

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

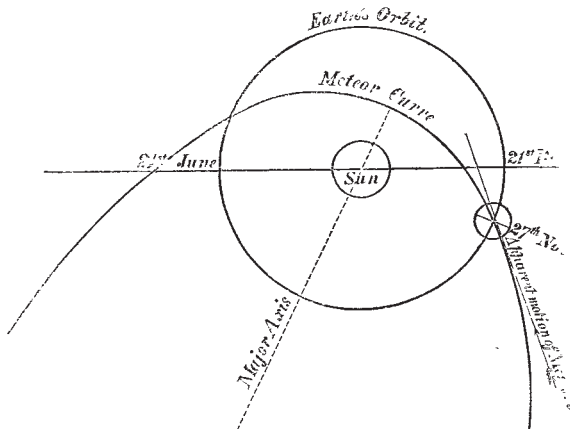
I HOPE last night, Nov. 27, was generally clear. It was so here, and we were treated to the most splendid meteoric shower that I have ever seen. I went out quite by chance into my garden at 7 P.M., and saw it in its full glory. I counted in a very few minutes 500 meteors, and then lost count, there being 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 Cassiopeia, 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. FIGOTT

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 Cassiopeia, and γ Andromeda, 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 Lyrae (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

the node of the periodical comet of Biela. It has been discovered quite recently that an analogy exists between the orbits of comets and meteoric showers; but in reference to this interesting part of the subject I would, however, without occupying further space, direct attention to a paper by Prof. Alexander S. Herschel, which appears in the monthly notices, R. A. S., vol. xxxii. No. 9.

Several correspondents describe an aurora borealis visible on the 27th; and it may be appropriate to note here that a very brilliant display was witnessed at Bristol on the 24th, at about 3 A.M. It was very intense at that time. On the previous and subsequent nights lightning was very frequent, and meteors more numerous than usual.

WILLIAM F. DENNING

Bristol, Nov. 30

THERE was a magnificent meteor-shower here on the evening of Wednesday last, the 27th. My attention was first called to it about half-past five o'clock, and I watched it at intervals until about seven, when the sky became overcast with clouds. It really was a shower, and no mistake, the sky at times quite sparkling with meteors. Their point of origin appeared to be in the neighbourhood of Cassiopeia, and their general direction towards the west and north, though several radiated to the east and south. Some, after becoming invisible, as if passing behind some intervening cause, suddenly emerged in all their brightness and then suddenly vanished. The streak left behind was in some instances a continuous, smooth line, in others the appearance was that of a row of sparks strung together. The finest meteor, and the one of longest duration, that I noticed became visible near Cygni, and continued its course to a point a little to the south of Vega. It resembled a small rocket. On the following evening the sky was too overcast to make observations.

THOMAS FAWCETT

Blencowe School, Cumberland, Nov. 30

THE splendid meteor-shower of November 27 was well seen at St. Andrews. My attention was not called to it until after the meteors had begun to decline in frequency; but they were still at about 8h. 30m. G.M.T., so numerous as to give considerable confidence in assigning their radiant point, about which they were seen shooting out in all directions. I saw at least two, whose paths were foreshortened almost to a luminous point. These appeared very close to the radiant near two stars in the right foot of Andromeda, which in the maps of the Society for the Diffusion of Useful Knowledge are numbered 51 and 54, or in about R.A. 25°, N. Decl. 48°. The sky became overcast; but about 11h. 30m., meteors were still falling in directions which confirmed my previous estimate of the position of their radiant. The sky was again clear at 1h. 30m. A.M., but I saw no more meteors.

I have since seen, in a table by Schiaparelli, from observations by Zerzioli, 1867-69, and under the date November 30, a radiant point in R.A. 17°, Decl. 48°, which agrees closely with that which I have ventured to assign to the remarkable shower of November 27.

W. SWAN

St. Andrews, Nov. 30

Metamorphosis of Insects

THE description of the development of the Lepidopterous wings, and the illustrations which were included in my lecture on Insect Metamorphosis, were taken from Landois' admirable essay in Siebold and A. Kölliker's *Zeitschrift* (1871).

Nov. 25

P. MARTIN DUNCAN

PRIZES OF THE FRENCH ACADEMY OF SCIENCES

AT its annual public meeting on Nov. 25 last the French Academy of Sciences awarded its prizes for the years 1870 and 1871. M. Faye gave a brief introductory address, in which he touchingly alluded to the misfortunes to science arising from the late war, to the various preparations for the forthcoming transit of Venus, the metric commission, and other matters of scientific interest. It is on account of the war that at this annual meeting the Academy had to award prizes for two years, namely, for 1870 and 1871. The list of prizes was as follows:—

Competition of 1870.—1. The Grand Prize in the mathe-

matical sciences this year was offered for a paper on the modification which light undergoes in its mode of transmission and in its properties, in consequence of the movement of the luminous source and the movement of the observer. This prize was not awarded, but a bonus of 2,500 francs was given to M. E. Mascart.

2. The Poncelet Prize was awarded to M. C. Jordan for his treatise on Algebraic Substitutions and Equations.

3. The Dalmont Prize was gained by M. Maurice Levy for his four memoirs on (1) Running Water, (2) The Pressure of Earths, (3) The Interior Movements of ductile Solids, (4) Curvilinear Co-ordinates.

4. The Lalande Prize in Astronomy to Mr. Huggins, for his Discoveries on the Physical Constitution of Stars, Nebulae, Planets, and Comets. The Commissioners for this prize speak in the highest terms of Mr. Huggins' discoveries, declaring that they mark a brilliant epoch in this new branch of science.

5. The Montyon Prize in statistics, to M. A. Potiquet for his work entitled, "L'Institut de France, &c.;" and honourable mention was made of M. A. Thévenot for the agricultural part of his work entitled "General Statistics of the Canton of Ramerupt," and to M. A. Castan for his memoir on the Influence of Temperature upon Mortality in the City of Montpelier.

6. The Jecker Prize.—MM. Clermont, Gal, and Grimaux, each obtained, by way of bonus, the sum of 1,700 francs for their works on Organic Chemistry.

7. The Barbier Prize was awarded to M. Personne for his Researches upon Chloral.

8. The Desmazières Prize to M. de Notaris for his work entitled "Epilogo della Briologia Italiana"; while honourable mention was made of M. C. Roumeguère for his work entitled "Cryptogamy Illustrated; or, History of the Natural Families of the Acotyledonous Plants of Europe."

9. The Thoré Prize to M. J. C. Schiödte, for his work upon the Metamorphoses of the Coleoptera.

10. The Bordin Prize, for the Comparative Anatomy of Annelids, to M. Léon Vaillant for his works on that subject.

11. The Savigny Prize was divided between M. Issel for his work entitled, "The Malacology of the Red Sea" (Italian), and Mr. MacAndrew for his researches into the Malacologic Fauna of the Red Sea.

12. The Bréant Prize. The reward of 5,000 francs, the whole of the annual interest of the legacy, was divided between M. Grimaud (of Caux), for his Researches concerning the Transmissibility of Cholera, and M. Thälörzan, for his work entitled "New Origin of Asiatic Cholera." Honourable mention was made of M. Bourgonne, jun., for his work entitled "Cholera Epidemic in the Communes of Condé, Vieux-Condé, Fresnes, and Escapout, during the year 1866."

13. The Chaussier Prize, to M. Tardieu, for his works on Legal Medicine.

14. The Montyon Prize in Medicine and Surgery. Two prizes of 2,500 francs were awarded—(1) To MM. Lancereaux and Lackerbauer for their treatise on Pathological Anatomy; (2) To Dr. Chassagny, for his work entitled "Method of Continued Traction. The forceps considered as an agent of prehension and traction." Bonuses of 1,200 francs were given—(1) To MM. Colze and Feltz, for their researches into Infectious Maladies, &c.; (2) To M. Jousset, for his experiments upon the Poison of the Scorpion; (3) To M. Decaisne for his memoirs upon the Temperature of Sick Children, and on the influence of Alimentation upon the composition of Female Milk; (4) To M. Despieux, for his work on Ulceration and the Ulcers of the Neck of the Uterus. The works of M. V. Fumouze upon the Spectra of Absorption of the Blood of M. Bergeret, on the Changes of the Urine, and of Bile in various Diseases, were honourably mentioned.

15. The Godard Prize was awarded to M. C. Mauriac for his work entitled "Essay on the Reflex Symptomatic Neuralgias of Blenorhagic Parastitis."

16. The Montyon Prize, in Experimental Physiology, to M. J. Raulin, for his Chemical Studies on Vegetation.

17. The Montyon Prize, for a paper on Unhealthy Occupations, was awarded to M. Guibal for his System of Ventilation applied to the Airing of Mines.

18. The Gegner Prize to M. Duclaux.

19. The Tremont Prize to M. Leroux, who will hold it for three years.

20. The Laplace Prize was obtained by M. H. B. X. Bou-