Southern Railway 'Schools' Class

4-4-0 Locomotive with Tender C. 1931

Constructed and described by MIKE COTTERILL Photographs by JOHN WOODWARD

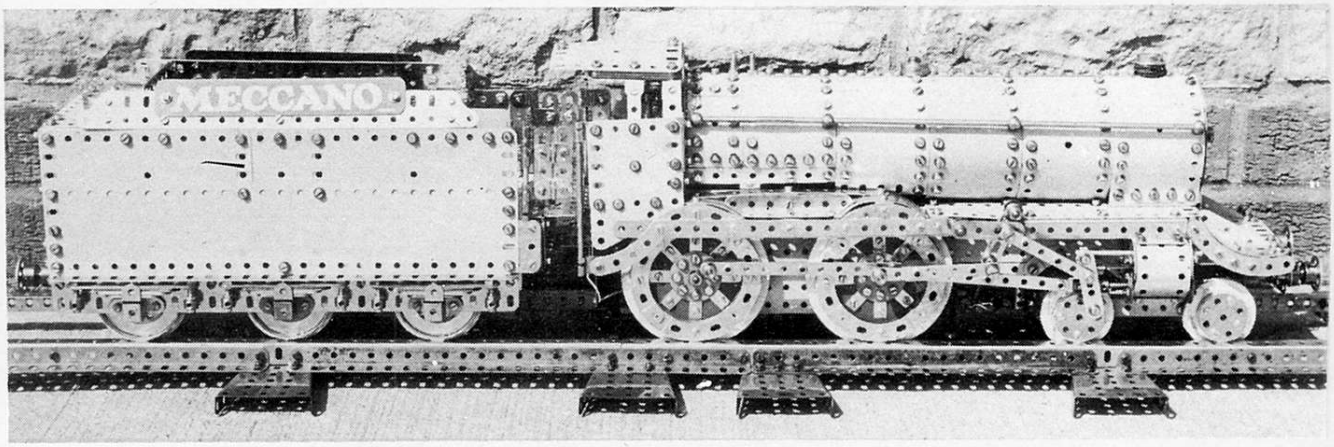


Fig. 1 A general view of the right hand side of the locomotive showing the faithfully represented lines and details of the prototype. Note the skilfully constructed boiler, leaving a minimum of vacant holes.

LIKE most Meccano Enthusiasts I find Railway Locomotives attractive modelling subjects. For Club Meetings, Exhibitions and Charity Shows I aimed to produce something that would actually travel and reverse automatically, be easily portable and reasonably faithful to its Airfix 00 Scale Construction Kit prototype.

The heart of the model is the drive unit shown in figs. 2, 3 and 4. An E20R Meccano Electric Motor, very similar to the recently discontinued E15R version, hangs vertically with it's switchplate towards the track. It is entended forwards by the mainframe sideplates consisting of 5½" x 3½" Flat Plates spaced by 2½" x 1½" Flanged Plates. The motor is positioned a little to one side, and by careful siting of gears along shafts, four 5:1 reductions are achieved. Final drive to the front driving wheels is by a ¾" Sprocket to a 1½" Sprocket. During construction I found it important to incorporate a facility to vary gear ratios as I had no real idea of how the E20R motor would cope 'on the track', but in practice, if the 'works' jam up the Grub Screws in the Sprocket Wheels slip and by thus permitting their Axle Rods to rotate in their Bosses, provide protection for the motor. It is imperative that both driving wheel axles move together, connected as they are by the coupling rods, and this is achieved by the Contrate Wheels and Pinions as shown in fig. 4.

The drivers are constructed from 4" Circular Plates mounted on doubled Bush Wheels with 'packs' of 2½" Stepped Curved Strips reproducing the flanges. Each 'pack' consists of five Strips spaced by thin Washers on Long Bolts, the ends being carefully interleaved with it's two neighbours. The radii of the 2½" Stepped Curved Strips are not really compatible with the mounting holes on the 4" Circular Plate but by gently 'splaying' each pack of Strips very slightly, a perfect circle can be obtained. The weight of the model passes from the innermost Strip of one pack to the outermost Strip of the adjacent pack, with each quarter rotation of the driving wheel.

The prototype had three different wheel sizes. Face Plates with Wheel Flanges were ideal for the Tender wheels, the smaller front bogie wheels were reproduced by bolting six 8-Hole Wheel Discs to 2" Pulleys. Although an unusual arrangement of parts, it has been very successful.

For continuous running, power is supplied via a trailing lead, but the model also incorporates two long Wiper Arms capable of being lowered on to the track to receive current fed through the rails. Electrical insulation is pro-

Fig. 2
Below: A view from the top of the chassis, after the cab and boiler have been removed, showing the E20R motor and reduction gearing.

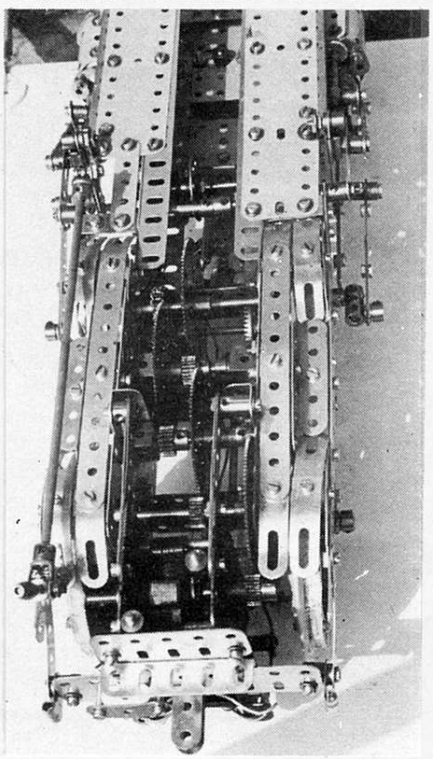
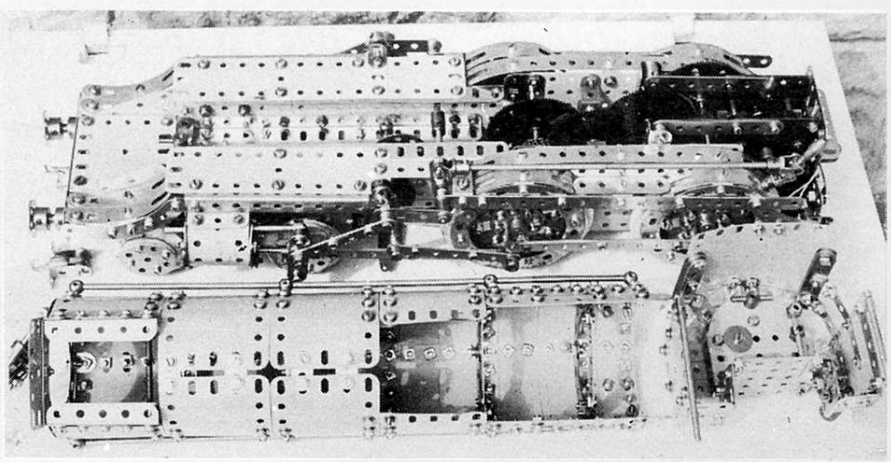


Fig. 3
Below: Shown here separated, the locomotive chassis and the boiler and cab sub-assemblies. Note the cab interior detail.



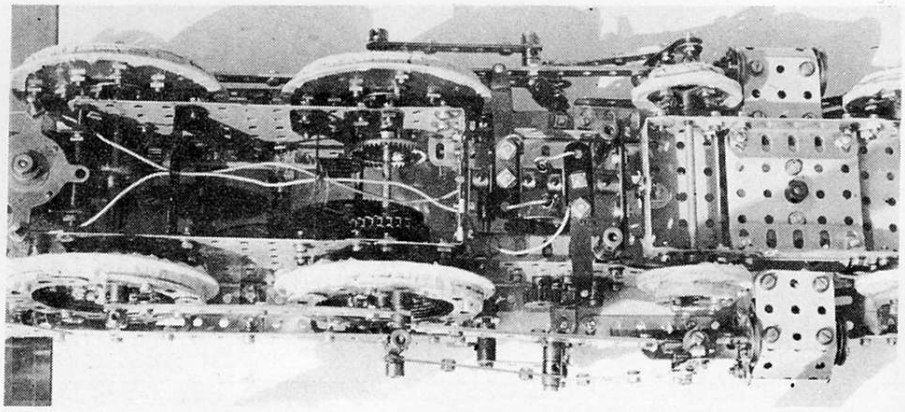
vided by masking tape edging around all the wheels which, incidentally, reduces wear on parts.

The cab and boiler can be removed by unscrewing two Threaded Bosses enabling closer inspection of the construction details. The boiler is formed around circles of 2½" Stepped Curved Strips, the Flexible Plates being abbutted wherever possible, rather than overlaid. Each join is underlaid by 5½" x 1½" Flexible Plates to eliminate empty holes. The chimney is modelled in an unconventional but effective manner by means of a ¾" Flanged Wheel bolted to the boiler, it's boss being widened out by coils of Meccano Cord.

The piston and valve motions are fully reproduced and contribute to the realism of the model when working. Coupling bars are made from several thicknesses of Narrow Strips, joined by long Grub Screws with a Nut mounted on each protruding end. The crosshead, consisting of a Slide Piece, runs on a 2½" Strip projecting from the steam chest.

Automatic reversing, of great value in display work meaning the model can be left for long periods unattended, is accomplished by mounting two short Threaded Pins on the E20R switchplate. A Coupling at each extremity of the six feet long track is positioned to switch the plate from one side to the other by means of engaging a Threaded Pin and allowing the loco's momentum of travel to effect the reverse switching.

The following statistics may be of interest; Length 35". Width, (excluding steam chests and external motions) 5". Weight 19 lb. Gauge of track, 5" No. of Stepped Curved Strips used, 100.



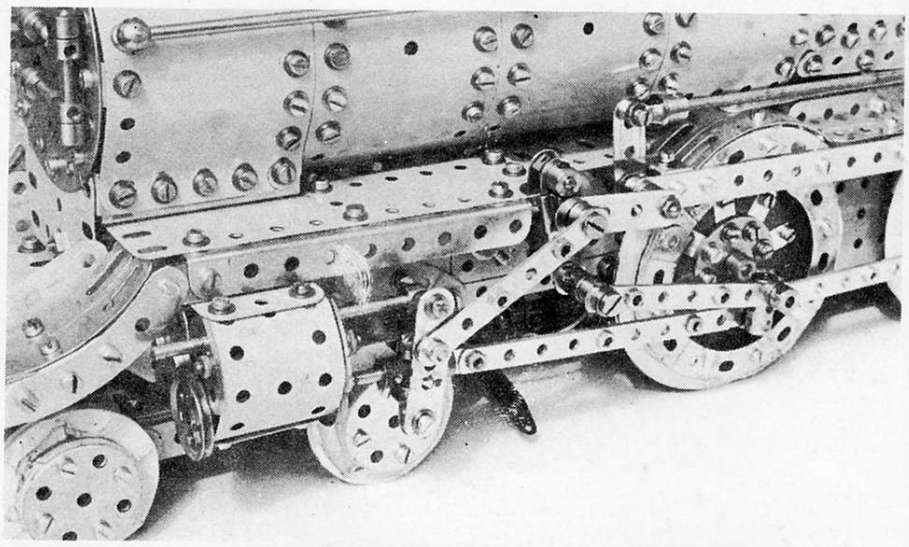


Fig. 4
Above right: Underside of locomotive chassis showing position of Wiper Arms and insulating material around the wheels.

Fig. 5
Right: A close-up view of the detailed valve gear.

Show Stopper!

SEEN on the Transvaal Meccano Guild's stand at the Easter 1979 Rand Fair in Johannesburg, South Africa, was this truly stupendous boom-type Excavator by Paul Hatty.

Paul, who graduated from university as an engineer, used a staggering 10,000 Meccano parts in the construction of his model, which is of a P & H 2100 BL design. Consuming some three and a half years of Paul's spare time in the making, the completed model reproduces every function of the original. What's more, the motions of travelling, slewing, bucket raising and lowering are all effected in scale time, no mean achievement in itself!

Approximately 160 links make up the two caterpillar tracks on which the model travels, although for display purposes the excavator was mounted on wooden blocks for the duration of the show. Other details of note include powered racking of the shovel arm, full ladderwork, handrails etc; and working observation lamps situated so as to illuminate the working area, doors and walkways. These are replicas of the pre-war Motor Car Headlight units, manufactured by the Transvaal Meccano Guild.

Built to a scale of 1:12 and finished mainly in the red and green colour scheme with zinc-plated strips for edging purposes, the model certainly deserves a long life in front of exhibition crowds. To this end, one can only hope that Mr. Hatty was joking when he remarked to a newspaper reporter that he was going to take it apart and build another model as soon as the show was over!

Below: Bucket discharge mechanism, access doors, laddering and many other fine details can be seen in this view of the right hand side of the model. Photograph kindly supplied by Jacques Rossouw, Secretary of the Transvaal Meccano Guild.