

have been ended so early. CHARLES BRONGNIART was elected a Foreign Correspondent of the Geological Society of London in 1888, and died April 18, 1899, aged 40.

TOWNSHEND MONCKTON HALL, F.G.S.

BORN MARCH 22, 1845.

DIED JULY 1, 1899.

TOWNSHEND HALL was born at Torquay in 1845, and studied for a short time at Wadham College, Oxford. On leaving there he gave himself up to science, and especially to geology. A paper by him on the distribution of fossils in the North Devon Series was printed in the Quarterly Journal of the Geological Society (1867, vol. xxiii, pp. 371-381); but his chief contributions to the geology and mineralogy of his native county are in the Trans. Devon Association (of which he was a member from the first), and include papers on mineral localities, raised beaches, submerged forests, concentric lamination, mineral oil, classification of North Devon rocks, and various matters of local geology. He also contributed to the GEOLOGICAL MAGAZINE and to the Mineralogical Magazine, and wrote several sketches of the Geology of Devonshire or parts thereof, and the "Mineralogists' Directory." He became, indeed, well known as our chief local authority on North Devon.

PROFESSOR ROBERT W. BUNSEN, PH.D.

BORN MARCH 13, 1811.

DIED AUGUST 16, 1899.

ALTHOUGH Bunsen achieved his great reputation as a chemist, and held the Chair of Chemistry in the University of Heidelberg for many years, he wrote (especially in his earlier life) several papers on minerals and on mineral waters, as well as on various geological subjects, notably on the chemico-geology of Iceland. To the scientific world he is largely known for his work on spectrum analysis, resulting in the discovery of the elements caesium and rubidium; whilst to the world at large he is known by the invaluable gas-burner that bears his name and the principle of which he discovered. Professor R. W. Bunsen was elected a Foreign Member of the Geological Society of London in 1856, holding the honorary distinction for 43 years. He died at the age of 88 years.

JOHN BALDRY REDMAN, F.G.S., MEMB. INST. C.E.

BORN 1816.

DIED DECEMBER 21, 1899.

JOHN BALDRY REDMAN was elected an Associate of the Institution of Civil Engineers in February, 1839, and a Member in March, 1846, his name being the earliest on the roll of over 6,300 Members and Associates at the time of his death. He was elected an F.G.S. in 1882. He did much service to geology by his important papers, read to the institution above-named, "On the Alluvial Formations, and the Local Changes, of the South Coast of England," and "The East Coast between the Thames and the Wash Estuaries," published in 1854 and 1865, which were the first systematic account of the changes along a great length of our coast, in this case from Norfolk southward to Dorsetshire. Much other work of the kind was also

done by him, for instance in the Reports of the British Association Committee on Coast-erosion, and his knowledge was always at the disposal of those interested in the subject. He died at the good old age of 83.

WILHELM HEINRICH WAAGEN.

BORN JUNE 23, 1841.

DIED MARCH 24, 1900.

THE celebrated palæontologist Wilhelm Heinrich Waagen was born at Munich, 23rd June, 1841, and educated there and at Zürich. In the latter place he specially studied natural history, for which he had early shown great taste.

In 1864 his first paper, "Der Jura in Franken, Schwaben, und der Schweiz," made its appearance, and gained a prize.

He established himself first at Munich, and for one year was natural history tutor to Prince Arnulph and Princess Therese of Bavaria. In December, 1870, Waagen was appointed palæontologist to the Indian Geological Survey. The Indian climate, however, did not suit him, and he was obliged to retire in August, 1875. The previous year he had contracted a fortunate and happy marriage with Sophie, Baroness von Gross-schedel.

Shortly after quitting India, Waagen settled in Vienna and became a Tutor at the University. The following year he went to Prag to occupy the Chair of Mineralogy and Geology at the German Technical High School. There, on the death of Barrande, he assisted in editing the continuation of the "Système Silurien de Bohême," and in association with Professor J. Jahn wrote the section Crinoids for that work.

On Neumayer's death, Waagen became in 1890 Professor of Palæontology at the University of Vienna, a post which he held till his death on 24th March, 1900.

Waagen was by no means a prolific writer, less than a score of papers in various journals being written by him.

His principal works were on the Jurassic Cephalopoda of Kutch and on the Salt Range Fossils, both forming part of the "Palæontologica Indica," and the latter incomplete at the time of his decease.

Of the value of these works from a systematic point of view it is perhaps as yet too early to speak; but of his enthusiasm and industry, and of the fact that he greatly advanced our knowledge of Indian palæontology, there can be no doubt.

MISCELLANEOUS.

THE UNIVERSITY OF LONDON.—It gives us great pleasure to announce that the Senate of the University of London has conferred the degree of Doctor of Science upon Mr. C. W. Andrews, B.A., F.G.S., of the British Museum (Natural History), and has also awarded him the Sherbrooke Scholarship, founded by the late Lord Sherbrooke, Trust. Brit. Mus. This is the first occasion on which this scholarship has been presented.