New Meccano Models

Wire Coverer—Arch Bridge—Crane—Meccanograph—Level Crossing Gates, etc.

ONE of the most remarkable features of Meccano model-building is the extraordinarily wide range of machines and structures of which faithful reproductions may be made, even with small Outfits, and the interest of the hobby makes it a source of almost unlimited pleasure. The new models described this month illustrate this wonderful variety, and also show how model-building encourages invention and gives opportunities for the introduction of ingenious ideas in overcoming little difficulties met with in construction.

Wire Covering Machine

The model shown in Fig. 1 is a machine that enables a coil of bare wire to be covered with a layer of cotton thread, thus converting the bare wire into the covered insulating type.

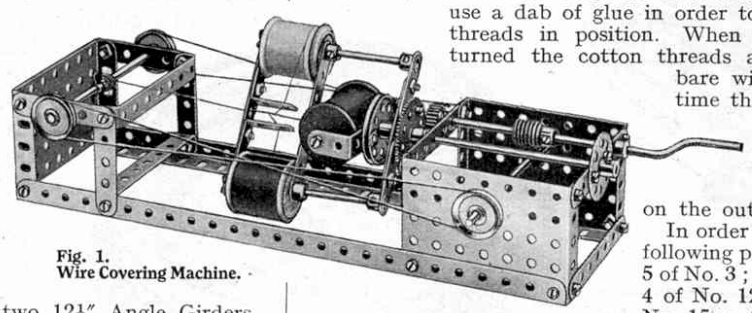

Fig. 1. Wire Covering Machine.

The frame of the model consists of two 12½" Angle Girders spaced apart by 3½"×½" Double Angle Strips. A 3½"×2½" Flanged Plate is bolted in position at one end of the model and two similar Plates are secured to the side Girders at the other end of the frame. Two 3½" Strips are bolted between these Plates so as to form a frame in which the gearing may be secured. A 3½"×½" Double Angle Strip is supported in position close to one end of the frame by means of four 3½" Strips, and a 4½" Axle Rod is mounted in the frame so formed. This Axle Rod forms the drum on to which the wire that has been covered is wound. Two 1" Fast Pulleys are secured on this Rod and serve to couple it to the operating handle of the model, thus enabling the take-up action to be carried out. A 4½" Axle is mounted rigidly in the boss of a Bush Wheel that is secured to one of the 3½" Strips forming the gear-box. A 57-teeth Gear Wheel is mounted loosely on this Rod, and a 2½" Strip carrying a Crank at each end is attached to the Gear Wheel, being spaced away from its face by means of Washers. An Axle Rod is mounted in the boss of each Crank and the bobbins carrying the cotton thread are mounted on these Axles.

The bobbins are prevented from sliding up and down the Rod by means of two 3½" Strips held in position by means of Collars and Spring Clips. The front 3½" Strip also carries two 1"×1" Angle Brackets, and the holes in the lugs of these Brackets form guides through which the cotton threads are led on to the wire that is to be covered. The Bobbin carrying the wire is mounted in a holder composed of a 1½" Pulley Wheel bolted rigidly to the central axle. Two 1"×1" Angle Brackets are bolted to the face of the Pulley, and a ½" Bolt is secured in the end holes of each lug of the Angle Brackets by means of a Nut. The projecting shanks of these Bolts pass into the centre bore of the bobbin carrying the bare wire, and the bobbin is thus held in place.

A Crank Handle is mounted in the gear-box, and a ½" Pinion is secured on one end. This Pinion meshes with the 57-teeth Gear carrying the frame on which the thread bobbins are mounted, and by rotating the Crank Handle these bobbins are driven round. The take-up action is effected by means of a Worm mounted on the Crank Handle shaft which meshes with a ½" Pinion secured on a transverse shaft mounted in the gear-box side plates. A 1" Fast Pulley is mounted on each end of this Rod, and the Rod is coupled up drum by means of two

To operate the model, the carrying the bare wire and the threads (which may be of two colours) are placed in position, bare wire is then threaded centre hole in the 3½" Strip

to the take-

crossed belts.

bobbins

cotton

distinctive

and the

through the

attached to

the rotating frame, the end of the wire being anchored to the take-up axle by means of a Spring Clip. The ends of the cotton threads are then led through the holes in the lugs of the Angle Brackets, and twisted round the bare wire. It is a good plan to use a dab of glue in order to hold the ends of the threads in position. When the Crank Handle is turned the cotton threads are twisted round the bare wire, while at the same time the wire is slowly drawn from the Bobbin on to the take-up drum. In this way a layer of cotton is formed on the outside of the wire.

In order to build this model the following parts will be required :— 5 of No. 3 ; 5 of No. 5 ; 2 of No. 8 ; 4 of No. 12a ; 2 of No. 15 ; 1 of No. 15a ; 2 of No. 16 ; 1 of No. 19 ; 1 of No. 21 ; 4 of No. 22 ; 1 of No. 24 ; 2 of No. 26 ; 1 of No. 27a ; 1 of No. 32 ; 5 of No. 35 ; 26 of No. 37 ; 4 of No. 37a ; 6 of No. 38 ; 1 of No. 40 ; 2 of No. 48b ; 3 of No. 53 ; 4 of No. 59 ; 2 of No. 62 ; 2 of No. 111 ; 2 of No. 111c.

Centrifugal Governor

The model Centrifugal Governor shown in Fig. 2, although very simple, will be found interesting to build and operate, as it demonstrates the principle on which the governors fitted to the majority of stationary steam engines operate.

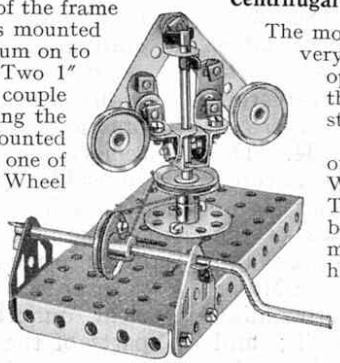

Fig. 2. Centrifugal Governor.

A 5½"×2½" Flanged Plate is used as the base plate of the model, and two Flat Trunnions and a Bush Wheel are secured in the positions shown in Fig. 2. The Bush Wheel forms a vertical or "foot-step" bearing for the Axle Rod carrying the governing mechanism. The governor arms consist of 2½" Strips having 1" Fast Pulleys attached to their ends to provide the necessary weights. The Pulleys are held in position by means of Bolts that are passed through the end perforations in the Strips into the bosses of the Pulleys, where they are gripped by the Set Screws.

The upper ends of the 2½" Strips are pivotally connected to an Angle Bracket by means of a Bolt and two locknuts. The Angle Bracket is held in place on the vertical Axle by means of two Spring Clips, one Clip being placed with its "wings" engaging with the outer locknut of the pivot, so that the Bracket will turn at the same time as the Rod.

A Flat Bracket is pivotally secured to each governor arm by means of a Bolt and two locknuts, and an Angle Bracket is attached to each of the Flat Brackets by further Bolts and locknuts. A second pair of Angle Brackets are now bolted to those already in position, and these are secured to two Double Brackets that are free to slide up and down on the vertical axle. A 1" Fast Pulley is secured rigidly to the vertical Axle and this Pulley is coupled to a second 1" Pulley mounted on a Crank Handle by means of a crossed belt. The vertical Rod is pre- ing upward by means of a on the Rod against the base plate.

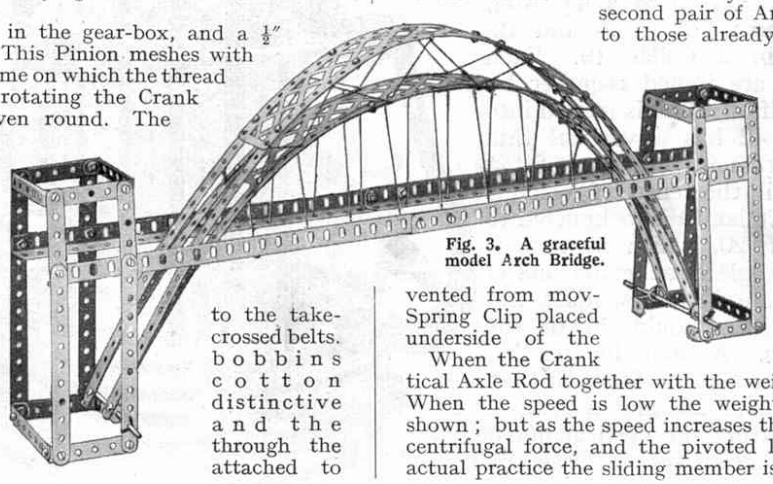

Fig. 3. A graceful model Arch Bridge.

vented from mov- Spring Clip placed underside of the

When the Crank Handle is rotated, the vertical Axle Rod together with the weighted arms are driven round. When the speed is low the weighted arms keep the positions shown ; but as the speed increases the weights fly outward, due to centrifugal force, and the pivoted links are drawn upward. In actual practice the sliding member is connected to the steam inlet

MODEL OF THE MONTH

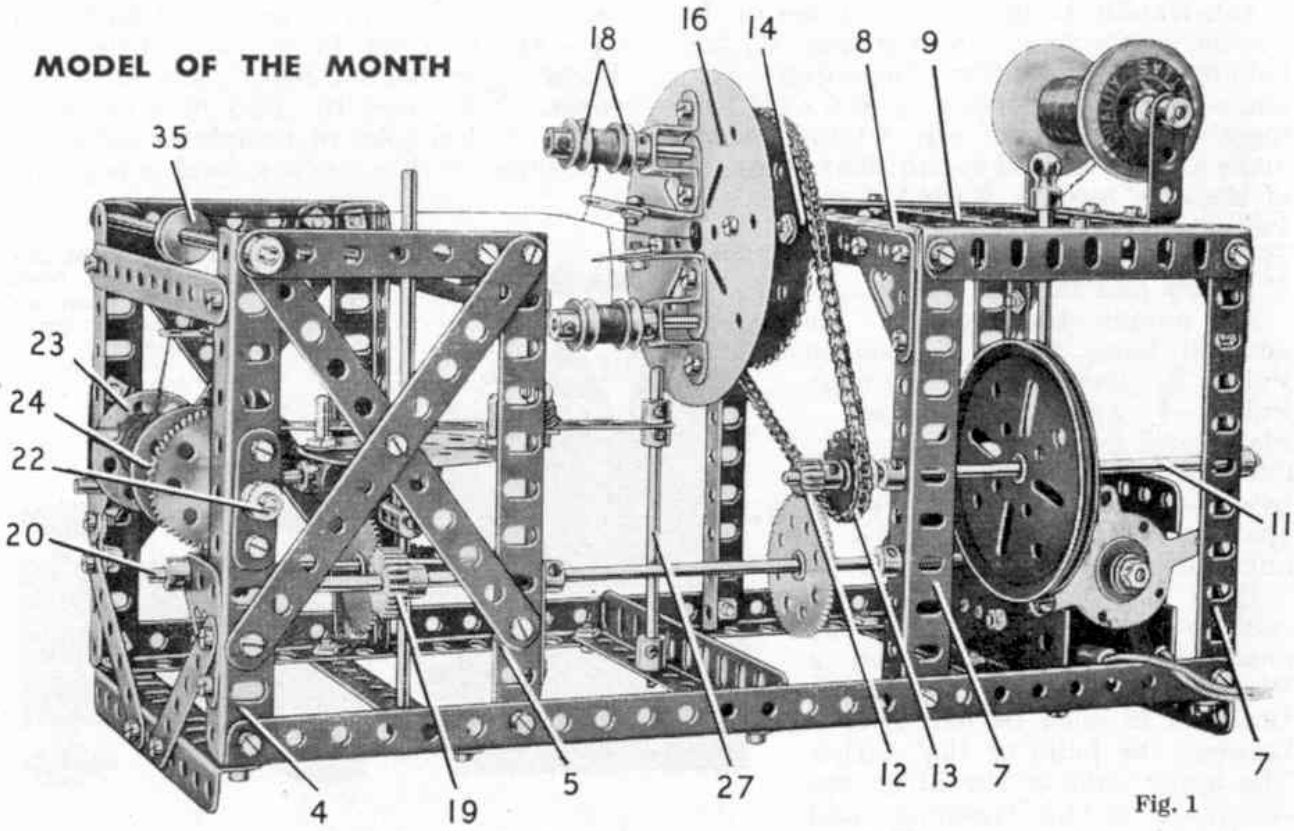

Fig. 1

Wire Covering Machine

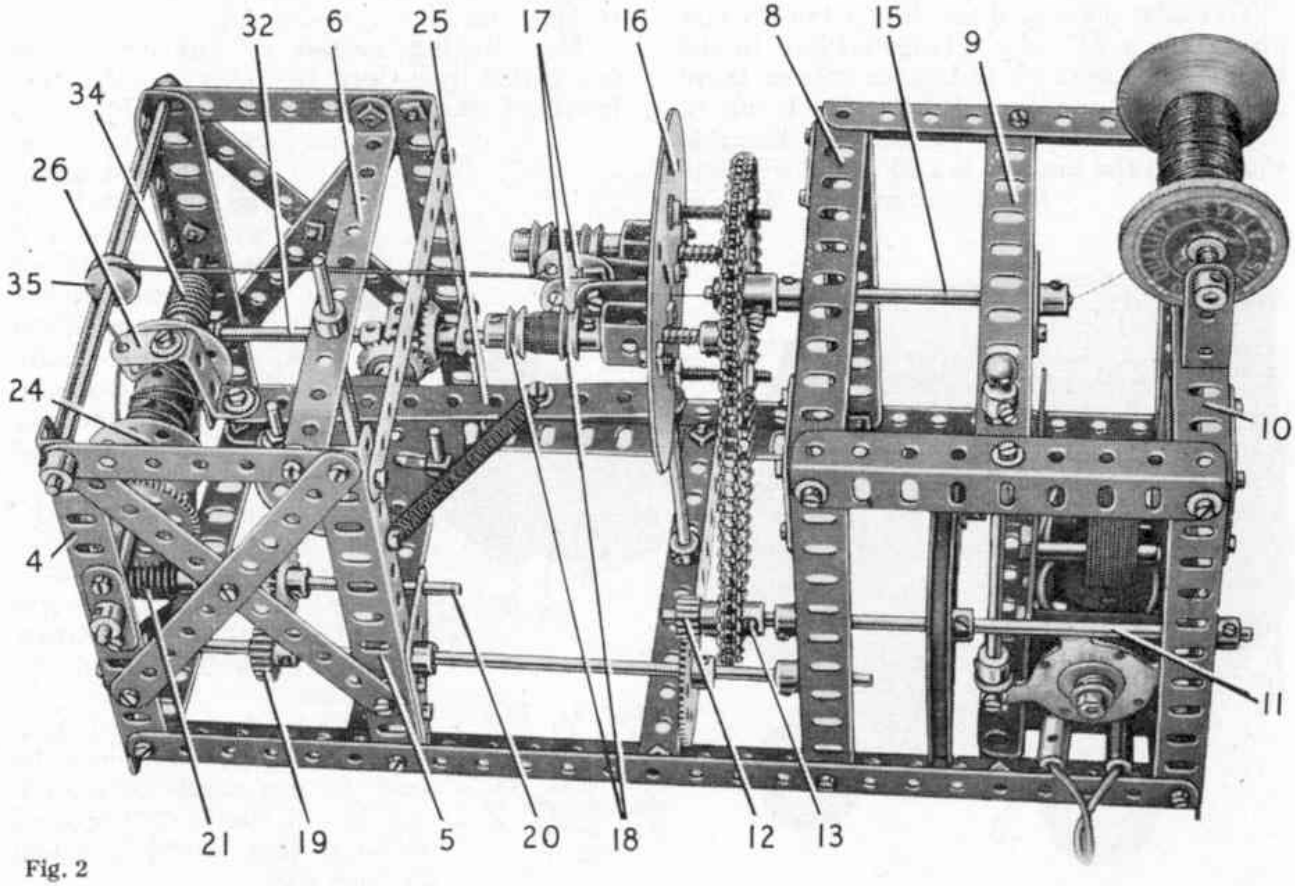

Fig. 2

Fig. 1. An attractive model of a Wire Covering Machine designed for covering wire with two layers of cotton or other insulating material.

Fig. 2. A semi-plan view of the Wire Covering Machine.

Fig. 3. The Wire Covering Machine seen from underneath.

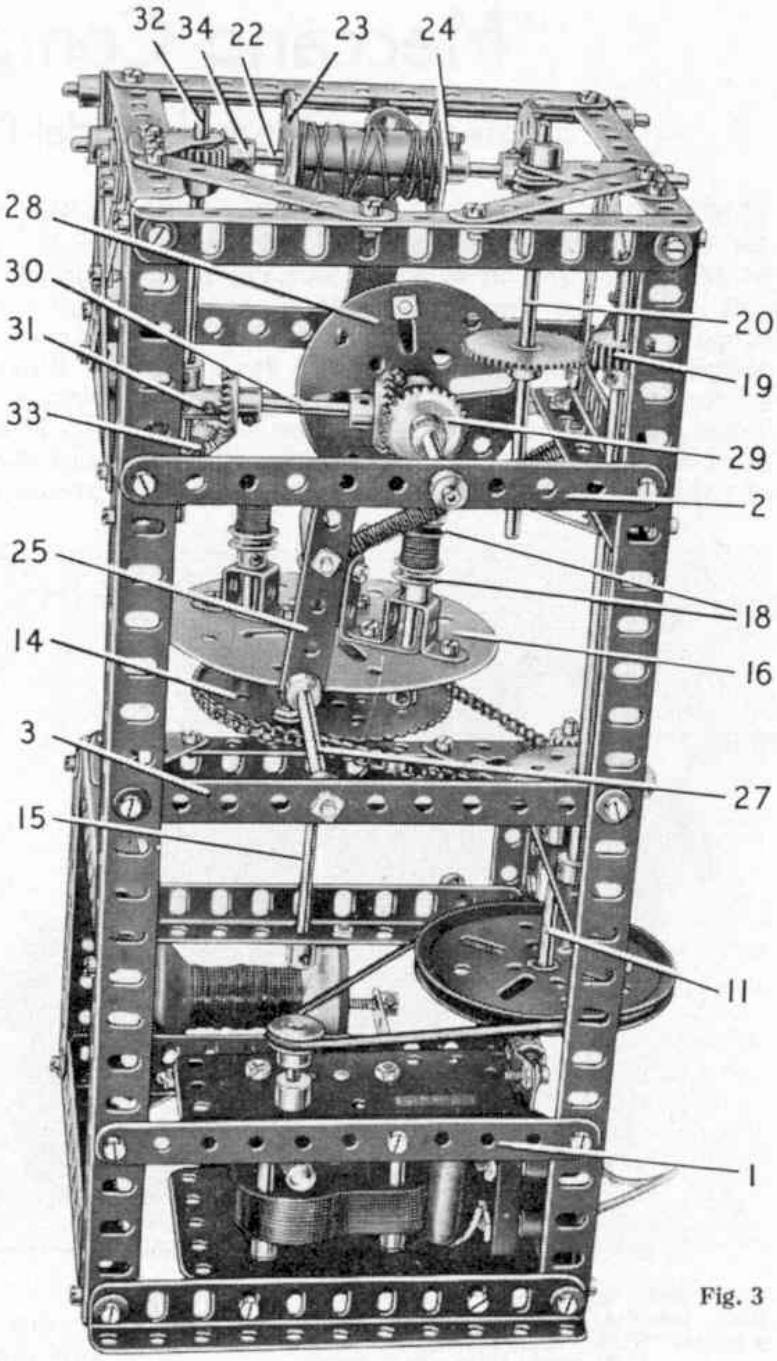

Fig. 3

OUR model this month is another splendid example of the way in which industrial machines can be reproduced with Meccano parts. It is a machine designed to insulate wire by covering it with double layers of cotton or silk, and once it has been set working the action is fully automatic.

Models of wire covering machines have been made before with Meccano, but this example is noteworthy for the outstandingly even way in which the layers of insulating material are wound on the wire. It is notable too because of the novel use it makes of one of the recent additions to the range of parts—the 4″ Rod with Keyway. The use of this part has simplified the design of the machine considerably.

The model is driven by an E20R(S) Electric Motor that provides drives to the carrier for the reels of insulating threads and the take-up drum for the insulated wire. The reels are formed by ½″ Pulleys on Rods supported by a special carrier, through the centre of which is passed the uncovered wire. The ends of the threads are tied to the wire, and the wire itself is fastened to the take-up drum at one end of the machine. This is all the setting up that is required.

When the Electric Motor is set working it rotates the thread carrier through suitable reduction gearing, and the threads are wound round the wire. At the same time the wire is pulled slowly through the centre of the carrier and is wound on the take-up drum. The wire is fed on to the drum by an ingenious cam-operated guide arm, which moves to and fro to distribute the wire evenly so that it can be unwound freely from the drum after the covering operation.

The thread carrier is mounted freely between Collars at one end of a 4″ Rod with Keyway. The Rod with Keyway is fixed in place at one end of the framework and the uncovered wire is led along its slot so that it passes through the centre of the thread carrying assembly. Thus this assembly is able to rotate on the 4″ Rod with Keyway without twisting the wire, and the wire can be drawn through the centre of the thread carrier. The uncovered wire is drawn from a reel mounted at one end of the frame.

The machine is fascinating to watch in operation, and it produces covered wire that is hardly distinguishable from the commercial product. The model is remarkable for its compact design and the

(*Continued on page 526*)

Buses in Birmingham—(*Continued from page 479*)

in the middle. But in course of time the bus system was built up thoroughly, and the tramways began to prove unprofitable, with the result that tramcar services were gradually withdrawn, the last tramcar service disappearing in July 1953.

The triumph of the motor bus was due to its greater speed and freedom on the road. But it may be added that tramway enthusiasts maintain that if more up-to-date tramcars of the kind now in use in the United States and on the continent had been developed these would have proved more popular and serviceable even than the buses. This is not the place in which to enter into a discussion on the relative merits of the two systems. The fact remains that the expense of renewing tramway tracks and other considerations led in time to the disappearance of the earlier form of transport.

By 1934 Birmingham had 550 buses in service and then owned the largest municipal bus fleet in the world, a claim that is made for the service today as far as England is concerned. A notable point is that in 1923 the first covered top bus in Great Britain, and perhaps in the world, was designed and constructed by Mr. Alfred Baker, General Manager of the Birmingham City Transport Department from its beginning in 1903 to 1928.

The growth of the Birmingham system since the war is illustrated by the fact that in the financial year 1952–3 there were 1,786 motor omnibuses in service. These ran over 46 million miles during that period, and carried well over 480 million passengers. These numbers are so immense that it is difficult to form any real estimate of what they mean. The calculation that the vehicles running in Birmingham cover each day a distance equal to about five times round the world will perhaps help the reader to realise the scale on which public service is carried on today.

The makes of vehicles operating in the City today are Daimler, Guy, Leyland, Crossley and A.E.C., with bodies by the Metropolitan-Cammell, Crossley, Brush, Park Royal and Leyland companies. The standard vehicle is 27 ft. long and 7 ft. 6 in. wide, with a seating capacity of 55. Engines are either Gardner 6LW 8.4 litre, Daimler C.V.D. 8.6 litre, Leyland 600 type of engine 9.8 litre, A.E.C. 9.6 litre, Crossley 8.6 litre or A.E.C. 7.7 litre, and the majority of the vehicles have fluid flywheel and epicyclic gearbox transmission.

Good Railways Need Good Locomotives—

(*Continued from page 507*)

Castle has come along—the version of the truth I have already mentioned that applies here obviously is that *Good locomotives need good coaches*. And so the Castle will be included in a new Hornby-Dublo Train Set, with which Western Region enthusiasts, and there must be thousands upon thousands of these, will be able to set up a train service that is appropriate to the Region that they admire.

Now let us come back to the following pages, and particularly to pages 510 and 511, which deserve special mention. The heading on page 510 explains this, and the pictures of course demonstrate how important are the Hornby-Dublo layouts of readers of the *M.M.* Here are pictures of three, and it is specially interesting to me to find that one of them shows an enthusiast in Ceylon, with his two brothers, alongside his own layout, from which he must get a good deal of fun, in which his brothers obviously share.

There is a double attraction about articles of this kind. They are good to read; and to see pictures showing how other Hornby-Dublo enthusiasts build up their railways is very helpful indeed. Every owner of a Hornby-Dublo layout wishes to go ahead on good lines. The expert members of the Magazine staff can of course give some splendid advice, and they do, especially when you write to ask them how to carry out any change you have in mind, but it is particularly helpful to see what other enthusiasts have done.

I follow the fortunes of the railways of many readers who are constantly in touch with me, telling me about additions they have made, with pictures showing what their railways look like at various stages of growth, and I enjoy every new development as much as they do. That is one reason why I like to include as many illustrated accounts of their railways as I can. So if you have never previously tried to tell me how you have extended your own Hornby-Dublo railway, and made it more like the real thing, why not do so now? You may very easily provide some other enthusiast with just the information that he wants for some purpose of his own. Seeing what you have done will at any rate encourage him, which brings me back to the fact that another version of what I have already quoted may well be *Good Hornby-Dublo enthusiasts need good companions*. And they deserve them.

Meccano Skimmer Scoop—(*Continued from page 517*)

Parts required to build the Skimmer Scoop: 4 of No. 1; 3 of No. 2; 2 of No. 3; 6 of No. 5; 3 of No. 10; 2 of No. 11; 8 of No. 12; 4 of No. 12c; 2 of No. 15b; 2 of No. 16; 2 of No. 17; 2 of No. 18a; 2 of No. 19b; 1 of No. 19g; 5 of No. 22; 1 of No. 24; 8 of No. 35; 67 of No. 37a; 64 of No. 37b; 10 of No. 38; 1 of No. 38d; 1 of No. 40; 1 of No. 44; 1 of No. 48; 6 of No. 48a; 1 of No. 51; 1 of No. 52; 2 of No. 54; 2 of No. 90a; 3 of No. 111c; 2 of No. 125; 2 of No. 126; 4 of No. 142c; 1 of No. 176; 1 of No. 187; 1 of No. 188; 1 of No. 189; 4 of No. 190; 2 of No. 191; 2 of No. 192; 1 of No. 198; 1 of No. 199; 2 of No. 212a; 1 of No. 213; 2 of No. 214; 2 of No. 221.

Wire Covering Machine—(*Continued from page 519*)

comparatively few parts used in constructing an efficient working model of a wire covering machine. It is easy to build and adjust, and makes an excellent subject for the many model-builders who delight in reproducing industrial machines and processes in Meccano

If you wish to build the Wire Covering Machine, write to the Editor for full instructions and a list of the parts required, enclosing a 2½d. stamp for postage The main Meccano agents in Canada, Australia, New Zealand, South Africa, Ceylon, Italy, Rhodesia and the United States of America receive copies of the *current* Model of the Month Instructions. Readers in those countries can obtain their copies by writing to the appropriate agent, enclosing suitable stamps for postage.

THE COMMONWEALTH Q.E. STAMP CATALOGUE

The 1958 edition of the Commonwealth Catalogue of Queen Elizabeth stamps is right up to date in regard to its contents. As is now customary, outstanding shades and varieties are included, with the most notable plate flaws, retouches, etc., and there is a valuable section on booklets. The illustrations are excellent, bringing out all necessary detail.

The catalogue can be obtained from the Commonwealth Stamp Company, Liverpool 2, price 6/– post free.

THIS MONTH'S CONTENTS

MODEL OF THE MONTH

WIRE COVERING MACHINE

Illustrated in the October 1957 issue of the "Meccano Magazine"

Construction of the Frame

The base of the frame consists of two 12½" Angle Girders connected at their ends by 5½" Angle Girders, and with two 5½" Strips 1 and 2 and a 5½" Angle Girder 3 bolted between them as shown in Fig. 3. At one end of the base two 5½" Angle Girders 4 and 5 are fixed to each side. The upper ends of these Girders are connected by a 3½" Strip and the assembly is braced by diagonal 5½" Strips. The Girders 4 and 5 are connected to the corresponding parts on the other side by 5½" Strips, and a 5½" x ½" Double Angle Strip 6 is bolted between the 3½" Strips. The structure is braced by two 3" Strips at the end of the frame.

At the right hand end of the frame (Fig. 1) two 5½" Angle Girders 7 are bolted vertically to each side. These Girders are connected at their upper ends by a 4½" Angle Girder, and they are connected to the Girders of the opposite side by 5½" Angle Girders 8, 9 and 10. This end of the frame is strengthened by four 1½" Corner Brackets as shown in Fig. 1.

Arrangement of the Main Drive

An E20R(S) Electric Motor is bolted to the frame at one end and a ½" Pulley is fixed on its armature shaft. This Pulley is connected by a Driving Band to a 3" Pulley on a 6½" Rod 11, mounted in the Girders 7 on one side and held in place by Collars. The Rod carries a 7/16" Pinion 12 and a 1" Sprocket 13. The Sprocket is connected by Chain to a 3" Sprocket 14, which is free to turn between two Collars on a 4" Rod with Keyway 15. The Rod with Keyway is supported in the Girders 8 and 9, and is fixed in a Double Arm Crank bolted to the Girder 9. An End Bearing lock-nutted to the Motor switch carries a Rod that passes through the Girder 9 and is fitted with a Handrail Coupling.

A 4" Circular Plate 16 is fixed by nuts on two 1½" Bolts, and these are fixed in the Sprocket 14 by further nuts. Two Double Bent Strips and two 1" x 1" Angle Brackets are bolted to the Circular Plate. Each Angle Bracket is extended by a Fishplate 17, these being arranged slightly out of line as shown in Fig. 2 by making use of their slotted holes. Two 2½" Rods are mounted in the Double Bent Strips and the Circular Plate, and each Rod carries two ½" fixed Pulleys 18. Each Rod is held in place by a Collar with a Compression Spring placed on the Rod between the Collar and the Circular Plate 16.

The Wire Take-Up Drum and the Feeding Mechanism

An 8" Rod is supported in the Girders 4 and 5 and one of the Girders 7 of one side, and is held in place by Collars. A 60-tooth Gear on the Rod is driven by the Pinion 12, and a ¾" Pinion 19 engages a 50-tooth Gear on a 4½" Rod 20, which carries a Worm Gear 21. Rod 20 is mounted in 1½" Corner Brackets bolted to the Girders 4 and 5 of one side.

The Worm 21 engages a 57-tooth Gear on a 6½" Rod 22 supported in 1½" Strips bolted to the Girders 4. This Rod carries the take-up drum for the covered wire . The drum is made by passing a Sleeve Piece over a Socket Coupling, which is fixed to the boss of a Bush Wheel 23. A Grub Screw in the Socket Coupling engages in a hole in the Sleeve Piece to fix the drum to the Rod 22. A Chimney Adaptor is pushed into the Sleeve Piece and a Bush Wheel 24 completes the assembly.

The covered wire is fed on to the drum by a guide arm 25. This

is a 5½" Strip fitted at one end with a 1" Reversed Angle Bracket that supports a Fishplate 26. The arm pivots between two Collars on a 3½" Rod 27, which is fixed in a Rod Socket attached to the Girder 3. The arm is moved to and fro along the length of the drum by the action of two Threaded Pins in a Face Plate 28. The Face Plate is fixed on a 6½" Rod mounted in the Strip 2 and the Double Angle Strip 6, and a ⅞" Bevel Gear 29 is locked on the Rod. Above the Bevel Gear a Short Coupling is mounted loosely between Collars, and this supports one end of a 2" Rod 30. The other end of Rod 29 is carried in a Coupling 31, which is free to turn on a 4½" Rod 32 between a Collar and a ⅞" Bevel Gear 33. Rod 32 is supported in 1" Corner Brackets bolted to the frame. Two ⅞" Bevel Gears on the Rod 30 are arranged to mesh with the Bevel Gears 29 and 33, as shown in Fig. 2. A ½" Pinion on Rod 32 is driven by a Worm Gear 34 on Rod 22. The arm 25 is held against the Threaded Pins in the Face Plate by a Spring arranged between the arm and the side of the frame.

Operating the Model

A length of bare copper wire should be wound on a large cotton reel mounted on a 3½" Rod supported in a 3" x 1½" Double Angle Strip. The Double Angle Strip is bolted to the Girder 10, and a Compression Spring on the Rod is arranged to press against the reel to prevent the wire from unwinding too freely. The wire from the reel is passed along the keyway of the 4" Rod with Keyway, through the boss of the Sprocket 14 and the centre hole of the Circular Plate 16, over a ½" loose Pulley 35 on a 6½" Rod, through the Fishplate 26, and is attached to the drum.

A length of cotton or silk wound between the Pulleys 18 on each of the two 2½" Rods is passed through one of the Fishplates 17, and is tied firmly to the wire.

When the Electric Motor is set working the Plate 16 revolves, and the lengths of cotton or silk are wound round the wire. At the same time the wire is wound slowly on the take-up drum, so that a double covering of cotton or silk is wound evenly on the wire as it is pulled through the centre of the rotating assembly.

PARTS REQUIRED

9	of No. 2	1	of No. 26	1	of No. 96
2	" " 3	1	" " 26c	1	" " 109
2	" " 4	1	" " 27	2	" " 111c
2	" " 6a	1	" " 27a	2	" " 111d
2	" " 8	1	" " 27d	2	" " 115
14	" " 9	4	" " 30	3	" " 120b
2	" " 9a	2	" " 32	1	" " 124
3	" " 10	88	" " 37a	6	" " 133
2	" " 12a	80	" " 37b	2	" " 133a
1	" " 13a	30	" " 38	1	" " 136a
4	" " 14	1	" " 43	1	" " 146a
3	" " 15a	2	" " 45	1	" " 163
2	" " 16	1	" " 47a	1	" " 164
2	" " 16a	1	" " 48d	1	" " 166
1	" " 17	23	" " 59	1	" " 171
1	" " 19b	1	" " 62b	1	" " 179
1	" " 23	1	" " 63	1	" " 186c
5	" " 23a	1	" " 63d	1	" " 230
2	" " 24	1	" " 94	1	E2OR(S) Electric Motor.
1	" " 25	1	" " 95b		