

SHEFFIELD MECCANO GROUP

NEWSLETTER

Number 3 December 1982

Chairman: Richard Bingham

Treasurer: Dave Penney

Assistant secretary: Mike Beadman

Secretary: Peter Mason

It is now more than a year since we put the Sheffield Meccano Group onto a more organised footing and started holding regular meetings, and at the most recent meeting in October we had some discussion as to how we should organise ourselves from now on. The meeting decided several points:

- 1) From now on we will keep a proper list of paid-up members and send invitations to the members only. Of course anyone will be welcome to attend meetings as a visitor.
- 2) Members will initially be anyone who attended any of the first three meetings and wants to pay a subscription, but from now on new members must be proposed, seconded and accepted at a meeting of the group.
- 3) The membership fee will be £3 for adults and half price for juniors up to the age of 18 years.

This means that if you wish to keep receiving Newsletters and invitations we need a subscription from you! A lot of people paid at the meeting, and their receipts should be included with this Newsletter; if you were not at the meeting or did not pay, our treasurer would love to hear from you.

The next meeting has been arranged for Saturday 23rd of April, 1983, at the same venue as last time: Norton Church Hall, Norton Lane, Sheffield. If anyone wants a map to show them how to find it, please let me know. We look forward to seeing you there.

Peter Mason.

Torque Amplifier

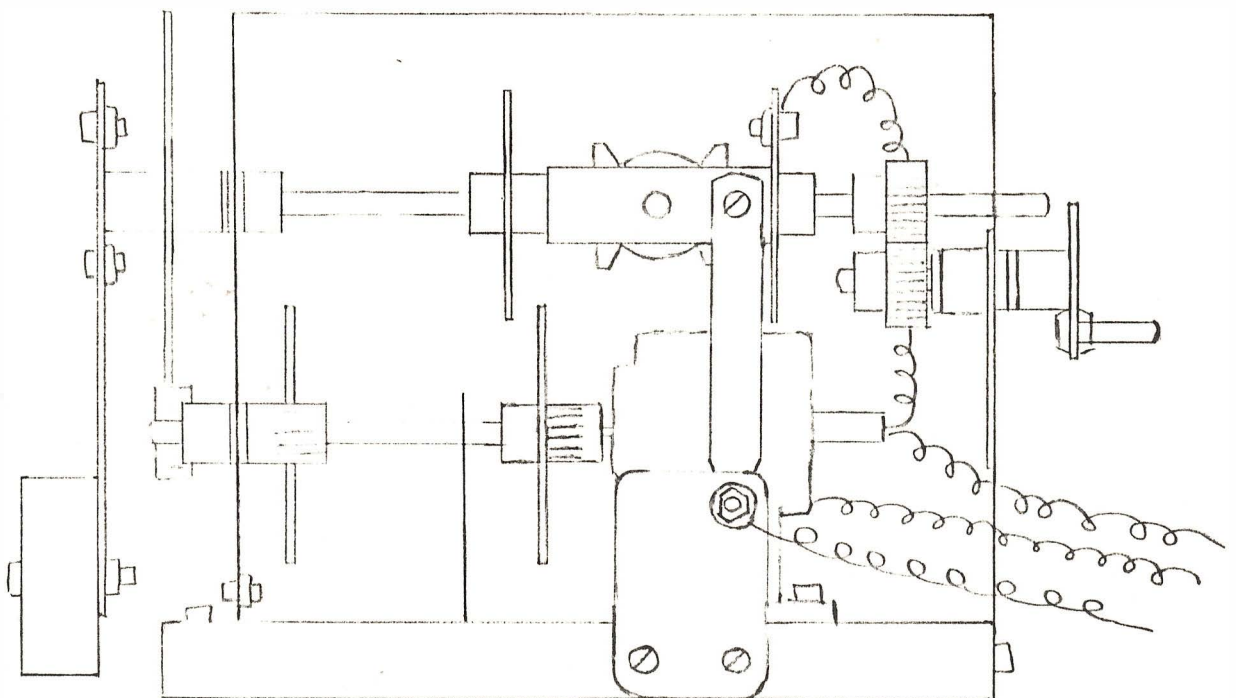
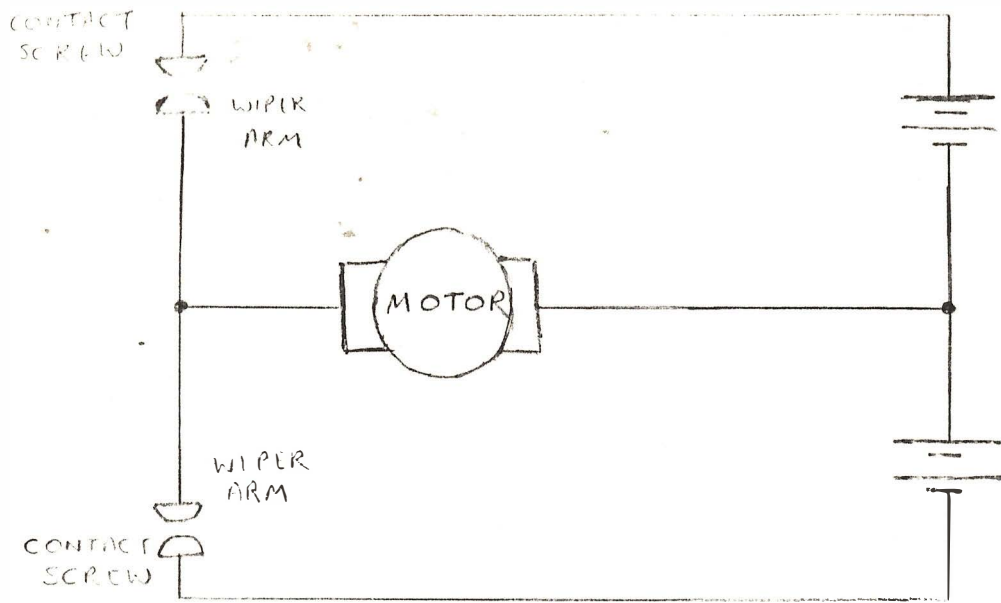
At the recent Sheffield Meccano Group meeting in October John Howe displayed a very ingenious mechanism; I was so fascinated by it that I had a go at rebuilding it when I got home. The device was a torque amplifier, or in more understandable terms a device to give power assistance to a motion: you turn the handle at one end with a touch of your little finger and the output shaft rotates its big weight with no apparent effort. John designed his model after reading a book about servo-mechanisms, and the original was used to allow remote finger-tip control of the gun turrets on a battle ship. You are more likely to find an equivalent mechanism in a car these days, giving effortless steering or braking to those who can afford it, but in that case it will be hydraulically operated instead of electrically as in this model. John has used the mechanism to drive a heavy Orrery from the not very powerful output of a clock, but other uses could quite easily spring to mind.

I should make it very clear that this is a description of my rebuild from memory of John Howe's original model; any ingenuity is his but any drawbacks are due to me. The model has also been described in the Midlands Meccano Guild Gazette.

The model is built up on a 5-1/2" by 2-1/2" flanged plate. The main gearing is supported by a framework of strips and angle brackets braced at the left hand end by a girder bracket and at the right by a flat trunnion (the actual details depend a lot on the situation in which you want to use the mechanism). At the left hand end a 1-1/2" square flat plate overlays the girder bracket, offset towards the front to carry a side shaft of the reduction gearing, and another 1-1/2" square plate is mounted on another girder bracket to take the other ends of the side shaft and the intermediate shaft (which is in line with the motor shaft). A crane motor is mounted centrally on the flanged plate two clear holes from the right hand end, and the reduction gearing to the output shaft consists of: 11 tooth pinion to 66 tooth gear (MW models type) on the side shaft, the same again onto the shaft in line with the motor, and then 19 tooth pinion onto 95 tooth gear on the output shaft. The load on the output shaft is represented by a 3-1/2" strip mounted on a double arm crank and carrying a stack of wheel discs at its end.

The exact gear reduction used can be chosen to give the required effect; if you use a very high reduction ratio as I did then you get a very great output power but the maximum speed of rotation is small; a lower ratio will give less power but the mechanism will be able to follow higher speeds of rotation of the input shaft.

At the right-hand side a crank is used as a bearing for the small handle that you turn to give your feeble input to the mechanism; this shaft is connected by two 19 tooth pinions to the right hand end of the output shaft, just to reverse the direction of rotation of the input. The handle is a threaded pin mounted on a small bush wheel. In the centre of the output shaft we come to the "meat" of the design, which as usual in these mechanisms turns out to be a differential. You can use any design of differential that you favour; mine was based on 1-1/2" by 1/2" double angle strips, two bushwheels and a couple of collars for spacing. Attached to the side members of the differential are two 2-1/2" wiper arms; these are designed to make contact with Elektrikit contact screws mounted on insulating flat girders at each side of the base. The wiper arms are gently adjusted



so that when the differential cage is level they both just fail to make contact with their corresponding screw; if the differential tilts slightly to one side then one or the other will complete a circuit.

To power the motor you need a separate battery or power supply for each side of the circuit, connected as in the circuit diagram. The centre point is connected directly to one motor terminal. From the other terminal a wire is taken to ground on the model (I chose a spot on the cage of the differential) and hence to the wiper arms. Opposite ends of the power supply then go to the contact screws, making one positive and the other negative with respect to the chassis; this means that if one of the wiper arms makes contact then the motor will turn in one direction, but if the other one makes contact it will run in the opposite direction.

The way the mechanism works is a lot more obvious if you build it, but I will attempt a simple explanation. When you turn the input handle the cage of the differential tilts, causing one of the wiper arms to make contact and start up the motor. The motor then turns the output shaft through the reduction gearing in the same direction that you turned the input shaft, causing the differential cage to tend to level up again and move the wiper arm away from its contact. The motor must be arranged to run in such a direction that the differential tends towards the level; the best way of achieving this is not to try and calculate it but to try it one way and if it does not work throw the reversing switch!

Peter Mason

Mecca - No!

In the beginning there was darkness. And the Lord said 'Let there be Light Engineering'. And the Lord came down and spake to Frank Hornby, saying unto him, 'I will give thee a spare rib of twelve and a half inches and thou shalt fill it with twenty five holes. And it will be called number one, and it will be fruitful.'

And so it came to pass that number 1 begat number 2, and number 2 begat numbers 3, 4 and 5. And thereafter a host of parts arose to the number of 235g, and they were all baptised and given the name Meccano.

This so pleased the Lord that he spake again to Frank, saying unto him, 'Go forth and make me a Meccano of many colours. And I will repay thee with a million Talents, and the people of the Earth will rejoice in thy name.'

And the people were mightily pleased and left their fields and ploughshares and made divers Meccano models. And it came to pass that a Temple was built at Henley-on-Thames and all the Tribes gathered there and laid their models at the Altar, and vied one against the other for the Blessing of the Lord. And this was on the day of Plentycost, for Meccano was dear to the pockets of all men.

And one disciple said 'I have built a Tower to the Lord which will lift the hearts of men to Heaven'. And another disciple gathered together the Sun, the Earth, the Moon, and all the Planets and gave them their motions, and this was named an Orrery.

So verily I say unto you all this is not Mecca - no - it is Meccano. Amen.

Bernard Sage

Yorkshire Dales Railway Museum Trust Exhibition

Every year Alan Grimshaw organises Meccano participation in two shows in West Yorkshire, at Skipton and Ilkley. This year several SMG members attended the Ilkley show, which is run by the Yorkshire Dales Railway Museum Trust, and they helped Alan to put on a good display; in fact it was so good that the Meccano stand was later judged by the visiting Mayor to be the best non-railway exhibit of the day, winning a cash prize! The prize money was converted into engraved shields for the people involved.

The models on show were:

Alan Grimshaw put on a good display all by himself, consisting of a set 10 size Traction Engine with a strip boiler, a supermodel leaflet Hammerhead crane, a scenic roundabout, a supermodel leaflet single cylinder steam engine, some Dinky Builder models, and a selection of smaller items.

David Wilkinson showed the Digger-on-a-Flinth from a recent Meccanomen's Newsmag and a Roger le-Rolland miniature railway.

Richard Bingham showed three of his collection of Meccano clocks: the automatic rewind balance-wheel clock, the bracket clock, and the one driven by a built-up electric synchronous motor.

Vernon Taylor was another modeller who produced quite a show just from his own efforts; he displayed a Set 10 4-4-0 engine and tender, a Highway kit type truck, a 1940's style sports car, a display roller bearing, a flexible plate bending machine and some other small items.

Bernard Sage showed his railway breakdown crane, with its six motors automatically operated in turn by an electrical sequencer.

Geoff Coles showed a "Paratrooper" fairground ride and a steam roller, and also a car built from a pre-war Meccano No 2 car constructor kit.

Julian Coles showed quite a collection: a SHADO 2 missile launcher, a remote-controlled car, a concrete truck, a bulldozer and two aircraft built from Meccano aircraft kits (the Coles house must look a little like the pre-war Binns Road model room at times!)

Frank Clarke did not show any models but appeared in support.

Sheffield Meccano Group meeting - 16th October 1982

Despite the last minute change of venue we had a good set of models on show, and the new hall proved very comfortable after we discovered how to switch the heating on! There were plenty of new and secondhand parts temptingly displayed to separate the enthusiast from his money, and we all had a very enjoyable day. The essential catering activity was in the capable hands of Margaret Arfield assisted by Mrs Coles.

Models on Show

Mike Burgess showed his vintage Meccano model of a vintage fire engine, a Scammell unit neatly emblazoned "Watford Fire Brigade". It was smartly turned out in red and silver.

Tom McCallam put on a superb display, even bringing his own cloth to show it off better. In the show were: a beam engine illustrated in one of Bert Love's Meccano books, a version of the supermodel steam excavator automated using a mains motor, a miniature circular saw bench, a lorry back axle unit, and a fairground cakewalk. All were produced in red and green.

John Beaumont showed a Meccano magazine model of the Nuremberg clock, in zinc and yellow. This is a difficult model to keep going, as it depends on being set up dead level.

Alan Patridge showed a tug-of-war machine, in which the competitor who turned the handle faster won the competition. The only problem was to silence the hooter which signalled the end of the event!

Vernon Taylor is another modeller who has been very busy. His collection included: a roundabout bearing unit, a miniature motor scooter, a flexible plate roller, an electric compass, and a crane grab.

Alan Grimshaw showed two machine tools, always a popular Meccano subject. They were a vertical milling machine and a planing machine, and both were operating smoothly.

John Martin showed a fine collection of models: a dwarf blocksetter, neatly modelled in red, green, yellow and blue, a supermodel 18 revolving crane, and a very detailed small scale model of a vintage Midland Railway engine and coach. At the back of the bench lurked an interloping Trix tractor!

John Howe showed his usual flair for mechanisms by displaying a demonstration power-assisted crank - you turned the little handle at one end and the big weight at the other revolved with no effort. Hard to believe until you have tried it.

Bernard Sage showed two models: his railway breakdown crane with all its movements operating successively under the control of a sequencer, and his twin cylinder horizontal steam engine (based on the supermodel leaflet?)

Robin Johnson showed a very neatly modelled and presented motor cycle and sidecar combination, using obsolete large rubber rings for the tyres. Where does he get them?

Roy Everitt showed a floating crane once employed on the Manchester Ship Canal to sort out the mess when two ships collided. It featured a 16 fall hook and an auxilliary hook, and was well produced in zinc, yellow and army green. He also showed his vintage motor car, loosely based on an early Meccano chassis design, with much redesign in the gearbox and differential area.

Iim Spooner showed the skeleton chassis of what is to become a Mini Cooper, a Roland Emmett train, and a miniature model of a general purpose steam tractor towing a caravan.

Richard Bingham blew the dust off his electric synchronous clock and his automatic rewind clock (you know, the one with all the flashing lights). The fact that they are both still working after all this time must be a tribute to the strength of the Meccano system.

Geoff Coles showed a 1916 Inventors Outfit, recently discovered in a loft in Newark, a 1905 Rolls-Royce based on an original by Jorge Catella, and a lorry mounted crane intended as a set 3000 model.

Julian Coles showed a 1910 Merryweather fire engine powered by a clockwork motor, and an unfinished chassis for a Shado 2 space vehicle with steerable tracks and a three-speed gearbox.

Louise Mason showed a swing bridge from an old number 5 set manual, and a crane set dockside crane.

Peter Mason showed his almost complete Middlesbrough Transporter Bridge, or "Port Clarence" bridge as Geoff Coles insists; it operated successfully for several hours until just before the business meeting, when the string broke, leaving a car load of passengers stranded in mid-river.

Dave Penney brought two Meccanograph designing machines with him to the meeting, but he was so busy during the afternoon that he forgot about them and left them in his car.