 of No. 46; 8 of No. 48a; 1 of No. 52; 2 of No. 53a; 4 of No. 63; 2 of No. 90a; 3 of No. 111a; 5 of No. 111c; 1 of No. 186b; 1 of No. 186c; 2 of No. 187; 4 of No. 188; 4 of No. 189; 1 of No. 190; 2 of No. 191; 4 of No. 192; 2 of No. 194; 2 of No. 212; 2 of No. 212a; 1 of No. 213; 2 of No. 214; 2 of No. 221; 1 Emebo Motor.