

This cordial letter is not recorded in the "Life and Letters"; but somewhere perhaps the original may be in existence.

Regarding the provision of regulations for the "Darwin Prize", it was decided that the subjects for each of the three years ensuing should be geology, zoology and archæology. The following committee of five adjudicators was chosen: Dr. Thomas Wright, the Rev. George Deane, Prof. Charles Lapworth, J. J. Harris Teall (afterwards Sir Jethro Teall) and W. Jerome Harrison. The first recipient of the gold medal, for the year 1881, was Edward Wilson, of Nottingham, for his paper "The Permian Formation in the North-east of England". The award for the year 1882, in zoology, went to Prof. A. Milnes Marshall, M.D., and W. P. Marshall, M.Inst.C.E., for their joint paper on the "Pennatulida". Space forbids naming the adjudicators. The medal was presented at the annual meeting held at Tamworth in June 1883.

At this meeting it was reported also that a bronze copy of the medal had been sent to the family of the late Charles Darwin, and that Mr. W. Erasmus Darwin, writing from Basset, Southampton, on December 14, 1882, had expressed the opinion that it embodied a striking likeness

of his father, who had much appreciated its foundation.

Awards continued, mostly yearly, but always subject to the receipt of meritorious papers. Mention may be made of the annual meeting of 1889, held at Oxford, with Mr. (now Sir Edward) E. B. Poulton, F.R.S., as president of the Union. His address bore the title "Theories of Heredity". We hear of "trenchant criticism" of the word "heredity" by Lawson Tait, and a "lively passage of arms" thereon with Francis Galton. The Darwin Medal for the year was handed to T. W. Walker, for a thesis on a geological subject.

So far back as 1882 a note of warning had been given in the *Midland Naturalist* that an endowment fund of £250 would be required if the gift of a gold medal was to continue as a permanent memorial. Alas! this object was never achieved; the Union sailed over uncharted and uncertain waters, and some indeed of its constituent bodies were bad sailors in Darwinian days. The *Midland Naturalist* ceased publication at the close of 1893, and the Darwin Medal became a final award in 1895 with its allocation to Dr. Walter E. Collinge, now keeper of the York Museum, for studies in comparative anatomy.

Obituary Notices

Mr. Hugh Ramage

THE death of Mr. Hugh Ramage, on April 16, at seventy-three years of age, will be deeply regretted by all who knew him. He was one of the most unassuming of men, yet his work in certain fields of spectroscopy was of a very high order, and his devotion to these studies in the leisure hours of a busy life manifested a spirit of self-sacrifice in the pursuit of scientific knowledge not often found at any time.

Mr. Ramage was born on March 31, 1865, at Wolverton, Bucks, but both his father and his mother were natives of Catrine, Ayrshire. He left school at twelve years of age, and a year later, after his parents had removed to Crewe, he entered the L.N.W.R. carriage works there in the telegraph office, his duties being to work the single needle telegraph instrument. While in this position, and afterwards when he became an apprentice in coach-making, he attended evening classes in elementary scientific subjects and mathematics at the Mechanics' Institute. Probably on account of these studies, he was eventually transferred to the laboratory of the locomotive works and became engaged in analytical work. When twenty-one years of age, he entered for the annual competition for National Scholarships or Royal Exhibitions, then awarded on highest successes in the Science and Art Department's examinations. As

the result, he obtained a Royal Exhibition tenable at the Royal College of Science, Dublin, which he entered in October 1886.

After completing his course at the Royal College of Science, Mr. Ramage returned to the Crewe laboratory in 1889 under Joseph Reddrop, and while there carried out investigations on the bismuthate method of estimating manganese and the estimation of phosphorus and carbon in mild steels. He left Crewe in 1891 to become demonstrator in chemistry under Prof. (afterwards Sir Walter) Hartley at the Royal College of Science, Dublin; and in the following year he began to assist Sir Walter in researches on flame spectra. One of the chief objects in view was the study of Bessemer flame spectra; and the results obtained were valuable contributions to the knowledge of the thermo-chemistry of the Bessemer process. It was in conjunction with Mr. Ramage that Sir Walter Hartley discovered the existence of the bands in the flame spectra of many metals and from a study of these was able to draw important conclusions about the relation between the band and line spectra of the same element.

Mr. Ramage's introduction to the use of the spectroscope in chemistry in association with Sir Walter Hartley determined his main scientific interests and activities throughout the rest of his life. In 1899 he left Dublin and went to Cambridge

as a research student, Prof. Liveing giving him facilities for work on the oxyhydrogen flame spectra of metals, especially the band spectra of copper, silver and gold, but also of other elements, and to study homologous lines in spectra and relationships between wave-length or wave-number and atomic weight. In his ninth term he submitted two theses to the Board of Studies and obtained his degree upon them. Three years later, in 1904, he was appointed organizer of higher education and principal of the Technical Institute at Norwich, out of which developed the Norwich Technical College, of which he was the principal until his retirement in 1930.

Mr. Ramage was the author, or joint author, of a number of papers published in the proceedings or transactions of societies and in scientific journals. Reference has already been made to his work with Reddrop, with whom he was associated in his first paper published by the Chemical Society in 1895, on the volumetric estimation of manganese by oxidation with sodium bismuthate, which is now in general use. From that date until 1901 he was the joint author, with Sir Walter Hartley, of fourteen papers contributed to the Royal Society, Chemical Society, Iron and Steel Institute and other societies, on spectrographic analysis of various minerals and metals and related subjects. Among the subjects of similar papers of which he was the sole author are the spectra of potassium, rubidium, caesium and their mutual relations, abnormal changes in some lines in the spectrum of lithium, and the distribution and spectra of metallic vapours in electric sparks. He also discovered that Norwich flue-dust was a source of gallium.

In recent years, Mr. Ramage devoted chief attention to the use of the spectroscope to biology and medicine, and his researches in this field are of particular importance. Some of the most interesting of these were published as communications to *NATURE*, and others appeared in the *Biochemical Journal*. The first account of results obtained by Mr. Ramage in his extension of spectrographic analysis to vegetable and animal matter seems to have been given by him in *NATURE* of April 20, 1920. This was followed, in the issue of August 23, 1930, by a communication on such an analysis of mushrooms, which showed that each part had a high potassium and a low calcium content. Copper and silver were also shown to be contained in different parts of a mushroom. (In August of last year Mr. Ramage extracted from half an ounce of dried mushrooms in powdered form a tiny pellet of silver and a similar one of copper.) In *NATURE* of November 1, 1930, a joint communication from Prof. Munro Fox and Mr. Ramage summarized the results of a survey of animal tissues with the view of detecting and analysing quantitatively those of the less common elements contained in protoplasm and its products capable of being investigated by spectrographic methods. A paper on this subject by Fox and Ramage was published in the *Proceedings of the Royal Society* in the following year. It was shown by these studies that manganese was widely distributed and that the manganese content of animal tissues varied with the locality in

which a given species of animal lived. Further work showed that strontium occurred in the genital duct of the edible snail and that manganese was a prominent element in its liver. Copper and iron were always detected; and silver was present in the kidney and liver of all crabs and lobsters examined. Similar methods were applied to the study of the composition of human tissues, the results of which appeared in the *Biochemical Journal* and the *Proceedings of the Royal Society*. Among other results, this work led to the first description of the presence of barium in the human choroid.

The essential importance of small amounts of mineral constituents in soils, as affecting the growth of both plants and animals, is now fully recognized, and the researches carried out by Mr. Ramage himself, and in association with others, upon the occurrence of such elements in plant and animal tissues have proved to be of greater practical value than was ever anticipated by him. He played an important part in the study of a deficiency disease of sheep in Australia, which ultimately proved to be curable by cobalt, by virtue of his discovery that the soil in the affected areas was deficient in this element. The sole motive of his scientific work was to increase his own knowledge of natural actions and phenomena, and to present the world with the results obtained, whether they were of practical use or not. In this respect he represented the noblest type of the scientific spirit.

While attending the Toronto meeting of the British Association in 1897, Mr. Ramage met Miss Winifred Pye-Smith, who became his wife in 1904 and survives him, with one son and one daughter.

Sir Wolseley Haig, K.C.I.E., C.M.G.

WE regret to record the death of Sir Wolseley Haig, distinguished as soldier, administrator and orientalist, which took place on April 28, at the age of seventy-two years.

Thomas Wolseley Haig was a son of Major Robert Wolseley Haig, of the Royal Artillery and fellow of the Royal Society, and was born on August 7, 1865. He was educated at Wellington College and Sandhurst, joining the Seaforth Highlanders in 1884. He transferred to the Indian Army and was engaged in the suppression of the dacoits of Upper Burma. His appointment in 1892 as a member of the Berar Commission, which was entrusted with the Assigned Dominions of the Nizam, brought him into close touch with the life of the Deccan and turned his interests to the study of its history and linguistics. After holding various administrative posts there, he entered the Political Department of the Government of India in 1901, serving at Hyderabad, at headquarters, and at Alwar, where as political agent he exerted great influence over the somewhat difficult Maharaja. His final term of service in the East, from 1910 onward, was passed mainly in Persia. He served in a consular capacity at various posts, including Baluchistan, Khorasan and Ispahan, to the last-named of which he was transferred in 1916, and