

ed were the Indians when the eclipse began, that they immediately supplied his wants. Drusus, and, according to Livy, Sulpitius Gallius appeased seditions in their armies by predicting eclipses.

Many strange causes have been assigned to eclipses by primitive people. Some supposed them the effect of divine wrath, punishing the sins of men by depriving them of light. Others fancied a dragon was devouring the sun, and whole nations united to frighten him away by their noise and clamour. Even to the present day, the Chinese practice on the occasion of an eclipse, the same rites and ceremonies as these prescribed and practiced 4,000 years ago. Biot, in his *Etudes sur L'Astronomie Indienne et Chinoise*, gives curious details of those rites. There, the Emperor is supposed to be the son of heaven, and his empire to be modelled on the same order as that which governs the celestial motions, and when the sun and moon cross each other's paths, and thus disturb the regularity of the heavenly courses, the government of the emperor is supposed to be, on account of its own disorders, the cause of this, and very curious ceremonies are performed to free the eclipsed body. The emperor and his grandees prepare themselves by fasting and dressing in the greatest simplicity, and on the day of the eclipse the mandarins attend with bows and arrows. When the eclipse commences the emperor gives the alarm on the drum, and they all go through a number of ceremonies, and let fly arrows at the sky to aid the eclipsed body. Eclipses, although no longer a terror to us, still cause a considerable impression, and not only do they affect men, but animals of all kinds. They are now predicted a long time beforehand, and all watch for them with curious interest.

A more frequent and immediate influence of the moon is the production of tides. As the earth revolves on its axis, different portions of its surface are successively presented to the moon, and the water under the moon, being more strongly attracted, is heaped up towards it, and thus a tide is carried round the earth, or rather two tides, for, on the side opposite, the earth is drawn away from the water, leaving it heaped up there also. Thus, at any particular place two tides occur in a day, or rather in a period of 24 hours 51 min. They are very useful in affording harbours for large ships, in places

which otherwise would not be navigable. They also, from their friction in shallow places, exert a slight action in decreasing the rate of rotation of the earth. This is the only influence of the moon of any importance, except perhaps, a slight disturbance on terrestrial magnetism, which it exercises at its perigee and apogee, or when it is nearest to, and furthest from, the earth.

There are many ways, however, in which the moon has been useful to peoples on the earth. It has been in times past, and is still to a certain degree, an invaluable guide to navigators in finding their position, and the direction of their course across the ocean. It has always, on account of its easy observation and regular motion, served as the base of a calendar for less developed peoples, for it is only by those well advanced in astronomy that the sun can be successfully used for this purpose. All the early calendars were based on the moon's motions. The Egyptians, Greeks and Jews all used a lunar year. The founders of Rome had a lunar year of ten months, or 304 days, and we have yet remaining from this system the twelfth month, called December, for it was then the tenth. The lunar calendar, though it was for a long time used, had the inconvenience that twelve lunar months only made 354 days, and so it did not agree with the solar motion, thus giving rise to inextricable confusion in the succession of the seasons, etc., so that this had to give place to a more regular system. The Turks and Jews, however, still keep up the old lunar year. The moon, not according to its real motion, but as it is found in the metonic cycle, is still used by the church in finding the time of Easter.

Owing doubtless to its proximity, the moon has at all ages enjoyed a greater reputation among men than any other heavenly body excepting the sun, and its influences were supposed to extend over the whole world, men, animals, plants and minerals. The old astrologers and geomancers had most singular ideas with regard to its influences. To them it was the ruler of the stars, the seasons, and the elements; it directed the growth of plants, governed shores and winds, was the giver of beauty and riches, had power over all diseases, and was the patroness of all whose business was connected with the night.