

been without success in the realms of science, medicine, and affairs. In Liverpool his efforts to strip the University of its shell and bare it to the life of the City have left a permanent effect of greatest value, by which he will be remembered here for many years to come. *Vale!*

J. S. MACDONALD.

DR. J. L. E. DREYER.

ON September 14, Dr. John Louis Emil Dreyer died at the age of seventy-four years from an illness which he had resisted for the greater part of a year with an astonishing vitality. By his death astronomers are deprived of the presence of one of the most distinguished historians of their science. There are others who have treated the history of astronomy more comprehensively, but within the wide range of his labours there is certainly none who has excelled Dr. Dreyer in the combination of learning, sagacity, scholarly precision, and clear and well proportioned exposition.

Dr. Dreyer was descended from a family which had long been distinguished, largely as soldiers, in the public service of Denmark. The son of Lieutenant-General F. Dreyer, he was born at Copenhagen in 1852 and was educated at the University of Copenhagen. In 1874 he came to Ireland as astronomer at Lord Rosse's Observatory at Birr Castle. Lord Rosse's famous telescope had been found to be specially adapted to the observation of nebulae, and Dreyer in consequence embarked on the study of nebulae, with which, next to his studies in the history of astronomy, his name is most closely associated. In 1878 his work on nebulae was interrupted by his appointment as assistant astronomer at the Royal Observatory at Dunsink, but it was revived on his appointment in 1882 to be director of the Armagh Observatory. While at Birr he prepared for publication the whole series of observations made with Lord Rosse's telescope from 1848 to 1878, published by Lord Rosse in the *Transactions of the Royal Dublin Society*, 1880, and he also published a supplement to Herschel's catalogue of nebulae with numerous corrections. At Armagh, in addition to minor studies on nebulae, he produced in 1888 the "New General Catalogue of Nebulae and Clusters of Stars," included in the forty-ninth volume of the *Memoirs of the Royal Astronomical Society*, which, with his two supplementary catalogues published in the same series in 1895 (vol. 51) and 1908 (vol. 59), form the standard catalogues to which reference is always made.

While at Dunsink, Dreyer joined Copeland in founding an international astronomical journal called *Urania*, the first number of which appeared in January 1881. In July of that year its name was changed to *Copernicus*. The last number appeared in June 1884. The editors contributed their full share of reports and articles, and the journal is full of matter which, after more than forty years, remains both interesting and instructive. Dreyer's most important contribution was his "New Determination of the Constant of Precession," vol. 2, pp. 135-155, which, though never adopted in practical work, was used by Newcomb in his classical determinations.

At Armagh Dreyer produced in 1886 the "Second Armagh Catalogue of 3300 Stars," but his subsequent publications have been restricted to nebulae and astronomical history. In 1890 he produced "Tycho

Brahe, a Picture of Scientific Life and Work in the Sixteenth Century." Danish patriotism has given rise to much research on Tycho Brahe, but Dreyer found no scholarly biography, which should at once establish the facts in the light of the evidence available and at the same time place Tycho in his true position in relation to the progress of astronomy and to the life and thought of his time. Dreyer's volume, which is as illuminating as it is scholarly, supplies this want. In 1913 he began the publication of a complete edition of Tycho's works, of which ten volumes have appeared and the remaining four are stated to be complete in manuscript. This edition must probably be regarded as in the main a work of piety. The preparation of the text must have been a laborious task. The notes, in Latin, are brief, but exhibit the editor's usual scholarship. He has among other things taken the pains to discover what editions of the classics Tycho used.

In 1906 appeared Dreyer's "History of Planetary Systems from Thales to Kepler." The history of planetary systems for those ages is practically the history of astronomical theory. Here as usual we find that mastery of authorities and that sober judgment in weighing doubtful evidence that we should expect from a scholar alone, combined with that skilful interpretation and sympathetic exposition that only an astronomer could give. Dreyer returned to parts of this subject in two papers contributed to *Monthly Notices of the Royal Astronomical Society* in 1917 and 1918, in which he effectively disposed of the long prevailing idea that Ptolemy's star catalogue did not rest on his own observations, but on those of Hipparchus or Menelaus reduced to his own time. In 1920 he succeeded, largely as a result of research on manuscripts at Oxford, in restoring the original form of the Alfontine Tables (*Mon. Not. R.A.S.*, vol. 80, pp. 243-62). He took the leading part in the editing of Sir William Herschel's "Scientific Papers," published in 1912, and a very large share in the volume which the Royal Astronomical Society has recently produced on the first hundred years of its history.

Distinctions came as a matter of course. In 1916 Dreyer received the gold medal of the Royal Astronomical Society, of which he was president from 1923 until 1925. He received the honorary degree of D.Sc. from the University of Belfast, and of M.A. from the University of Oxford, in which city he had settled on his retirement from Armagh in 1916.

In private life Dreyer was unobtrusive, but accessible. He spoke quietly, and with the same deliberation and authority with which he expressed himself in public. His learning was always available to those who wished to benefit by it, and he will be greatly missed. His wife, a daughter of John Tuthill, of Kilmore, Co. Limerick, whom her friends hold in affectionate remembrance, died in 1923. He leaves three sons, all distinguished in the fighting services of the British Crown, and one daughter, who is married to Mr. Warham Shaw-Hamilton, late of Dartan, Co. Armagh.

MR. J. H. MUMMERY, C.B.E.

THE death of John Howard Mummery on August 30, whilst on a holiday visit to Cornwall, deprives the world of an eminent microscopist. Born on January 19,