AMONG THE MODEL BUILDERS

with "Spanner"

IT'S BEEN SAID many times by many people, but I make no apology for repeating it here: Meccano is a tremendously useful commodity!

To the Meccanoman, of course, it is a totally absorbing, self-contained hobby – an end in itself – but, to other people, it can be more a means to an end by providing a source of amazingly versatile "ready-made" components to assist in the construction of something other than a purely-Meccano model. Mr. J. van Raalten of De Bilt, Holland, for instance, is a Meccano Modeller who is also a keen amateur astronomer and he has successfully used his first hobby to help him with his second, as can be seen from the photographs below.

In astronomy, the constant rotation of the earth can cause a bit of a problem. If, for example, an astronomer is studying a particular star, then that star will appear to move across the heavens as the earth rotates. This of course means that every time the astronomer returns to his telescope after a break in observation, the telescope will be pointing in the wrong direction and he must search for his star – a job which may take considerable time if, indeed, he ever finds it again. Also, many astronomers take long-exposure and time-lapse photographs through their telescope, for which they need to be "locked-on" to their subject otherwise the movement of the earth will swing their 'scopes off-target.

Using Meccano, Mr. van Raalten has built a device to overcome the problem: a motorised driving system for the polar axis of his 8" astronomical telescope. This system turns the telescope at the same rate as, but in opposition to, the rotation of the earth so that it remains pointing at the same chosen spot in space. We do not have the (editorial) space to go into full constructional detail here, but the following few comments from Mr. van Raalten may be of interest. His device is driven by a 1 r.p.m. non-Meccano mains motor, by the way.

"As a sidereal day is 23 hrs. 56 mins. 4 sec. or 1436 mins. 4 sec" says Mr. van Raalten, "I required a reduction of about 1436:1. A large gear was necessary and so I used a ring of large-toothed Quadrants and the Pinion to give an initial reduction of 10·5:1, followed by a further reduction of 60:1, using a Worm and a 60-teeth Gear, and a final reduction of 2.28:1 from a 25-teeth Pinion and a 57-teeth Gear at non-standard Meccano meshing using a Plate with elongated holes.

"Multiplied together, 10.5 x 60 x 2.28 give a final reduction of 1436.4:1, allowing the polar axis one revolution in 1436 min. 24 sec. Thus there is a difference of only 20 seconds in 24 hours, or 5/6 sec. an hour. This represents a movement of only 12½ arc seconds in one hour and this difference is negligible; even if one wants to take photographs of the sky."

Mr. van Raalten reports that, initially, some serious trouble was caused by fluctuations in the frequency of the mains current feeding the drive motor. Being a synchronous motor, drops in the frequency cause the motor to slow down, but he has overcome the problem by, if I understand his notes correctly, using a battery-powered Meccano Motor-with-Gearbox, to override the mains motor by turning the mains motor, in its housing, at the required speed while the frequency-drops last. Increased frequency, resulting in the motor running too fast, is counteracted by simply stopping the motor for short periods.

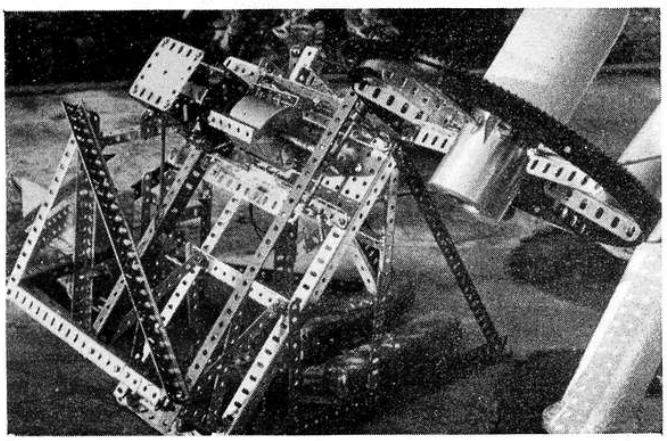
I leave the last word on his model to Mr. van Raalten, "From a Meccano point of view," he says, "The Model is not beautiful (it looks like an out-of-space vehicle!) but it is efficient and that was its purpose." That's what matters Mr. van Raalten!

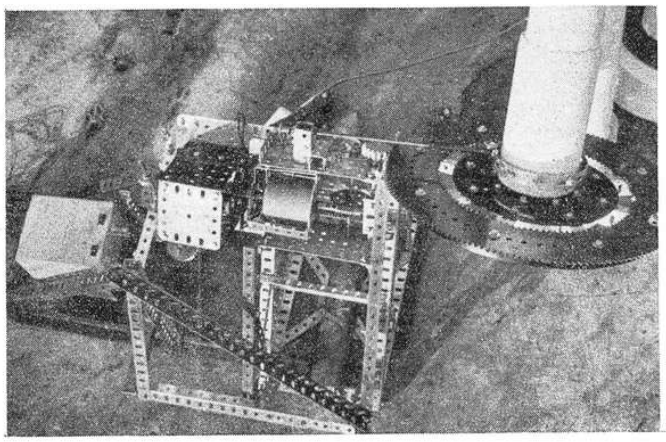
DIFFERENTIAL ANALYSER

Still on the subject of value, Meccano has long been widely used in industry and research for all sorts of purposes. Many are the pieces of test equipment quickly "knocked-up" out of Meccano parts in the laboratories of industry and many, too, are the machines of modern living, the original prototypes of which incorporated our components to some degree

Generally speaking, of course, such prototypes usually make use of other

These two illustrations show a device built out of Meccano by Mr. J. van Raalten of De Bilt, Holland. Coupled to his 8" astronomical telescope, it counteracts the rotation of the earth and keeps the telescope pointing at its "target". It makes an excellent example of the value of Meccano in other non-Meccano hobbies.





AMONG THE MODEL BUILDERS

with "Spanner"

IT'S BEEN SAID many times by many people, but I make no apology for repeating it here: Meccano is a tremendously useful commodity!

To the Meccanoman, of course, it is a totally absorbing, self-contained hobby – an end in itself – but, to other people, it can be more a means to an end by providing a source of amazingly versatile "ready-made" components to assist in the construction of something other than a purely-Meccano model. Mr. J. van Raalten of De Bilt, Holland, for instance, is a Meccano Modeller who is also a keen amateur astronomer and he has successfully used his first hobby to help him with his second, as can be seen from the photographs below.

In astronomy, the constant rotation of the earth can cause a bit of a problem. If, for example, an astronomer is studying a particular star, then that star will appear to move across the heavens as the earth rotates. This of course means that every time the astronomer returns to his telescope after a break in observation, the telescope will be pointing in the wrong direction and he must search for his star – a job which may take considerable time if, indeed, he ever finds it again. Also, many astronomers take long-exposure and time-lapse photographs through their telescope, for which they need to be "locked-on" to their subject otherwise the movement of the earth will swing their 'scopes off-target.

Using Meccano, Mr. van Raalten has built a device to overcome the problem: a motorised driving system for the polar axis of his 8" astronomical telescope. This system turns the telescope at the same rate as, but in opposition to, the rotation of the earth so that it remains pointing at the same chosen spot in space. We do not have the (editorial) space to go into full constructional detail here, but the following few comments from Mr. van Raalten may be of interest. His device is driven by a 1 r.p.m. non-Meccano mains motor, by the way.

"As a sidereal day is 23 hrs. 56 mins. 4 sec. or 1436 mins. 4 sec" says Mr. van Raalten, "I required a reduction of about 1436:1. A large gear was necessary and so I used a ring of large-toothed Quadrants and the Pinion to give an initial reduction of 10·5:1, followed by a further reduction of 60:1, using a Worm and a 60-teeth Gear, and a final reduction of 2.28:1 from a 25-teeth Pinion and a 57-teeth Gear at non-standard Meccano meshing using a Plate with elongated holes.

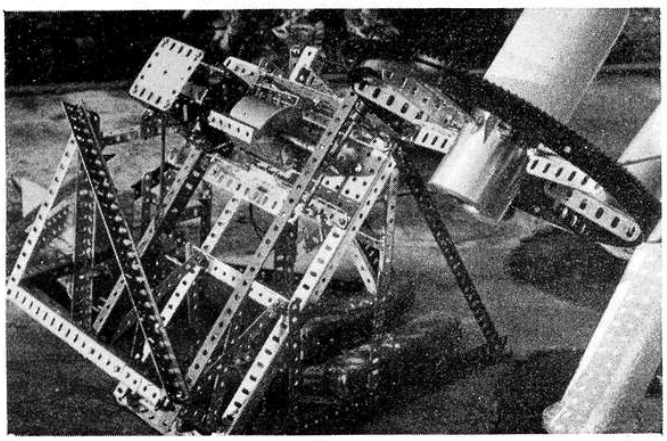
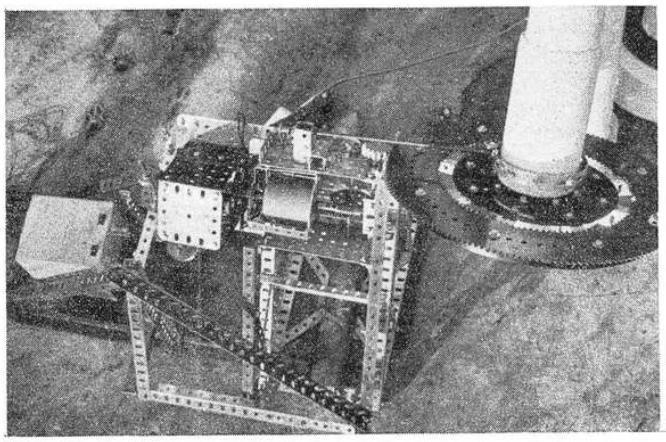
"Multiplied together, 10.5 x 60 x 2.28 give a final reduction of 1436.4:1, allowing the polar axis one revolution in 1436 min. 24 sec. Thus there is a difference of only 20 seconds in 24 hours, or 5/6 sec. an hour. This represents a movement of only 12½ arc seconds in one hour and this difference is negligible; even if one wants to take photographs of the sky."

Mr. van Raalten reports that, initially, some serious trouble was caused by fluctuations in the frequency of the mains current feeding the drive motor. Being a synchronous motor, drops in the frequency cause the motor to slow down, but he has overcome the problem by, if I understand his notes correctly, using a battery-powered Meccano Motor-with-Gearbox, to override the mains motor by turning the mains motor, in its housing, at the required speed while the frequency-drops last. Increased frequency, resulting in the motor running too fast, is counteracted by simply stopping the motor for short periods.

I leave the last word on his model to Mr. van Raalten, "From a Meccano point of view," he says, "The Model is not beautiful (it looks like an out-of-space vehicle!) but it is efficient and that was its purpose." That's what matters Mr. van Raalten!

DIFFERENTIAL ANALYSER

Still on the subject of value, Meccano has long been widely used in industry and research for all sorts of purposes. Many are the pieces of test equipment quickly "knocked-up" out of Meccano parts in the laboratories of industry and many, too, are the machines of modern living, the original prototypes of which incorporated our components to some degree

Generally speaking, of course, such prototypes usually make use of other

These two illustrations show a device built out of Meccano by Mr. J. van Raalten of De Bilt, Holland. Coupled to his 8" astronomical telescope, it counteracts the rotation of the earth and keeps the telescope pointing at its "target". It makes an excellent example of the value of Meccano in other non-Meccano hobbies.