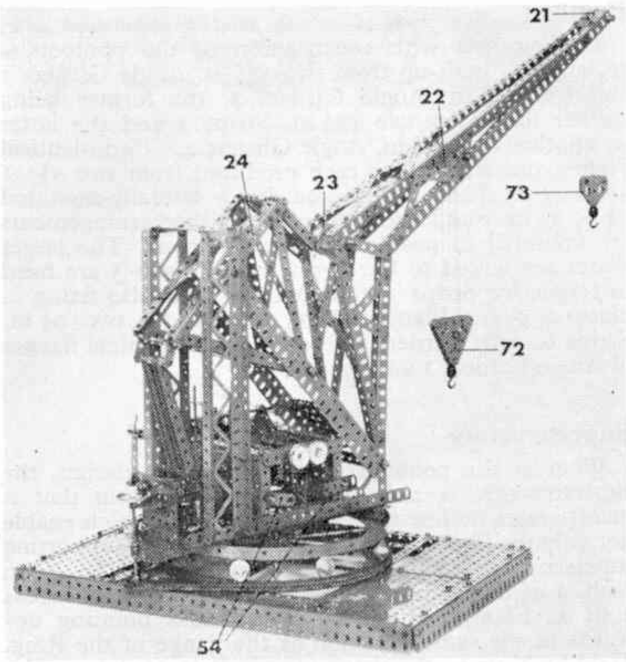


First featured in the March 1925 issue of Meccano Magazine and subsequently described in pre-war Super Model Leaflet No. 28, this giant Pontoon Crane has been re-built for today's readers.

NEW 40-YEAR OLD MODEL

by Spanner

A giant Pontoon Crane rebuilt from the March 1925 issue of Meccano Magazine for advanced model builders.

MECCANO MAGAZINE has been published now for more than half a century, during which time literally thousands of new Meccano models of all shapes and sizes have been featured. Meccano, itself, has been on the market even longer—some 60 years—and so, as Meccano is a life-long hobby for many people, there are innumerable adult enthusiasts throughout the world who have seen or possibly even built lots of the models we have presented in the past.

Because of this we have always been a bit wary about giving a second showing of some of the old models for the benefit of newer readers, but we have recently been rather surprised by the large number of requests we have had from the same adult readers asking us to reproduce some of the old advanced models not only for the benefit of newer readers, but also because they would like to see them again, themselves. In response to these requests, therefore, our model-builder has delved 43 years back into our history and come up with this Pontoon Crane, originally featured in the March 1925 issue of the M.M. It was also described in No. 28 of the famous series of pre-war Super Model Leaflets but, despite its age, it can still be built with standard Meccano parts included in the current system, although our builder has made one or two modifications.

Owing to circumstances, it will be necessary for me to re-write the actual building instructions, but before doing so, I think it would be interesting to reprint, word for word, the introduction to the original article. I found it interesting as well as informative and I hope you will do so too.

" Elsewhere in these pages," it says (referring to the 1925 magazine, not this one), " Mention is made of 'Crane Lighter No. 4,' the immense Pontoon Crane belonging to the British Admiralty, which was illustrated and described in the " Meccano Magazine " for September 1921. This crane has been carefully copied in the accompanying model, and the result must undoubtedly be considered as yet another splendid Meccano achievement.

Before proceeding with our description of the model it would be of service perhaps to recall the chief characteristics of 'Crane Lighter No. 4.' The crane is mounted on a pontoon 242 ft. in length and 86½ ft. in breadth. It is capable of lifting its load of 250 tons to a height of 77½ ft. above the level of the sea, and has a reach of 100 ft. radius. The base of the crane rotates and rests upon rollers, which have a path of 50 ft. in diameter.

A large working area

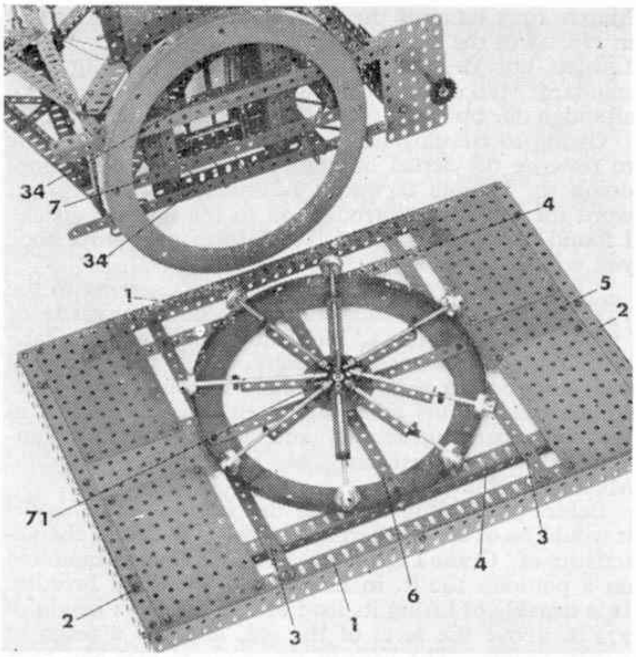
By raising or lowering the jib the reach of the crane is altered thus enabling loads to be picked up from the deck of the pontoon at, say, a reach of 50 ft. swung round and lowered into place at a reach of 100 ft. The crane, as erect as possible, picks up its load and swings round in line with the place where the load is to be dropped. The jib is then lowered, extending the reach of the load as it hangs, until it is immediately over the spot where it is finally deposited.

Hauling is accomplished by steel ropes, the maximum effort being made with the jib inclined at an angle of 40 or 45 degrees to the horizontal. When a heavy load is on, both steam and hydrulic brakes control the movements with wonderful precision.

The Meccano model

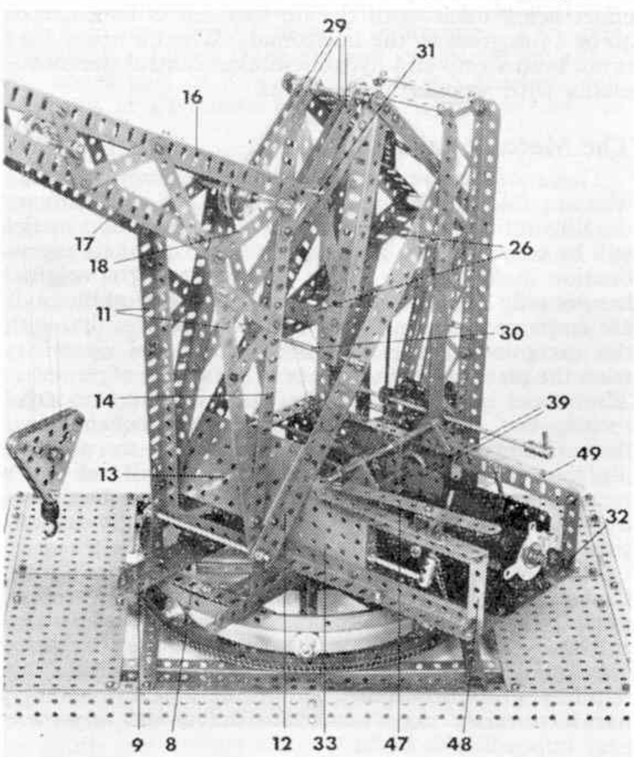
Those of our readers of sufficiently long standing who are able to turn up " M.M." No. 20 and compare the illustration on page 6 with our new Meccano model will be struck by the accuracy and realism of its reproduction in Meccano. Every movement of the original has not only been carefully copied, but identical methods are employed to bring about the required results, with the exception that in the Meccano model electricity takes the place of steam engines as the source of power... The model is complete in every detail—the wonderful rocking-bar, giving great leverage and movement at the expenditure of the minimum of effort—the graceful jib, with its two pulley blocks; the wheel and roller race, to minimise friction, and the screw mechanism—by which the jib is raised or lowered—perfectly demonstrated by the Meccano Threaded Rods."

All these comments apply equally to our re-built Crane although I must mention that, whereas the original model employed two Motors, one to drive the hooks and the other the slewing movement, our model uses only one E15R Motor to drive all movements. This requires a slightly more-complicated gear assembly, but it certainly does not make the model anywhere near impossible to build.



In this view of the model the superstructure has been removed from the pontoon to show construction of the pontoon and roller race, both of which are easily built.

A close-up view of the general superstructure. Pay particular attention to the method of joining the jib to the body.



Pontoon

Dealing first with construction of the pontoon, a rectangle is built-up from two 18½ in. Angle Girders 1 and two 12½ in. Angle Girders 2, the former being further joined by two 12½ in. Strips 3 and the latter by another two 18½ in. Angle Girders 4. Two identical Plate arrangements are each produced from two 5½ × 3½ in. Flat Plates connected by a laterally-mounted 4½ × 2½ in. Flat Plate 5, then the finished arrangements are mounted in position on the pontoon. The larger Plates are bolted to Girders 1, while Plates 5 are fixed to respective Strips 3, the securing Bolts also fixing in place a 9⅝ in. Flanged Ring crossed by two 9½ in. Strips 6. Flat Girders are bolted to the vertical flanges of Angle Girders 1 and 2.

Superstructure

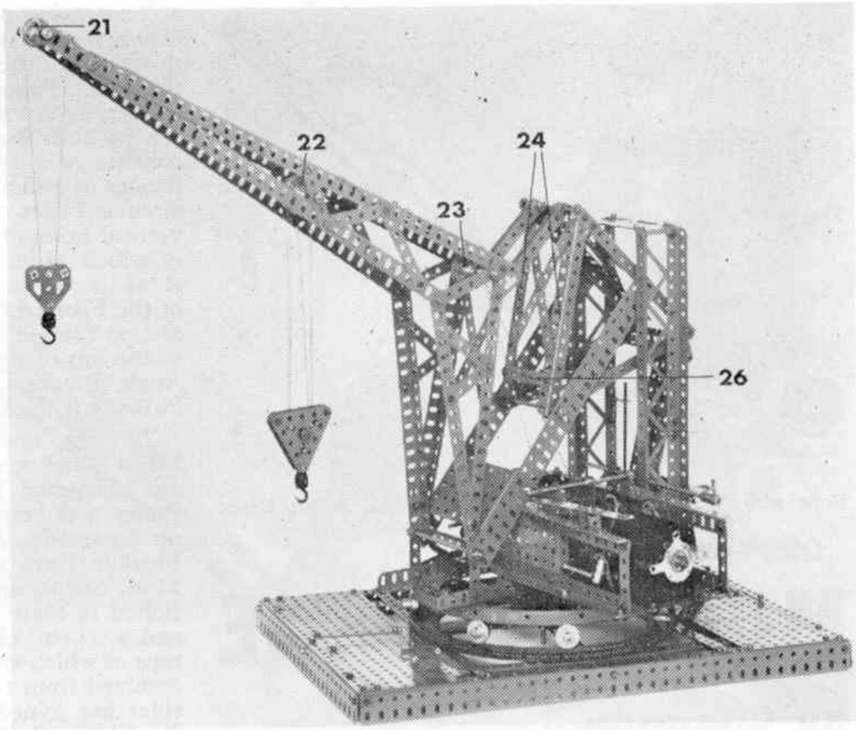
Whereas the pontoon is very simple in design, the superstructure is rather more complicated in that it incorporates no less than six hinge points which enable not only the jib, but also a large section of its supporting superstructure to vary its operating angle. To begin with, a 9½ in. Strip 7 is fixed by two ½ in. Bolts across a 9⅝ in. Flanged Ring, the Bolt shanks pointing upwards in the same direction as the flange of the Ring. Held by Nuts on the shank of each Bolt, at right-angles to the Strip, is a 4½ in. Angle Girder 8 which cuts across a section of the Ring, its horizontal flange clamped tight against the vertical flange of the Ring. Bolted to Girders 8 are two 12½ in. Angle Girders 9, separated by a distance of five clear holes.

Now fixed to each Girder 9, through the third and sixth holes are two further 12½ in. Angle Girders 10 joined by a 12½ in. Braced Girder. The upper ends of Girders 10 are, in turn, joined by two 3½ × ½ in. Double Angle Strips to which a 3½ in. Braced Girder is bolted. Also fixed nearer the opposite ends of Girders 9 are two Corner Gussets in which a 4 in. Rod is held by Collars. Mounted on this Rod are two 9½ in. Angle Girders 11, connected by a 3½ in. Strip, and two 12½ in. Flat Girders 12, the other ends of which are bolted to inside Girders 10. Flat Girders 12 are themselves connected by a 3½ × 2½ in. Flanged Plate 13, as shown.

A further 9½ in. Angle Girder 14 is bolted to each Girder 11 through its third hole, the two Girders being held apart further up by a 2½ in. Strip and a 3 in. Strip 15, arranged as shown. Girders 11 are joined by two crossed 5½ in. Strips. Two 18½ in. Angle Girders 16 and 17 are next attached one to the top of Girder 11 and the other to the top of Girder 14, the securing Bolts fixing a 3½ in. Strip 18 between the Girders and at the same time helping to fix a 1½ in. Corner Bracket 19 to the top of Girder 14. Girders 16 and 17 are bolted together at one end, bracing Strips being added further back as shown. Girders 16 at each side are joined by two crossed 3½ in. and two crossed 4½ in. Strips 20, while a 1½ in. Strip is bolted through the third holes from the ends of Girders 17. A 2 in. Rod, carrying a 1 in. loose Pulley 21, is held by Collars in the end holes of these Girders, while similarly held in two of the jib bracing Strips, is a 3 in. Rod carrying two 1 in. loose Pulleys mounted between two 8-hole Bush Wheels 22. An identical Pulley/Bush Wheel arrangement 23 is mounted on a 3½ in. Rod held by Collars in Strips 18.

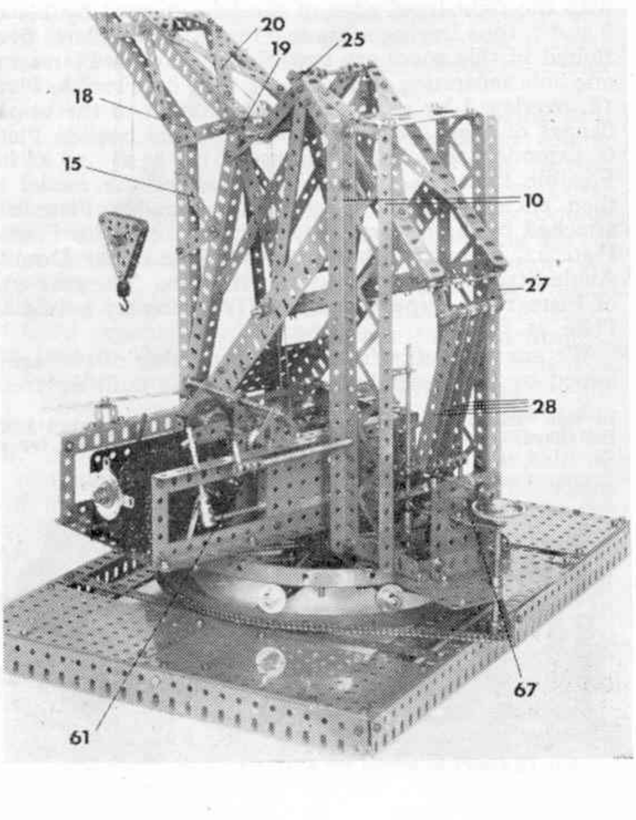
At this stage, two triangular constructions 24 are each built up from three 7½ in. Angle Girders, one of which is extended one hole by a 1½ in. Strip 25. The triangles are then joined by crossed 5½ in. Strips down each side and by an additional 3 in. Strip 26 in two cases. A further 3 in. Strip is bolted to the ends of one pair

The magnificent re-built version of the giant Pontoon Crane which was first featured in the March 1925 issue of Meccano Magazine.



Below, a rear view of the general superstructure showing the relation of the main and secondary gearboxes to each other.

of Girders and to this are fixed two 1 × 1 in. Angle Brackets 27, in the free lugs of which a 2½ in. Rod is journalled. Mounted on this Rod, in order, are four Washers, a Collar, a 5½ in. Strip, a second Collar then a second 5½ in. Strip followed by two more Washers, a further Collar, two further Washers and a third 5½ in. Strip. A fourth Collar and Strip are added, then a final Collar and four last Washers. The Strips, numbered 28 in the accompanying illustrations, must be free to turn on the Rod.



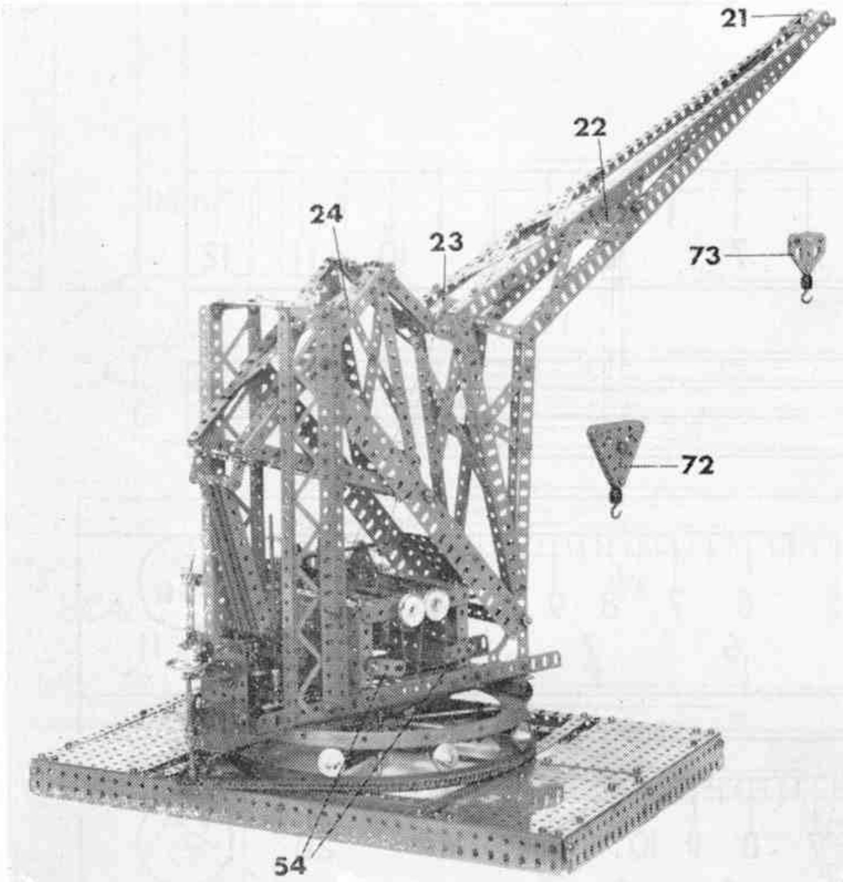
Held by Spring Clips in Strips 25 is a 3½ in. Rod on which four 3½ in. Strips 29, arranged in pairs, are held by Collars. The Strips in each pair are themselves separated by a Collar and, like Strips 28, they must be free to move on the Rod.

The completed triangular box is now positioned in the model, a 4½ in. Rod 30 being passed through the unused corners of the triangles and through the centre holes in Flat Girders 12 to be held by Collars. Strips 29 are then held by Collars on a 3½ in. Rod 31 journalled in Corner Brackets 19, and this should leave Strips 28 dangling at the rear, to be secured later.

Next month's Meccano Magazine concludes the Pontoon Crane. The Motor, Gear, Pulley Blocks and Roller Race assembly are described together with operating instructions.

PARTS REQUIRED:

2—1	2—15a	242—37a	3—76
3—1a	7—16	218—37b	1—94
13—2	4—16a	80—38	1—95a
2—2a	1—16b	1—40	1—96
11—3	2—17	1—45	1—96a
7—4	1—18a	8—48a	1—97
6—5	2—18b	4—48b	2—99
3—6a	8—20b	1—48c	4—103a
6—7a	2—22	2—52	4—103b
8—8	7—22a	5—52a	2—108
10—8a	1—23	1—53	1—109
6—8b	4—24	1—53a	2—111
2—9	6—26	2—57c	4—111a
5—9a	1—26a	62—59	3—111c
1—9d	1—26b	4—62	2—126
1—9f	4—27a	3—63	3—126a
4—12a	2—28	3—63d	2—133
1—13	4—30	2—70	2—167b
3—13a	3—31	1—72	2—173
12—15	10—35	2—73	1—E15R Motor



NEW 40 YEAR OLD MODEL

by Spanner

The final part of a giant Pontoon Crane rebuilt from the March 1925 issue of Meccano Magazine. A Supermodel for those with lots of Meccano.

IN MECCANO Magazine last month we began describing this extremely interesting advanced model by detailing construction of the pontoon and general superstructure. Before continuing with the building instructions this month, however, I would like to give a brief resume of the reasons why the model is so special.

Irrespective of its intriguing appearance and completely realistic movements, its main claim to fame is the fact that it is a reproduction of a model which was first featured in the March 1925 issue of the M.M., later appearing in pre-war Super Model Leaflet No. 28. This alone says a good deal for the continued reliability of the Meccano system; a reliability which is further attested to by the fact that the model is an almost scale reproduction of a crane that existed in real-life. This was "Crane Lighter No. 4"—an enormous floating crane owned by the British Admiralty. The dimensions of the pontoon alone were 242 ft. long by 86½ ft. wide, while the crane as a whole was capable of lifting a load of 250 tons to a height of 77½ ft. above the sea, to then deposit it anywhere within 100 ft. radius from the crane. Even by modern standards, these figures are impressive, as I am sure you will agree.

The Meccano model reproduces all the actions of the original crane, and, talking of the model, it is time now to continue with the building instructions.

Motor and gear arrangements

In this model, two distinct gear arrangements are included, the main gearbox controlling the two load hooks, and a secondary unit controlling the swivelling motion of the superstructure as well as the vertical movement of the jib. The main box is constructed from two 9½ in. Angle Girders joined at one end by a 5½ × 3½ in. Flat Plate 32. A 5½ × 2½ in. Flanged Plate 33 is bolted to the other end of each Girder, then the lower flanges of these Plates are joined through their first and seventh holes by two 4½ in. Angle Girders 34. The upper flanges are joined by a similar Angle Girder 35 and a 4½ × ½ in. Double Angle Strip 36, both of which supply the bearings for two 5 in. Rods each held in place by a 1 in. fixed Pulley 37 at one end and a Collar at the other. A ⅞ in. Bevel Gear 38 is mounted on the inside end of each Rod.

Before going any further, the sideplates of an E15R Electric Motor, bolted to Flat Plate 32, are extended two holes forward by 3 × 1½ in. Flat Plates 39. A ½ in. Pinion on the Motor output shaft drives a 57-teeth Gear 40 on a 2½ in. Rod journalled in the Motor sideplates. A ½ in. Pinion on the centre of this Rod in turn drives a second 57-teeth Gear 41 on a 3½ in. Rod held by Collars in Flat Plates 39. Mounted on one end of the latter Rod is a ¾ in. Sprocket Wheel 42, a ½ × ½ in. Pinion being mounted on its opposite end. This Pinion meshes with another 57-teeth Gear 43 mounted above it on a second 3½ in. Rod *free to slide in Flat Plates* 39. Also fixed on this Rod are two ⅞ in. Bevel Gears 44, outside the Plates, and a Crank 45, trapped between two Collars inside the Plates. The Bevels must be so positioned that, when the Rod is slid in its bearings, one or another of the Bevels engage with appropriate Bevel 38.

Movement of the Rod is controlled by a 5 in. Rod 46 fixed in the boss of Crank 45 and journalled in two Trunnions bolted one to the upper flange of each Flanged Plate 33, Collars acting as stops for the Rod. Pivotally attached to one of these Collars is a 5½ in. Strip 47 which is lock-nutted to a Double Bent Strip attached to a $5\frac{1}{2}$ in. Angle Girder. This, in turn, is bolted to Flanged Plate 33 and attached to one of the $9\frac{1}{2}$ in. Girders by a $2\frac{1}{2}$ in. Strip 48. A similar Strip is attached to a second $5\frac{1}{2}$ in. Angle Girder 49 bolted to the other Plate 33.

Sprocket Wheel 42 is now connected by Chain to a $1\frac{1}{2}$ in. Sprocket fixed on a 5 in. Rod 50 held by Collars in Flanged Plates 33. A $\frac{1}{2} \times \frac{3}{4}$ in. Pinion mounted on the Rod meshes with a 57-teeth Gear 51 on an $11\frac{1}{2}$ in. Rod 52 free to slide in Plates 33 but being prevented from moving too far in one direction by a $\frac{1}{2}$ in. Pinion 53 outside the Plates.

Journalled in the end flanges of each Plate 33 is an 8 in. Rod held in place by a Crank 54 and a Collar. A Coupling, carrying a $2\frac{1}{2}$ in. Rod 55 in its longitudinal bore, is mounted transversely on the end of the Rod nearest the Motor, then the complete gearbox is fixed in position in the model by bolting Girders 34 to Girders 9.

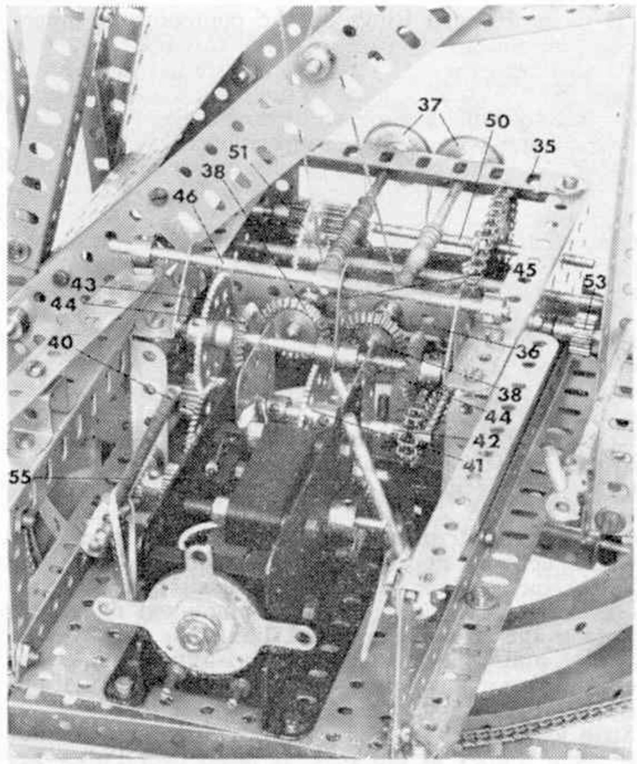
Next, two $3\frac{1}{2} \times \frac{1}{2}$ in. Double Angle Strips 56, a distance of two holes separating them, are bolted between rear Girders 10, two and five holes respectively from their lower ends. Journalled in the centre holes of these Double Angle Strips is a 2 in. Rod carrying a Coupling and a $1\frac{1}{2}$ in. Contrate Wheel 57 between the Strips and held in place by a Collar above the upper Strip and a 1 in. Gear 58 beneath the lower Strip. The Rod, incidentally, passes free through one of the Coupling's end transverse bores, its longitudinal bore providing one bearing for a $3\frac{1}{2}$ in. Rod, the other end of which is mounted in nearby Flanged Plate 33. Fixed on this Rod are two $\frac{1}{2}$ in. Pinions 59 and 60, the former in constant mesh with Contrate 57 and the latter meshing with Pinion 53 when Rod 52 is moved towards the jib. Movement of Rod 52 is controlled by a 1 in. Rod fixed in a Coupling 61 which is in turn fixed on an 8 in. Rod journalled in inner Girders 10. A Crank 62 on this Rod is pivotally connected to a loose Collar mounted between two fixed Collars on Rod 52.

Returning to 1 in. Gear 58, this is in constant mesh with a further two 1 in. Gears 63 positioned one each side of it on Adaptors for Screwed Rods 64 mounted in lower Double Angle Strip 56. Fixed in each Adaptor is a 5 in. Screwed Rod mounted in upper Double Angle Strip 56 and in a 1×1 in. Angle Bracket bolted to appropriate Angle Girder 10. Each Rod is also screwed through one transverse tapped bore of a Short Coupling 65, mounted on the end of a $1\frac{1}{2}$ in. Rod passed through the end holes of Strips 28, the Strips being spaced by Collars and Washers as before.

A $4\frac{1}{2} \times 2\frac{1}{2}$ in. Flat Plate 66 is now bolted to the ends of Girders 9, as shown. Attached to this Plate by a $2\frac{1}{2}$ in. Angle Girder is a $2\frac{1}{2} \times 2\frac{1}{2}$ in. Flat Plate which helps to support Rod 52 and to which a Flat Trunnion 67 is attached by a $1\frac{1}{2}$ in. Angle Girder. A $3\frac{1}{2}$ in. Rod carrying a $1\frac{1}{2}$ in. Contrate 68 and a 1 in. Sprocket Wheel 69 is journalled in the apex hole of the Flat Trunnion and in Plate 66, being held in place by a Collar. Contrate 68 meshes with a $\frac{1}{2}$ in. Pinion 70, fixed on the end of Rod 52, when the Rod is moved away from the jib towards the rear.

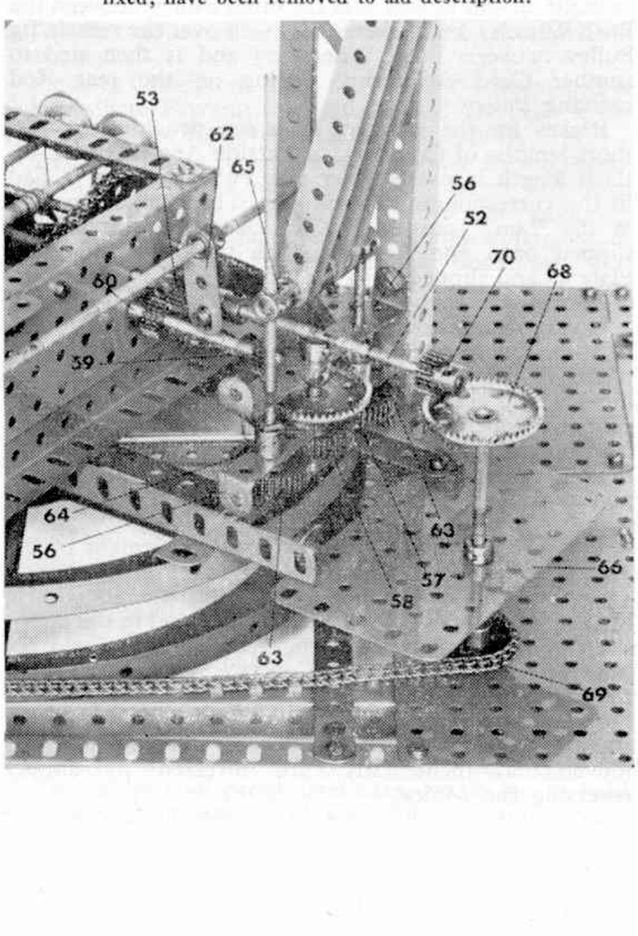
Roller race

Before the superstructure of the Crane can be mounted on the pontoon, a roller race to facilitate the swivelling movement must be produced. This is built up from a Face Plate 71 to which eight radiating $2\frac{1}{2} \times \frac{1}{2}$ in. Double Angle Strips are bolted. Held by a Collar and a Spring Clip in the lugs of each one of these is a 5 in. Rod on the end of which a $\frac{3}{4}$ in. Flanged Wheel is fixed. The finished race is then mounted between



A close-up view of the main gearbox including the E15R Electric Motor which drives all the movements of the model.

In this close-up view of the secondary gearbox, left-hand Girders 10, like Flat Trunnion 67 and the Plate to which it is fixed, have been removed to aid description.



the $9\frac{7}{8}$ in. Flanged Rings on the pontoon and superstructure and a 3 in. Rod is passed through the centre holes of Strips 6 and 7 as well as through the boss of Face Plate 71. Being loose in the boss, the Rod is held in place by Collars above and below Strips 6 and 7.

With the superstructure in position on the pontoon, a length of Sprocket Chain is passed round the circumference of the lower Flanged Ring and round Sprocket Wheel 69. The Chain must be as tight as possible so that, when the Sprocket rotates, the Chain tends to grip the Flanged Ring causing the Sprocket to travel round the Chain thus rotating the Crane.

All that now remains to be built are the pulley blocks, two of which are included in the model. The larger, numbered 72, consists of three $2\frac{1}{2}$ in. Triangular Plates connected together at the corners by $\frac{1}{2}$ in. Bolts, Washers on the shanks of the Bolts spacing the Plates sufficiently far apart to allow two 1 in. loose Pulleys to be mounted between them on a central 1 in. Rod held in place by Collars. A Loaded Hook is secured on the lower Bolt, as can be seen. The smaller pulley block, numbered 73, is built up from two Flat Trunnions separated by a Collar at each upper corner and with a $\frac{1}{2}$ in. loose Pulley mounted on a $\frac{1}{2}$ in. Bolt fixed in the upper centre hole. A Loaded Hook is mounted on a Bolt fixed to the apex of the Flat Trunnions.

Both pulley blocks work independently of each other, each having its own operating Cord. In the case of the smaller block, a length of Cord is tied to the $1\frac{1}{2}$ in. Strip joining the ends of Girders 17, is passed round the $\frac{1}{2}$ in. Pulley in block 73, is taken over Pulley 21, is brought down the jib and is finally taken over one of the Pulleys between Bush Wheels 23 to be attached to a Cord Anchoring Spring fixed on the front Rod carrying Pulley 37. A second length of Cord is tied to one Bush Wheel 22 in the jib, is passed round one of the Pulleys in block 72, is brought up and around one of the Pulleys between Bush Wheels 22, is taken down and round the other Pulley in the block and is again brought up and passed over the other Pulley between the Bush Wheels. From there it is taken over the remaining Pulley between Bush Wheels 23 and is then tied to another Cord Anchoring Spring on the rear Rod carrying Pulley 37.

Brakes for the winding Rods are provided by two short lengths of Cord tied to outside Angle Girder 34. Each length is passed over one Pulley 37 and is tied to the corresponding Crank 54. The brakes are held in the "on" position by an elastic band which is slipped onto one Rod 55, then taken beneath Flat Plate 32 and slipped onto the other Rod 55. The Rods, of course, act as the brake levers.

Owing to the drive mechanism built into this model it is possible to operate one of the main gearbox movements at the same time as one of the secondary box movements, although both movements of any one box cannot be operated simultaneously. The main gearbox controls the pulley blocks, movement of Strip 47 bringing one or the other Bevel Gear 44 in mesh with corresponding Bevel Gear 38, thus turning the respective winding Rod.

In the case of the secondary box, movement of the 1 in. Rod in Coupling 61 in one direction brings Pinion 53 into mesh with Pinion 60, setting the jib control linkage into motion. Movement of the Rod in the opposite direction, however, disengages Pinions 59 and 60, but engages Pinion 70 with Contrate Wheel 68 to bring the swivelling mechanism into action. Note that in both gearboxes the gearing must be so arranged that there is a neutral period between movements. All movements, incidentally, are reversed by simply reversing the Motor.

BRITISH STOCK CAR RACING—*Continued*

motor sport. The rest of the cars battle on like this for twenty laps, and slowly the red topped men avoid the abandoned cars, pass slower drivers, and pick their way to the front—although not every time. Men like Ellis Ford (3), Andy Webb (763) and Trevor Frost (68) all at the top of their chosen sport whose cars are groomed to perfection, a credit to them and to Stock Car Racing.

Stock Car Racing's biggest night is that of the respective World Final for each class. Preliminaries for this event take place during each season, when selected meetings at differing venues count, on a points basis, for entry to the big night. Often, as in the Football Association Cup competition, fancied men fall in early rounds and many lesser known faces can find themselves in a position to have a crack for the title. When the big night arrives, drivers not only have to face competition from their own country, but also entrants from France, Belgium, Holland, South Africa and other countries. Many of our drivers compete regularly at overseas meetings, and 1967 saw the triumphant return of F.II driver Tony May (364) from Holland complete with the European Championship Trophy, the first time that a British driver has won a major foreign award. Whichever the class raced, the technique remains the same. The prime object is to win, and this is done by skill of man and machine and nothing else. Slower cars can legitimately be pushed or spun off, but deliberate charging or fencing is not allowed and such an action would result in the offender receiving dire penalties for such behaviour. Tactics vary according to driver and racing surface, be it shale or tarmac. Gearing, back axle ratios and the type of tyres fitted all have to be carefully considered. Star graded Formula I driver Geoff Harrison (127) is a past master of the calculated tail slide, taking the same line both in and out of the bends with unbelievable precision for lap after lap. Veteran Junior driver Chick Woodroffe (601) whose car seems glued to a tight inside line all through a race and young Todd Sweeney (531) whose rapid rise to F.II fame has been his uncanny ability to "read the track" well in advance.

Remember that all these incidents take place on a track of which the majority are less than 440 yards per lap, and bounded on the outside by a three strand wire fence supported by railway-line type uprights at regular intervals and on the inside by oil drum sized markers. These only add to the hazards of getting round the track for twenty or so laps, with all the other drivers breathing down your exhaust pipe, at speeds which average 45-50 m.p.h.

Stock Car Racing has, for some time, suffered from its dubious early days and is still regarded by the "purists" as something of a circus act. However such days are well and truly past and whatever the thoughts are on Stock Car Racing, the skill of driver and ingenuity of construction of the cars cannot be denied. It's a fast, skilful and entertaining sport, which combines speed with spectacle, and can be seen at Stadiums all over the Country, during a season which lasts from November to February and includes such famous circuits as Cadwell Park in Lincolnshire and Brands Hatch in Kent.

Readers can obtain details of their nearest Stock Car track and details of all fixtures from: The British Stock Car Racing Supporters Association, 2, Enfield Court, Ruthall Close, Abdon Avenue, Selly Oak, Birmingham, 29.

Great Engineers No. 9

S. Z. de Ferranti
(1846-1930)
by A. W. Neal

SABASTIAN ZIANI DE FERRANTI was born in Liverpool and his family were distinguished in the fields of music and painting. As a child he frequented Lime House Railway Station, and railway locomotives captivated him. At the age of ten he was asking for 'a book on Compound steam', and 'as a great favour' a model steam fire-engine. When only thirteen years of age, he attended St. Augustine's College, Ramsgate; here, he displayed advanced thinking, and the headmaster wisely set aside a room for him to experiment in. Soon a friendly electrician in Canterbury taught him to use the lathe and he was writing home for such a machine-tool. He left Ramsgate and sold his dynamo during 1881. This was the time when Edison, in America, had started a power station to light consumers' houses with his carbon filament lamp. In England the Swan incandescent lamp was lighting the Savoy Theatre, London, and electric lighting was obviously coming to stay.

1881 was also the year that Ferranti took up employment with Siemen's at Charlton. On this he said "A most fortunate place which is as good for me as if I was spending piles of money on experiments". In the course of his duties he met Alfred Thompson, an engineer, and they joined hands on a dynamo project. Ferranti, had by then, finished his improved dynamo and arc lamp which he had worked up whilst at school. The Ferranti machine was found to be similar to that designed by Sir William Thomson (later Lord Kelvin), and they agreed to combine the two inventions. Then came along Francis Ince, a wealthy London lawyer, and this resulted in the formation of a company to be known as Ferranti, Thompson and Ince Ltd., to manufacture the Thomson-Ferranti machine. The Hammond Electric Light and Power Supply Company Limited obtained the sole sales rights, and at this time Ferranti was hardly 18 years old.

After about a year, both companies went into voluntary liquidation, and Ferranti bought back his patent and commenced business on his own account. He went ahead with the manufacture of the dynamo, with electric meters, transformers, fuse gear, oil-break switches and so on. It was at this time that he built his first 10,000-volt transformers.

In 1883 the Grosvenor Art Gallery in New Bond Street, London, installed electric lighting, and it seems this source of electric supply was extended to neighbouring premises. The result was the formation of Sir Coutts Lindsay and Co. Ltd., and the construction of a generating station with Gaulard and Gibbs transformers. Technical troubles arose and Ferranti was consulted, and, in 1866, he became engineer to the company—at 21 years of age! The reforms he brought about lead to some litigation. The little company formed the London Electric Supply Corporation Ltd., and then went to Deptford to build a new power station with Ferranti as its engineer and electrician. The project was a very large one at that period—Ferranti did not believe in small electric light works supplying a limited area, but in mass production of electricity supplying a wide area. The supply from Deptford was settled by Ferranti at 10,000 volts, a decision that drew considerable criticism at a time when 2,000 was regarded with doubts. "Engineer" reported: 'The new electrical machinery is so enormous as compared with anything in existence, that it may be deemed a perfectly novel creation, a monument to the confidence reposed by the directors in their engineer Mr. S. Z. de Ferranti.' During the course of these works there were many problems to overcome and new techniques to develop, but all was well in the end and a regular supply of electricity was made available in February 1891.

Colonel Crompton, the direct current advocate, gave full credit to Ferranti (and alternating current), for the part he played in developing electric supply.

In 1890, the Grosvenor Gallery power station, being used as a kind of substation, was burnt out with disastrous results. Probably some of the engineers of the day agreed that it was those high voltages that Ferranti would work to, that brought this about. But contemporary reports suggest otherwise. In 1891 Ferranti, then twenty-seven years of age, severed his connection with the Company.

We have seen that Ferranti was operating a manufacturing business after the Ferranti, Thompson & Ince Limited business closed down. This second business was named S. Z. de Ferranti, and there were partners in it. While retaining his interest in this, Ferranti embarked upon his great pioneering work at Grosvenor Gallery and Deptford.

In 1890 the business known as S. Z. de Ferranti was turned into a limited liability company with a factory at Charterhouse Square, London, making electric supply equipment and steam engines. Then, in 1896-7, all work was transferred to Hollingwood. In 1905 the title became Ferranti Limited.

He spent Christmas 1929 in Switzerland and died on the 13th January, 1930 at Zurich.

One could lay stress on the extreme youth of Dr. Ferranti when he did his great pioneering work. Of course, his was an exceptional case, but it can be held up as a shining example of youthful accomplishment.