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MECCANO® Magazine

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QUARTERLY

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SIGHTS WORTH SEEING !

I was privileged during the latter part of August to attend both the Midlands M.G. Exhibition – part of the Town and Country Festival held over the August Bank Holiday weekend at the Royal Agricultural Showground near Stoneleigh, Warks – and, the following weekend, the giant Fourth Annual Meccano Exhibition at Henley-on-Thames, Oxfordshire. Both Exhibitions were outstanding displays of Meccano modelling at its best, from the small and simple to the huge and complex, although, as M.M.G. members would be first to agree, the former Show could not compare to the latter in size and volume. This is hardly surprising, of course; the Stoneleigh Show was primarily presented by the M.M.G., while the Henley Show was open to the whole Country – indeed, the whole world!

This year your Editor arrived at the Shows armed, not only with a camera, but also with a 'professional' flash unit borrowed from our freelance photographer. It must be stressed that only the flash unit was 'professional'; your Editor, with it, was a rank amateur! However, with considerable luck, we managed to produce a reasonable number of usable photographs (as well as a lot that were not) and we have drawn the best from these to present in our show reports inside this issue.

In previous show reports we have, in a sense, wasted space with a lot of written text. As somebody once said, however, a photograph is worth a thousand words, so, this year, having a good selection of photographs available, we are abandoning description and presenting the reports in 'Photo Feature' form, with captions. As mentioned, though, not every photograph I took came out and, in any case, it would be impossible to include everything displayed at the Exhibitions. If your own model is not featured, therefore, we hope you will understand the problem – and will believe its absence does *not* mean we didn't like it.

COMPETITION WINNERS

Every year the Sponsor of the Henley Exhibition, Mr. Geoff Wright of M.W. Models, organises an interesting and usually totally unique, model-building contest which is judged at the Show. This year the title of the contest was "A Pound for a Pound", and in it a Pound (£) note

Pictured outside our Liverpool headquarters, Mr. Geoff Wright (left) sponsor of the Henley Meccano Exhibition presents the prizes to the winners of the 'Pound for a Pound' Competition, Michael Drinkwater (centre) and Bert Halliday. Geoff has asked us to mention that the original idea for the competition came from Geoff Bennett of the Holy Trinity Meccano Club.

was the prize for the winning model weighing a pound (lb). There were two categories, junior and senior, and I am pleased to announce that the winners were: junior, Michael Drinkwater of Maidenhead, Berks, with an Australian Wool Press and, senior, Mr. Bert Haliday of London with a Self-winding Dragster.

Now, a Pound might not seem a particularly exciting prize – but what the entrants in the contest did not know is that the winners would be invited to our Binns Road headquarters at Meccano's expense to receive their prizes! This is indeed what happened and our picture shows Bert and Michael being presented with the 'lolly' by Mr. Wright, outside our main entrance. (They came inside, as well, of course, and spent the afternoon touring the factory.) We hope everybody had an interesting time.

Finally, on behalf of Meccano Ltd., I would like to extend our sincere thanks to organisers of and exhibitors at all Meccano displays wherever they have been held in the world. In pursuing your hobby you are promoting our product in perhaps the most effective way possible; we recognise this and are genuinely grateful. Keep up the good work!

The Editor

EDITORIAL DIRECTOR: J.D. McHard

EDITOR: C.J. Jelley

ASSISTANT EDITOR: M. K. Peddie

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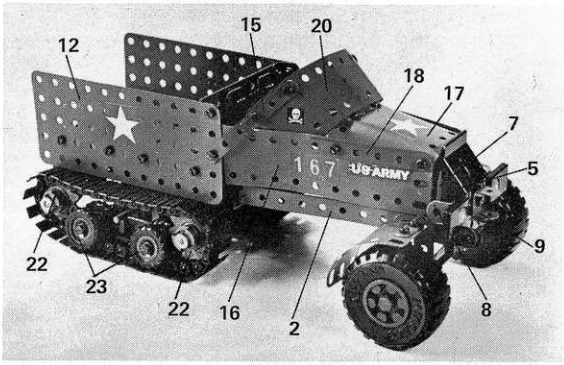


A self-contained set in its own right, the Combat Multikit is also designed as an ideal add-on outfit for the Army Multikit. Here we show you how to take the two sets and build a superb combination model.

HALF-TRACK & HOWITZER

Described by 'Spanner'

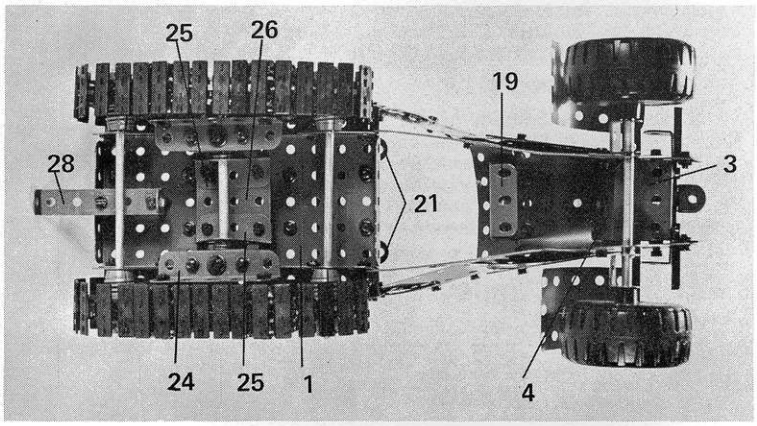
PROBABLY THE best-selling Meccano outfit in recent times has been the Army Multikit. Since its introduction in 1973, demand has consistently outstripped supply! At the beginning of this year, we introduced the Army set's younger brother, the Combat Multikit and, already, sales have more than met our expectations. Conclusion – military-orientated outfits have a wide appeal!

With the Combat set, of course, only comparatively simple (though very realistic) models can be built, whereas, with the Army set, considerably larger, more involved productions are possible. Besides being a self-contained outfit in its own right, however, the Combat set is specially designed as an add-on set for the Army Multikit and, with the two outfits combined, model-building scope is significantly increased – witness the Half-track and Howitzer featured here. Built with a mixture of the two outfits, this model – or two models – makes one of the most appealing combination pieces which I have seen for a long time. It was designed by the Meccano Model Development Manager at Binns Road and, in my opinion, it serves as a credit to his modelling ability. I am not the only person to be attracted by it, either; our Model Book people liked it so much that they included an illustration of it in the Combat Multikit Book of Models, as some readers might have noticed.

Beginning construction with the Half-track, the chassis consists of a 5½" x 2½" Flanged Plate 1, extended 12 holes forward by two 7½" Strips 2, one Strip bolted to each side flange of the Plate. These Strips are curved inwards slightly, as shown, and are attached at the front by Angle Brackets to a Channel Bearing 3, the flanges of which project rearwards. Bolted to the top flange of this Channel Bearing is a 2½" x 1½" Flexible Plate 4, overlaid along its forward edge by a Double Bent Strip 5, and also overlaid along the next row of holes by a 4½" Narrow Strip 6. The Plate is curved upwards as shown. Clamped to the centre section of the Double Bent Strip are a 1½" Flat Girder 7, behind the Double Bent Strip, and, in front of it, a 2½" x ½" Double Angle Strip 8 overlaid by the Multikit radiator grille which is, in turn, overlaid by a Double Bracket 9. It is important to stress that these components are not bolted directly to the Double Bent Strip, but are clamped to the raised centre section by a ¾" Bolt.

Leaving the front of the model for the time being, two 3½" x 2½" Flanged Plates 10, flanges upwards, are bolted to the top of Flanged Plate 1, the appropriate edges coinciding with the front and rear edges of Flanged Plate 1. The two small gaps remaining are enclosed by two 5½" Strips 11, bolted to the Flanged Plates as shown, then fixed to the flanges of Plate 10 at each side is a 5½" x 2½" Flat Plate 12, the securing Bolts passing through the second row of holes in the Flat Plate. The front upper corners of the Flat Plates at each side are connected by a 3½" Flat Girder 13 attached to the Plates by Angle Brackets, while another 3½"

Underside view of the Half-track showing chassis detail.



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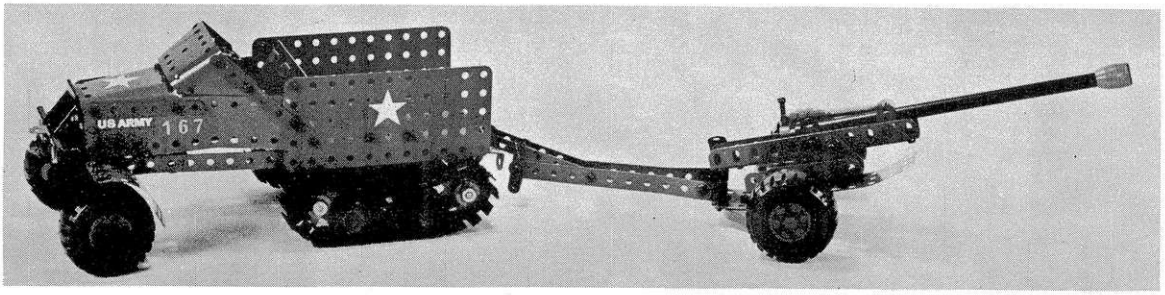


The completed Half-track and Howitzer which is built from a combination of the Army and Combat Multikit sets.

Flat Girder 14 is attached to Flat Girder 13 by Obtuse Angle Brackets.

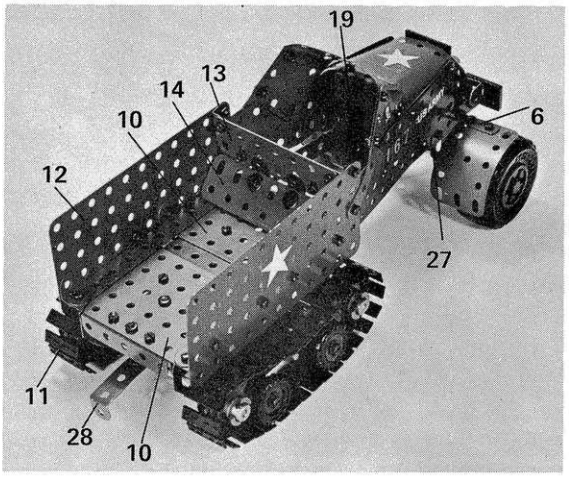
Flat Plates 12 are now each extended forward by a 3" Narrow Strip 15 and a 5½" x 1½" Flexible Plate 16, Plates 16 at each side being shaped to follow the contours of Strips 2 and being connected together by a 5½" x 2½" Flexible Plate 17, shaped to form the bonnet top. The upper edge of each Plate 16 at this point is overlaid by a 3" Narrow Strip 18. Fixed by one flange to the underside of the rear edge of Plate 17 is a 2½" x 1½" Flanged Plate 19.

It will be seen that Narrow Strips 15 are angled forwards and upwards and these provide the supports for the 'armoured' windscreen which is simply provided by a 5½" x 1½" Flexible Plate 20, curved to shape and bolted to the Narrow Strips. The Narrow Strips themselves are bent inwards slightly to follow the contour of the shield. The seat moulding 'sits' on two Angle Brackets 21 bolted to Flat Girder 13, the front of the moulding being wedged between the lower corners of Flexible Plate 20 which, if necessary, are bent inwards slightly to cause a tight fit.

Being a half-track, the model has ordinary wheels at the front and crawler tracks at the back. Each track assembly consists of two 10-teeth Sprocket Wheels 22 fixed by Collars on 5" Rods journalled in Flat Trunnions bolted to the side flanges of Flanged Plate 1. These, of course, serve as the main wheels carrying the crawler track (each track consisting of 32 Links), but it will be seen that an independently – floating set of idler wheels is also provided at each side. Each unit consists of two pairs each of two ½" Pulleys with Tyres 23, revolving freely on 1. 1/8" Bolts locked by nuts in the end holes of a 2½" Angle Girder 24. Note that, although the Pulleys revolve freely, they are spaced sufficiently apart on the Bolts to allow the chain section of the Track Links to fit between them. Bolted to the upper horizontal flange of the Angle Girder is a Trunnion, the lower centre hole in which provides the swivel point for the unit. A Collar is fixed to the top centre of the flange of the Trunnion by a standard Bolt which is fitted with a Washer, then passed through the centre hole in Angle Girder 24 and the centre hole of the Trunnion flange, after which it is fitted with another Washer and screwed into one tapped bore of the Collar. The central bore of the Collar must line up with the swivel-point hole in the Trunnion.

By means of the Collar, the unit is fixed on a 4½" Rod journalled in the apex holes of two more Trunnions 25 which are bolted to a 2½" x 1½" Flanged Plate 26, centrally fixed between the flanges of Flanged Plate 1. Note that the Collar in each case is spaced from nearby Trunnion 25 by five Washers.

The front wheels are straight-forward Multikit Road Wheels mounted on a 4" Rod journalled in the apex holes of two Flat Trunnions 27 bolted to Strips 2. However, each wheel is spaced from the Trunnion by a Double Bracket which is loose on the Rod. Mudguards are simply provided by two 2½" x 1½" Flexible Plates, curved to shape and bolted to Narrow Strip 6. Finally, a towing bracket for the Howitzer is provided by a 2½" x ½" Double Angle Strip 28 which is slung rigidly beneath Flanged Plate 1 by Nuts on 1-1/8" Bolts held by locknuts in the Flanged Plate.



In this view of the Half-track the solid construction of the rear load body is clearly shown. The Flat and Flanged Plates in the Army Multikit are used to very good effect in the production of this part of the model.

PARTS REQUIRED
(Multikit Numbering)

2- 15	3-404	4-414	14-434
2- 15a	2-405	4-415	1-437
6- 59	2-406	1-417	6-441
4-p85	2-407	1-419	1-442
32-p91	1-408	2-425	1-444
2-319	2-409	1-426	4-446
1-321	2-410	85-427	1-448
2-401	3-411	70-428	8-449
2-402	3-412	1-430	8-452
2-403	2-413	6-431	

HOWITZER

We come now to the Howitzer which, although comparatively un-

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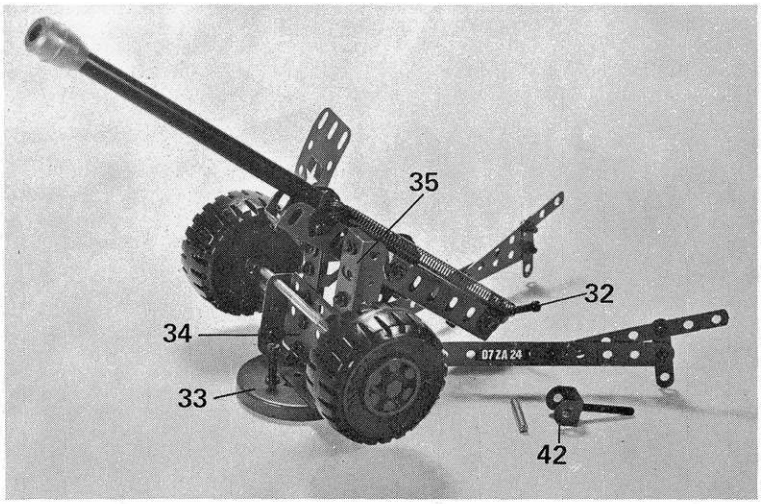


The Howitzer hinged up on to its firing base, ready for action. To the best of our knowledge, this hinging movement is unique as far as Meccano models are concerned.

←

complicated, nonetheless incorporates a firing gun and a very interesting fire-base feature. The gun consists of a 5½" U-section girder 29 (provided by two 5½" Angle Girders) to the centre underside of which a Double Bent Strip 30 is fixed using a standard Bolt through the forward lug, but a ½" Bolt, shank upwards, through the rear lug. A Multikit Gun Barrel, complete with Muzzle Brake, is secured in the U-section girder by four Obtuse Angle Brackets 31 bolted to each flange of the girder, the rear end of the Barrel making contact with the protruding shank of the ½" Bolt. Note, of course, that the Gun Barrel is wedged in place, being held between the Obtuse Angle Brackets and the Bolts which fix the Brackets to the girder. The firing pin locating in the centre bore of the Gun Barrel is a 4½" Rod, on the end of which a Collar is held by a ¾" Bolt 32. One end of a Tension Spring is located on this Bolt, the other end of the Spring being located on a standard Bolt fixed in the spare lug of an Obtuse Angle Bracket bolted to the left-hand flange of the U-section girder. Another Obtuse Angle Bracket, bolted through the rear hole in the left-hand flange of the girder, serves as the catch for holding the firing mechanism in the 'cocked' position.

The gun carriage and mounting is built up from a Wheel Flange 33, across the centre of which a 2½" x ½" Double Angle Strip is bolted. Lock-nutted to the lugs of this Double Angle Strip is a 1½" x ½" Flanged Plate 34, to which two 2½" Angle Girders 35 and a 2½" x ½" Double Angle Strip 36 are bolted, as shown. Bolted, in turn, to the Girders are two Trunnions 37, through the apex holes of which the gun is pivotally mounted by a 1.1/8" Bolt passed through the fifth holes from the front in the flanges of U-section girder 29. Fixed, as shown, to right-hand Angle Girder 35 is a 2½" x 1½" Flexible Plate 38 which is curved gently to shape to serve as the gun shield. Journalled in the upper end holes in the flanges of Plate 34 is a 5" compound rod, built up from two 2½" Rods joined by a Rod Connector, on which Multikit Road Wheels are mounted. Excessive sideways movement of the Rod is prevented by two Angle Brackets bolted one to each flange of Girder 34.

Two trail arms are each built up from a 5½" Strip 39, extended rearwards and upwards by a 3½" Narrow Strip 40 which is itself connected through its third hole to the end hole of Strip 39 by a vertical 1½" Narrow Strip, as shown. Strips 39 are angled outwards and are attached to a 1½" Flat Girder 41 by right-angled Rod and Strip Connectors. The Flat Girder is bolted to Wheel Flange 33 to complete the gun.

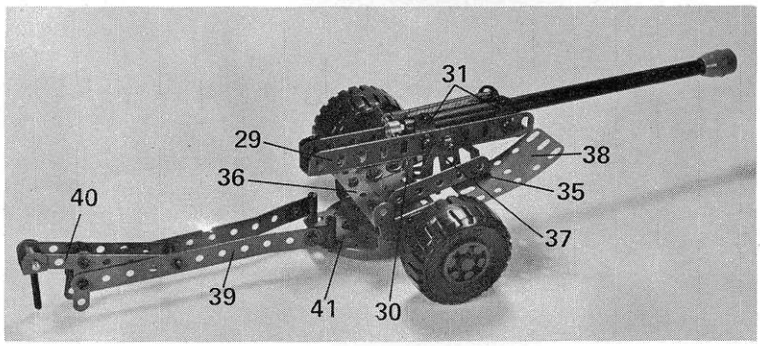
UNIQUE MOVEMENT

The unique aspect of this model is the way the gun-support hinges on the Double Angle Strip bolted to Wheel Flange 33. For travelling, the mounting is hinged downwards to bring the wheels into contact with the ground, but for firing, the mounting is hinged upwards to lift the wheels clear of the ground and thus leave the gun on the steady fire-base provided by the Wheel Flange. When the gun is being towed by the half-track, incidentally, a special connecting bracket is required, this being provided by a Double Bracket 42 to which a 1-1/8" Bolt is fixed. The gun trail arms are brought together and located inside the lugs of the Double Bracket, after which a 1" Rod is passed through the lugs and the end holes of Narrow Strips 40. The 1.1/8" Bolt then simply locates in the end hole of Double Angle Strip 28 projecting from the rear of the half-track.

PARTS REQUIRED
(Multikit Numbering)

1- 15a	1-404	1-424	13-434
2- 16a	6-404	2-425	1-437
1- 18b	2-406	48-427	2-440
1- 43	1-407	35-428	2-441
1- 59	1-411	41-430	1-442
1-213	2-414	1-431	2-445
2-402	1-416	2-432	2-447
2-403	1-418	1-443	

In this view, the Howitzer is hinged down into the travelling position, with the wheels in contact with the ground and the towing linkage in place.



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COLLECTORS' CORNER

B. N. Love investigates a

Strange Alliance

IN THE same manner that generations of boys in this country have been familiar with the name MECCANO, their contemporaries on the other side of the Atlantic have known ERECTOR, the American bolt-together constructional system which, like Meccano, has been in existence for many years.

Generally speaking, the differences in the two constructional systems can be spotted a mile away, but there was a time when the two manufacturers got together when the then existing U.S.A. Meccano Company was sold to A.C. Gilbert Co. of Connecticut in 1928. As a result of this, the Gilbert Company continued to market some Meccano parts for a while, although they reverted to their own product after a very brief period. However, some of the influence of Meccano design did linger and Fig. 1 shows a striking example of an Erector part which is so like its Meccano partner as to require close inspection to find any differences.

Those readers who have handled the genuine Meccano Digger Bucket will recognise the real McCoy as being the one on the left in Figs. 1 & 1a, largely because it is put together with Nuts & Bolts. There are other differences however and the illustrations show one of them straight away. The Erector "Digger Scoop", known as Part 'X', is put together with rivets. As such, it is an improvement in terms of giving a clean 'bite' into the work site and the rear door hinges very smoothly. Fig. 1a also shows a difference in the sliding catch at the rear. However, the most striking difference is in the gauge of steel used for the Erector part which is twice as thick as the Meccano Digger Bucket: 1.05mm as compared with 0.525mm. This is immediately evident when the buckets are weighed against one another in either hand. A minor difference is that of the number of holes available for attachment, only three in the Erector Bucket against nine in the Meccano part, but this latter is a 1932 specimen and it is known that earlier Meccano patterns of Digger Buckets had no side perforations. With regard to dimensions, the Erector

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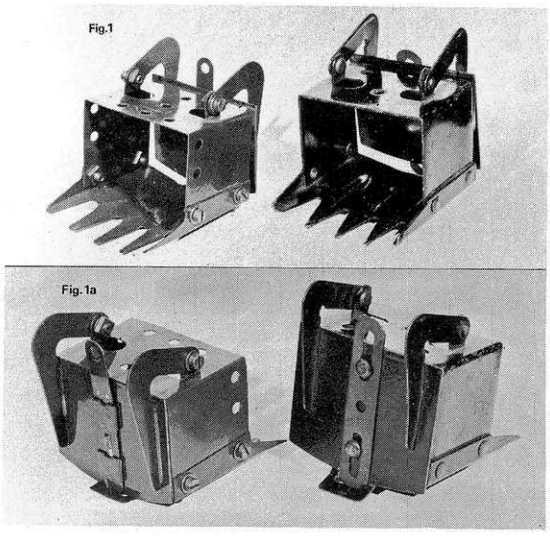


Figs. 1 and 1a, above, show early samples of Meccano and Erector parts viewed from front and rear. Left is the Meccano Digger Bucket and right is the Erector "Digger Scoop". Note differences in bucket release catch and heavier gauge metal and all-rivet construction of Erector part. Fig. 2, below, a pair of Erector wheel flanges ("Turret Plates") bearing a strong resemblance to the Meccano 3" Pulley of the period.

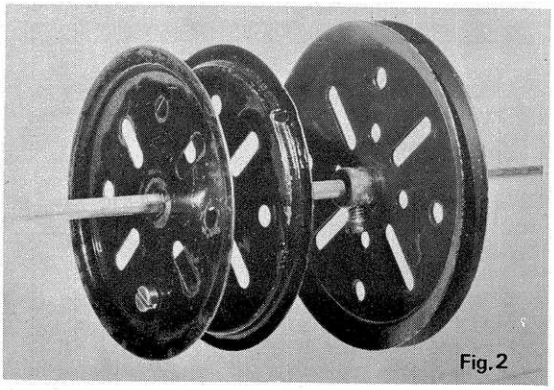
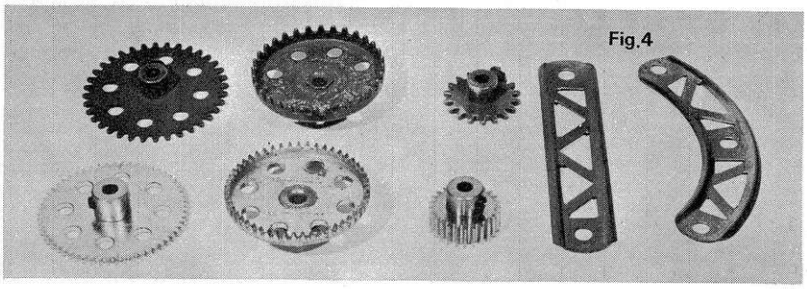
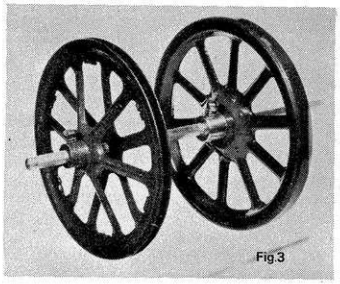


Fig. 3, below right, the early erector spoked and grooved "Large Red Wheel" (left) compared with the Meccano Spoked Wheel (right). Rig. 4, below left, Erector gears and Meccano equivalents. Note coarser tooth form and pitch on Erector parts. The 3" curved and straight "strips" on the right are actually Erector "Girders".





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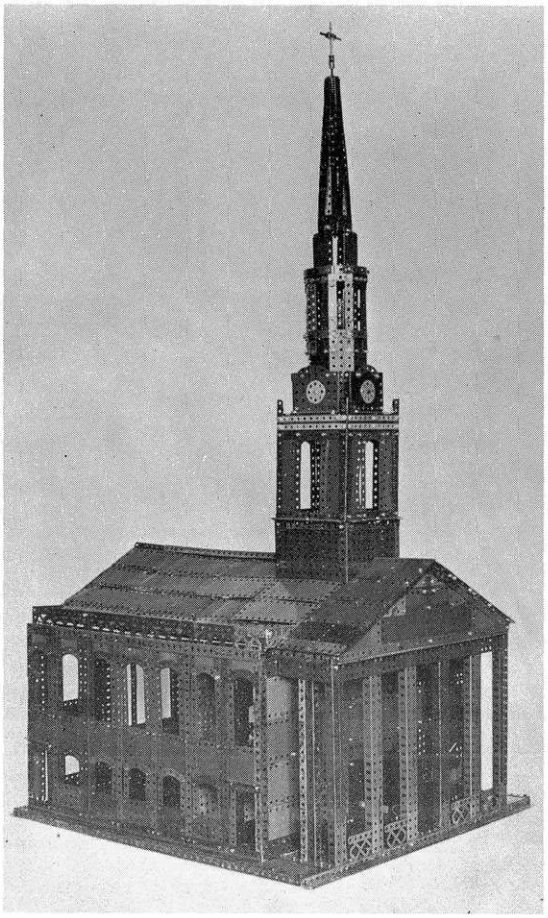
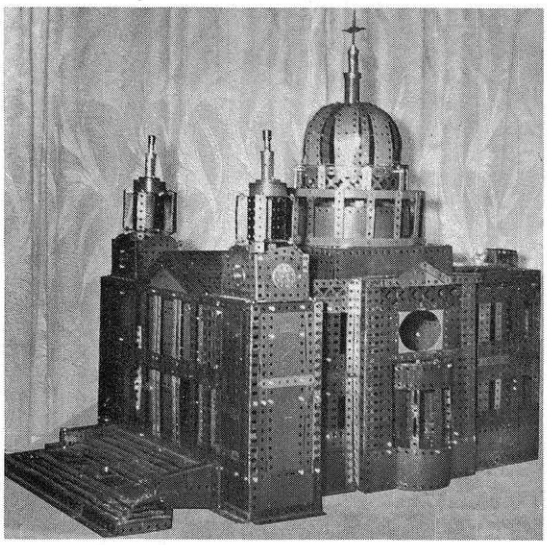


Two fine architectural models built by the author. Above, St. Martin's-in-the-Field church, Trafalgar Square, London and, below, St. Paul's Cathedral.



AMONG THE MODEL BUILDINGS

(with apologies to 'Spanner')

R.S. DRAPER offers hints on architectural modelling.

I HAD my first Meccano set well over forty-five years ago and I have during this time progressed from small models to those of such proportions that they have nearly caused domestic strife! During this time the thing that has surprised me most has been the absence of publicity where architectural models are concerned. I suppose most Meccano enthusiasts prefer working models, but there is a very wide field where buildings, monuments, bridges, etc, are concerned.

Those readers who can turn back to old Meccano literature will remember such models as the Whitehall Cenotaph (M.M. 1934) Antwerp Cathedral (Meccano Book of Prize Models 1932) Stoneyhurst College (Book of New Models 1930) and, much more recently, the Post Office Tower (M.M. March 1969) and Blackpool Tower (M.M. Oct. 1970). I have had a lot of enjoyment in building churches of all descriptions. They have included St. Paul's and Gloucester Cathedral and small country churches. The squareness and flatness of some of our modern sky-scrapers lend themselves admirably to modelling, especially if a working lift is installed in them. If a constructor works to a scale in keeping with Dinky Toys, the effect becomes pleasing when they are placed together.

Architectural modelling in Meccano does not necessarily involve a lot of parts. Small models can be made of such structures as the Eiffel Tower if Narrow Strips are used and these can be just as effective as large models. All this calls for ingenuity on the part of the modeller.

Many of the wide range of Meccano parts lend themselves realistically to buildings, bridges, houses, churches, etc. of all kinds. Let us consider some of these. Angle Girders will, of course, form the framework of the majority of structures. If the front and sides of the building in question are recessed as in Fig. 1., a more satisfying and formidable effect is given. Mention has already been made of Narrow Strips for small models. They can be used on large models to good effect where the gap between successive Strips is made to look like a row of long or short windows. Again, they can be bolted in lengths and used as chains on a model suspension bridge and they look far better than the standard-size Strips.

Curved Strips can be used to make a projecting bay (Fig. 2) or as an ornamental Balustrade (Fig. 3). These,

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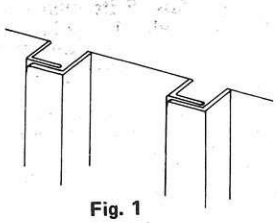
Fig. 1

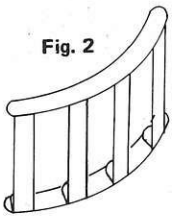
Fig. 2

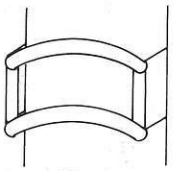
Fig. 3

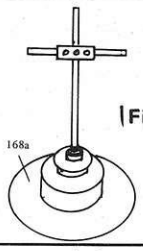

Fig. 4

used together with Corner Gussets (Part 108) and Flanged Brackets (Parts 139 & 139a), can add a very decorative effect. Even the little Washer, neatly glued over an appropriate Strip or Angle Girder, can be made to look like a small window, or a port hole in the case of a ship. Windmill Sails, especially the old open type, can be made to represent lattice work or even windows. If the old type are available and are used with Transparent Plates behind them, the effect is pleasing. Braced Girders can be used in the same connection. To give an example, if a modeller was constructing a model of the London Monument the cage at the top could be fenced in with Braced Girders.

Flat Girders not only *give* strength to a model, but they make it look strong when they are used to reinforce the skeleton Angle Girders. Flexible Plates of all sizes adquately solve the 'filling in' problem, especially where floors of buildings, decks of bridges, etc, are concerned. Triangular Plates, both flexible and rigid, fill in awkward corners and also add the final touches to model castles and more ornate buildings.

The Meccano Hinge certainly comes into good effect when modelling buildings. Instead of leaving a gap to represent an opening in a wall, an actual door can be fixed which will open and shut. Double Bent Strips (Part 45) can be used to add final touches of decoration. An example of this can be seen on the old Super Model Transporter Bridge where the tops of the supporting towers are finished off with these Strips.

Circular models, such as round towers, are difficult to construct, but judicious use of Hub Discs, Circular Plates and Strips can be made, and quite good results will ensue. Even some of the wheels in the Meccano system can be used to decorative effect. Fig. 4 shows how this can be done where the top of a church tower is finished off with a cross. The use of the Ball Thrust Race Flanged Disc (Part 168a) should be noted.

Handrail Supports and Couplings used with care will add to the realism of a model especially to a building with a flat roof. Even the little Centre Fork (Part 65) can make its contribution to a model especially where it is held in a small Coupling and points upwards to the sky.

In conclusion, in between your mechanical models with the whiz of the electric motor and its electronic units, why not have a go at an architectural model? You'll find it fun!

COLLECTORS' CORNER

Scoop is just slightly bigger than its partner, the Meccano Bucket's external dimensions being approximately those of the Erector part's internal dimensions.

Fig. 2 shows a further close comparison of contemporary parts. Readers will recognise the Meccano 3" Pulley Wheel on the right. The split pair of Erector wheel flanges alongside bear a striking resemblance and, for photographic purpose in the illustration, they are held apart by a Meccano Insulated Spacer. Closer inspection will show that the slots in the Erector parts (these are known as Part BN, Regular Turret Plate) are shorter and that the hole centres are now a ½" Meccano standard, not even ¾" – they are, in fact, at 2cm centres. An immediate advantage of such a design is the ease with which motor tyres can be fitted to the split flanges. This Erector part is 68 mm in dia. compared with 76mm for the Meccano 3" Pulley.

Erector did not list an Artillery Wheel, as such, but they had P17, "Red Wheel-Large" which had basic similarities to the Meccano Spoked Wheel shown alongside it in Fig. 3. Again the Meccano Wheel was 3" overall diameter, 76mm, while the Erector wheel is 72mm. It also has 12 spokes instead of ten, but they are really 'half spokes' being staggered and clipped at the inside edges of the wheel rims. What is in favour of the Erector part is its grooved edge which supplies a spoked pulley wheel to give added realism to pithead winding gear, popular as models of the day.

The Gilbert Co. made no attempt to copy the finer gears already made by Meccano Ltd. and they stuck to their coarse-tooth gears which also served as chain

Continued from Page 97

wheels for sprocket drive. A few samples of these are shown in Fig. 4 alongside Meccano parts of similar diameters, but of totally different tooth form and pitch. The thin Erector gears were in steel, brass plated, and their smaller gears were in brass. They make a tight fit on Meccano Axle Rods.

Readers who have a copy of the author's book, "Model Building in Meccano and Allied Constructional Sets" will have seen illustrations of some post-second world war Erector parts. These bear little or no resemlance to the period being discussed in this article, but two of the pre-war Erector basic construction parts are shown alongside the gears in Fig. 4. They are actually listed as Girders and not as strips as one might expect. Because of the ridges on the edges, these components could be made up into box girders of considerable strength, but the wide spacing of holes was a distinct disadvantage in terms of journalling and points of attachment. Both of the short Erector Girders illustrated are quoted as 2½", but this is the centre spacing of the end holes and not the overall length which is 3" in both cases. I well remember the frustration of these dimensions as a boy when an Erector 2½" (so called) strip would not match up with a Meccano 2½" Strip.

Although it was possible to buy paper flags bearing the name Erector in the old days, the Gilbert firm seemed reluctant to append its name to individual parts and none of those in the author's collection have any hint of "ERECTOR" stamped upon them. It is generally recognised by experienced constructors, incidentally that the Erector system is not directly compatible with the superior Meccano system.

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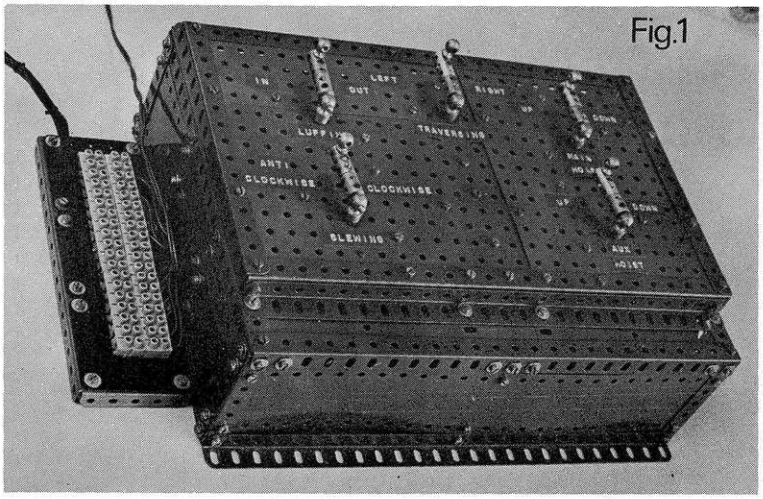

Fig.1

REMOTE CONTROL CONSOLE

* * *

A useful piece of electrical equipment – and the ultimate in reader participation!

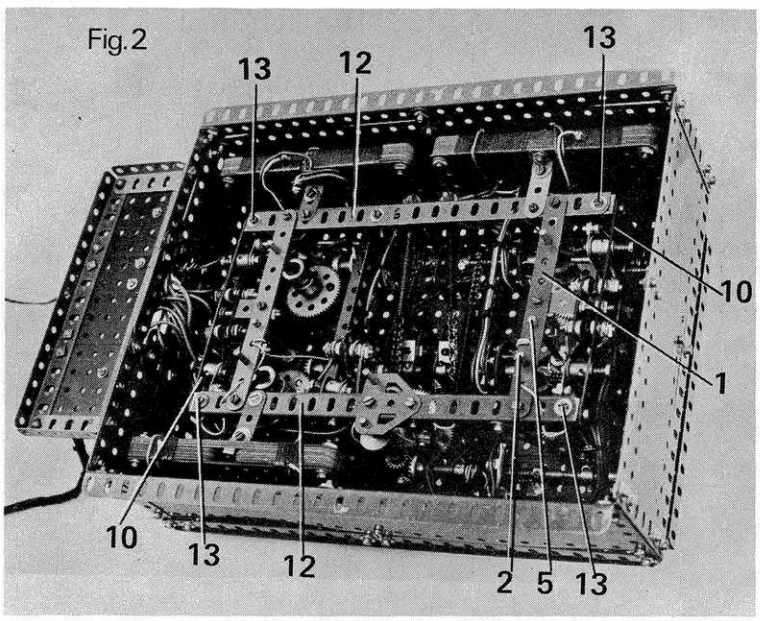

Fig.2

EVER SINCE its launch in 1973, we have made the point that the MMQ is the Meccano Modeller's *own* Magazine; *your* subscriptions pay for its production and *you* provide a lot of the featured material. Now, in this article, we take the participation theme one stage further:

As regular readers know, it is not unusual for us to print the illustrations for a model in the Magazine, but to make the written building instructions for that model available separately. We continue here along similar lines by printing the illustrations for a Remote Control Console designed and built by Mr. Colin Cohen of Cape Town, South Africa – but, instead of asking you to write to Binns Road for the necessary building instructions, we are asking you to write direct to Mr. Cohen in Cape Town. How's that for reader participation and co-operation within the international Meccano fraternity?!

In featuring the Remote Control Console, it is important to stress that the unit is not so much a Meccano model as a piece of Meccano-built electrical equipment. As such, it is perhaps more suitable as a constructional project for advanced modellers, with some knowledge of electrics, than for the electrically inexperienced. It is, however, "safe" in that it is not *(under any circumstances)* connected to the Mains, but operates from a low voltage power source such as a transformer/rectifier, a transformer alone, or batteries, depending upon individual requirements. As to a more detailed description of the Console – what it is and what it does – this is best provided by Mr. Cohen, himself:

"The unit," writes Mr. Cohen, "which may be described more as a piece of electro/mechanical equipment than a Meccano model, is made from standard parts except for the resistance wire. It provides a very convenient, simple and reliable method for operating multi-motored Cranes and similar models, and a single module may be used to propel vehicles. It is suited to both D.C. and A.C. commutator-type motors and is superior to most other controllers designed in Meccano in that each operation – on/off, reversing and speed control – is performed entirely with one lever.

"With overall dimensions of 12½" by 9½" by 4" high, the Console contains five modules as it was designed for a five-movement Crane, but the number of modules is quite immaterial. Rotating the handles either clockwise or anti-clockwise operates an "on" and "off" and reversing switch and, at the same

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time, it also controls the speed in both directions. There are five resistance steps. Movement to the first step in either direction, against light spring resistance, allows for "inching", and further movement against heavier spring resistance increases the speed of the motor. The handle returns automatically to the 'off' position when released.

"All five modules operate in exactly the same manner and are entirely independent of each other. Thus only one is described in the separately-available building instructions. A section of the instructions is devoted to adjustments to the unit which are tricky and critical, but time and patience spent on this will reward the constructor with a degree of reliability that will make operating a pleasure for him. So far, the Console has directed my Crane through several exhibitions, two of a week's duration each, and has also been operated by non-meccanomen, including children"

The building instructions to which Mr. Cohen refers are lengthy and, unfortunately, we do not have sufficient space at our disposal to include them here. However, Mr. Cohen has kindly offered to make copies of his own instructions available upon request, therefore interested readers wishing to obtain a copy should contact Mr. Colin Cohen at 3 Bellair Road, Vredehoek, Cape Town 8001, South Africa, enclosing the equivalent of R2.50 for surface mail postage or R4.00 for air mail postage. (Please note that these figures are quoted in Rands – not Pounds!)

In passing on this offer we ask readers to remember that Mr. Cohen is an 'ordinary' (no offence!) enthusiast who does not have our facilities at his disposal. We therefore request that only readers who are genuinely interested in building the Console apply for the instructions – otherwise. Mr. Cohen will soon regret his generosity!

Although Mr. Cohen did not specifically request it, incidentally, we suggest from our own experience that conversion of the necessary remittance to South African currency should be arranged by the person applying for the instructions, before sending away for them. Most banks level pretty hefty charges for processing cheques payable in a currency different to that applicable in the Country in which the cheque is being cashed, and it would be unfair to expect Mr. Cohen to stand these charges. (We find International Money Orders ideal for making payment).

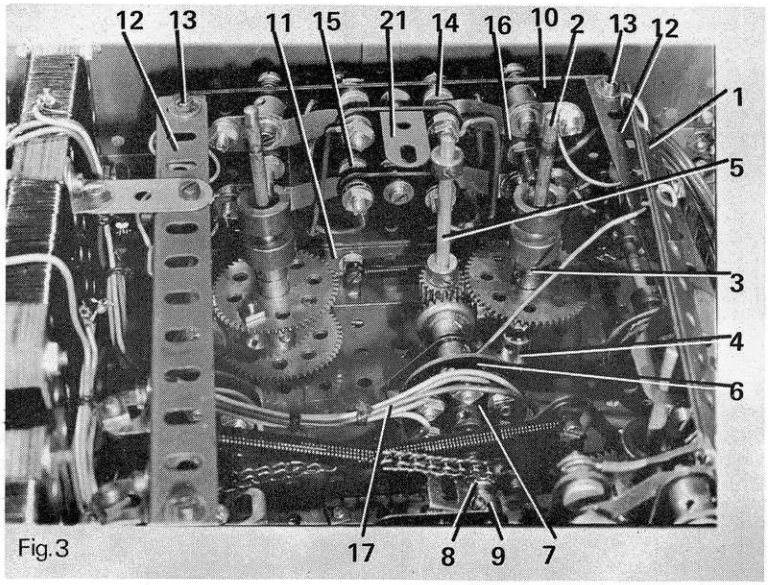


Fig.3

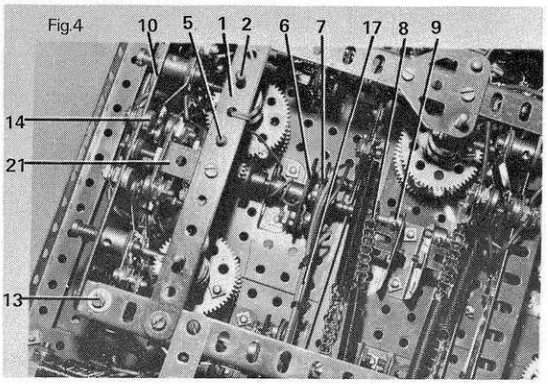
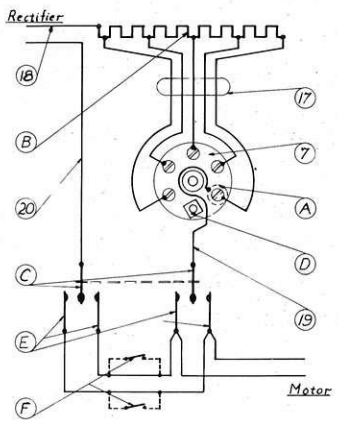


Fig. 3, above, shows the on/off and reversing contacts of the Remote Control Console, as well as the gearing for two of the controls. Fig. 4, right, shows another view of the switches, including the resistance tapping selector shaft. General views of the Console, from above and below, appear on the opposite page.

Fig. 5



In fig. 5, left, A = Contact Stud on Bush Wheel G; B = Resistance; C = Moving Contacts; D = Threaded Pin; E = Fixed Contacts; F = Limit Switches.

In Fig. 6, below, the gears are shown in the "OFF" position. One gear is shown with solid lines, the other with broken lines.

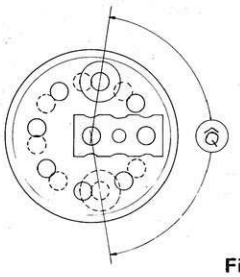


Fig. 6

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AMONG THE MODEL-BUILDERS

with "Spanner"

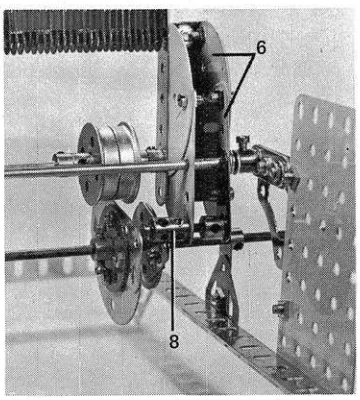
A section for readers from readers

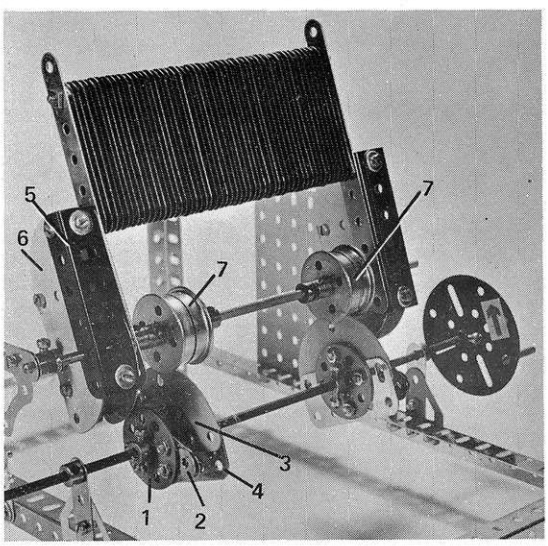
ONE THING working on Meccano Magazine has taught me: it never does to assume that a particular model or mechanism design has reached its ultimate development. No matter how apparently well-established is a particular design, the chances are that someone, somewhere, at sometime will come up with an ingenius method of improvement.

Take the weaving loom, for instance. Looms have been built in Meccano for almost as long as Meccano has existed and, although the overall shape and style has of course varied one to another, many of the basic internal mechanisms have remained essentially the same for 50 or 60 years. One such unit is the slay – the sort of 'comb' which separates the warp threads and which slaps backwards and forwards to pack the cross-running weft threads into a tight weave. Traditionally, this has been crank-operated and, while perfectly adequate, it does place considerable strain on the crank mechanism and, by imparting continuous motion, it does not allow the slay to 'dwell' at the end of its swing to thus increase the time available for cross-movement of the shuttle.

Now – and this brings me to the point of my opening statement – after all these years of traditional design, Mr. Ernest Keighley of Longton, near Preston, has developed an excellent alternative drive method for a slay (see accompanying illustrations), working on a built-up cam system. It not only reduces driving strain, but also allows a very distinct dwell between oscillations.

We are indebted to Mr. Keighley for his co-operation in letting us borrow the slay and cams from his original Loom for photography – for which purpose, incidentally, we mounted them in a simple support to show their relative positions only. In working operation, the cams are mounted on the main driving shaft of the Loom, with the slay mounted on a long Rod in its appropriate position. There are two pairs, each of two cams, one of which knocks the slay forward and the other backwards. The forward-motion cam consists quite simply of an 8-hole Bush Wheel 1, to the face of which two 1½" Strips 2 are bolted in such a position that they come together to form a point. The backward-motion cam is built up from a Semi-circular Plate 3, extended by a 2½" Flat Girder 4, both bolted to another 8-hole Bush Wheel. The two cams, separated on their support rod by a distance of approximately 7/16th", are locked together by Nuts on a ¾" Bolt, as shown.





Above and left, two views of a very interesting cam-operated, slay-drive mechanism for a Meccano loom, designed by Mr. Ernest Keighley of Longton, near Preston. Although looms have been built in Meccano since the early days of the system, the slays have operated on a continously-moving, crank-drive principle. The cam system reduces strain and allows the slay to "dwell" at the end of its movement.

The size and design of the slay would depend upon the requirements of the parent Loom, but secured to each side of the slay is a special assembly, consisting of a 3" "U"-section girder 5 (supplied by two 3" Angle Girders), to each flange of which two overlapping Semi-circular Plates 6 are bolted, these Plates being reversed in relation to each other, as shown. Mounted in the second holes from the lower ends of the girders at each side, and in the appropriate holes in the Semi-circular Plates, is an 8" Rod on which two cam followers 7, free to revolve, are held by Collars. Each follower consists simply of two 1.1/8" Flanged Wheels positioned face to face. These followers make contact with the larger cams, while the smaller cams make contact with two further cam followers 8, each consisting of a Short Coupling revolving freely on a 1 1/8" Bolt passed through the inner lower Semi-circular Plate 6 and held in the boss of a Threaded Crank bolted to the outer Semi-circular Plate. The support rod on which the completed unit pivots passes through the centre straight-edge holes of lower Plates 6.

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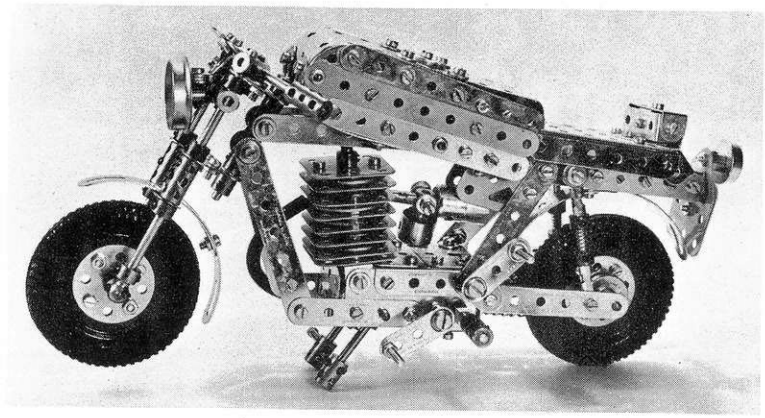
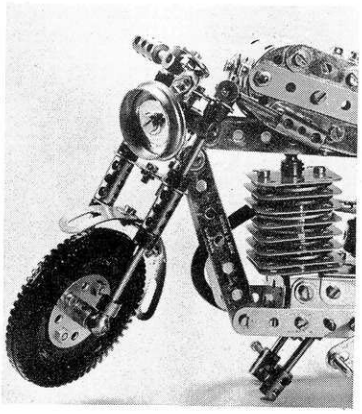




Above, a general view of an atmosphere-packed' Motorcycle built by Mr. Roberto Gerli of Genoa, Italy. Right, a close-up view of the front section of the machine.

The following parts list applies only to the cams, the cam followers and support units, but not to the slay itself, or the demonstration mounting.

PARTS REQUIRED			
4- 6a	28-37a	2-62a	2-111d
4- 9c	26-37b	2-63d	10-214
4-20	8-38	2-103f	
4-24	6-59	2-111	

ITALIAN MOTOR CYCLE

While in Germany early this year, attending the Nuremburg International Toy Fair (we sometimes get about, you know!) I was shown a compact, but extremely detailed and impressive motor cycle which had been brought for display on the Company Stand at the Fair by Mr. Edilio Parodi, the head of the company which distributes our products in Italy. The model had been built by an Italian Meccano enthusiast, Mr. Roberto Gerli of Genoa, and it impressed Mr. Parodi so much that he decided to bring it along to the show in case it should be of display use to us there. I was equally attracted and so, with the MMQ ever in mind, I 'borrowed' the model to have the accompanying photographs taken. Mr. Gerli subsequently supplied some background information on the model which I found very interesting as it showed how modelling ideas can start almost by accident.

"As usual," said Mr. Gerli, "Many Meccano parts were spread all over my work table and the unintentional joining of some of them appeared to my eyes as the swinging arm of a motor cycle. This, added to my enthusiasm for motor cycling which I had since I was a lad and my knowledge of the make-up of a motor cycle, was enough to take me away from the other model I had begun making in order to devote myself to this new model.

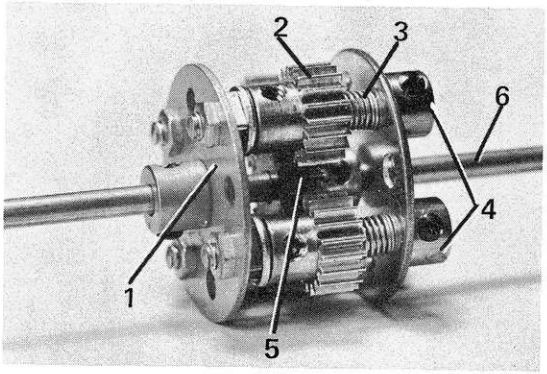
"I cannot say how many times I assembled and dismantled the spring frame just to achieve the correct proportions dictated by the fixed diameter of the wheels. The wheels, in fact, served as the starting point and I achieved the appearance of motor cycle wheels by using parts taken from the Clock Kits. Once these had been made, the model progressed rapidly, especially the rear suspension and engine, but there was a problem with the exhaust pipe. I did not suceed in making it with standard Meccano parts and had to solve the problem by using electric wire, using a Plastic Meccano axle as the silencer."

Readers may notice that the silencer is held in place by somewhat mutilated Narrow Strips and they may also notice that the sides of racing tank make use of (non-existent!) 4" Narrow Strips. To be fair, however, Mr. Gerli himself pointed these out in his notes, explaining that he had some old broken parts in his possession and so made use of these, rounding off the ends of broken Narrow Strips to produce the non-standard parts. Modellers without broken parts could of course use overlapping smaller Narrow Strips to produce the required length. Special parts, or not, I still think the model is very good!

COMPACT EPICYCLIC CLUTCH.

Great minds think alike! In the last issue of the MMQ, we featured a heavy-duty Epicyclic Load Clutch designed by Mr. Pat Lewis of Giggleswick, Yorkshire and it now transpires that Mr. Adrian Ashford of Woolwich, London has been working – totally independently – on a similar idea. I say 'similar', but not identical', for Mr. Ashford has designed a lighter-duty Compact Epicyclic Clutch and it is important to stress that he did so back in February long before the last MMQ appeared! Thus, there is no question of it being a modified copy of the Lewis version. I can, incidentally, confirm that Mr. Ashford's unit works extremely well, having seen it

Continued on Page 105



A compact Epicyclic Clutch designed by Mr. Adrain Ashford of Woolwich, London. Although we only recently featured a heavy-duty Epicyclic Clutch, this smaller, lighter unit was developed quite independently of it, but the co-incidence shows how great Meccano minds can think alike!

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MECCANO CLUB ROUNDUP

All Meccano Clubs are invited to submit reports for these pages. Reports should be approximately 350 words long, and should reach us by the end of the second month before month of publication.

CAPE TOWN MECCANO CLUB

There has been a big upheaval at our end of the world: Richard Schonegeval has been transferred to Sasolburg and, although retaining his membership of our Club, he will undoubtedly prove an asset to our Transvaal friends. Tatchel Venn has been transferred to Port Elizabeth (400 miles away) which is abbit distant to attend our meetings, and so he is somewhat out in the cold. We said farewell to them both at the July meeting, but they will probably be back home around Xmas time and we can convene a meeting to suit. Michael Adler and I are thus the only two stong builders left in Cape Town!

Trevor Hawtrey, who joined us recently, has produced some very fine models from his small set. The bug has bitten him, and he has purchased a large second-hand outfit – a mixture of nickel and red/green. He is re-painting everything in the current colours, and we know that we will see him put this enviable outfit to good use. Unknown to him at the time, the "six round plates" in his set transform themselves into three Geared Roller Bearings and these, together with thirty-eight Channel Segments, just about make up for what he paid for the whole lot!

Mr. G. Maurice-Morris described us in one of his lists of Meccanomen as "lone wolves". There must be many keen Meccanomen in Cape Town, and, indeed, I know there are, but their apparant lack of interest in joining a Club certainly substantiates his statement.

Colin Cohen.

(Anybody interested in joining the Cape Town Meccano Club should contact Colin Cohen at 3, Bellair Road, Vredeloek, Cape Town, 8001, South Africa. Tel: 45 6495)

HENLEY SOCIETY OF MECCANO ENGINEERS

Although 5th July was Henley Regatta day and the warm evening rather more suited to outdoor activities, there was a commendably good attendance at this, the last meeting of the H.S.M.E. before the 4th Annual Meccano Exhibition.

Both young, and not-so-young members were soon enthusiastically discussing completed, part-completed and models yet to be built. Of the finished models, one of the most beautiful (built in immaculate gold and blue French parts) was an industrial twin-cylinder horizontal Steam Engine, complete from boiler house to lineshaft and catwalks, by Tony Knowles Tony's master-piece ran silently and faultlessly throughout the evening. Keith Orpin showed his model of a GMC 2½ ton Truck fittingly built from olive green Multikit parts. The Truck was complete with front and rear lights, plus a stop lamp which illuminated when the working foot-brake was depressed. A 3-speed and reverse gearbox transmitted the drive via a 2-speed transfer box, to the fully floating tandem rear axle. All the controls were located in the cab – even the bonnet release catch!

The large space of the hall served admirably to demonstrate the capabilities of Michael Edward's two romotely-controlled vehicles. His beautifully-proportioned Austin 7 'Chummy' with folding hood, and self-change gearbox was again displayed, together with a newcomer: a single-decker London Transport Bus. Operated via a slender multicore cable, this model was steered remotely. Its self-changing gearbox shifted up and down faultlessly, depending upon the r.p.m. of the motor, again controlled remotely by the "driver", as was the reverse, turn indicators and internal lights. Michael's models also included a Foliot Verge Clock, designed by the builder.

Adding to the traffic congestion was a vehicle rarely seen on our roads: a German Tiger Tank, constructed by Paul Blythe. Although this model can, by means of photo-cells, "sniff" its way along a reflective strip laid on the floor, it was more fun to drive it by a hand-held controller, which declutched and braked either track.

Mike Nicholls had re-created a large synchronous motor of incredible power for its type and, being silent and free from wear, it could provide a practical – if somewhat expensive – power plant. Mike also showed a 'whip' type clock escapement mechanism and a collection of obsolete parts, al in immaculate condition.

Highlight of the evening was a display of the H.S.M.E's most recent acquisition – the late Stuart Wilson's impeccably complied records of the Holy Trinity Meccano Club – by the Society's Curator, Tony Homden. The Collection includes original posters of "Meccano and Wireless" exhibitions of the 1920's plus Stuart's original handwritten "Meccano Monthly" – which appears to have later changed its title to "Flywheel". This unique collection of Meccano bric-a-brac contains a wealth of Meccano history about which we will hear more when Tony has had an opportunity to sort through the treasures.

Mrs. Wright, as usual, provided first class refreshments during the very successful evening.

Paul Blythe.

Editor's note: We hear that Mr. Charles Covey of Peckham, London will be taking along a 'mint' original 1929 No. 7 Meccano Set to the next meeting of the Henley Society of Meccano Engineers. Should be a sight to see! The meeting will be held on Saturday, 1st November in the Sacred Heart Hall, Henley.

JOHANNESBURG MECCANO HOBBYISTS

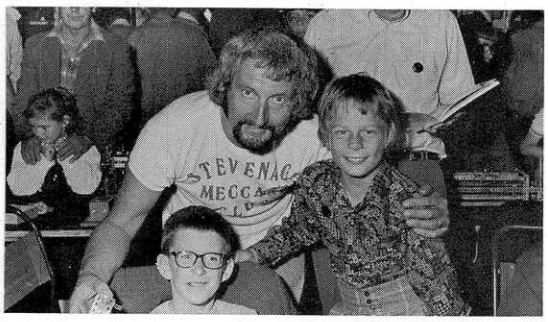
As our Club was only formed in July 1975, there is very little to report at this moment of time.

At present, we are meeting in Members' houses, and at the second meeting of the J.M.H. we finalised our constitution. Then followed discussions and letter reading, after which we studied and remarked upon each other's models.

As to our future activities, I quote from Section II of our Constitution which says that the main aim of the Club is "To promote the understanding, enjoyment and educational advantages, and to further Meccano construction as a hobby amongst the Members of the Club." We have also decided not to participate in any exhibitions until we have a minimum membership of 10.

Charles Roth.

(Anybody interested in joining the Johannesburg Meccano Hobbyists should contact Charles Roth at P.O. Box 27702, Yeoville 2143, Johannesburg, South Africa.)



'Snapped' at the Henley Exhibition in August: Stevenage Meccano Club Secretary, Dennis Higginson, with two of his keen young members, Neville Alston (seated) of Letchworth and Simon Plummeridge of Stevenage.

NORTH EASTERN MECCANO SOCIETY

Following the announcement of our proposed formation in the January MMQ – plus advertisements in the local press – five members attended the inaugural meeting of the North Eastern Meccano Society in March. No formal business was undertaken, most of the event being spent in getting to know each other, browsing through literature and looking at items of interest brought by members.

The second meeting of the Society was in June, and along more formal, business-like lines, with officials being appointed, a title chosen and various activities discussed. Also, another new member was welcomed. Models were on show at the meeting, and arrangements were made for a display in a prominent large window in the centre of Darlington, in October. At least eight models – possibly ten – will be on display with a view to creating public interest in the Society and, indeed, attracting more members, both from press interest as well as the window itself. It is expected that we shall be able to display a Printing Press, a Steam-driven Block-setter, a Supermodel Block-setter, a Fairground Roundabout, plus several other models which are currently in the process of being constructed. During the meeting, Joe Etheridge demonstrated a fine Printing Press, and Frank Beadle a fairground item.

Frank Beadle.

(Anybody interested in joining the N.E.M.S. should contact the Secretary, Frank Beadle, at 'Greytyles,', Yoredale Avenue, Darlington, Co.Durham, DL3 9AN.)

MAYLANDS MECCANO CLUB

On July 20th, a total of 19 people set off on this year's 'Marathon Walk' from the Clubroom to King's Park and back. The predominant reason for the walk is to raise money for the Parents Committee, and, to date, the Walk has raised 145 Dollars, which will go towards the Club's building fund.

It was with immense delight that we accepted an invitation to participate in an 'International Toy Fair' at the Belmont Forum, which is a shopping complex about five miles across the river from our Clubroom. The Fair was held during the first week of the second term school holidays and commenced on the Monday with two of our Members appearing on an early-morning television show demonstrating their models. Lewis McBeath demonstrated a remote-controlled Travelling Gantry Crane whilst Kevin Stephens showed a pre-war Supermodel Leaflet Motor Chassis. Lewis's model incorporated a Motor-with-Gearbox which powered it's many movements, and he deserves every credit for his "creation", as it operated faultlessly throughout the duration of the Fair.

Other models on display included a Printing Machine, a 4-wheel drive Chassis and a Lorry Chassis. Both chassis constructions gave rise to many favourable comments from visitors, most of whom checked the steering, clutches, gearboxes and differentials – just to make sure that everything was in proper working order! Also on show were a Hammerhead Crane, a Travelling Bucket Dredger (which scooped-up soup noodles) a Meccanograph, two Horizontal Steam Engines and Barry Pearces model of a 1905 RollsRoyce.

All in all, it was a most successful exhibition, and it was specially good to see the pleasure that many of the older men derived from witnessing that their boyhood hobby still holds its own with the youngsters of the Seventies.

Viv Malmgreen

STEVENAGE MECCANO CLUB

On the 14th June, S.M.C. members put on not one, but two exhibitions! At a Garden Party of the North Avenue Methodist Church, Letchworth, Messrs. Barton and Alston staged a layout of Hornby gauge O and Dublo model railways. The space available was 24ft x 4ft and the object was to allow visitors to drive a train around either of the two circuits on receipt of a donation to church funds. Four locomotives ran

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on the Dublo track and eight on the gauge O – five electric and three clockwork. Much interest was shown by the older spectators as they reminisced on childhood memories of Hornby, whilst the youngsters really enjoyed running the trains.

Meanwhile, at Pin Green School, Stevenage, 12 S.M.C. members displayed 35 models and raised several pounds for the school funds. It was our fifth visit to this school!

On 19th July, members from both Senior and Junior Henley Clubs and also members of the Holy Trinity Club joined S.M.C. members in exhibiting a grand total of 105 models at Nobel School, a large comprehensive school in the Chells district of Stevenage New Town. It was the school's annual Fete and much interest was aroused by the exhibits which ranged from a Giant (truly!) Block-setting Crane to the smallest Pocket Meccano models. Geoff Pratt from Luton brought along a splendid Grandfather Clock, and special thanks go to Bill Roberts and family who travelled all the way from Surrey.

All the participants had a most enjoyable day and £16 was raised for the school funds.

NEW MEMBERS

Adult:	Alec Webb (Letchworth)
Boys:	David Webb (Letchworth) Mark Webb (Letchworth) Christopher Marshall (Stevenage) Simon Plummeridge (Stevenage)

It is interesting to note that the Webbs are the third family of father and sons to have joined the S.M.C. – it just goes to prove that Meccano really is a family hobby!

John Foord.

SOUTHERN CALIFORNIA MECCANO CLUB

Our new Club (formed in January 1975) was represented at the fifth Annual Model and Craft Show in Anaheim, California, on the weekend of May 4 – 5, 1975. This event, with 60,000 people in attendance, is billed as the largest exhibition of its kind in the United States. To the best of the Club's knowledge, this was the first time that a metal constructional system has been displayed in a major hobby show in California.

Since there was no special category set up for our type of model building, we were placed with the nearest to similar subjects – the radio controlled model aircraft and the model railroad structures. This proved to be a satisfactory, but somewhat incongrous setting, since these other models are characterized by meticulous detailing and precise scale, and some were even housed in glass cases!

In the middle of the table – and dominating the display – was Hal Munn's Tower Crane, standing 6ft high with a 6ft boom. Nearby, was Jack Taylor's Fairground Ride. Unfortunately, both models were static owing to the lack of power outlets to the display tables; had they been in motion, we might have stolen the show! Our Club Secretary, Clyde Suttle, placed a supply of Club cards nearby and many of these were picked-up by visitors.

European model-builders may not fully comprehend the almost total disappearance of metal construction systems from the American scene. Many of the older visitors, who remembered the great days of the 1920's and 1930's, were overheard remarking; "Look, somebody brought a Meccano Set!" The younger viewers were generally unable to relate to this type of model-building at all.

A start has been made, however, and next year the Club will have additional models to show from, we confidently predict, an expanding membership.

Hal Munn.

(Any reader interested in joining the Southern California Meccano Club should contact the Secretary, Clyde Suttle, at 6062 Cerulean Avenue, Garden Grove, California, U.S.A. 92645)

TRANSVAAL MECCANO GUILD

Owing to a seasonal lull in Club activities, the Transvaal Meccano Guild has nothing current to report this issue, but this allows mention of an exhibition which we held earlier in the year – the 'Pretoria Meccano Exhibition' which took place at the Pretoria City Hall from 31st March to 5th April 1975. It was a hughe success, attracting no less than 20,000 visitors!

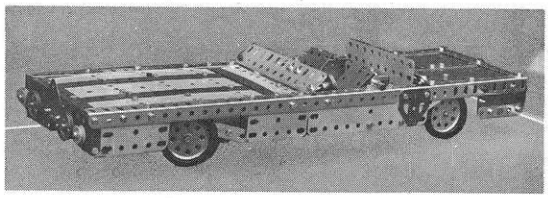
The main attraction of the Exhibition was a Meccano Railway by Jaap Kies; this was a 3½"-gauge railway on over 100ft. of track. Jaap had 3 diesels and 1 steam locomotive, plus at least a dozen trucks and wagons. The live-steam section was again very popular and, as usual, run (or should it be 'steamed') by Joe Crettaz.

On the Tuesday afternoon, the Club was presented with a 'Gold Certificate' for the Exhibition and, as all the Club's other cups and medals were on display, it was a delight to add the Certificate to the other awards.

A 'Super 8' film of the show has been produced by Abie Koegelenberg, and it is hoped that other Meccano Clubs around the world will be able to view the film in due course, by borrowing it from Meccano Limited.

Peter Matthews.

AMONG THE MODEL-BUILDERS – *continued from Page 103*



An American car built by John Swanson of Carshalton, Surrey and inspired by a larger model once illustrated in the MMQ. John is shown with his model, below.

operating in a model bus which Mr. Ashford displayed at the recent Henley Exhibition.

Construction is simple. Four Long Threaded Pins are fixed in diagonally opposite positions to the face of an 8-hole Bush Wheel 1 which is fixed on the input shaft of the unit. Mounted on each pin, in order, are a Washer, a ½" Pinion 2, loose on the Pin, and a Compression Spring 3.

The Compression Springs and Pinions are held on the Threaded Pins by an 8-hole Wheel Disc slipped on to the Pins and held in place by Collars 4, Before fitting this Wheel Disc, however, the input shaft is fitted, free, halfway into the bore of a central ½" Pinion 5, this Pinion being fixed on the inner end of the output shaft 6 which, of course, passes through the centre hole of Wheel Disc 5 when the Disc is fixed in place.

Under normal operation, drive to the input shaft causes the complete unit to revolve to give a straight-through drive, but, when sufficient drag" is applied to the output shaft, the epicyclic motion will come into operation and the through drive will be cut. The critical load point can of course be varied by altering the position of the Wheel Disc on the Threaded Pins to vary the friction applied by the Compression Springs.

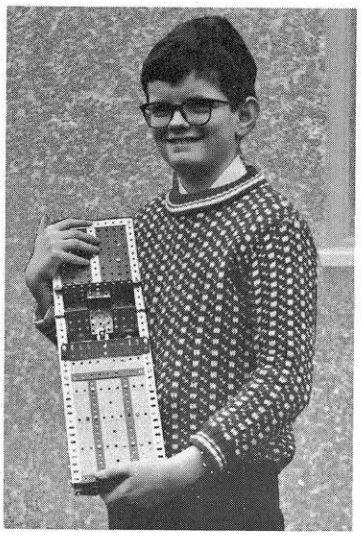
PARTS REQUIRED
(excluding shafts)

1-24	5-26	4-59	4-120b
1-24a	4-38	4-115a	

AMERICAN CAR

In preparing an issue of the MMQ, we naturally try to select material which we think will be of interest and perhaps help to readers, bearing in mind that the magazine is read by modellers of all ages. We often have no way of knowing if we have achieved the desired aim, but it is always particularly gratifying when we hear of, or see, something which has been inspired by a magazine item; we know the magazine has been of service. I am therefore particularly pleased to reproduce the accompanying photographs of an American Car built by a young Surrey modeller, John Swanson of Carshalton. In submitting the photographs, John explained that the car was inspired by a model built by Mr. Michael Walker, Secretary of the North West Meccano Guild and featured in the July 1973 MMQ. Mr. Walker's model was of course considerably more complex, but, having now compared the two myself, I can certainly see the distinct likeness.

Actually, John is to be congratulated on an extremely good model. He has succeeded in producing a very clean, crisp outline and, by careful use of a comparatively small selection of parts, he has achieved a good solid appearance. All in all, a very pleasing model.



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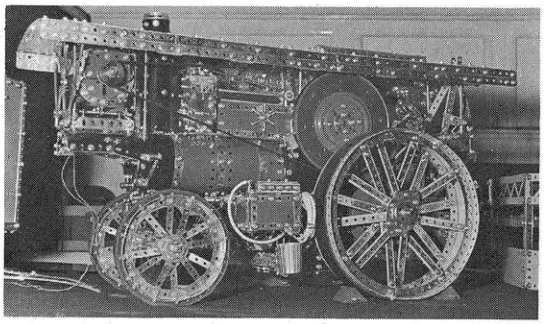

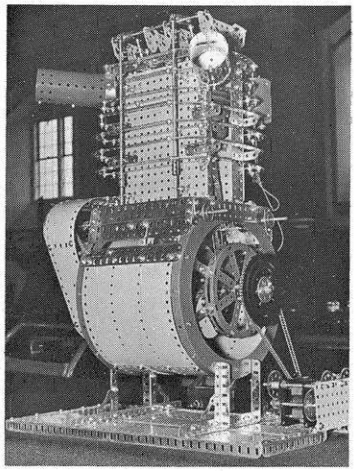

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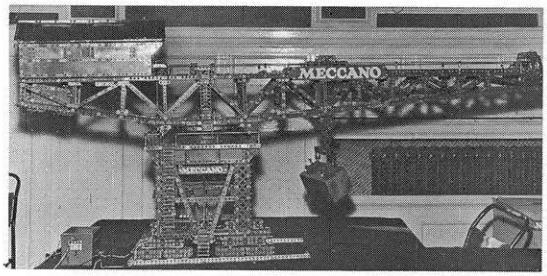
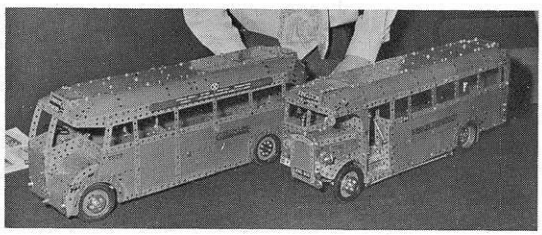
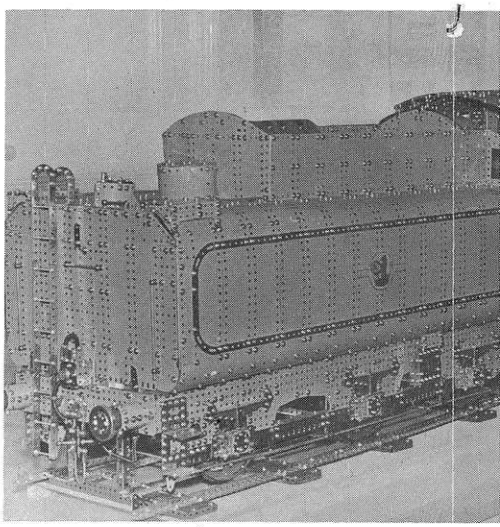
A photo report on the 4 Exhibition held at Henley

Above left, one of several beautiful Traction Engines displayed at the Show. This particular example, based on a Fowler Class 86 Showman's Engine, was built by Keith Orpin of Abingdon, Berks. Above right, a well-constructed version of the No. 10 Set Twin-cylinder Motor Cycle Engine. Our apologies go to the builder, however, as we unfortunately did not catch his name.

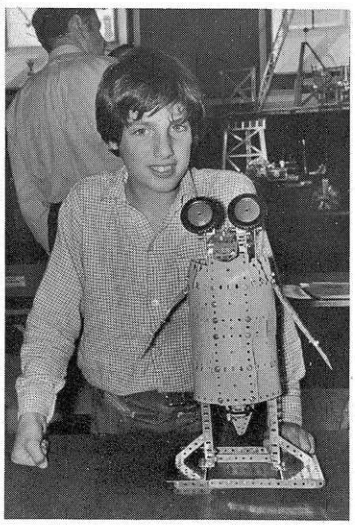




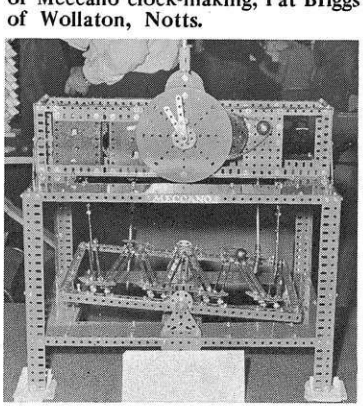
Left upper, Bob Faulkner's trusty Block-Setting Crane – a regular sight at meetings up and down the country. Left lower, two superb examples of bygone transport by Adrian Ashford of London: left, a pre-war TF London Transport Greenline Coach and, right, a post-war Leyland Tiger PS1. Both have working springing, clutch, gearbox and diff

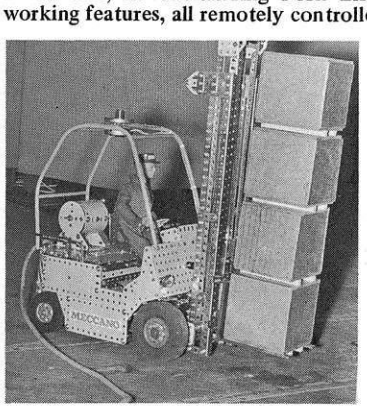


Above, the "star" of the Henley exhibition was th locomotive built by Terry Pope of Wellingboroug original designer, Brian Lowe of Newton Abbot. So it almost filled the Mayor's antechamber in which it Railways" display. (Some readers may have seen th Below left, an outstanding Fork Lift Truck by T working features, all remotely controlled, it fascinate



Below left, 13-year old Edmund Atkinson of the H.S.J.M.E. pictured with his novel motorised Penguin. Below, a fascinating Rolling Ball Clock designed and built by that master of Meccano clock-making, Pat Briggs of Wollaton, Notts.





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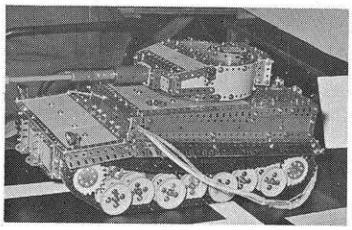
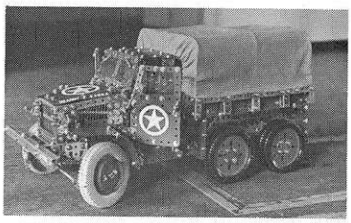
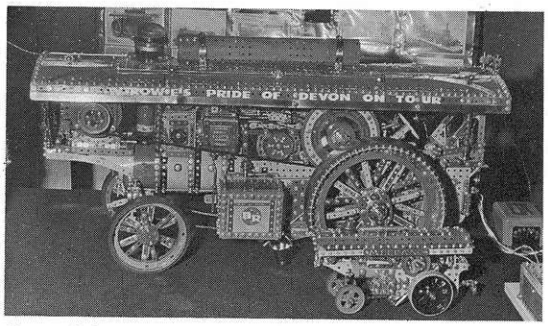
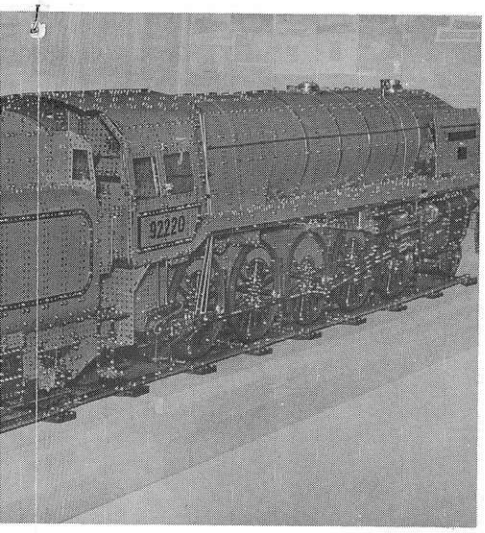
the 4th Annual Meccano
Henley on 29/30 August.







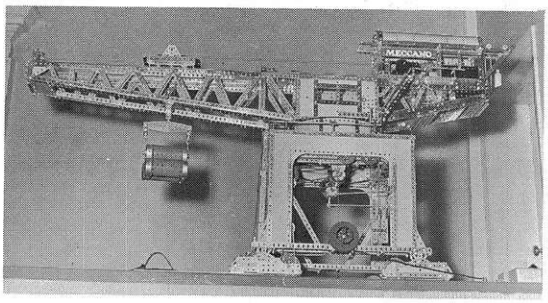
Above left, an interesting German Mk IV Tiger Tank by Paul Blythe of Aylesbury. Fitted with a photo cell sensing mechanism plus automatic steering and track brakes, it will follow a white line automatically. Left, a beautifully-proportioned GMC 2½ ton Army Wagon built by Keith Orpin Above, two outstanding Traction Engines by Brian Rowe of Newton Abbot, Devon.

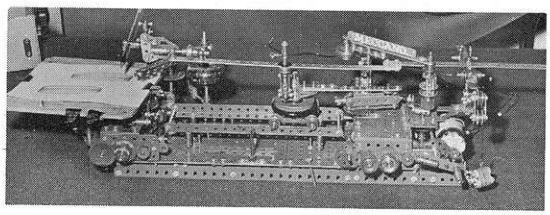


n was this enormous model of the "Evening Star"
gborough from details supplied by the model's
bot. Some 11ft. 1in. long x 2ft. high x 19in. wide,
which it was exhibited as part of a "150 years of
seen the model on B.B.C. T.V's "Blue Peter").
k by Tony Rednall of Havant, Hants. With full
ascinated young and old alike.

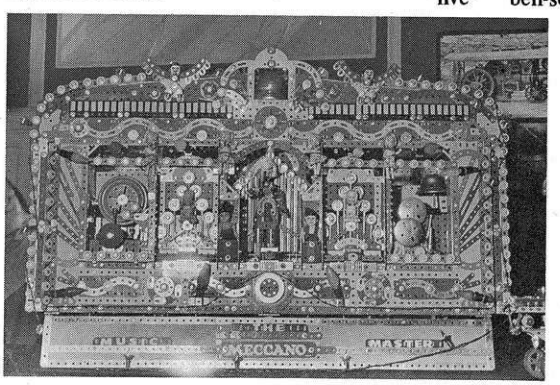
Right upper, an excellently-proportioned Electric Harbour Crane designed and built entirely from a No. 10 Set by Bert Love of the Society of Advanced Meccano Constructors. Not a block-setting crane – though reminiscent in its general shape

Right lower, an extremely versatile Meccanograph by Bert Halliday of London

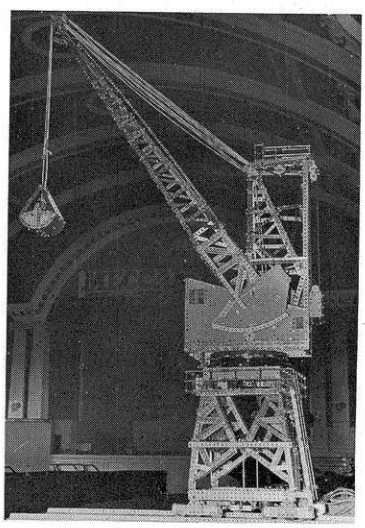




Below, tremendously popular with the visiting public was this "Steam Organ" – 'The Meccano Music Maker' – another of the fine exhibits by Brian Lower of Newton Abbot. It featured taped organ music with "live" bell-sound accompaniment.



Right, a tall and imposing 5-ton Crab Crane built to 1/16th scale by E.F. Oatley of London. Based on an original machine produced in 1953 by Cowans Sheldon and Co. of Carlisle, it is fully-operating with all movements controlled remotely.



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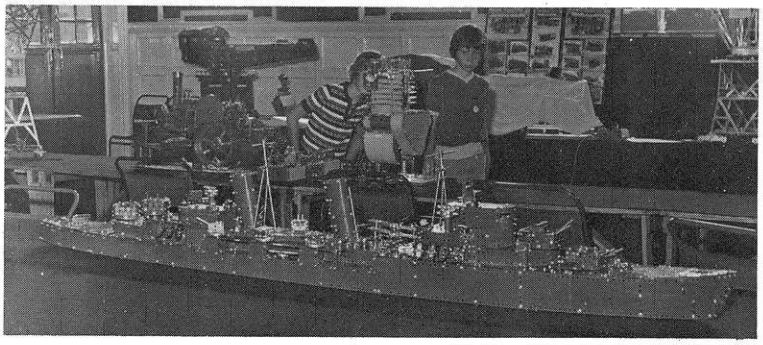
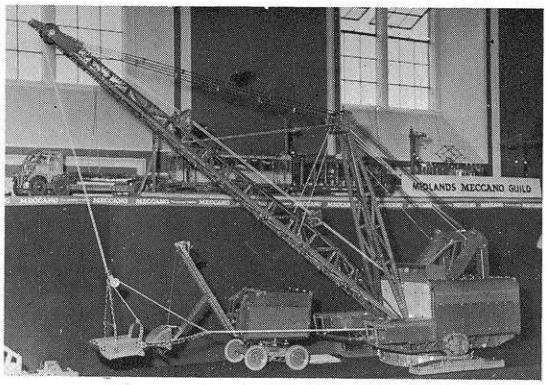
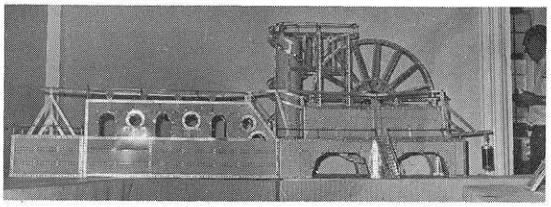
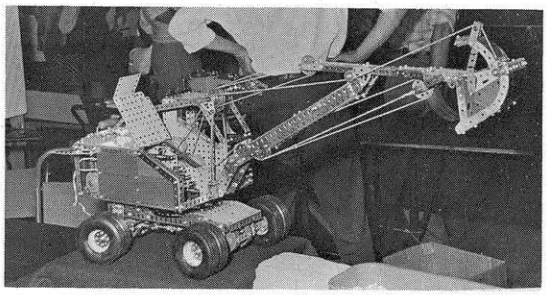
SCENE AT THE HENLEY SHOW...



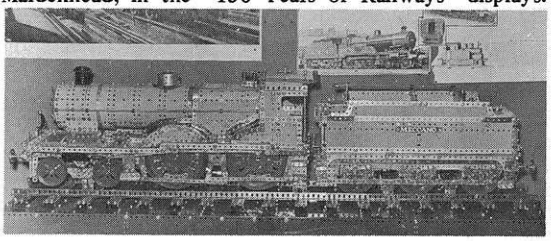


Above, a beautifully-proportioned model of H.M.S. Belfast built by Michael Box of Burghfield Common, Nr. Reading. Fine detail is outstanding. Left, a fully-operating 'giant' model of the giant walking dragline excavator, 'Big Geordie', built by Peter Wilson of Westfliffe-on-Sea. Below, a large reproduction of the Isle of Man's Laxey Wheel built from a GMM Supermodel Leaflet by Bob Ford of Chalfont St. Peter.

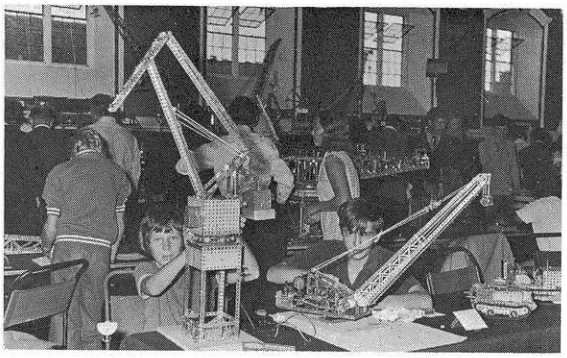


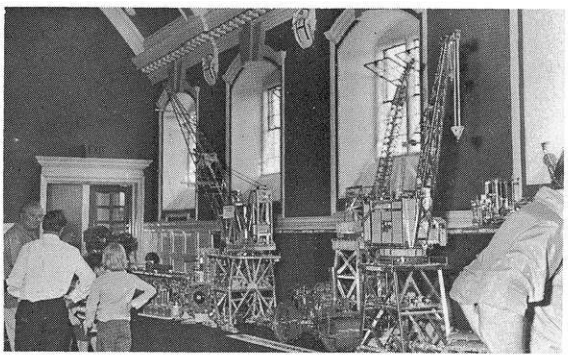


Left, a complex Excavator which we liked – and our apologies to the builder for missing his name! Below, a fine LMS Compound Locomotive, by Chris Reeve of Maidenhead, in the "150 Years of Railways" displays.



Below left, two young members of the H.S.J.M.E., Chris Breeze (left) and Richard Beer at work on their respective models, a freelance Level-luffing Crane and a 'live-steam' Crane powered by the Meccano Steam Engine. Below right, a general view looking down one side of the main exhibition hall at Henley taken early on the 'exhibitors' day. Many more models were added later – especially on the back ledge – but this shot gives an indication of the size and excellence of the exhibits. Cranes were much in evidence!





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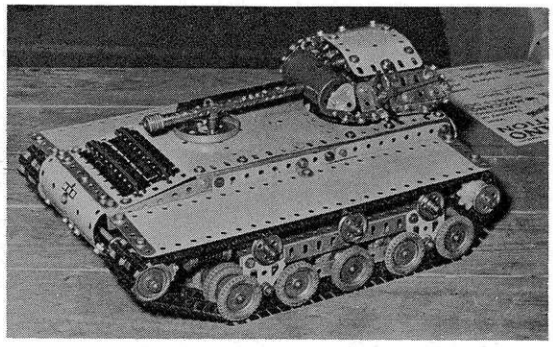
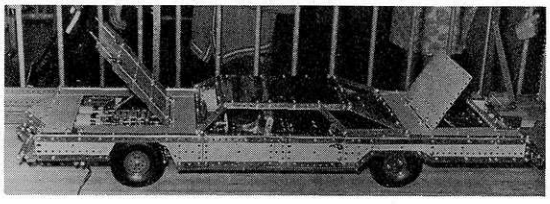
...AND AT STONELEIGH

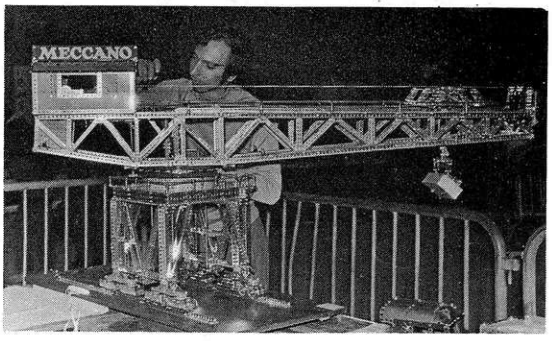
A photo report on the M.M.G. Exhibition at the Town and Country Festival, Stoneleigh, Warwickshire, 23–25 Aug.

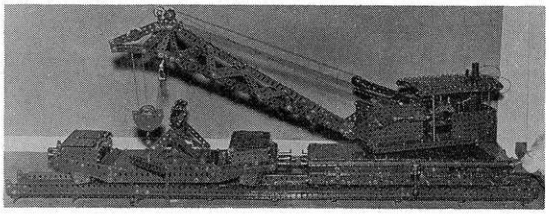
Above, one of the giant exhibits on display at the Midlands Meccano Guild exhibition which was part of the Town and Country Festival held at the Royal Agricultural Showground, Stoneleigh, Warks. over the August Bank Holiday weekend – a 16ft long, 1/60th scale model of the Saltash Bridge by Alan Partridge of Sutton Coldfield. Right, a very pleasing Tank by Bill Barker. Below, a complex and fully-working model of an American Car by Michael Walker of Darwen, Lancs.



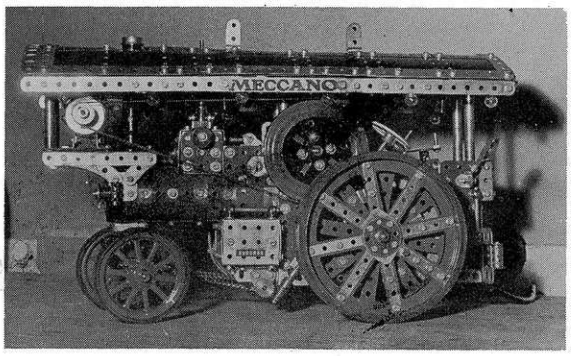


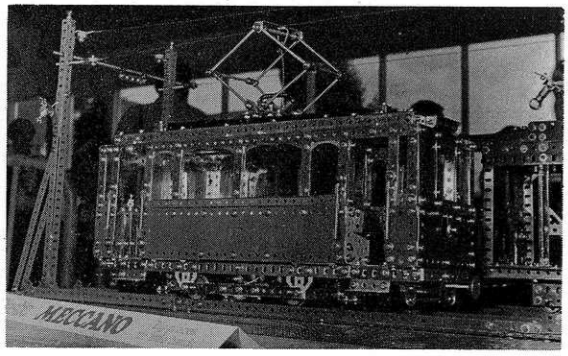
Right, Roger Wallis adjusts his Giant Block-setting Crane – a fully-working model operated by remote control. Below, a strongly-built and detailed Railway Breakdown Crane, displayed by Ernest Chandler of Stratford.





Below left, a pleasingly-proportioned Traction Engine by Phil Ashworth, former Secretary of the M.M.G. Phil also displayed the highly complex and unique Gaming Machine which some readers may have seen illustrated in the 'Daily Mail' in August. Below right, one of the beautiful German-style Trams running on a fascinating Tramway displayed by M.M.G. President, Esmond Roden of Cheltenham. The Tramway was also displayed at Henley the following weekend – as, indeed were many of the models on show at Stoneleigh. We are sorry we could not illustrate more of them here.





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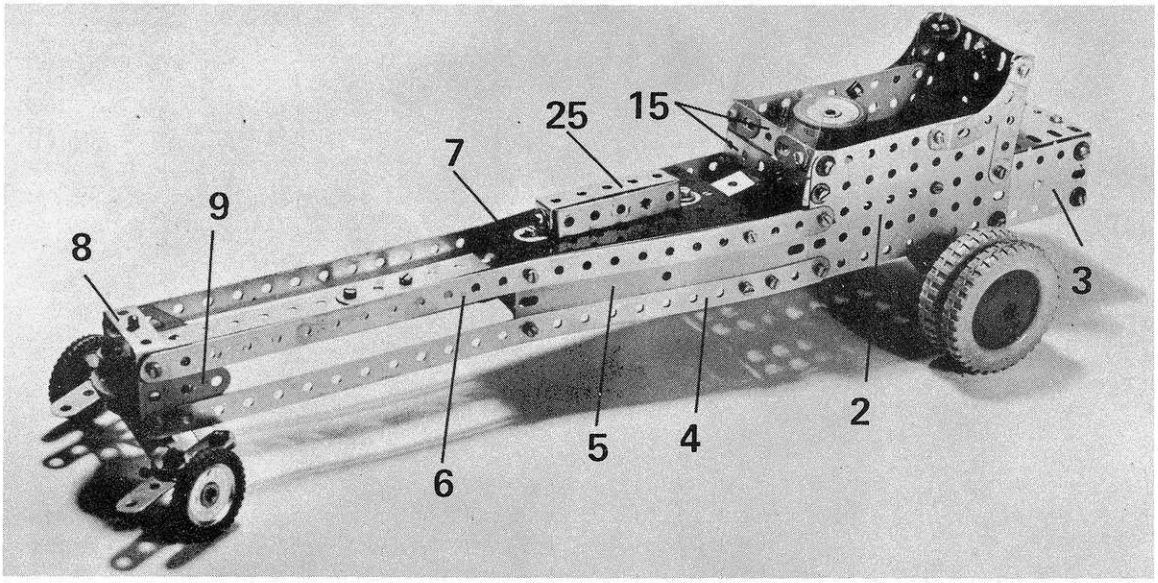
5 - 4 - 3 - 2 - 1 - VROOM!

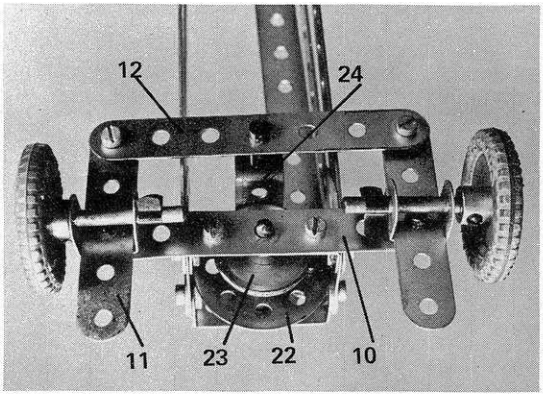


Try this No. 5 Set

MECCANO DRAGSTER

says 'Spanner'

A DRAGSTER, by definition, is designed to blast away from a standing start and to screech over a pre-set, measured distance in as short a time as possible, i.e. as fast as it can! Thus it is designed for speed and acceleration, rather than attractive appearance and, in fact, most dragsters are little more than a big engine with wheels and a place for the driver to sit! It is important to mention this because featured here is a Meccano Dragster, built from a No. 5 Set, and we are the first to admit that it is not designed with beauty in mind! However, with its rear cockpit, central 'engine', long tapering nose and small front wheels, I believe it captures something of the atmosphere of the real thing, although the size of the rear wheels – normally very large in real life – has been limited by the size of the Wheels in Set 5.



Above, a general view of the finished Dragster, built from a No. 5 Outfit. Hardly a thing of beauty, we agree, but then dragsters are not designed for attractive appearance! Left, a close-up view of the simple, yet effective steering mechanism fitted to the model.

Construction is quite simple. The chassis consists of a 5½" x 2½" Flanged Plate 1, to each side flange of which a 4½" x 2½" Flat Plate 2 is bolted, the securing Bolts helping to fix in place a 2½" x 1½" Flexible Plate 3 and a 12½" Strip 4. This Strip overlays the lower edge of a 5½" x 1½" Flexible Plate 5 which is also bolted to the Flanged Plate, while the upper edge of the Plate is overlayed by another 12½" Strip 6. The Strips and Plate 5 at each side are curved to shape, as shown, and are bolted to two Flanged Sector Plates 7, one above the other and coinciding with the two pairs of Strips.

The forward ends of Strips 4 and Strips 6 are connected together by two 1½" x ½" Double Angle Strips 8 and two Flat Trunnions 9, arranged to form a square, with the Double Angle Strips making up

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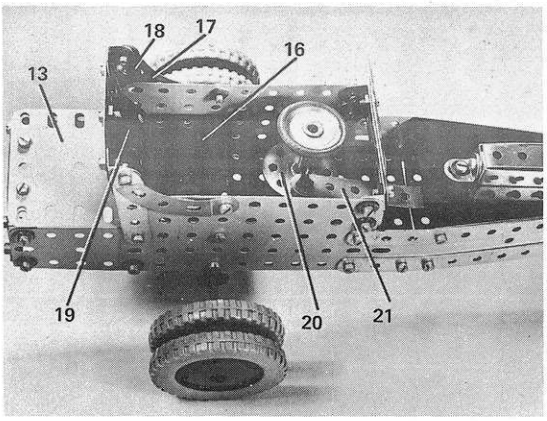
the top and bottom of the square. Bolted to the lower Double Angle Strip is a 3½" Strip 10 serving as the front axle beam. Lock-nutted to each end of this Strip is a Double Bracket, between the lugs of which a 2½" Strip 11 is fixed, the securing Bolt passing through the centre hole of the Strip. Lock-nutted, in turn, between the rear ends of the Strips at each side is another 3½" Strip 12 which serves as the steering tie-bar. The front wheels are 1" Pulleys with Motor Tyres fixed on 1½" Rods journalled in the lugs of the Double Brackets and held in place by Spring Clips.

At the back of the model the upper rear corners of Plates 3 are connected together by a 2½" x ½" Double Angle Strip, to the top of which a 2½" x 2½" Flexible Plate 13 is fixed. The back is then completed by two 2½" x 1½" Triangular Flexible Plates 14, arranged to form a 2½" x 1½" rectangular flexible plate, the lower edge of which is overlayed by a 2½" Strip and is attached by Angle Brackets to the lower rear corners of Plates 3.

At the front of the cockpit, two 2½" x ½" Double Angle Strips 15 are bolted between Flat Plates 2, as shown, a 2½" x 1½" Transparent Plastic Plate, overlayed by two Fishplates, being bolted to the upper Double Angle Strip to serve as the windscreen. A seat is provided by a 2½" x 1½" Flanged Plate 16, bolted between Plates 2, while each side of the seat is provided by a 2½" Stepped Curved Strip 17 and a 2½" Strip 18, arranged as shown and bolted to Flat Plate 2. The upper ends of the Strips at each side are connected by a 2½" Strip, attached by Angle Brackets, at the same time fixing in position two overlapping 2½" x 1½" Plastic Plates 19 serving as the back of the seat.



The rear section of the Dragster viewed in close-up. On a real dragster the rear wheels are very much larger in relation to the body – sometimes taller than the whole machine, in fact – but we were of course limited by the size of the Road Wheels in the No. 5 Set. Call it modellers' licence!

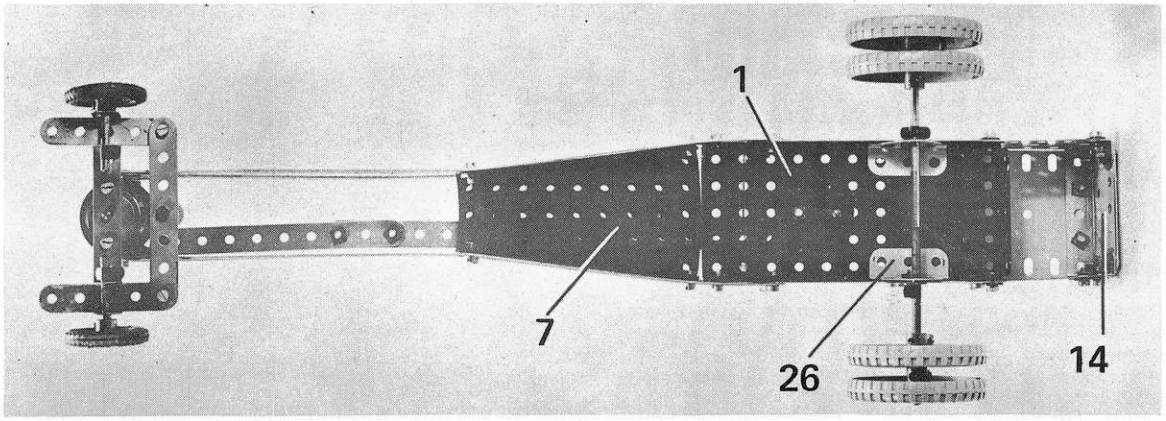
Coming to the steering, journalled in Flanged Plate 1 (centre hole, fifth row from the front) and in a Reversed Angle Bracket bolted to the Plate, is a 3½" Rod on which an 8-hole Bush Wheel 20 and a 1" Pulley with Rubber Ring are fixed. The Pulley with Ring of course serves as the steering wheel. Lock-nutted to the Bush Wheel, however, is a 13½" compound strip 21, built up from a 9½" and a 5½" Strip, this being curved appropriately to pass beneath Double Angle Strips 15 and under upper Flanged Sector Plate 7. The front end of the strip is lock-nutted to another 8-hole Bush Wheel 22 fixed on a 2" Rod which is held by a Spring Clip and a 1" Pulley 23 in the centre holes of Double Angle Strips 8. Packing Washers are used as necessary on the Bolts securing compound strip 21 to the Bush Wheels. Fixed by its round hole lug to the rear side of Bush Wheel 22 is a ½" Reversed Angle Bracket 24, the other lug of this Bracket locating over a ¾" Bolt fixed in the centre of Strip 12.

This completes the steering linkage, but, to round off the model, the simulated engine is represented by three 2½" x ½" Double Angle Strips 25, arranged as shown and fixed to the top of upper Flanged Sector Plate 7 by Angle Brackets. And, finally, twin rear wheels are provided by 2½" Road Wheels fixed on a compound 7" rod held by Spring Clips in two Trunnions 26 bolted to Flanged Plate 1. The compound rod is built up from two 3½" Rods joined by a Rod Connector.

PARTS REQUIRED

4- 1	4-22	1-52	2-142c
3- 2	1-23a	2-53a	1-155
2- 3	2-24	2-54	4-187
6- 5	5-35	2-90a	2-188
2-10	76-37a	1-111	2-189
2-11	63-37b	1-111a	1-190
6-12	18-38	6-111c	1-193
3-16	2-48	2-125	2-194
1-17	6-48a	2-126	1-213
2-18a	1-51	2-126a	2-221

An underside view of the Dragster showing the long, slender tapering shape



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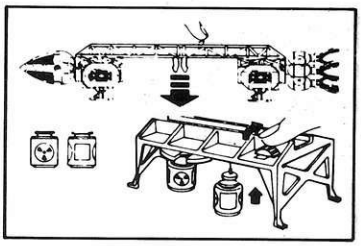
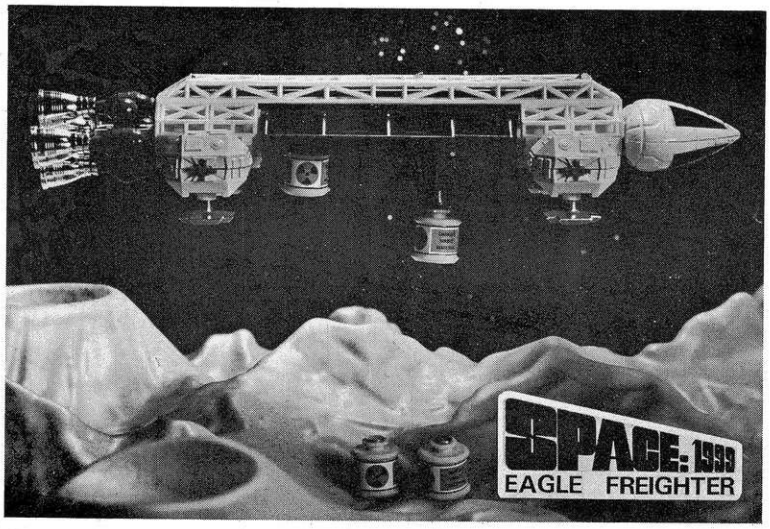
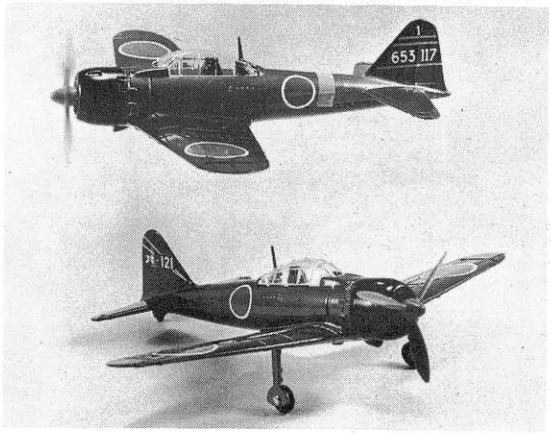
DINKY TOYS NEWS

A look at the new Dinky Toy models released since the last issue of "Meccano Magazine Quarterly".





Right, No. 360 Eagle Freighter – a further model based on an original featured in the new Gerry Anderson science fiction television series, "Space 1999". With a long "latice-work" body sporting a four-rocket cluster and an "arrow head" nose cone, the model carries a removable centre module which itself carries four removable containers, located in a revolving carrier disc, and a finger-operated winch with magnetic pick-up. The model also features spring-loaded undercarriage legs on each of its four outriggers, which enable pick-up of the module to be automatic: release is simply by movement of a lever situated on top of the model. Measuring 222mm. in length, the Eagle's overall finish is in white with a red module and exhaust nozzles, and silver-coloured combustion chambers and landing gear. The winch and carrier disc are black, while the drums are yellow but are labelled to identify their 'dangerous' nature.



Above, No. 739 A6M5 Zero-Sen, based on the famous (or perhaps infamous) Japanese World War II fighter plane. Features included a realistic casting, a clear-view "bubble" canopy and a pilot-figure representation. For added authenticity, the Zero features a battery-powered, "flick-start" motor and a spring loaded retractable undercarriage. Produced to 1/65th scale, the model measures 150mm. in length and has a wingspan of 184mm. Overall finish is in metallic green, with a grey underside, black cowling, red propellor and aerial and sports Japanese roundels. Comes complete with a sheet of additional marking transfers for self-mounting.

Below, No. 662 Static 88mm. Gun with Crew, based on perhaps the most famous German anti-aircraft gun of World War II – the 88mm. "Flak" gun. Built around an extremely realistic, detailed body casting, the model sports an elevating gun barrel which is breach-loaded and fires harmless plastic "shells" by means of a spring-operated firing mechanism, In addition, the complete gun assembly is rotatable through a full 360°. For added play-value, the gun is supplied with three appropriate moulded figures – an officer and two gunners. Produced to 1/35th scale and measuring 218mm. in length, the Gun is finished in German military green with a black chassis, and comes complete with 12 shells. The 88mm Gun is also available as a mobile unit without crew, but with detachable bogies.

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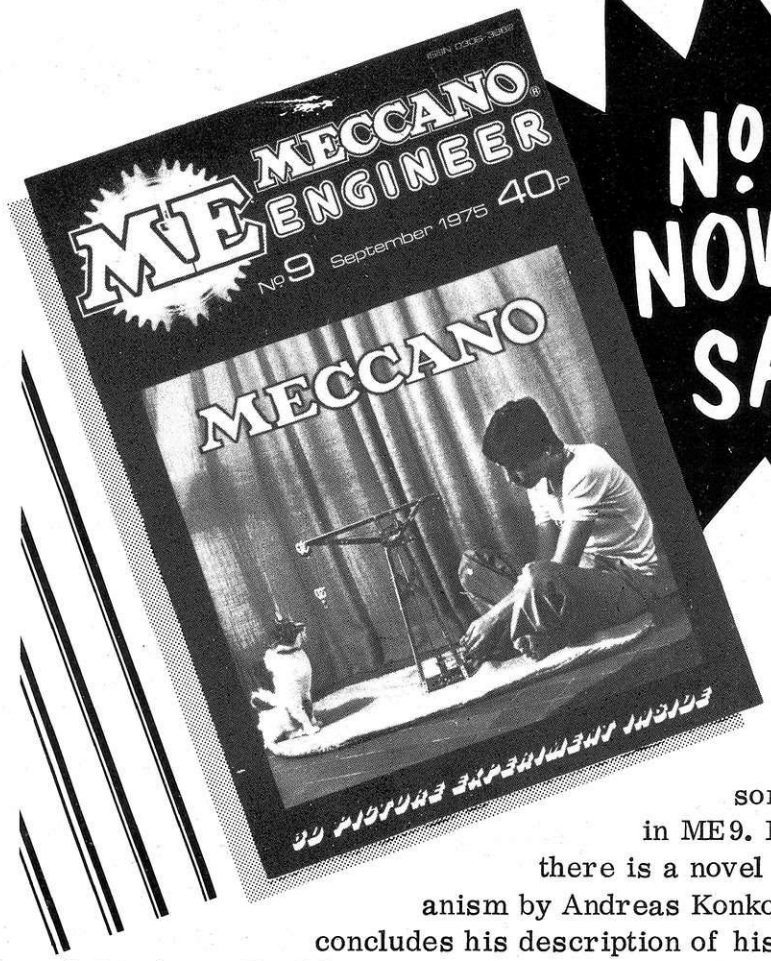

No 9 NOW ON SALE

EVERYONE will find something of interest in ME9. For model builders there is a novel Centrifugal Mechanism by Andreas Konkoly, and Bert Love concludes his description of his 10-Set Battleship, whilst those who like to model straight from the prototype will be interested in Geoff Wright's dissection of Tower Bridge. For the mathematically-minded there is Paul Smith's Science Feature on Steering Mechanisms, and for the historian and collector, the obsolete workshop and industrial parts are reviewed, and the complete 1929 Erector illustrated parts list is reproduced.

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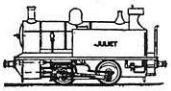

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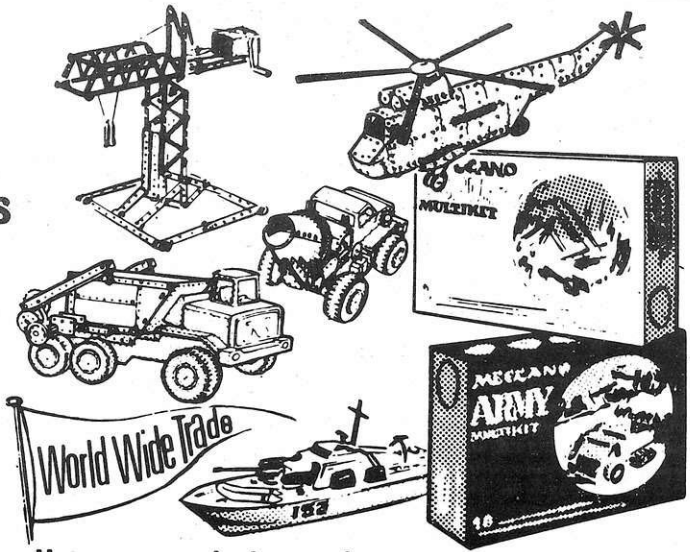

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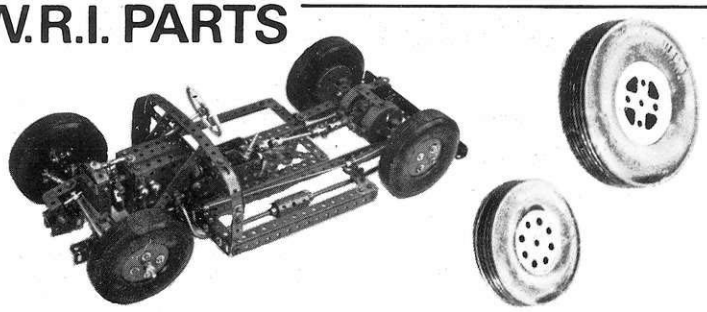

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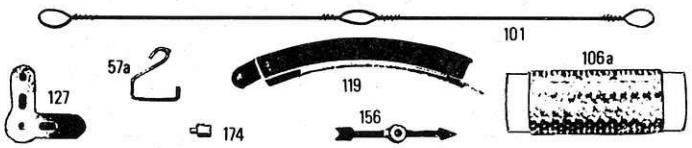

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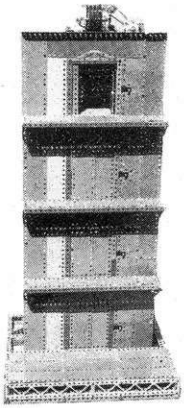

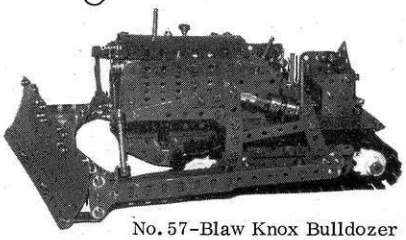

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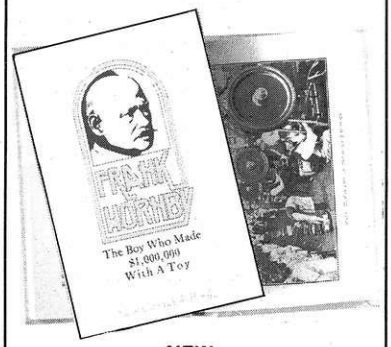

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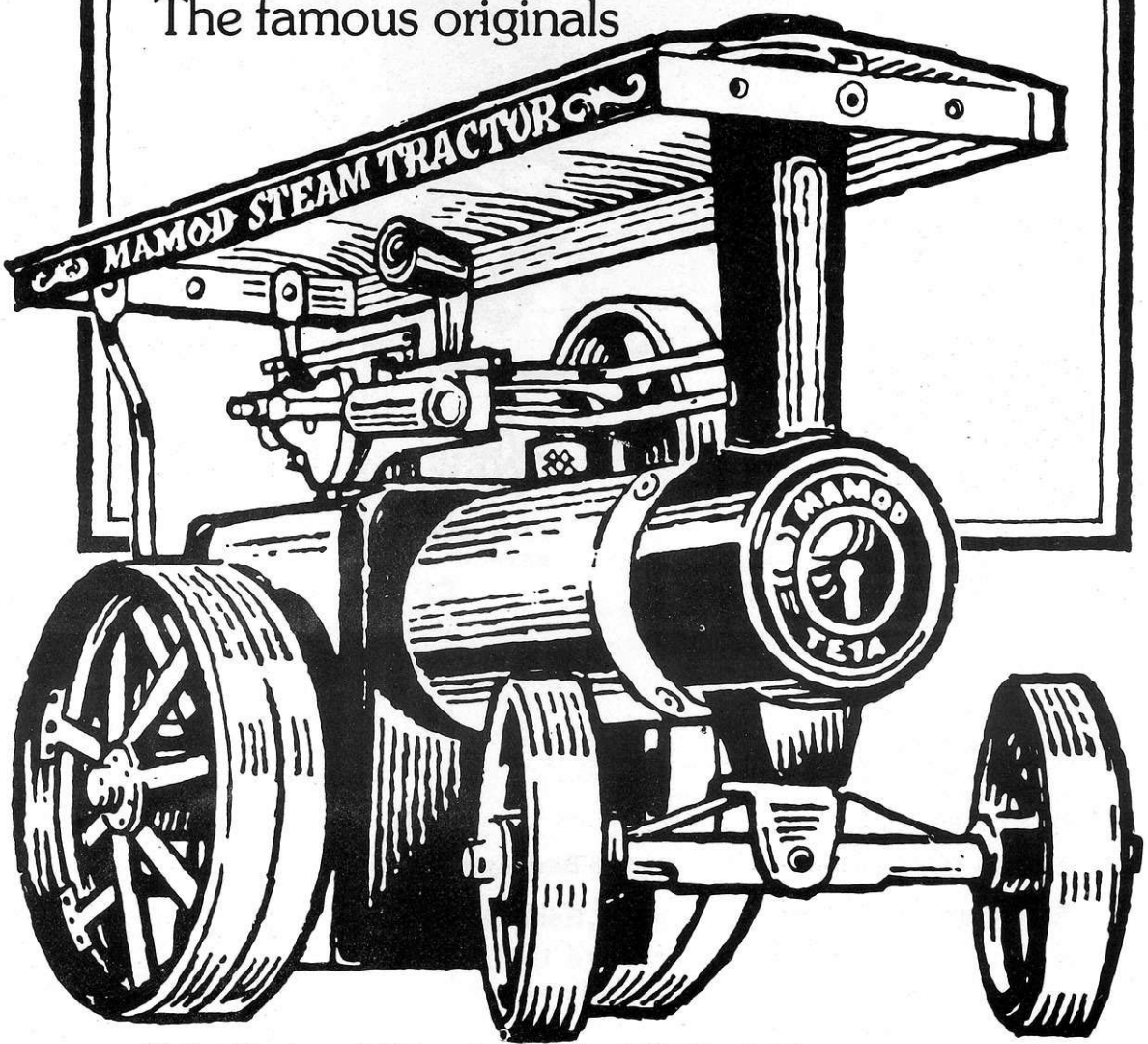

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REMOTE CONTROL CONSOLE

by Colin Cohen

It is important to stress that the Remote Control Console is not so much a Meccano model as a piece of Meccano-built electrical equipment. As such, it is perhaps more suitable as a constructional project for advanced modellers, with some knowledge of electrics, than for the electrically inexperienced. It is, however, 'safe' in that it is not (under any circumstances) connected to the Mains, but operates from a low voltage power source such as a transformer/rectifier, a transformer alone, or batteries, depending upon individual requirements.

The unit is made from standard parts except for the resistance wire. It provides a very convenient, simple and reliable method for operating multi-motored cranes and similar models, and a single module may be used to propel vehicles. It is suited to both D.C. and A.C. commutator-type motors and is superior to most other controllers designed in Meccano in that each operation - on/off, reversing and speed control - is performed entirely with one lever.

With overall dimensions of 12½" by 9½" by 4" high, the Console contains five modules, as it was designed for a five movement crane; but the number of modules is quite immaterial. Rotating the handles either clockwise or anti-clockwise operates an 'on' and 'off' and reversing switch and, at the same time, it also controls the speed in both directions. There are five resistance steps. Movement to the first step in either direction, against light spring resistance, allows for 'inching'; and further movement against heavier spring resistance increases the speed of the motor. The handle returns automatically to the 'off' position when released.

All five modules operate in exactly the same manner and are entirely independent of each other. Thus only one is described in these building instructions. A section of the instructions is devoted to adjustments to the unit which are tricky and critical, but time and patience spent on this will reward the constructor with a degree of reliability that will make operating a pleasure for him. The Console has directed a crane through several exhibitions, two of a week's duration each, and has also been operated by non-Meccanomen, including children.

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BUILDING INSTRUCTIONS

GENERAL

USES

For starting and stopping electric motors which are designed to run in either direction, and for controlling their speed. The unit is suitable for both A.C. and D.C. motors and provides a very convenient, simple and reliable method for operating cranes, excavators, etc., where a separate motor is provided for each movement.

GENERAL DESCRIPTION

Fig.1 shows a grouping of five controls built into a console 12½" x 9½" x 4". By rotating the handle either to the left or to the right, five step speed control can be obtained in either direction of the motor. The handle springs back automatically to the 'off' position when released.

CONNECTIONS TO THE MODEL

The wires from the model should be brought out together and tied into a loom. It is a good idea to provide two or three spare wires in the loom in case of a wire breaking.

It may not be convenient to leave the Console coupled permanently to the model, especially if the latter is very large and has to be moved around. As may be seen in Fig. 1 the wires come out of the left hand side of the console and terminate on a strip of 5 amp. connectors which is fixed to an Insulating Plate with 6 BA or 1/8" screws. The connectors are obtainable at any electrical shop, and the screws at hardware shops. The loom terminates in a second set of connectors, identical to the first, and each connector holds the shank of a nail, the head having been cut off. This then plugs into the fixed strip of connectors, and the screws of the latter are tightened onto the nails.

INTERNAL ARRANGEMENTS

Fig. 2 shows the internal workings. This particular Console was designed to control a crane with five movements. (The prototype was featured in 'Meccano Magazine', September 1960, page 438.) It thus has five controls, all functioning in exactly the same manner, although the construction of the centrally situated control

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(traversing) varies slightly, the fixed contacts being mounted on an Angle Girder instead of an Insulating Plate. The resistance tapping selector shaft is also somewhat longer.

There are five sets of resistances altogether, four extending along one side on two sets of 5½" x 2½" Insulating Plates, and the fifth on its own on the other side, on one set of Insulating Plates, the latter resistance being divided into two sections connected in parallel. The reason for this is that it controls two 6-speed Power Drive Units simultaneously for traversing, and thus has to be of heavier section as it carries more current than the others. The other resistances control one Power Drive Unit each.

It is therefore apparent that the Console is designed to suit a particular case, and thus there is no point in giving a Bolt by Bolt description of it. Meccanomen will in any case find plenty of scope for improvement. These instructions will therefore describe the construction and adjustment for one unit only. 'Open Correspondence' OC146 in 'Meccanoman's Journal' No.21, October 1970, Page 596, and articles on electricity and motors in various issues, should lead to a clearer understanding of the remote control of motors.

CONSTRUCTION

(Note:- Perforated Strip 1 in Figs. 2 and 4 has been removed in Fig. 3, and may be seen lying on the extreme right hand side.)

MECHANICAL

A 4" Axle Rod 2 (Figs. 3 and 4) is supported in one of the Flat Plates forming the top of the Console, and in the Perforated Strip 1. A Handrail Coupling fitted to the Axle Rod carries the Control Handle (Fig. 1), whilst the components on the inside of the Console consist of a Washer and Collar against the Flat Plate, followed in order by a 1½" Gear Wheel, its boss facing away from the Collar; a Coupling, the Axle Rod passing through a cross-bore at one end (Fig. 6); two Washers; a second 1½" Gear Wheel, boss facing in the same direction as the first; a Collar 3 and a Socket Coupling with a further Collar in one end to secure it to the Axle Rod. The Gear Wheels only must be free to rotate on the Axle Rod.

Each Gear Wheel carries one Rod Socket or Threaded Boss; one of these may be seen at 4. The spacing between the Gears should now be such that upon rotating them, the Threaded Bosses will not strike one another, but will both contact the Coupling.

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Meshing with each Gear is a ½" Pinion mounted freely on a common 3½" Axle Rod 5, and these in turn mesh with one 3/4" Contrate Wheel carried on at least a 3" Axle rod. (Axle Rod 5 of the left hand unit (Fig. 3) is hidden under the Angle Girder frame). The 1½" Gears will thus rotate in opposite directions. Note at this stage that when the Operating Handle is turned either to the left or to the right, the Coupling, by pushing against one of the Threaded Bosses, causes the Gears, and hence the Contrate Wheel, to rotate always in the same direction. Careful adjustment of the Trunnion is necessary to prevent the Coupling from striking the teeth of the Contrate Wheel.

The Resistance Tapping Selector Shaft on which the Contrate Wheel is mounted, carries between journals (Fig. 4) a Collar and Insulating Bush Wheel 6, in one of the holes of which is fitted a Contact Stud, a 6-hole Insulating Bush Wheel 7 fitted with five 7/32" Bolts (Contact Screws may also work, but sufficient were not on hand at time of construction) and a Threaded Pin (Fig. 5), a Compression Spring and finally two Collars 8 and 9. The sole function of the Threaded Pin is to prevent the Bush Wheel from rotating as it must be loose on the Axle Rod. On this particular Console the Threaded Pin is located in a hole in the Angle Girder hidden partially by the Tension Spring. The standard Grub Screw in Collar 9 is replaced by a 7/32" Grub Screw or a Set Screw, and the adjacent journal supports a ½" X ½" Angle Bracket arranged so that the Screw strikes against it. One end of a Tension Spring is anchored to the framework of the Console, whilst the other end is attached via a short length of Sprocket Chain (not less than 8 links) to Collar 8. If it is not desired to distort a link to enable it to fit over the Bolt shank screwed into Collar 8, Meccano Cord may be used, but this frays after a time and may well choose to break at the most awkward moment. Collar 8 also adjusts the pressure on the Compression spring.

REVERSING SWITCH

The fixed and moving contacts of the Reversing Switch are supported on a 5½" x 2½" Insulating Plate 10. The Plate 10 does not overlap Angle Girder 11 (Fig. 3), but butts against its edge and is attached by means of a Flat Girder. The distance between Plate 10 and Strip 1 has to be adjustable within small limits, however, and this is effected by attaching the Plate to Angle Girder 12 by means of ½" x ½" Angle Brackets, Bolt 13 passing through the elongated hole of the Angle Bracket (Fig. 2). Angle Girders 12 are braced to Flat Plates 10 by means of Perforated Strips and Angle Brackets, not seen in any of the illustrations.

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Four fixed Contacts are required. Two are attached directly to Plate 10, one is seen at 14, and the other is two holes lower down in a similar position to 15 of the left hand unit (Fig. 3). The other two fixed Contacts must be mounted opposite the first two. On this particular unit they were supported on separate 1½" Insulating Strips, but there is no reason why they should not be on a common Strip positioned vertically and attached to the Plate by means of a 3/4" bolt and Nuts. The distance between the contact faces should be about quarter of an inch, though this is very approximate for the moment.

The next stage is the construction of the moving Contacts. 1½" Insulating Strip 16 carries a Threaded Pin in its centre hole (the Washer under the shoulder is not essential) and a 1" Radius Wiper Arm and Fishplate in each of its outer holes, the Wiper arm and Fishplate being in metallic (electrical) contact with one another. Each Bolt securing the Wiper Arms is screwed tightly into a Threaded Boss, and thus no Nuts are used. The Wiper Arms will have to be shaped as in Fig. 4, though the final adjustment comes later.

A Pivot Bolt with a Compression Spring under its head is screwed into each Threaded Boss so as to attach the assembly to Plate 10. The tip of the Threaded Pin should protrude about 1/32" into the slot of the Socket Coupling, though this will also be adjusted later.

RESISTANCE

DETERMINING THE LENGTH OF THE RESISTANCE WIRE

For the 6-speed Power Drive Unit running on 10 - 12 volts, proceed as follows:-

Taking three or four yards of insulated resistance wire of about two ohms per yard, scrape off one inch of the insulation at one end with knife or sandpaper, or burn it off with a match and sandpaper clean afterwards, and connect this to one terminal of the battery or rectifier. Connect one wire of the Motor to the other terminal of the battery. Remove the insulation from the free end of the resistance wire and hold it to the other wire of the Motor. The resistance should now be in series with the Motor. The Motor, which of course should be set to drive the Model, will probably not run, meaning that the resistance wire is too long. The wire should now be shortened by about a foot at a time, and later shorter amounts, till the Motor is running at a suitable minimum speed. This will then be the length of the resistance wire required.

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Note: i) The Motor must be capable of starting under full load in either direction with this maximum resistance in the circuit.

ii) As each Motor will probably be loaded differently, it will be best to measure out a resistance for each individual Motor rather than make them all the same value.

MAKING UP THE RESISTANCE

Fold the resistance wire in half and then in half again. There should now be two ends and three intermediate folds. Remove the insulation from each of these folds and twist up the folds for about half an inch so that they will stand out when wound around the former.

The former consists of two Insulating Plates spaced apart about half an inch by Insulating Strips, and the wire is wound tightly around this. As the wire is insulated, it does not matter if adjacent turns touch each other. There should now be five points to connect to the corresponding five Bolts on the Bush Wheel 7.

WIRING CONNECTIONS

The resistance tappings are connected in consecutive order to the above mentioned Bolts by loom 17 (Figs. 4 and 5), but the wire 18 for the battery connection is not attached at this stage. The connecting wires 17 may be twisted around the resistance wire, but preferably either soldered or secured with the type of connector referred to earlier (under the heading 'Connections to the Model').

A very flexible stranded wire 19 is connected to the Contact Stud on Bush Wheel 6, wound around the boss and Collar two or three times, and is then connected to a Fishplate attached to one of the Wiper Arms. The other Wiper Arm is connected, by means of its Fishplate and the same type of flexible wire 20, to the battery.

The fixed contacts are interconnected as in Fig. 5 as well as to the Motor. Limit switches may, if desired, be inserted as shown dotted. In this case of course, the interconnecting wires must be extended to the limit switches on the Model.

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SETTING UP AND ADJUSTING

SWITCHING (ON/OFF & REVERSING) CONTACTS

When the handle is rotated, the Socket Coupling will push the Threaded Pin to one side and out of the slot, thereby causing the Wiper Arms to make contact with one set of Contact Studs. Further rotation will cause the Threaded Pin to slide on the outer face of the Socket Coupling, so maintaining the switch closed in one direction. The contacts must remain closed as the Socket Coupling is rotated back towards the 'off' position, and only when the Threaded Pin actually re-enters the slot must the contacts open.

Rotation of the Socket Coupling in the opposite direction must cause the Wiper Arms to close to the other Contact Studs in exactly the same manner. The height of the Socket Coupling must be adjusted so that the path of travel of the Threaded Pin lies between the tapped hole and the outer edge, because the Socket Coupling will rotate through an angle of about 130° in each direction.

If the Threaded Pin does not slide, but catches on the surface of the Socket Coupling and lifts when the latter is rotated back to the 'off' position, thereby causing the contacts to open prematurely and possibly close in the reverse direction, then the tip of the Threaded Pin must be moved further into the slot of the Socket Coupling. this adjustment is done at the nearest Bolt 13 in the slotted hole of the Angle Bracket. The trouble may also be due to the Plate 10 flexing, and the Plate must thus be supported very rigidly - note the 1" x ½" Angle Bracket 21 fitted for this purpose.

A certain amount of adjustment may also be made by screwing out the Pivot Bolts a few turns, thus reducing the Compression Spring pressure, but sufficient pressure must be maintained in order to return the switch positively to the 'off' position.

RESISTANCE CONTROL

Rotate Bush Wheel 6 so that the Contact Stud on it makes contact with one of the Bolts adjacent to the Threaded Pin on Bush Wheel 7. Collar 9 is then set so that by means of the Screw in it striking against the Angle Bracket, the Contact Stud cannot move any further towards the Threaded Pin. The Tension Spring causes the assembly to return to this position when rotated away so that the Stud may make contact with the other resistance tappings. The Sprocket Chain winds itself around Collar 8, and at this stage see to it that the Bolt in the Collar does not push against the far end of the Chain. The pressure

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set up by the Compression spring must not be too great, otherwise it will impair the smooth operation of the Tapping Selector Shaft. If necessary file the heads of the Bolts into a slightly rounded form (or use old or latest type dome head Bolts) so that the Stud will pass easily from one to the other. Here again Contact Screws may be more suitable, or five Contact Studs may be fitted to Bush Wheel 7 and one Contact Screw to Bush Wheel 6 instead of the Stud.

In the position now retained by the Compression Spring, all the resistance must be in as shown in Fig. 5, and by rotating the Shaft, resistance will be cut out till the Contact Stud reaches the Bolt on the other side of the Threaded Pin. It is to the end of the resistance wired to this latter Bolt that wire 18 is connected.

The 1½" Gear Wheels must be set so that the Threaded Bosses are arranged in the positions as indicated in Fig. 6, with the Coupling IN BETWEEN. In this position all the resistance must be in, i.e. the Screw in Collar 9 must be stopped up against the Angle Bracket. In this position too, the Socket Coupling must hold the switch in the 'off' position, the moving contacts being situated centrally between the fixed contacts.

Rotation of Rod 2 will now cause the Coupling to move towards one of the Threaded Bosses, but before actually making contact, the on/off switch must close in one direction, thereby causing the Motor to start running at minimum speed. The Threaded Pin must not yet have entirely left the slot of the Socket Coupling, and thus upon releasing the handle, the controller will return to the 'off' position under the action of the Compression Springs on the Pivot Bolts. For positive contact, and to prevent arc-ing and burning, the Wiper Arms should be seen to bend slightly, thereby setting up pressure, and the contact point will also slide across the face of the Stud.

Further rotation of Rod 2 must rotate Bush Wheel 6 against the heavier spring tension, thus cutting out resistance. If the Bush Wheel is now found to rotate in the wrong direction, then reverse the positions of the Gear Wheels.

When all the resistance has been cut out, further rotation of the handle must be stopped, otherwise Bush Wheel 6 will rotate too far, causing the Contact Stud to strike the Threaded Pin. This stop comes about very conveniently by the fact that the Gear Wheel which is not being driven by the Coupling rotates in the opposite direction, and

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the Threaded Boss on it meets the Coupling around the back and thus prevents further movement. The angle through which Rod 2 rotates is thus limited and within this limit the contacts have first to close, being followed by the Contact Stud moving to the other four resistance tappings.

If the last resistance tapping is not reached, then rotate Bush Wheel 6 on the Axle Rod so that it does reach the appropriate Bolt. If now the Contact Stud does not return to the first Bolt, then this means that the Gear wheels are not rotating through a large enough angle. This is adjusted by loosening the Contrate Gear, being careful not to unmesh it from the Pinions, and rotating it so as to reduce the angle Q. This may now result in the Coupling striking the Threaded Bosses before the switch contacts have closed. To rectify this now, the distance between the faces of the fixed Contact Studs should be reduced so as to reduce the travel of the Wiper Arms. It is important that in the 'off' position the Wiper Arms must be exactly central between the fixed Contacts.

The Tension Spring must be adjusted so as to return the entire unit back to the inching position, from where the Compression Springs on the Pivot Bolts can take over. Thus if the handle be released in any position, it will automatically return to the 'off' position.

Adjustments are tricky and critical and require a great deal of patience, but the reliability and ease of operation that can be obtained to make a Model a pleasure to operate will be well worth the time spent on careful adjustment.

LUBRICATION

The Gears and pinions should each receive a drop of oil to enable them to rotate easily on the Axle Rods. An electrical lubricant such as 'Evolube' should be placed sparingly on all electrical contacts and may also be used to lubricate the Threaded Pin where it slides against the Socket Coupling, if grease or 'Vaseline' is not available. Never use grease or oil on the contacts as the arc-ing will cause it to burn and this will eventually damage the contacts, thereby rendering the unit unreliable.

APPENDIX A

RESISTANCE WIRE

Resistance Wire is obtainable from good radio and electronic equipment shops and is packed on reels from a few ounces upwards. It

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should be insulated so that spacing between turns is not necessary.

If the current passing through the wire is too great, then it will heat up, but wire of about 2 ohms/yard (22 S.W.G. 80/20% Nickel Chrome Wire) is suitable for the Power Drive Unit and will probably do for the Emebo Motor. E15R and E20R Motors draw considerably more current (see 'Meccanoman's Journal' No.31 pages 897 - 899) and this wire will heat up if wound into a compact coil. Thus either a longer length of heavier gauge and thus lower resistance will be required, e.g. gauge 16; or several lengths of gauge 22 can be connected in parallel, but this reduces the resistance and hence a longer length will be necessary to give the desired resistance. For example, using wire of 2 ohms/yard to give a total resistance of 6 ohms, three yards of a single strand will be necessary. Two three yard lengths in parallel however will only provide a resistance of 3 ohms, and therefore 12 yards will be necessary to give a 6 ohm resistance. Similarly, 3 wires in parallel will require 27 yards to give 6 ohms. This paralleling method thus calls for an enormous amount of space and wire, and if the wire does heat up excessively, it will be better to buy a heavier gauge wire.

Instead of purchasing this special resistance wire, there is no reason from an electrical point of view why an old oven or heater element may not be used, this being placed in a suitable container on the floor. The wires 17 must then be extended out of the Console. In this case it will not matter if the resistance wire heats up. Referring then to the section headed 'Resistance', connect one end of the element to the battery or rectifier, and a wire from the Motor can then be moved along the element till a position is found to give a suitable minimum speed. The resistance wire between these two points is then subdivided into four equal parts, giving three intermediate points for the other tappngs.

APPENDIX B:

SECURING THE COMPONENTS TO AXLE ROD 2

To prevent slipping, the Handrail and ordinary Coupling should be attached very securely to Axle Rod 2. Special pointed Grub Screws can be used which dig into the Rod, but concave faced, toughened Grub Screws are obtainable at engineering supply firms, and these are stronger than the Meccano version. Ask for 5/32" Whitworth Screws. Alternatively, 'flats' may be filed on the Axle Rod onto which the Screws will grip. In this case the Handrail Coupling should be reversed so that its rounded head fits onto Rod 2.