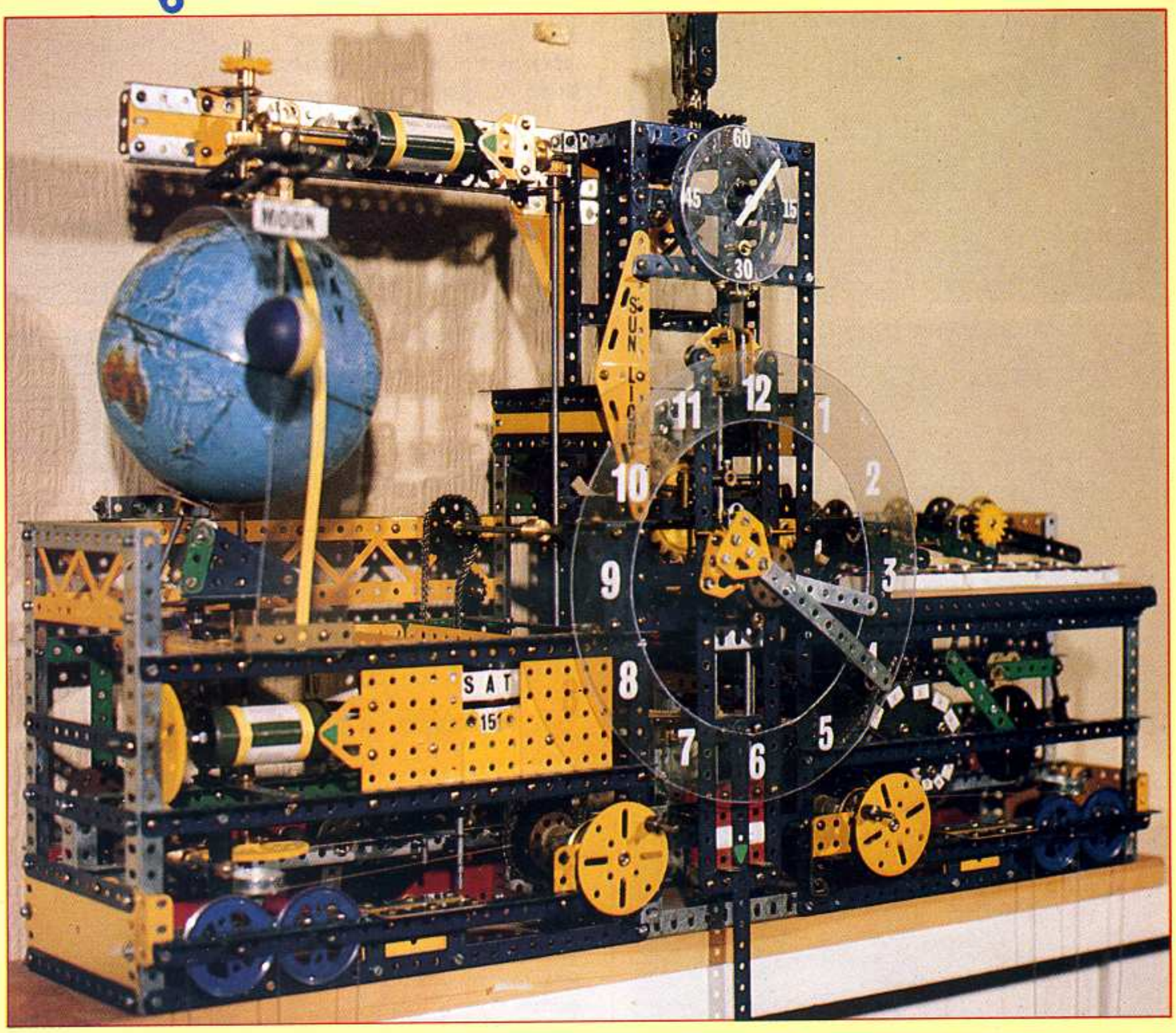
THE MECCANO MARVEL

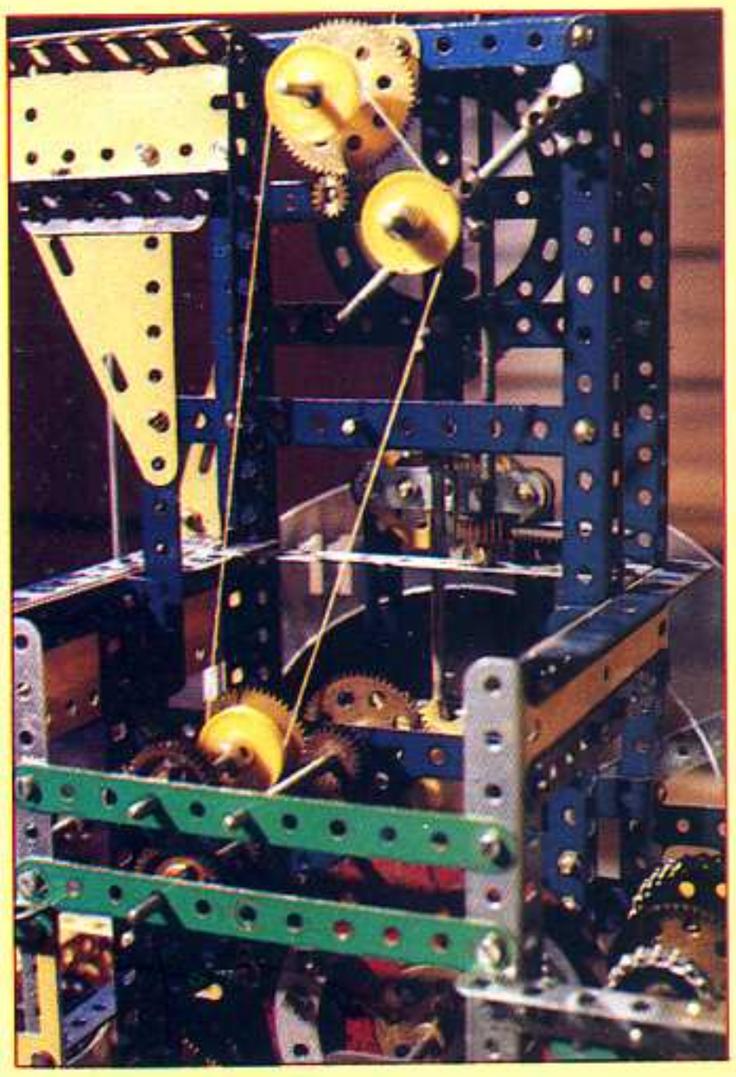
John Hunter talks to the man who made a clock almost entirely from Meccano— a clock that not only strikes the hours, but plays Westminster chimes on a xylophone, gives the day and date, shows the rotation of the earth, and the rotation and phase of the moon.

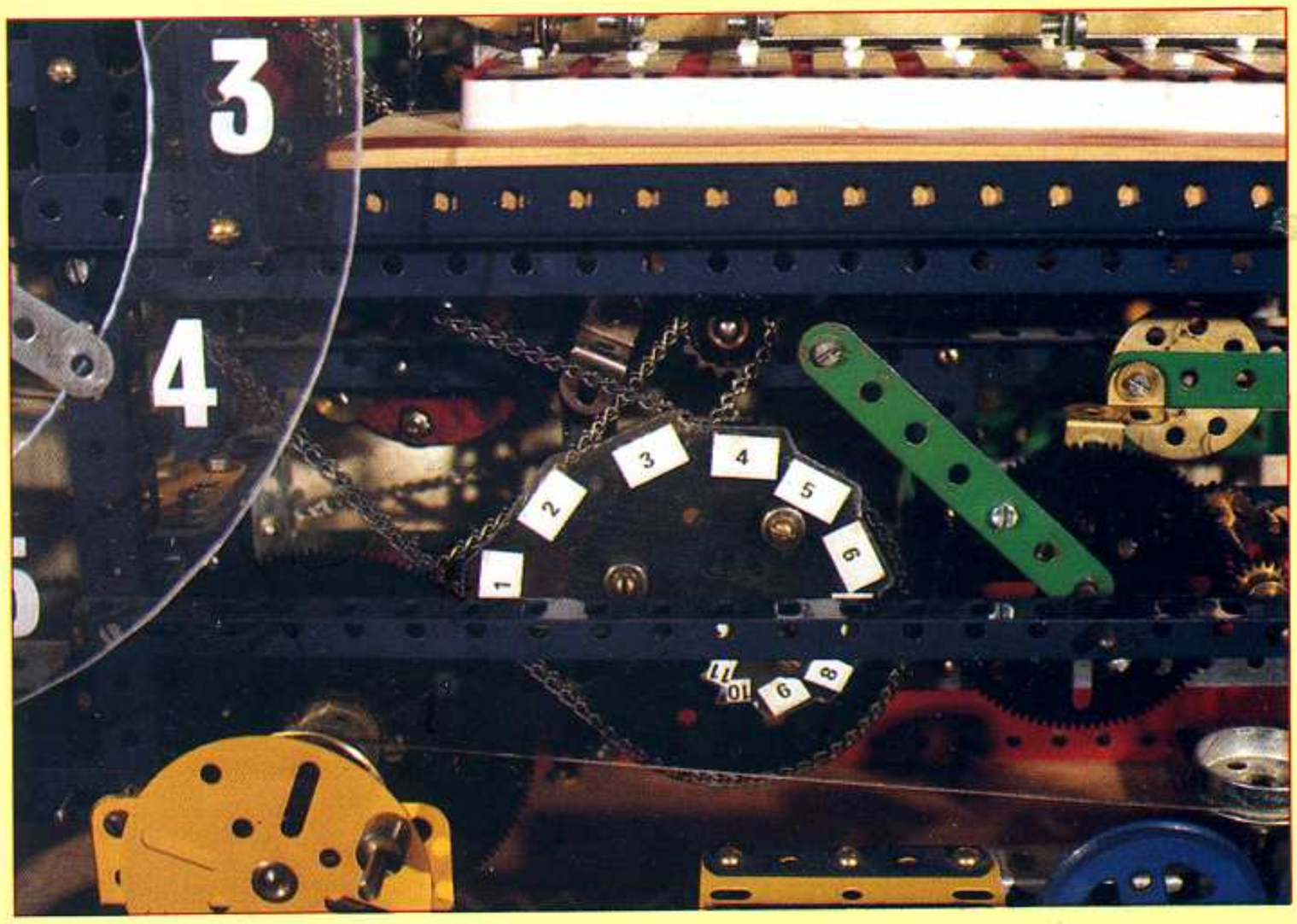


Right: Geoffrey Weir's Meccano clock. Note the Meccano hands and pendulum rod.

Below: Great use is made of chains and pulleys in the clock. This one is part of the going train.

Below right: This snail cam is one of the few non-Meccano parts in the clock.





IN DECEMBER 1979, the company which made Meccano was put into the hands of the Official Receiver. This was a bitter blow to the many Meccano enthusiasts up and down the country who realised that soon the supply of Meccano spare parts was about to dry up. To others, the news was a spur to buy as much Meccano as they could afford before the drying-up became a reality.

Geoffrey Weir was one of these. He had been interested in building things out of Meccano since he was a boy and as soon as he heard about the collapse of the Meccano empire he went to Hamleys in Regent Street, London, and spent £140 on a Set No 9 to add to the Meccano pieces he already had.

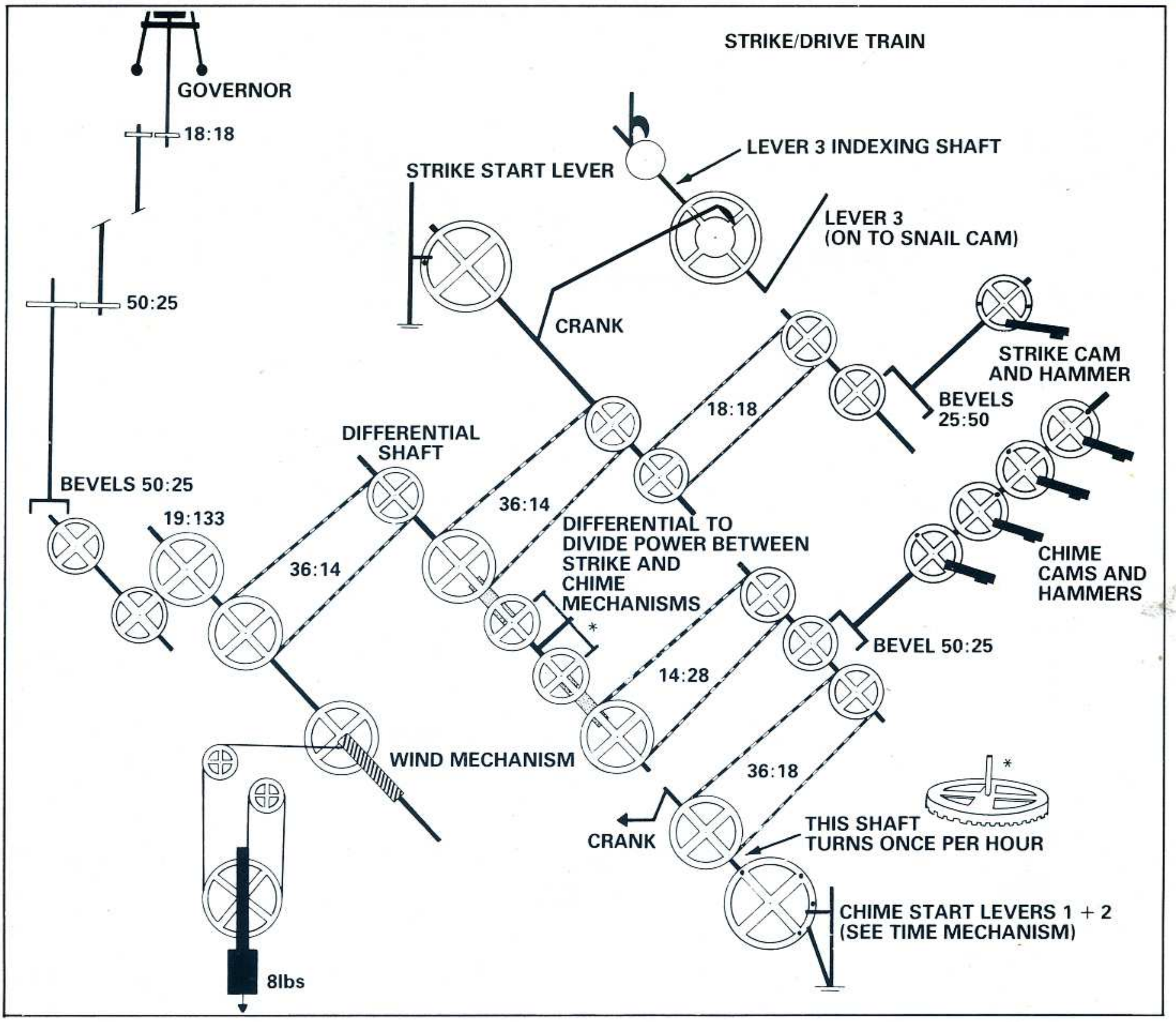
Geoffrey, a mechanical engineer by profession, then decided to start building a Meccano clock, and the mechanism depicted on these pages is the result of many developments and innovations since then.

Why did he decide to build a clock entirely from Meccano? Partly, because of the challenge, but also because, unlike most Meccano devices, it would be of interest even when he wasn't there; it would tick away in his absence for as long as it took the weights to run down.

There is also, Geoffrey says, great scope for improvement. At the moment the clock strikes and chimes on a toy xylophone. I'm going to improve the striking mechanism,' says Geoffrey. 'I'm going to replace the xylophone with tubular bells',

The clock, as you can see from the photographs has a conventional dial – cut out of sheet perspex with chapters applied in white Letraset – and conventional motionwork. The gears, stamped out of plastic, are straight cut. This leads to a big loss of power and accuracy. The power loss can be compensated for by using heavier weights, though it's not possible to compensate for the loss of accuracy. Even so, the 24 hour clock keeps time to within a couple of minutes a day.

As you can see from the diagrams and photographs, the Meccano clock makes much use of chains where, in a more conventional clock, gears would intermesh directly. The reasons for this are threefold. First, it helped with the spatial arrangement of the various parts. Second, it allowed Geoffrey to separate the various systems, letting the viewer see exactly what is happening and where. Third, with Meccano parts, certain important ratios can only be gained using chains



and pulleys, for instance, the revolutions of the moon round the earth.

Drive to the going train and to the strike/chime work comes from two 8lb flints Geoffrey dug up in his garden. These weights – and obviously the distance which they are allowed to fall – let the clock run for 24 hours. The reason for using weights rather than springs is that there is no such thing as a Meccano spring and that the following weights provide a source of interest to the viewer.

It's difficult to talk in conventional clock-train terms about a clock of Meccano, but the diagrammatic drawings of the two trains are more or less self-explanatory.

Some of the finer points deserve to be brought out. The plastic escape wheel – which was originally a Meccano caterpillar track centre wheel – turns once every 40 seconds. A 60 second escape wheel was not feasible with Meccano parts. Drive to the escape wheel comes via four sets of intermeshing gears and one chain. Drive to the second hand, however, originates two arbors back down the train and comes via a weight-loaded string pulley and a set of gears.

The date ring runs from the snail cam arbor via a chain and pulley arrangement with a ratio of 18:36. Thus the snail cam arbor which turns once every 12 hours, turns the date ring once every 24 hours. The date ring itself is run via bevel gears.

The 24 hour date wheel in turn runs the earth globe, again via bevel gears and a worm gear drives the barrel with the equinoxes and solstices on it. The overall ratio here is 1:366.4, which is the nearest attainable with Meccano parts. The moon ratio, at 29.55 compared with an ideal ratio of around 29.53, is closer to the ideal.

The strike/chime train runs via a chain and pulley to a set of differential gears. These are similar to the differential gears used in Frank Monk's orrery (*Clocks,* June 1982) and have the effect of allowing either the strike or chime train to run while the other is quiescent in much the same way that the differential on the rear axle of a car allows one rear wheel to turn faster than the other when cornering.

The strike has a conventional snail cam – cut out of clear perspex – though, unconventionally, on the three-quarter hour the chime plays only two bars of the Westminster chime. You can't win 'em all.

GOING TRAIN AND PLANETARY WORK