cycle; but of course it is available only for fairly short periods of time and is useless for the study of ancient eclipses. But we can here make use of the cycle of 22,325 lunations, or almost exactly 1805 years, discovered by M. Oppert. This cycle, for which I suggest the name Megalosaros, shares with the Saros the property of restoring the distances of Sun and Moon with almost perfect accuracy. Further we can with small labour compute an auxiliary table which gives the shift of the track in longitude, including the effect of secular acceleration; we can thus deduce all the circumstances of an eclipse with a considerable degree of accuracy, and can form an estimate whether it will be visible in a given locality. Of course for complete precision we must have recourse to the lunar tables; but it seems to me that in using Mr. Stockwell's cycle we have to do this before we can gain the roughest idea of the track of the shadow, and it is unquestionably a great gain to have a rough preliminary idea of the track, that we may avoid useless labour in computing the elements of eclipses that are invisible at the station we are considering.

I have constructed a diagram (p. 381) to illustrate the properties of these different cycles. The steady, stately westward sweep of the Saros tracks stands out in strong contrast to the capricious behaviour of the Stockwell tracks; further, the Saros tracks illustrated are all total, and the duration of totality varies slowly and steadily, while the Stockwell eclipses jump about at random from total to annular or *vice versâ*.

The period of 521 years (18 Stockwell cycles) gives somewhat closer approximations as regards duration of totality, though still much inferior to the Megalosaros. The latter gives surprisingly accurate results as regards duration of totality, and also as regards the latitude of the track, while the shift in longitude follows a fairly regular law and may readily be taken from an auxiliary table as stated above. This cycle is illustrated on the diagram by the eclipses of 96, 1901.

As regards practical utility, there does not appear any need for such cycles within the period covered by Oppolzer's Canon, which gives a close approximation to any eclipse that we desire to study. For epochs outside the Canon, my own preference would incline to the use of the Megalosaros, while allowing that Mr. Stockwell's results are full of interest, and present the sequence of eclipses in a new and suggestive light. A. C. D. Crommelin.

CORRESPONDENCE.

To the Editors of 'The Observatory.'

Democritus and Galileo on the Milky Way.

Gentlemen,—

Conjectures on the nature of the Milky Way before the invention of the telescope were numerous. (Of course I do not

include amongst these the mythological absurdity to which it owes its name and the Greek and Latin equivalents.) But apparently the earliest to form a correct one was Democritus, the philosopher of Abdera, of whom very little is known, and of whose voluminous writings only a few fragments are extant. He is supposed to have lived, like Plato, to a great age, and to have died about the time when the victories of Epaminondas gave the Thebans their short-lived supremacy in the affairs of Greece. For his view of the nature of the Galaxy, we must have recourse to the treatise of Plutarch, 'De Placitis Philosophorum.' In the third book (c. 1) of that work he gives the ideas of different philosophers on the subject, amongst which he says:—

Δημόκριτος, πυλλῶν καὶ μικρῶν καὶ συνεχῶν ἀστέρων ουμφωτιζομένων ἀλλήλοις συναυγασμὸν, διὰ τὴν πύκνωσιν.

The removal of this theory out of the region of conjecture took place when Galileo first directed a telescope to the starry heavens. His 'Sidenus Nuncius' was published early in 1610, about 1980 years after the death of Democritus. In this ever-memorable book he writes:—

"Quod tertio loco a nobis fuit observatum, est ipsiusmet LACTEI Circuli essentia, seu materies, quam Perspicilli beneficio adeo ad sensum licet intueri, ut et altercationes omnes, quæ per tot sæcula philosophos excruciarunt, ab oculata certitudine dirimantur, nosque a verbosis disputationibus liberemur. Est enim GALAXIA nihil aliud, quam innumerarum Stellarum coacervatim consitarum congeries: in quamcumque enim regionem illius Perspicillum dirigas, statim Stellarum ingens frequentia sese in conspectum profert, quarum complures satis magnæ ac valde conspicuæ videntur; sed exiguarum multitudo prorsus inexplorabilis est." (*Le Opere di Galileo Galilei, Edizione Nazionale*, vol. iii. p. 78.)

Probably Galileo thought that he had thus completely solved the problem of the Milky Way. But it is the wont of science to remove difficulties, and in doing so to create or bring into prominence others. Of the complex nature and structure of that wonderful zone he had no idea, and the labours of his successors have by no means exhausted scientific speculation with regard to it. Of course I have no intention here of touching on views which have been held and subsequently abandoned. But I should like before closing to allude to the very interesting pending problem, now that it is recognized that the irresolvable nebulæ have such a preference for the neighbourhood of the poles of the Milky Way, to endeavour to obtain some explanation of this.

Yours faithfully,

Blackheath, 1901, Sept. 6. W. T. LYNN.

Another Slow-pathed August Meteor.

GENTLEMEN,—

The remakable shooting-star described by Mr. Denning on p. 352 of this month's (September) number of the *Observatory*