

# BONE SHAKER

by Spanner

The conclusion of the advanced tramcar model featured in June issue of Meccano Magazine. Based on a 1903 prototype used in Bradford.

IT IS at this stage in construction that the truck can be built up and then fitted to the chassis. Two similar side members are each obtained from two  $7\frac{1}{2}$  in. Angle Girders 44, connected by a  $5\frac{1}{2}$  in. Narrow Strip 45, but separated from each other by a distance of three holes. Two Girder Frames 46 are bolted one to the centre of each Girder 44 and their apexes are joined by a  $9\frac{1}{2}$  in. compound narrow strip 47, built up from two  $5\frac{1}{2}$  in. Narrow Strips. The Bolts joining these Narrow Strips also hold in place a Flat Trunion 48, the apex of which is bolted, along with a Double Bracket 49, to the centre of Narrow Strip 45. Another Double Bracket 50 is bolted to the outside end of each Girder 44.

Four wheels are now each produced from a Face Plate bolted to a Wheel Flange and are mounted in pairs on two  $4\frac{1}{2}$  in. Rods 51. These are journaled in the bosses of Double Arm Cranks bolted to the insides of Girder Frames 46, a Collar spacing each wheel from the adjacent Crank. A 2 in. Sprocket Wheel 52 is fixed on one of the Rods, as shown, then the finished truck is secured to Angle Girders 1 by four  $\frac{3}{4}$  in. Bolts 53 passed one through each Angle Girder 44. Compression Springs on the shanks of the Bolts separate Girders 44 and 1, further separation

being supplied by four pairs of curved  $2\frac{1}{2}$  in. Strips 54. As can be seen, one Strip in each pair is bolted to Girder 1 while the other is bolted to Girder 44. Additional suspension is obtained from another six Compression Springs each mounted on a 2 in. Rod 55 held in the boss of a Double Arm Crank (fixed to the inside of Girder 1) and passed through the lugs of Double Brackets 49 and 50. Collars are mounted on the ends of the Rods passing through Brackets 50.

## Motor and control mechanism

Bolted to the underside of Flat Plate 27 is a Power Drive Unit carrying a  $\frac{3}{4}$  in. Sprocket Wheel on its output shaft. This Sprocket is connected by Chain to Sprocket Wheel 52.

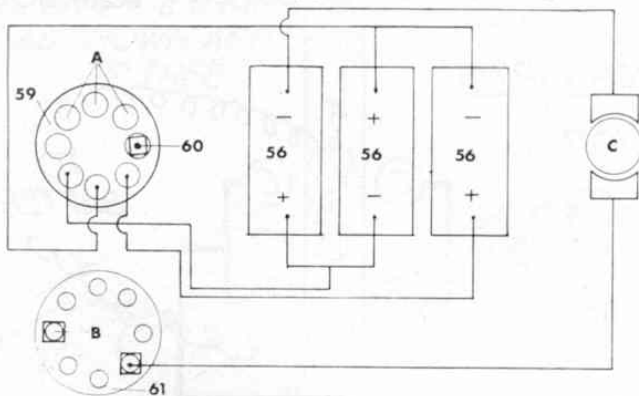
To make the tram self-supporting, a built-in power source for the P.D. Unit is provided by three Ever Ready 1839 or equivalent torch batteries 56, taped together and wired in series, i.e. the positive terminal of one battery is connected to the negative terminal of the next, and so on. It will be necessary to solder the connecting wires to the terminals.

A control lever is next built up from a Crank 57 mounted on a  $5\frac{1}{2}$  in. Rod, journaled free in the boss of a Double Arm Crank bolted to the top of Flat Plate 5, and held in place by a Collar beneath the Plate. Mounted on the Rod between the two Cranks is an arrangement consisting of a Cylinder 58 in each end of which a  $1\frac{1}{8}$  in. Flanged Wheel is wedged. Also mounted loose on the Rod is an 8-hole Insulating Bush Wheel 59 (Elektrikit Part No. 514), in seven holes of which Contact Studs are fixed. A  $\frac{3}{4}$  in. Bolt 60, carrying a Washer, is fixed in the eighth hole, its shank projecting through a hole in Plate 5.

Connecting with the Contact Studs in Insulating Bush Wheel 59 is a Contact Screw in an 8-hole Bush Wheel 61, fixed on the lower end of the Rod. One of the Power Drive Unit leads is connected to this Bush Wheel, while all the other connections are as shown in the accompanying diagram. The batteries, incidentally, are fixed to the underside of the appropriate platform with Cord, and a Threaded Pin is attached to Crank 57.

To complete the platform fittings, an imitation brake is built up from a Crank 62 on a  $4\frac{1}{2}$  in. Rod held by Collars in Flat Plate 5 and in an Angle Bracket bolted to Strip Plate 38. A similar imitation brake is built on to the other platform together with an imitation control lever. The latter is built up in the same way as the above working controller except that no Bush Wheels are added beneath the platform, their places being taken simply by a Collar.

Finally the trolley pole (non-working) is represented by an  $11\frac{1}{2}$  in. Rod 63 held by Collars in a  $1 \times \frac{1}{2}$  in. Double Bracket, the lugs of which are extended by  $1\frac{1}{2}$  in. Strips 64. The lower Collar is held on the Rod not by Grub Screws, but by Bolts passed through the lugs of the Double Bracket and into the tapped bores of the Collar. A Small Fork Piece carrying a  $\frac{1}{2}$  in.

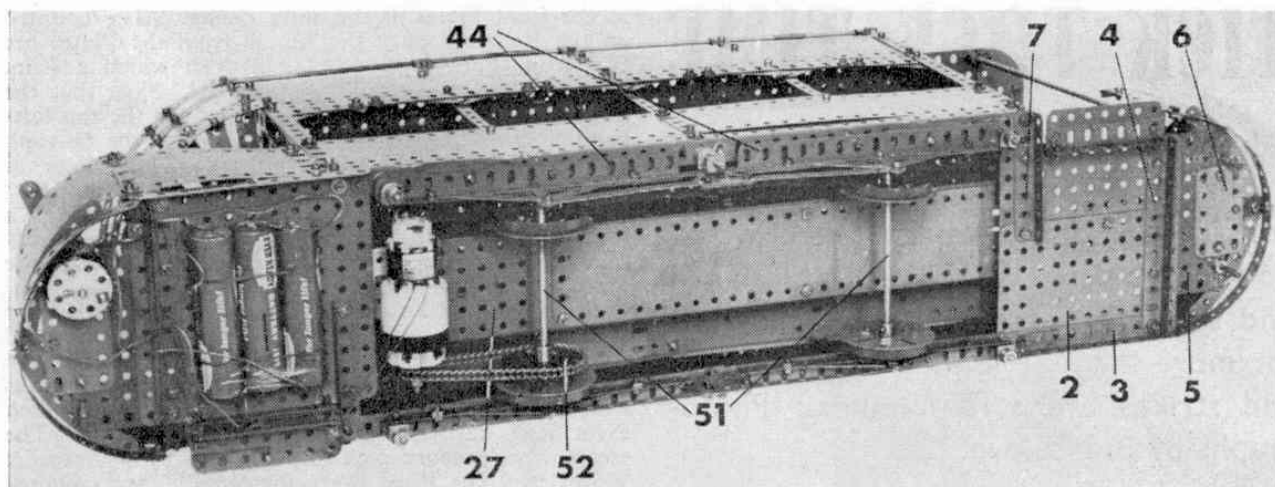


## Super Plastic Kits from Japan continued

are fully sprung, and the tracks are constructed from a number of small links. The basic kit costs 99/11d. and another kit is available including a control unit for 124/-.

The detail on the Chieftain 1/25th scale model tank by Tamiya is superb. Once again, construction is fairly straightforward, providing each step is carefully followed. All wheels are independently sprung and the

tracks, instead of being the usual strip of flexible plastic, are fabricated from a number of plastic "links", each fitted with a soft rubber pad for additional grip. The performance is impressive, the model rapidly climbs steep slopes and obstacles. Power for the model is once again provided by electric motors. Another kit including the remote control unit that comprises of an additional motor and control panel, will be available at the end of the year price 126/-. Price for the basic kit we constructed is 99/11d.



loose Pulley is mounted on the top of the Rod.

The pole base consists of three Sleeve Pieces 65 wedged over two  $\frac{1}{2}$  in. Pulleys with boss mounted on a  $\frac{5}{8}$  in. Rod, the Pulleys coinciding with the joints between the Sleeve Pieces. A  $\frac{3}{8}$  in. Flanged Wheel 66 is clamped over the top Sleeve Piece, followed by a Collar, then the whole thing is fixed in the centre of the top deck by another Collar mounted on the Rod beneath the deck. The Bolts fixing Strips 64 to the Double Bracket are screwed into the tapped bores of yet another Collar 67 which is fixed to the top of the  $\frac{5}{8}$  in. Rod.

Held by Nuts in the end holes of Strips 64 is a 1 in. Screwed Rod 68 on which a Tension Spring 69 is mounted. The other end of this Spring is bolted to lower Sleeve Piece 65 to complete the model.

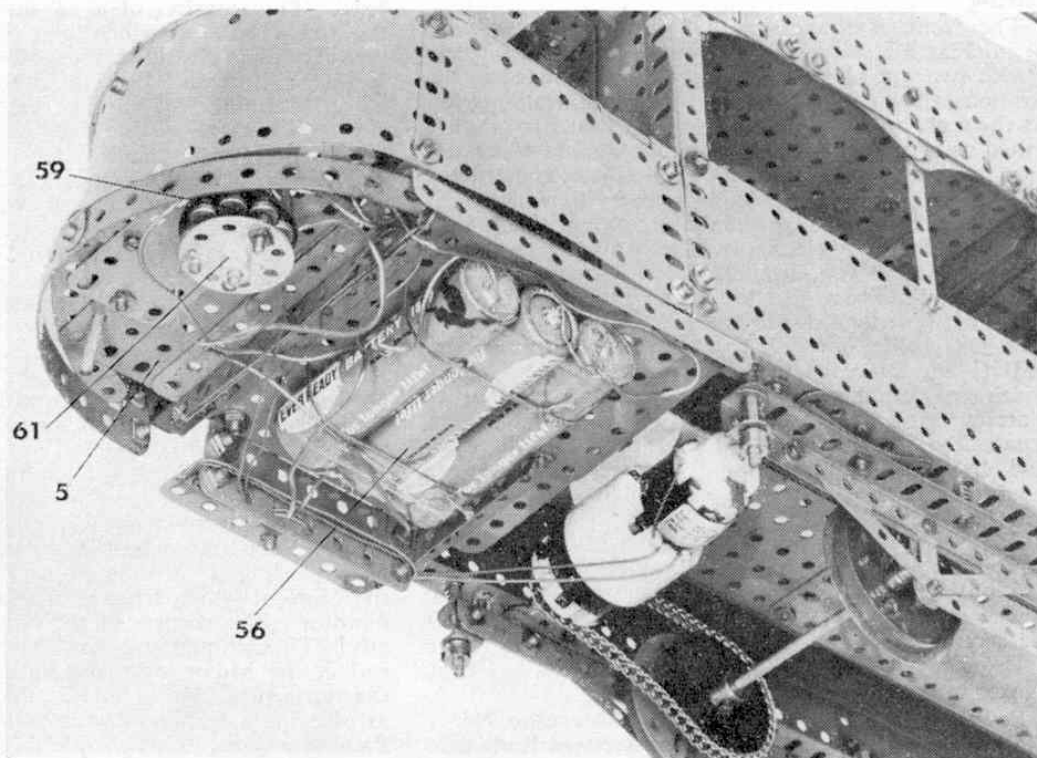
If required, a track can be built up from suitable Angle Girders, but the following parts list applies only to the model.

#### PARTS REQUIRED

6-1a	4-15a	2-74	2-179
4-1b	2-16a	4-89b	6-188
4-2a	6-17	16-90	18-189
24-3	4-20	1-94	4-191
8-5	1-20b	1-95	14-196
4-6	1-23	1-96a	1-197
20-6a	3-23a	6-103a	22-212a
8-7a	1-24	2-103d	4-213
4-8b	408-37a	2-103k	4-214
8-9	388-37e	4-109	2-216
10-9a	200-38	5-111	8-235
4-9b	1-43	1-111a	8-235a
6-11	27-48	4-111c	4-235d
1-11a	15-48a	4-113	12-235e
30-12	7-52a	4-115	
6-12b	4-53a	1-116a	1-514
6-12c	20-59	10-120b	7-544
6-13a	4-62	2-126a	1-543
2-14a	12-62b	4-137	4-561
7-15	3-70	3-163	
1 Power Drive Unit		3-3 V Batteries	

On opposite page, a wiring diagram showing the connections between the batteries, motor and controller Bush Wheels. A—Contact Studs; B—Contact Screws; C—Power Drive Unit.

Above, a complete underside view of the Tram showing construction of the driver's platform and drive from the motor to the truck.



At right, in this close-up view of the "business end" of the model, the layout of the batteries and controller Bush Wheels is clearly shown.