of his work of 1791. Galvani was in doubt as to how to explain the effects he observed, and, said J. D. Forbes, who had carefully studied his writings, "in the short space of a few weeks, he had abandoned his earlier notion of the metals being the source of the electricity, and ascribed the effects to the proper electricity of the nerves and muscles". Still pursuing his experiments at intervals, in 1791 he published his most famous, and now very rare, memoir, "De Viribus Electricitats in Motiv Musculari Commentarius", the appearance of which roused great interest in scientific circles.

The first German accounts of Galvani's views were published in 1792 by a young doctor, E. J. Schmuck, and in October of that year Volta wrote his two letters to Cavallo entitled, "Account of some Discoveries made by Mr. Galvani of Bologna, with Experiments and Observations on them". The letters were in French, the first sentence being, "Le sujet des découvertes et des recherches, dont je vais vous entretenir, Monsieur, est l'electricité animale". Volta had sent the letters to be read to the Royal Society as an acknowledgement of his election as a foreign member in 1791. They were read at a meeting of the Society on January 31, 1793, and were duly published in the *Philosophical Transactions*. In 1794, when Volta was awarded the Copley Medal, Sir Joseph Banks in his address said :

"The experiments of Professor Galvani, until commented upon by Professor Volta, had too much astonished, and, perhaps, in some degree, perplexed many of the learned in various parts of Europe. To Professor Volta was reserved the merit of bringing his countryman's experiments to the test of sound reasoning and accurate investigation. He has explained them to Dr. Galvani himself and to the whole of Europe, with infinite acuteness of judgment and solidity of argument ; and through the medium of the *Philosophical Transactions* he has taught us that the various phenomena which presented themselves under the modifications of Dr. Galvani's experiments hitherto tried, are wholly owing to the excessive irritability of the nerves when subjected to the action of portions of the electric fluid, too minute to be discovered, even by the delicate electrometer of our ingenious brother, Mr. Bennet, of Wirksworth ; and he has detected in the metals, which Dr. Galvani considered as mere agents in conducting his animal electricity, that very existing principle which the Doctor and his followers had overlooked."

Forbes considered the award of the Copley Medal to Volta, rather than to Galvani, a questionable decision, for "the great value of Volta's paper, at the time, was undoubtedly that it directed the attention of English experimenters to Galvani's discoveries, then quite recent and probably imperfectly known". That Galvani was little known and had not travelled, while Volta was personally known in both Paris and London, may have had something to do with the decision.

From 1791 onwards, Galvani did little more to add to his fame. His wife died, his health declined, and when after the French Revolution the Cisalpine Republic was set up, he declined to take the oath of allegiance to the new authorities and was dismissed from his offices. He died on December 4, 1798, apparently at the house of a brother to which he had retired after his dismissal. His writings were republished in one volume in 1841 by the Academy of Sciences of Bologna.

As regards the oft-repeated story of Galvani's observations on frogs being connected with the preparation of a dish for his invalid wife, Forbes dismisses it as an absurd invention.

Obituary Notices

Prof. D. Morgan Lewis

DAVID MORGAN LEWIS, emeritus professor of physics in the University of Wales, died at Aberystwyth on July 28, aged eighty-five years.

Born at Eglwyswrw, Pembrokeshire, in 1851, he was the eldest son of the Rev. Evan Lewis, minister of the Welsh Independent Church at Brynberian and a prominent figure in his denomination. His early education was received at a local British school and at Cardigan, and later he entered the Presbyterian College, Carmarthen, to train for the ministry. Here he became proficient in mathematics and in 1873 entered Trinity College, Cambridge, where he was 20th Wrangler in 1877. Afterwards he studied physics at the Cavendish Laboratory.

In 1878 Lewis was ordained as minister of the English Congregational Church at Hirwain, Glam., where he served until 1883. The advent of the new Welsh national colleges decided him to seek a wider field and in the latter year he resigned his pastorate and returned to work at the Cavendish Laboratory. In 1884 he was appointed as assistant to Andrew Gray, professor of physics in the new University College of North Wales at Bangor, with whom he worked in full accord until 1891, when he was appointed to the professorship at Aberystwyth in

succession to D. E. Jones. Here he worked quietly, and gradually built up an efficient department of physics until his retirement in 1919. He was married in 1894 to Miss Annie Powell of Carreg Cennen, Carms., who predeceased him in 1932.

Prof. Lewis was of a modest and retiring disposition, and greatly disliked publicity. Yet he could be very enthusiastic in those causes which, in his opinion, mattered. While at Hirwain he inaugurated and lectured to classes under the Science and Art Department, and later wrote considerably to the Welsh local Press to stress the importance of scientific and technical education in the new secondary schools which were then being established. He served the University Colleges of Bangor and Aberystwyth and the University of Wales well during their formative years, and the cause of adult education in the Principality found in him a willing helper. During many years, he served as a governor of Aberystwyth County School and was for a period chairman.

After his retirement, Lewis's main interests were in the affairs of his religious denomination, in Welsh hymnology and in archæology. Until quite recently, his quiet, dignified figure could always be seen at the meetings of the British Association, among whose members he had a host of friends. T. C. J.

DR. PERCY PHILLIPS, director of the Hydrological Service of the Physical Department, Egyptian Ministry of Public Works, died in Cairo on August 4, at the age of fifty-seven years. Previous to the Great War, he was a lecturer in physics in the University of London and during the War had a commission in the Sound-Ranging Section of the Royal Engineers, with which he saw service in France and Palestine. He joined the Egyptian Government Service in 1919, and was responsible for the collection and discussion of statistics relating to the water supply of the Nile. He did valuable work in the study of the hydrology of the Nile Basin and in the preparation of the large irrigation projects on the Nile.

WE regret to announce the following deaths :

Dr. G. P. Clinton, formerly botanist of the Connecticut Agricultural Experiment Station, known for his work in mycology, on August 13, aged seventy-one years.

Prof. F. B. Loomis, professor of geology in Amherst College, Mass., an authority on vertebrate palæontology, on July 24, aged sixty-three years.

Mr. Andrew Mellon, founder of the Mellon Institute of Industrial Research at Pittsburgh, Pa., sometime American Ambassador in Great Britain, on August 26, aged eighty-two years.

Prof. Luigi Pernier, professor of archæology and the history of ancient art in the University of Florence.

Lord Rothschild, F.R.S., a trustee of the British Museum and founder of the Tring Zoological Museum, on August 27, aged sixty-nine years.

News and Views

Sir Thomas Grainger Stewart (1837-1900)

SIR THOMAS GRAINGER STEWART, the eminent Scotch physician, who died on February 3, 1900, was born at Edinburgh on September 3, 1837. He qualified in 1858, and then visited the medical centres on the Continent, where he came in contact with Virchow, Schönlein and Traube in Berlin, and Oppolzer, Skoda and Hebra in Vienna. On his return to Edinburgh, he was made physician to the university wards in the Royal Infirmary. In 1876 he was appointed professor of physic and proved an exceptionally gifted teacher. He was one of the first in Great Britain to direct attention to the deep reflexes, and under the title of "Paralysis of the Hands and Feet from Diseases of the Nerves", he first described the condition known as multiple neuritis. For many years he held a foremost position as a consultant throughout Scotland and the north of England. His chief publications were "A Practical Treatise on Bright's Diseases of the Kidneys" (1868), "The Teaching of Medicine in Edinburgh" (1877) and "An Introduction to Diseases of the Nervous System" (1884). He was the recipient of many honours. In 1882 he was appointed physician to the Queen in Scotland, in 1887 he was made M.D. *honoris causa* of the Royal University of Ireland, in 1890 he was elected president of the Royal College of Physicians of Edinburgh and honorary fellow of the College of Physicians of Philadelphia, in 1894 he was knighted, and in 1898 he was elected president of the British Medical Association when the annual meeting was held in Edinburgh.

Samuel Siegfried Karl von Basch (1837-1905)

THIS eminent Austrian physiologist and physician was born on September 9, 1837, at Prague. After studying medicine in his native town and Vienna, he qualified in 1862 in Vienna, where he acted as assistant for several years to Dittel, Jaeger, Turk and Kalisko. In 1865 he went to Mexico, where he was appointed Court physician to the Emperor Maximilian, who was shot on June 19, 1867, and himself narrowly escaped execution. After his return to Vienna he carried out some important experiments on the action of nicotine on the movements of the intestine, and in 1878 was appointed extraordinary professor in experimental pathology. He was the author of numerous publications, but his chief work was "The Physiology and Pathology of the Circulation" (1892), which he dedicated to his former teacher, the celebrated physio-