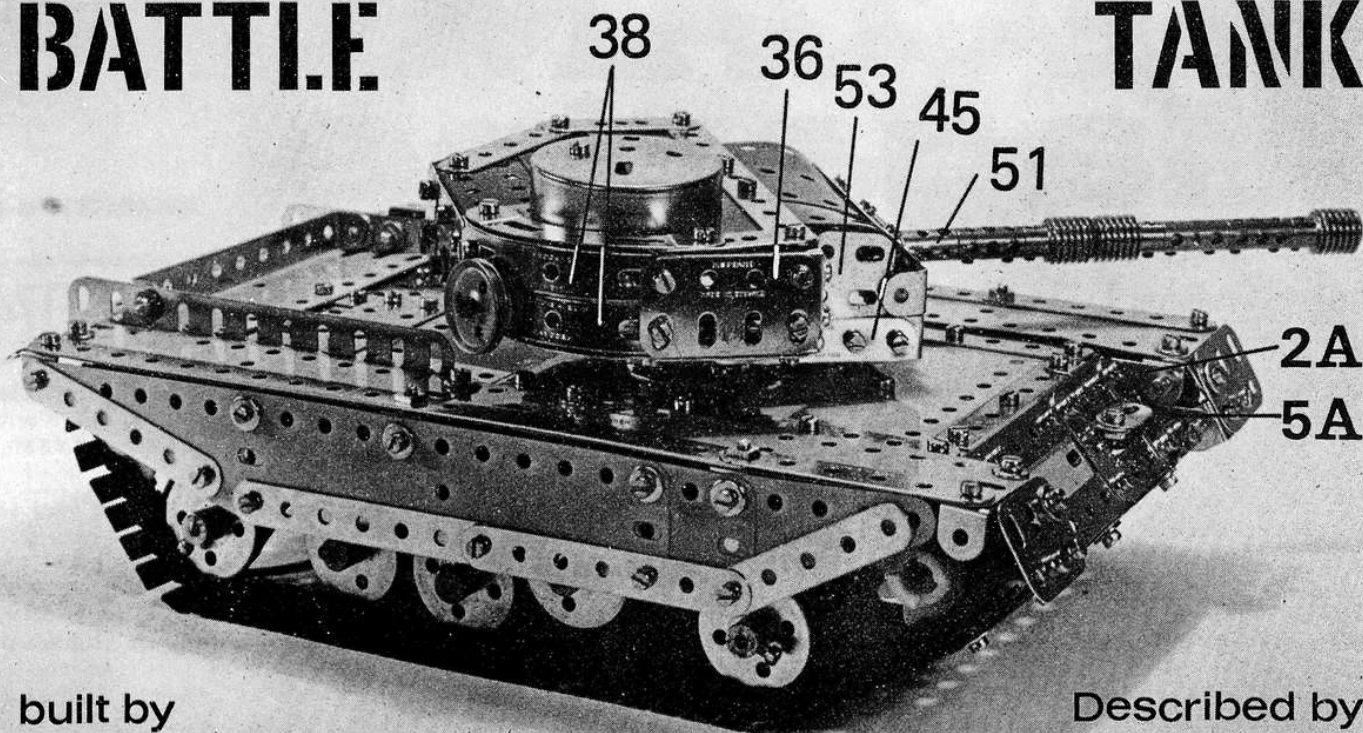


BATTLE

TANK



built by
ANTHONY WHITWORTH

Described by
"Spanner"

NOBODY IN his right mind looks on war with pleasure, but the fact is that the mechanical accoutrements of war - particularly fighting vehicles - are intriguing to very many people: the rugged shapes, the movements and the general air of strength are fascinating to behold!

I, as much as anybody, am captivated (from a purely mechanical point of view) by fighting vehicles and I am therefore particularly pleased to feature the Meccano Tank, illustrated here. Designed and built by Mr. Anthony Whitworth of Epsom, Surrey, it is based on the famous British Centurion and it certainly captures the atmosphere successfully. Fitted with working crawler tracks from the Meccano Caterpillar Track Pack, it is powered by a Motor-with-Gearbox which, if required, also rotates the turret automatically as the tank is driven along. Proportions, overall, are good, and especially so when considered in relationship to the tracks which appear well in scale.

BODY

As regards construction, each side of the main body frame consists of a 10½" compound flat girder 1, supplied by a 9½" and a 2½" Flat Girder. A 9½" Strip 2, extended two holes forward by a 1½" Strip 2A and further extended four holes rearwards by a 5½" Flat Girder 3, is butt-joined to the upper edge of the

compound girder by a 1½" Corner Bracket 4 at the forward end and a 1" x 1" Angle Bracket 5 six holes from the rear end of Flat Girder 3. Note that the Bolt fixing Corner Bracket 4 to Strip 2 also holds a 2½" Strip 5A and an Angle Bracket in place. Bolted to the spare lug of this Angle Bracket is a 4½" Angle Girder 6, which connects the two body side frames together, and a rearward-running 9½" Strip 7, positioned as shown. The rear ends of compound flat girders 1 at each side are connected together by a 2½" x 1½" Flanged Plate 8 extended by a 3" x 1½" Flat Plate, the latter attached to the compound girder - and to Flat Girder 3 - by Angle Brackets. The rear ends of compound girders 3 at each side are connected by a 4½" x ½" Double Angle Strip 9. A 4½" Angle Girder 10 is bolted between the spare lugs of 1" Angle Brackets 5, the securing Bolts also passing through the second holes from the rear ends of Strips 7 to hold the Strips in place.

Now bolted between Strips 7 in the positions shown are two 4½" x 2½" Flexible Plates 11, a 4½" Strip 12, this also attached to Strips 2 by Angle Brackets, and two 4½" compound strips 13, each built up from two 2½" Strips. Note that the forward edge of rear plate 11 is overlaid on top by a 4½" Strip 14 and note, also, the gap between Strip 12 and rear Plate 11. This gap is necessary to

accommodate the journals for the revolving gun turret.

Bolted centrally to Angle Girder 6, forward Plate 11 and Strip 12 is a 3½" Strip, the rear securing Bolt also fixing a ½" Reversed Angle Bracket 15 in place. A 5½" Strip 16 is centrally bolted to rear Plate 11, Strips 13 and Angle Girder 10, the forward securing Bolt in this case also fixing a ½" Reversed Angle Bracket 17 in place. A 1-1/8" Flanged Wheel is bolted to the spare lugs of the Reversed Angle Brackets, while a 4½" x 2½" Flexible Plate 18 is bolted to the protruding end of Strip 16, as shown.

Attached by Obtuse Angle Brackets to Angle Girder 6 at the front of the body is a 2½" x 1½" Flexible Plate 19 edged along the top by a 4½" Strip, along the sides by 1½" Strips and along the lower edge by a 4½" Angle Girder 20. The remaining ends of Girder 20 and the 4½" Strip are joined by another 1½" Strip, the resulting rectangular gap representing the driver's forward-view hatch. A hatch cover is represented by a fish-plate bolted to an Obtuse Angle Bracket which is in turn bolted to the 4½" Strip. Fixed to the lower flange of Angle Girder 20 are two 2½" x 1½" Flexible Plates 21, overlaid along the rear edges by 2½" Strips. The rear corners of the Plates are connected to the lower forward corners of compound flat girders 1 by

1" x 1/2" Angle Brackets. At the rear of the body a 4 1/2" Angle Girder 22 is attached to Double Angle Strip 9 by Fishplates.

Turning to the track guards, these are comparatively easily built up from a 12 1/2" x 1 1/2" compound flexible plate 23 - supplied by one 2 1/2" x 1 1/2" and two 5 1/2" x 1 1/2" Flexible Plates - overlaid on the outside edge by a 12" compound strip and bolted to four 1 1/2" x 1/2" Double Angle Strips fixed at intervals to Strips 2 and 2A and Flat Girder 3. At the front, Plate 23 is extended forwards and downwards by a 1 1/2" Flat Girder 24, attached by an Obtuse Angle Bracket, and, at the rear, it is extended backwards and downwards by a 1 1/2" Strip, also attached by an Obtuse Angle Bracket. Flat Girder 24 is also attached to strip 5A by a 1" x 1/2" Angle Bracket. The sides of the guard are built up from a 6 1/2" x 1 1/2" compound flexible plate 25, extended forward by a 2 1/2" x 1 1/2" Triangular Flexible Plate and extended rearwards by a 3 1/2" x 1 1/2" Triangular Flexible Plate. The first Plate is edged by a 6 1/2" compound strip, the second Plate by a 2 1/2" Strip and the third Plate by a 3" Strip. Note that the compound flexible plate is supplied by a 5 1/2" x 1 1/2" Flexible Plate and a 2 1/2" x 1 1/2" Flexible Plate, overlapped three holes, while the compound strip is supplied by two 3 1/2" Strips overlapped one hole. The finished assembly is bolted to the outer lugs of the 1 1/2" x 1/2" Double Angle Strips mentioned above.

GUN TURRET

Turning now to the gun turret, the forward flange of a 3 1/2" x 2 1/2"

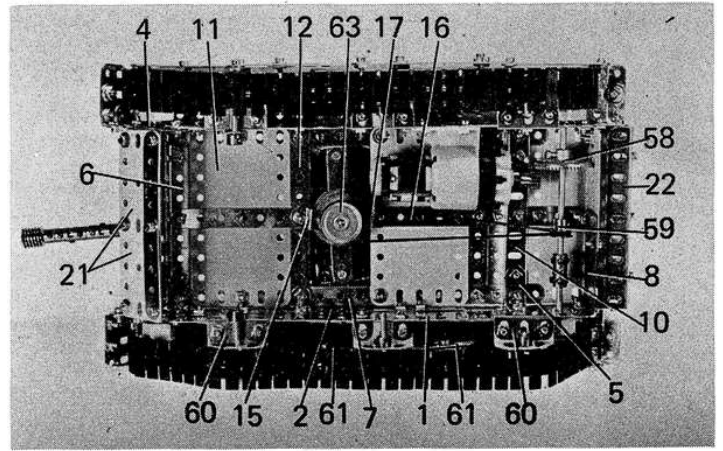
Opposite page: the superb Centurion Tank built by Mr. Anthony Whitworth of Epsom, Surrey. Right: an underside view of the model showing the motor and drive system. The turret revolves automatically as the Tank drives along.

Flanged Plate 26 is extended three holes outwards at each side by two 2 1/2" Strips 27. Attached to these Strips, and arranged to run parallel with them, is a 5 1/2" Strip 28, the connection being made by the long lugs of two 1" x 1/2" Angle Brackets bolted between the ends of the Strips. Bolted to the top-positioned short lug of each of these Angle Brackets is a 2" Angle Girder, the securing Bolt also holding in place a 5 1/2" x 1 1/2" Plastic Plate overlaid along its forward edge by a 5 1/2" Strip 29 and along the two side edges by 2" Strips. The Plate is extended rearwards by two 2 1/2" x 1 1/2" Plastic Plates 30, while the left-hand 2" Strip is extended rearwards by a 2 1/2" Strip 31, angled as shown, the right-hand 2" Strip being extended by a 3" Stepped Curved Strip 32. The rear ends of Strips 31 and 32 are bolted to the rear corners of Flanged Plate 26, the securing Bolt in the case of Curved Strip 32 also holding a 1" Corner Bracket 34 in place. A Boiler End 35 is bolted to the top of the

Flanged Plate to represent the turret cupola.

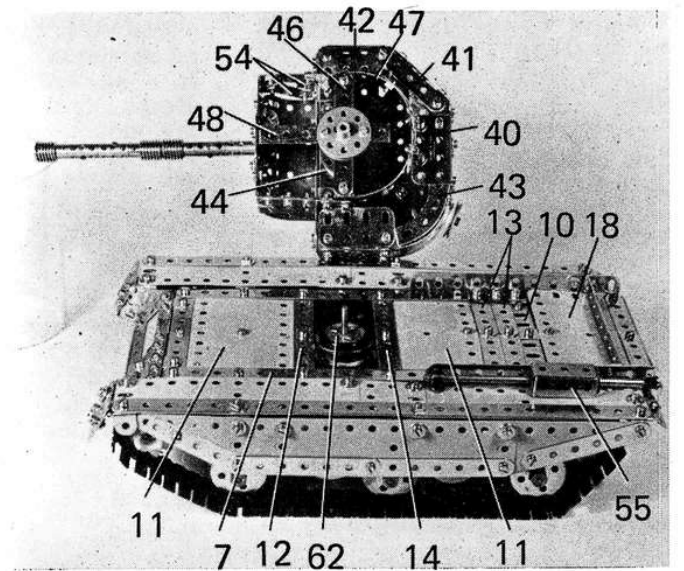
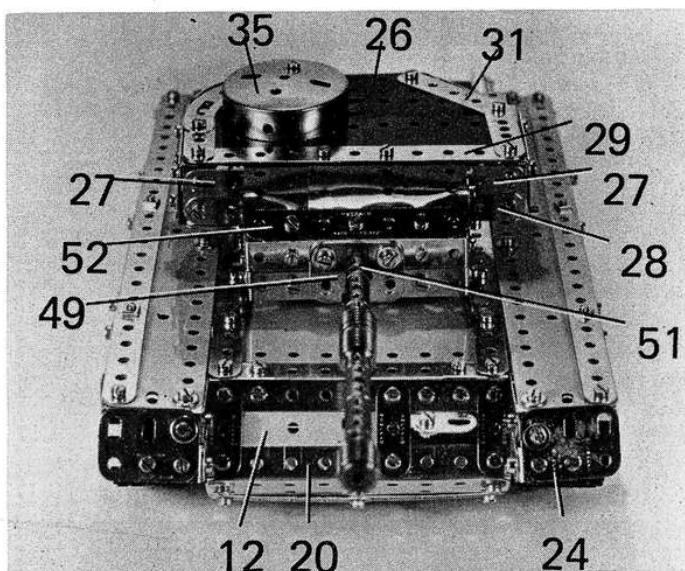
Now bolted to the vertical flange of each 2" Angle Girder is a 2" Flat Girder 36, while a 2 1/2" Flat Girder is bolted to the rear flange of Plate 26. The latter Girder is connected to left-hand Girder 26 by 2" Strips 37, attached by Obtuse Angle Brackets, and to right-hand Girder 36 by Fishplates and Formed Slotted Strips 38. A 1/2" Plastic Pulley, overlaid by a 1" Pulley without boss 39, is bolted to the lower Formed Slotted Strip in the position shown.

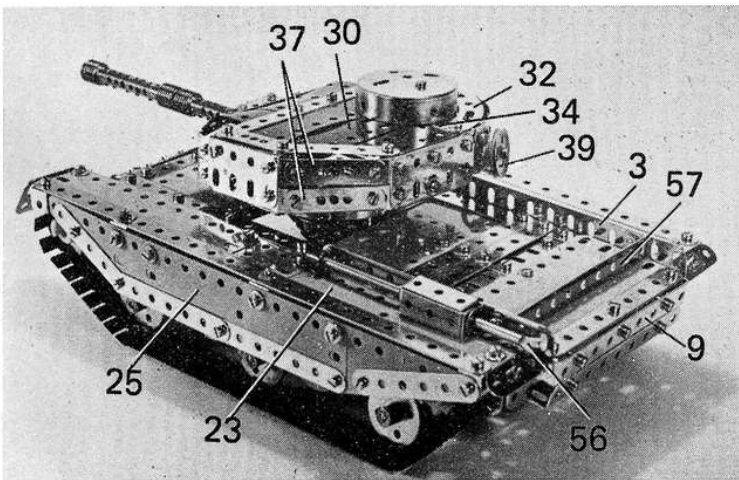
Bolted to the lower edge of the 2 1/2" Flat Girder, to project beneath the turret, is a Girder Bracket 40. Running from one side of this to follow the contours of the turret are, in order, a Fishplate, a 2 1/2" Strip 41 and a 2" Flat Girder 42, the latter also attached to Flat Girder 36 and to Strip 28 by Angle Brackets. Attached to opposite Girder 36 also by Angle Brackets is another 2" Flat Girder, this extended rearwards



Strength and power! A dramatic front view of the Tank.

The underside of the turret and top of the main body.





A general three-quarter rear view of the Centurion Tank built by Mr. Anthony Whitworth of Epsom, Surrey. A very realistic model powered by a motor-with-gearbox.

by a 2½" Stepped Curved Strip 43.

A 3½" Strip 44 is next attached to Strip 28 by Corner Angle Brackets, to the lower lugs of which two 2½" Strips 45 are bolted, the securing Bolts passing through the second holes of the Strips. The rear ends of the Strips at each side are connected by a 3½" Strip 46, attached by Angle Brackets, at the same time extending the Strips rearwards in a complete semi-circle using three Formed Slotted Strips 47. At their rearmost points, these latter Strips are attached to Flanged Girder 42 by two Angle Brackets. The forward ends of Strips 46 are connected by a 3½" x ½" Double Angle Strip, to the centre of which a 3½" x ½" Double Angle Strip 48 and a 1½" Flat Girder 49 are bolted. Double Angle Strip 48 crosses 3½" Strip 46, as can be seen. Two 8-hole Bush Wheels 50 are bolted to the Double Angle Strip so that their bosses coincide with the crossing point. The boss of the upper Bush Wheel points upwards, while that of the lower points downwards.

Bolted to the upper section of Flat Girder 49 is a 3½" x ½" Double Angle Strip, the securing Bolts also fixing two overlying 1½" Strips in place. Attached to the centre of these Strips is a Threaded Coupling 21, in the longitudinal bore of which a 5" Rod is held. Fixed on this Rod to represent the barrel are, in order, a Coupling, two Worms, face to face, two more Couplings and a final Worm. Attached by Obtuse Angle Brackets to the upper edge of the supporting Double Angle Strip is a 3½" Strip 52, three 2½" x 1½" Plastic Plates then being bolted between this Strip and the underside of the main turret top Plate to complete the turret top surface. The remaining gaps at the sides are enclosed by a 1½" Flat Girder 53 in the right-hand case and two 1½" Strips 54 at the left.

Before fitting the turret to the body a simulated exhaust pipe is built up from three 1½" x ½" Double Angle Strips 55, arranged to form a box, with the inside Strip being bolted to left-hand Flat Girder 3. Mounted in the lugs of the Double Angle Strips is a 4½" Rod, the forward end of which is held in a Collar secured to the left-hand track guard. The rear end of the Rod is extended by a Rod Connector, in which a Centre Fork 56 is carried to represent the exhaust nozzle. A 4½" x ½" Double Angle Strip 57, incidentally, is bolted between the third holes from the rear of Flat Girders 3 to complete the body.

DRIVE SYSTEM

The drive system should also be completed before fitting the turret. A Motor-with-Gearbox, pre-set in one of the higher reduction ratios, is secured to the left-hand body side-member, as shown. A ½" Pinion on the output shaft meshes with a 1½" Contrate Wheel 58 on the main drive axle - supplied by a 4½" and a 2" Rod joined by a Coupling and journalled in the second row circular holes of compound flat girders 1 - where it is held by Couplings on which Plastic Meccano 10-teeth Sprockets are mounted. If the turret is later required to revolve automatically as the tank drives, a ½" Pulley 59 is also fixed on the axle.

At the front of the body, a 6½" compound rod, built up from a 4" and a 2½" Rod joined by a Rod Connector, is journalled in the centre holes of Strips 5A and the slotted base holes of Corner Brackets 4. As with the drive axle, it is held in place by Couplings fitted with Plastic Meccano 10-teeth Sprockets. Note, that the Couplings on both axles are spaced from the body by Washers.

Five idler wheels for each track are supplied by 1-1/8" Flanged

Wheels, the outer two being mounted on short Rods journalled in Trunnions bolted to 1½" Angle Girders 60 which are in turn bolted to compound flat girder 1. The centre wheel is mounted, along with two 2½" Strips 61, on another short Rod also journalled in a Trunnion, this one being attached by Angle Brackets to the compound flat girder. The two final Wheels are mounted on Pivot Bolts journalled in the second holes from the ends of Strips 61. Each track, which is of course carried on the idler wheels and the Plastic Meccano Sprockets, is supplied by 65 Catterpillar Track Links. With the tracks in place, the clearance under the track guards is not excessive and a little readjusting may be necessary - perhaps reversing the directions of some securing Bolts to point outwards - to obtain the maximum possible clearance.

The turret may now be mounted on the body, where it revolves easily on a simple ball race. Four Meccano Steel Balls are carried in the Flanged Wheel bolted to Reversed Angle Brackets 15 and 17, being held inside by a 8-hole Wheel Disc which serves as a cover. A 1" Pulley without boss 62, fitted with a Rubber Ring, is positioned on top of the Wheel Disc, then a 2" Rod, held in the bosses of Bush Wheel 50 in the turret, is passed down through their centre holes and, free, through the boss of the Flanged Wheel, being held in place beneath by a 1" fixed Pulley 63. To add extra movement to the model, Mr. Whitworth connected this Pulley, with a 10" light Driving Band, to Pulley 59 on the drive axle. Thus, when the tank moves along, the turret revolves automatically - a novel feature for a generally very pleasing model.

PARTS REQUIRED			
6- 1a	1-16a	1- 53	1-133a
3- 2	1-16b	7- 59	4-147b
4- 2a	4-18a	8- 63	1-154a
6- 3	2-18b	1- 63c	1-154b
4- 4	11-20	1- 65	1-155
21- 5	1-22	8- 69b	1-161
4- 6	2-22a	1- 73	1-162a
5- 6a	1-23	1- 89a	4-168d
4- 9a	1-23a	2-103a	1-186b
2- 9e	1-24a	2-103c	5-188
4- 9f	1-26	3-103f	6-189
5-10	3-32	4-103g	3-191
18-12	220-37a	3-103h	4-194
2-12a	216-37b	1-111	1-194d
6-12b	40-38	1-111a	2-213
13-12c	11-48	4-111c	5-215
1-15	3-48b	2-125	2-221
2-15a	2-48c	6-126	2-224
1-15b	1-51	2-133	4-P84
1 Motor-with-Gearbox			130-P91