

meteors, and one communicated in April 1876 is specially to be noted, for it was a determination of twenty-seven radiant points that he had determined from his own observations, and was the first of a series of such papers that he contributed during his career. Reference is made in it to similar lists of radiant points by Greg, Tupman, Herschel (Alexander), and to a committee of the British Association on luminous meteors that had published full reports for several years past—for there were many workers in this field at the time, and Schiaparelli had already put forward his views on the relation between meteor-streams and cometary orbits. It is clear that at the beginning of the nineteenth century shooting stars were considered to be of electrical origin, though aerolites found on the earth were recognised as having come from without. It was not until about 1834 that the significance of meteor radiation was recognised as indicating direction in space, and hence later came the further conclusion that meteors move in orbits around the sun.

Denning evidently determined to associate himself with the band of workers in this new branch of science, and to take his full share in the arduous duty of observing. He has described his plan of working in his paper of May 1890, this being a catalogue of 918 radiant points of shooting stars observed at Bristol:

“All the observations were made in the open air and from the garden adjoining the house. Attention was almost invariably given to the eastern sky. In mild weather I sat in a chair with the back inclined at a suitable angle; but on cold frosty nights I found it convenient to maintain a standing posture, and sometimes to pace to and fro, always however keeping the eyes directed towards the firmament in quest of meteors.”

Denning's papers on meteors were many, and touch the subject at many points. Bare mention can only be made here of stationary radiants, a difficult subject depending largely on his observations as data. Almost the last of these papers was one in November 1923, which is a catalogue of 314 radiants from observations made at Bristol between the years 1912 and 1922, and, with those in three previous lists of which this is a continuation, brings the total of radiant points determined by him to nearly 1500. The number of meteors observed by him in the years specified was 6220, and of these the flights of 4008 were recorded. This paper contains some notes embodying items from his experience or his views on various meteoric subjects that make it valuable. A General Catalogue of more than 4000 radiant points determined by himself and others, compiled by him, is to be found in vol. 53 of the *Memoirs of the Royal Astronomical Society*.

Besides the large amount of naked-eye observing here indicated, Denning found time to use his telescope, and in this respect his success was noteworthy. The search for comets is a task requiring assiduity and patience, and he was rewarded for efforts of this kind by the discovery of five. His first was on October 4, 1881, and the comet then

discovered, after being further observed by himself and others, was believed to be periodic, but was, however, not seen afterwards. Comets discovered by him in 1890, 1891, and 1892 were not periodic, whereas for the fifth, discovered in 1894, a period of 7.3 years was computed. Many nebulae not previously known were found by him in the course of his search for comets, and the Nova in Cygnus of August 1920 is credited to him as its first observer.

It is difficult to summarise or comment on Denning's observations of Jupiter and the other planets, but they comprise many determinations of rotation period of the giant planet from observation of various spots. He gave to the world his knowledge so gained in a book, “Telescopic Work for Starlight Evenings”, published in 1890; and a brochure on the planets Mercury and Venus, a reprint of chapters contributed to the *Observatory* magazine, is a valuable summary of experience. In 1895 the Valz prize of the Paris Academy was awarded to him for his meteoric work, and in 1898 Denning was the recipient of the gold medal of the Royal Astronomical Society, the grounds for the award being his meteoric observations, his cometary discoveries, and other astronomical work. He received the degree of M.Sc. from the University of Bristol in 1927 *honoris causa*. In the year 1904 he was granted a Civil List pension of £150 a year for his services to science, for he followed no profession. In his youth he had worked with his father, who was Borough Accountant of Bristol, and it is somewhat unexpected to learn that at that time he was a cricketer of skill and reputation, and that he might have been included in the eleven representing his famous county. But he preferred a secluded life that he could devote to astronomy. Though not inclined to make friends personally, he had a large list of correspondents, whom he was always ready to help with advice, and one passes from among us who lived solely for the acquisition of abstract knowledge, for which he endured much self-sacrifice and sought no personal reward.

H. P. H.

WE regret to announce the following deaths:

Prof. Solon Irving Bailey, emeritus professor of astronomy in Harvard University, on June 5, aged seventy-six years.

Prof. Friedrich Becke, formerly general secretary of the Vienna Academy of Sciences, on June 18, aged seventy-six years.

Sir Hugh Bell, Bart., chairman of the council of Armstrong College, Newcastle-on-Tyne, and past-president of the Iron and Steel Institute, who occupied a prominent place in the industrial life of the north of England, on June 29, aged eighty-seven years.

Mr. E. W. Blair, senior scientific officer of the Royal Naval Cordite Factory, Holton Heath, who was killed in the explosion at the factory on June 23.

Dr. T. F. Chipp, assistant director of the Royal Botanic Gardens, Kew, on June 28.