

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

where he was associated with General Percy Molesworth Sykes, who speaks highly of his abilities and achievement in dealing with Eastern peoples in his "History of Persia". In 1920 he retired, having received the orders of the Star of India, St. Michael and St. George, and the British Empire. In 1922 he was created K.C.I.E. In 1923 he accepted an heraldic appointment in Scotland. He resigned the office of Albany Herald in 1935 on the ground of ill-health.

As an oriental scholar, Sir Walseley Haig will be remembered chiefly for his contributions to Indian history and for his detailed knowledge of Moslem rule. As a translator his version of Badaoni's history, one of the chief sources for Akbar's reign, is the

standard of reference. He also translated the *Burhan-i-Maasir* of Tabatabai, the principal source for the Nizam Shahi dynasty of Ahmadnagar. On his return to England, Sir Walseley was appointed professor of Arabic, Persian and Hindustani at Trinity College, Dublin, and later was lecturer in Persian in the School of Oriental Studies, London. He was also joint editor of the "Cambridge History of India", the third and fourth volumes, covering the whole Moslem period, being allotted to him. The third volume was largely his own work; but owing to a breakdown in health, after he had planned the fourth volume and prepared voluminous notes, the completion of the volume fell to Sir Richard Burn.

News and Views

Prof. J. J. Abel, For. Mem. R.S.

PROF. JOHN JACOB ABEL, who has just been elected a foreign member of the Royal Society, is the doyen of American pharmacologists. He is one of the best known and widely beloved personalities in medical science, in his own and other countries. After graduation, he worked under C. Ludwig in Leipzig and O. Schmiedeberg in Strassburg. Returning to the United States, he became professor of pharmacology at Ann Arbor, Michigan, migrated from there in 1893 to be the first professor of pharmacology at the Johns Hopkins Medical School, Baltimore, and held this chair with great distinction for nearly forty years. Prof. Abel's direct contributions to science have been chiefly on the chemical side of pharmacology. He was the first to bring to practical completion the isolation of epinephrine (adrenaline); later he discovered the same substance in the skin glands of a South American toad, from which he also isolated the toxic principle 'bufagin'; and he was the first to crystallize insulin. Among many other achievements, he devised methods for studying the diffusible constituents of the living blood, and the reconstitution of its plasma after hæmorrhage. Even in his retirement he is actively engaged in new and important researches on tetanus toxin. Throughout medical science in the United States his influence has been spread by his pupils, inspired by the example of a long life of selfless devotion to the pursuit of knowledge.

Prof. N. E. Nørlund, For. Mem. R.S.

AN unusually wide circle among men of science, including mathematicians, astronomers and geodesists, will approve and appreciate the election of Prof. N. E. Nørlund to the foreign membership of the Royal Society. Prof. Nørlund has since 1923 been the director of the Danish Geodetic Institute, an office always previously held (as in the case of the Ordnance Survey in Great Britain) by a military officer. In

recent years, he has undertaken a new first-order triangulation of Denmark, and in Greenland also he has instituted a new triangulation which will extend up to 76° N.—a most valuable contribution to the determination of the figure of the earth. In mathematics, his works include memoirs on the theory of difference equations in the complex domain; on divergent series; and on continued fractions. In astronomy, at the University Observatory of Copenhagen, he has worked especially on the errors which affect the meridian observations of fixed stars, and has also made an important study of the double star ξ Ursæ Majoris, concluding from a very slight perturbation in its orbital motions that it is a triple star, the observable pair having an invisible satellite. Prof. Nørlund has held many distinguished offices in his own country, and has played a prominent part in the international organization of science; he has presided over the Baltic Geodetic Commission, the International Time Commission, and the International Council of Scientific Unions. He is a foreign member of the Academies of Science in Paris, Rome (Lincei) and Stockholm, and an associate of the Royal Astronomical Society.

Prof. René Leriche

THE Lister Medal for 1939, which is awarded in recognition of distinguished contributions to surgical science, has been awarded to Prof. René Leriche, professor of clinical surgery in the University of Strasbourg, and he will deliver the Lister Memorial Lecture in 1939 at the Royal College of Surgeons of England. Prof. Leriche, who was born on October 12, 1879, received his medical education at Lyons, taking his degree in 1906. In 1906-9 he was chief of the surgical clinic of the Lyons hospitals, and then became full surgeon. In 1920 he became lecturer in experimental surgery at Lyons, and has also held there the professorship of external pathology. In 1924 he was appointed to the chair of clinical surgery