And though, as compared with that of electricity, planetary velocity is small, say twenty miles per second, yet this error in a very attenuated atmosphere would produce an intolerable amount of resistance right ahead.

Looking for deflections arising from this cause I saw, or fancied I saw, some very remarkable ones, such as no rules of foreshortening or perspective would account for.

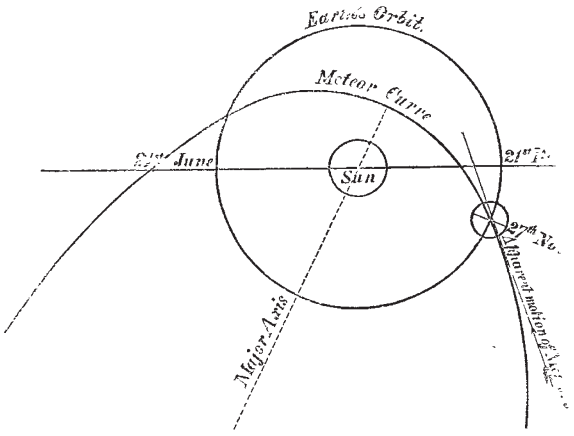
Rainhill, Dec. 2 HENRY H. HIGGINS

I HOPE last night, Nov. 27, was generally clear. It was so here, and we were treated to the most splendid meteoric shower that I have ever seen. I went out quite by chance into my garden at 7 P.M., and saw it in its full glory. I counted in a very few minutes 500 meteors, and then lost count, there being far too many to count all. On several occasions I saw as many as twelve in the sky at once: their radiating point seemed to be about ξ Cassiopeiæ, and from that point they floated in every direction—north, south, east and west. At that time, Cassiopeia being immediately above one's head, the effect was magnificent.

Malpas, Nov. 28 EDMUND V. PIGOTT

ON the 27th inst. a very fine display of meteors was observed here, which continued from about 5 P.M. to a late hour.

During 20 minutes of casual observation I counted 70 meteors —viz., from 7.45 to 8.5 P.M. One or two very fine ones were observed, one of which, having a northerly direction, left a luminous trail lasting for about 15 seconds. The radiating point



was situated about 10° to S. and E. of the zenith. The apparent velocities varied considerably, no doubt due to the angle at which each meteor was seen. The appearance of the tails also varied, some giving a quiet steady light, others wavy or sparkling; reddish sparks appear to have been observed. At 9.35 I counted 11 in 2 minutes.

I have constructed the annexed diagram from my rough observations. W. J. M.

Glasgow, Nov. 29

A VERY fine shower of shooting stars was observable at Boltsburn, Rookhope, in Durham, on Wednesday night (27th inst.). I first noticed them about half-past seven, when they were very numerous; their directions were chiefly downward, towards nearly all points of the horizon. The radiant point seemed to be situated near the Great Bear, but of this I could not make myself perfectly satisfied. They varied much in magnitude and length of track. Some of the larger ones left a streak of reddish light on their track, which lasted a second or two. About eight o'clock I counted, in fifteen minutes, 600, which came within my field of vision from a doorway having a southerly exposure. The regularity of occurrence was such as to approximate closely to 200 during each five minutes. How long the phenomenon continued in the latter part of the night I had not the opportunity of ascertaining. JOHN CURRY

Rookhope, Durham, Nov. 29

THE following are the observations which I was able to make on the great shower of meteors on Wednesday last:—

The first which I saw was at 5.25 P.M. Between 5.35 and 5.50, 150 were counted by one observer in the sky towards N.E. At 6.26, in four minutes, five observers counted 310. At 6.40, in two minutes, five observers counted 316. At 8.37, with a hazy cloud to N., six observers, in five minutes, counted 553. At 8.45, in fifteen minutes, one observer counted 528 while facing S.E.

A very few, among so many, left visible streaks of light after the meteor itself had disappeared, fifteen seconds being the longest time any of them remained visible. They appeared to radiate from a point a little to the south of μ Cassiopeia, many in the vicinity of that star having courses of less than a degree in angular measurement.

Towards 10 P.M. clouds covered the greater part of the sky, so that only unusually brilliant meteors could be seen; they were, however, again visible, but in decreased numbers, at 11.30.

Birkenhead, Nov. 29 G. H. H.

A VERY well sustained shower of meteors was observed here and at many other stations in the early part of Wednesday evening last, Nov. 27. Unfortunately, however, the weather was very unfavourable for observation at this city, and but very few of the meteors constituting the "shower" came under my notice. The first shooting star was noticed at 5h. 50m. It was a very brilliant one, and must have equalled Venus when at her *maximum*. This meteor passed down the northern sky near Dubhe, in Ursa Major, and left sparks in its flight. Very soon afterwards—at about 5h. 55m.—four other bright meteors, succeeding each other very rapidly, were visible. The most remarkable fact in connection with them was the great coincidence in their apparent courses among the stars. They all *appeared* to diverge from a point westward a few degrees from Polaris, and passing downwards became extinct in Ursa Major. At 6h. 5m. I commenced a careful watch of the sky in conjunction with a friend, and during the interval from that time until 6h. 30m. seventy-four additional meteors came under our observation. At 6h. 30m. the sky was much overcast, and though all the stars were invisible, yet for a short time subsequently I saw several flashes of light in some portion of the heavens, which must have been originated by the bursting of meteors of considerable magnitude. During the time that I was enabled to witness the appearance of meteors, the sky was very much obscured by clouds and mist which rendered nearly all the stars imperceptible. I could, however, faintly see Polaris, Vega, α and β Persei, δ and α Cassiopeiæ, and γ Andromedæ, and was enabled from the paths of the various meteors seen, to find the exact situation of the radiant point. This was situated at a place between Perseus and Andromeda, and about 5° north of the brilliant star Almaach (γ) in the latter constellation. This is at Right Ascension 1h. 56m. Declination 46° North. I saw several meteors in close proximity to this point. They had very short paths. I also noticed two meteors which were apparently quite stationary, and after brightening disappeared. The largest that were seen passed between Ursa Minor and Ursa Major, and several were also noticed in the neighbourhood of α Lyræ (Vega). No shooting stars were seen in the western sky, as it was overcast. I did not notice any trail of light after the disappearance of any of the brightest meteors, nor did I hear any noise as of an explosion, subsequently to the extinction of any one of them. I principally directed my attention to the accurate determination of the radiant point, and to the numbers of meteors visible.

It may be considered remarkable that such a comparatively small number of shooting stars should have come under observation at this city. The facts are, that, owing to the extremely cloudy state of the atmosphere, only an exceedingly small proportion of the meteors which actually existed were seen. During the whole time of observation—*i.e.*, from 5h. 50m. to 6h. 30m., a period of 40m.—it was very cloudy and misty, and but few of the brighter stars were visible, and these were hardly discernible. Under these circumstances, then, it is evident that only the brighter class of meteors could have been perceptible, while the smaller ones, which constituted the great majority of those seen at other stations, must have been utterly invisible. From these facts, I believe that no meteor less in apparent brightness than a second-magnitude star was seen here. Under more favourable atmospheric conditions, no doubt, the meteor shower would have been a grand spectacle from this place, and have equalled in intensity the display as described by other observers at different stations.

It does not seem improbable that the recent exhibition of November meteorites was originated by the earth passing through

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