

stellar physics. Time and progress have cleared away many of the false starts, and have partly reshaped the theories which he held; but we can recognise, better than his contemporaries could, that he was led forward by a vision of principles of evolution which was not an illusion; and now that other fields of research are converging towards his own lonely path, the fulfilment of his vision seems to be drawing near.

He was elected a Fellow of the Society on 1862 March 14, and served on the Council from 1866 to 1872. He resigned his Fellowship in 1897.

A. S. E.

SIR EDMUND GILES LODER, Bart., was born on 1849 August 7. He was a man of very wide culture and interests. He travelled much and was a keen sportsman, but also a diligent and successful student of various branches of natural science. At Leonardslee, Horsham, he accumulated a fine museum well stocked with specimens of big game and other animals which he had himself shot in various parts of India, America, and Africa, and on the occasion of a short trip to the Sahara secured the fine specimen of a small gazelle now known as *Loder's Gazelle*. In addition he kept a number of interesting and rare animals in a live state. He was also exceedingly interested in trees and horticulture, and possessed unusually fine collections of conifers and rhododendrons, and his rock garden was the model on which that at Kew was based.

It does not appear that he did any systematic observational work in astronomy, at any rate in later years, but he erected an observatory with a refractor of 8 inches aperture, the object glass being by Alvan Clark. He went to the Andaman Islands in 1874 to observe the Transit of Venus, and on an eclipse expedition to Colorado in 1878.

His death occurred on 1920 April 14.

He was elected a Fellow of the Society on 1874 November 14.

MRS. FIAMMETTA WILSON was the eldest child of Mr. F. S. Worthington of Lowestoft. The family had been settled in Lowestoft since 1820, and Mr. Worthington took up the practice of medicine and surgery, and succeeded to his father's practice in that town. Mr. Worthington was very devoted to natural science, and after his retirement from practice spent his time in microscopical studies and became an authority on Rotiferæ. He married in 1862 Miss Helen Felicite Till, daughter of Mr. Richard Till, of Clapham.

Mrs. Wilson was born 1864 July 19. Her early education was at home under governesses. She then spent four years in Lausanne, and finally a year at school in Germany. She early showed great facility in acquiring foreign languages, and spoke Italian, French, and German. Always exhibiting a courageous temperament, she was a fearless horsewoman. She played lawn tennis, and danced exceedingly well. All her life she was devoted to animals, and a dog was her constant companion.

After a few years at home she went to Italy to study music, which she did with the thoroughness and power of application which were such marked features of her character.

She was very fond of travelling, and after a year in Italy went to the United States and Canada. When she returned to England she taught for some years at the Guildhall School of Music, and was most successful as a conductor of stringed orchestras, often writing the score herself.

It was not till some time after her marriage with Mr. S. A. Wilson that she became interested in scientific matters, culminating in her attraction to astronomy, through attending a course of lectures on it by Professor A. Fowler about 1910. This became an absorbing interest to her, and she gave up a great deal of her music in order to devote more time to it. Social enjoyments were relinquished so that she might the more fully indulge the passion for astronomy; but her indomitable spirit and energy occasionally led to carelessness of self, which caused suffering.

Another faculty which she possessed in a pronounced degree was that of attracting and pleasing friends.

She invariably made a success of her undertakings. Her musical abilities were considerable. At one period, before astronomy became her dominating study, she wrote a good deal, and her short stories, etc., in magazines were much appreciated.

Mrs. Wilson was justly regarded as the brightest ornament and the most exhilarating presence in the little community of meteoric observers. Not only will her enthusiasm and cheering encouragement be sadly missed, but the cessation of her accurate and numerous observations will cause a void which cannot be filled.

Undismayed by the most unfavourable conditions, and unwearied even by physical weakness, her dauntless spirit often enabled her to gain success where others would have failed. She sometimes watched the heavens for five or six hours, when only a few stars were visible amid the clouds, and her perseverance was often amply rewarded by the detection of fireballs.

Mrs. Wilson was also a keen observer of other phenomena, such as displays of Aurora Borealis, the zodiacal light, comets, etc., and published some interesting and useful data on these appearances.

She had a wooden platform erected in her garden at Totteridge, so that she might get above obstructing trees; and here on her "perch," as she called it, she stood in some of the keenest winds of winter mornings, watching and recording, with wonderful fidelity, the paths of the objects she loved so well.

Throughout her observational work Mrs. Wilson was always actuated by the desire to attain accuracy so far as it was possible. In recording meteors, however, we can only approximate the ideal without attaining it.

Mrs. Wilson invited candid criticism, and even censure if necessary, but the writer (who received all her meteoric work) need hardly say that he invariably found occasion only to praise.

Mrs. Wilson was as prompt as she was exact. One instance may suffice as evidence. On 1914 December 14 she saw a bright meteor at 6.25 p.m., and immediately despatched details by telegram. The writer had seen the same object, and so its real path could be computed within two hours or so of its flashing across the sky; and this constitutes a record for expedition as far as the writer's experience goes.

In the pursuit of observations Mrs. Wilson had to encounter difficulties. Once when watching for meteors on the pier at Looe, on the Cornish coast, a sudden storm arose, and she only saved herself at the expense of a thorough drenching from spray. During the war astute special constables detected the flashlight she used for recording meteors, and severely threatened her with arrest as a German agent. With zeppelins dropping bombs in the neighbourhood, Mrs. Wilson calmly pursued her vigils on several occasions. Falling splinters from shrapnel once made things highly dangerous, but she managed to get good records. At another period it was her custom to watch from the roof of a friend's observatory at Harrow, and narrowly escaped a fall from a ladder. But she regarded these experiences lightly. They certainly brought more of the charm of variety than of the semblance of fear into her ardent quest for meteors.

During the ten years from 1910 to 1920 June she saw more than 10,000 of these objects, and registered the great majority of their paths. Such was her diligence that of about 650 meteors, which were doubly observed and had their real paths computed during the period alluded to, she supplied data with regard to about three-fourths of the total number.

Mrs. Wilson discovered Westphal's comet at its return in 1913, with a Zeiss field-glass, power 8, but Delavan anticipated her by a few days. She wrote an excellent paper, "Clusters and Nebulæ visible with Small Optical Means," for the *B.A.A. Journal* (27, 72, 1916 November), and contributed two papers to the R.A.S., one on large meteors she had observed in 1914, and another on the shower of 1918 January 3 (Quadrantids). She frequently contributed to the *English Mechanic*, *The Chaldæan*, and other English and foreign journals.

She had greatly endeared herself to a wide circle of friends, for she had a sympathetic nature combined with a charmingly vivacious manner. She was very active in encouraging others to enter upon practical astronomical work, and to share the delights which she herself experienced in it.

Of the value of her observations there can be no doubt. The writer frequently found that she was able to supply important records. In the case of the radiant point of the Lyrids, further evidence of its apparent motion was much required, and on 1916 April 26, six nights after the maximum, a bright meteor from it was observed from Bristol; but a duplicate record was needed. A few days later Mrs. Wilson sent in data for the same object, which she had caught between clouds, and the radiant point was accurately

Feb. 1921. *Hundred and First Annual General Meeting.* 269

found at  $278^{\circ} + 35^{\circ}$ , its motion established, and a missing link added to the chain of evidence.

Mrs. Wilson joined the B.A.A. in 1910, and conducted (with Miss A. Grace Cook) the Meteoric Section of that Association while the Director, the Rev. M. Davidson, was engaged in war duties. She also became a member of the Société Astronomique de France and of the Société d'Astronomie d'Anvers. In 1920 July a letter was received from Harvard appointing her to the "Edward C. Pickering Fellowship for Women" for 1920-21; but she died before the honour could reach her.

For some of the details in this memoir the writer has to express his obligations to Mrs. Wilson's sister, Mrs. Jervase-Hatt.

Mrs. Wilson died on 1920 July 21, two days after her 56th birthday.

She was elected a Fellow of the Society on 1916 January 14.

W. F. D.

GIOVANNI CELORIA was born at Casale Monferrato, near Alessandria, Piedmont, on 1842 January 29. He graduated at the Turin University in 1863, and then decided to adopt an astronomical career; he proceeded to Germany, and studied in succession at Bonn and Berlin. On returning to Italy, he was chosen by Schiaparelli as his assistant at the Brera Observatory, Milan. The bond between the two astronomers became very close; Schiaparelli in his work on double stars referred in terms of warm gratitude to Celoria's great help, and the latter wrote an affectionate appreciation of Schiaparelli after his death in 1910. Schiaparelli retired from the Directorship in 1900, and was succeeded by Celoria, who held the office till 1917, when he retired, but continued to reside at Milan till his death.

Celoria's work covered many branches of astronomy. He was very much interested in the studies of the Herschels on the structure of the universe, and repeated some of their star-gauges, making a star-count with a 4-inch refractor of the zone between Declination  $0^{\circ}$  and  $+6^{\circ}$ ; finding, to his surprise, that near the galactic pole this small instrument showed practically as many stars as the great reflector of Herschel. He deduced the comparative thinness of the star stratum in that direction. His observations also supported the conclusions of Sir John Herschel and (later) of Dr. B. A. Gould that there is a ring of bright stars inclined to the galactic plane at an angle of about  $19^{\circ}$ . This result has recently been discussed by Dr. Harlow Shapley, who attributes it to a local cluster.

Celoria's contributions to double-star astronomy were specially in the direction of orbit-computation. He also did useful fundamental work, producing a catalogue of the mean positions of 1118 stars.

He took a keen interest in the problem of the moon's secular acceleration. Schiaparelli drew his attention to the "eclipse of Hipparchus," recorded by Cleomedes and Pappus; he thereupon