

of weakness in the earth's crust; how the time arrives when under the slowly increasing horizontal compression the subsided area yields and closes, so that the contained sediments are forced up in folds to form a new mountain range, while the earth's crust is left for the time being in a state of relaxation, at the mercy

of minor forces which in the time of its strength it had no difficulty in resisting; how it is gradually consolidated once more by the reviving forces of compression, while new regions of weakness are being prepared by new accumulations of sediment, and another cycle of mountain building begins.

### Obituary.

SIR WILLIAM AUGUSTUS TILDEN, F.R.S.

BY the death of Sir William Tilden on Saturday, Dec. 11, in his eighty-fifth year, British chemistry lost one of its best known and most loved representatives. Born before Frankland had endowed the atom with valency, or Cannizzaro had used the implications of Avogadro's hypothesis to fix its relative weight, his span of life bridged the gulf between conceptions so widely separated as the indivisible unit of that remote time and the *congeries* of protons and electrons of the present day.

As a boy, Tilden was sent to various private schools and finished that part of his education at Bedford Modern School, where, during the two years of his stay, he helped to found the school scientific society, which bears his name. So far as can be ascertained, his interest in chemistry was first aroused by the experiments which a visiting tutor at the last of these private schools carried out in class to illustrate his teaching. Being given the choice of a career, Tilden in 1857, on leaving school, chose that of chemist. But through a confusion of ideas on the part of his guardian, more pardonable then than now, he started as the apprentice of a pharmacist, the late Alfred Allchin of Barnsbury in North London, who had been Redwood's assistant in the Pharmaceutical Society's School in Bloomsbury Square. He was therefore of the company of Scheele, Dumas, and others, who found their way to eminence in chemistry through the discipline and experience of the old type of pharmacy.

While attending classes at Bloomsbury Square during his apprenticeship, Tilden was attracted to Hofmann's lectures at the Royal College of Chemistry in Oxford Street, which opened up to him a new world and exercised a profound influence on his career. In 1862 he became assistant to Dr. John Stenhouse, F.R.S., but a year later returned to the School of Pharmacy, this time as demonstrator in chemistry under Attfield—a position he occupied until 1872, when, abandoning pharmacy for chemistry, he became science master at Clifton College under Percival, afterwards Bishop of Hereford. It may not be without interest to note that one of his students at Bloomsbury Square, the late W. A. Shenstone, F.R.S., who like himself had been a Jacob Bell Memorial scholar, succeeded him at Clifton.

From Clifton, Tilden went to Birmingham in 1880 as professor of chemistry and metallurgy in the newly founded Mason College and took an active share in the development of that institution; but in 1894, three years before it achieved university status, he was called to the chair of chemistry in the Royal College of Science, South Kensington, in succession to the late Sir Edward Thorpe. On his retirement from South Kensington in 1909—he had succeeded the late Prof. J. W. Judd, F.R.S., as Dean of the College in 1905—he received a

knighthood and was given the title of emeritus professor in the Imperial College of Science and Technology. Thereafter, he occupied himself with literary work—chiefly studies in historical chemistry—and, for recreation, with his garden, of which he was justly proud. Among the more important of his books may be mentioned "Short History of the Progress of Scientific Discovery," published in 1899; "The Elements" (1910); "Chemical Discovery and Invention in the Twentieth Century" (1917); "Famous Chemists: the Men and their Work" (1920).

In the field of original research Tilden was first busied with subjects of pharmaceutical interest, out of one of which, the study of dilute nitro-hydrochloric acid, a method was developed in 1874 for the production of nitrosyl chloride in quantity, a reagent used largely by him in the investigation of the terpenes. Pinene nitrosochloride, the first of the additive compounds formed by its aid, was isolated by him in 1875, and others followed; but his work on these unsaturated hydrocarbons, and the conclusions reached about their constitution, are less likely to be remembered than his discovery of the polymerisation of isoprene into caoutchouc, which supplied the first clue to the manufacture of indiarubber by synthetical means. Among the other subjects which claimed his attention, mention may be made of his work on the relation of specific heat to atomic weight which formed the subject of the Bakerian lecture before the Royal Society in 1900. By awarding him the Davy medal in 1908, that Society set its seal on the merit of his contributions to knowledge.

Recognition also came to Tilden from universities and scientific societies. He received the honorary degrees of Sc.D. (Dublin), D.Sc. (Victoria), and LL.D. (Birmingham); became a fellow of the Royal Society in 1880; was a fellow of the University of London; corresponding member of the Russian Imperial Academy of Sciences; and honorary member of the Pharmaceutical Society; president of Section B (Chemistry) at the Bath meeting of the British Association in 1888; president of the Institute of Chemistry in 1891-94; treasurer of the Chemical Society in 1899-1903, and its president in 1903-5. His British Association address was noteworthy as an expression of his views on the teaching of chemistry; his tenure of the chair of the Institute of Chemistry for the adoption of the figure of Williamson's statue of Priestley in Birmingham for the seal of that body; and his presidency of the Chemical Society for the initiation of the invaluable series of "Annual Reports on the Progress of Chemistry," and of the movement for the admission of women to the fellowship, which, to his regret, was not endorsed by the Society until after the War.

Always sure of a welcome at any meeting he might attend, and listened to with pleasure when he intervened in discussions or debates, Tilden maintained his interest

in chemistry and chemists to the end. Even when infirmity, which might have deterred many a younger man from making the effort, came upon him, he would travel from Northwood to attend meetings of the Chemical Society's council. These visits became less frequent as his sight began to fail, and after the summer of 1923 he was seen only once more at Burlington House, when, at the annual general meeting in 1924, as those who heard him will never forget, he made his last speech, rich in reminiscences of his early days as a fellow of the Society. To those who had the privilege of serving on his staff in Birmingham or London, he was ever the stimulating counsellor and appreciative chief. Nor were his students slow to recognise that in him they had a teacher who never spared himself in their interest, and, giving them of his best, he received in return that consideration which old-world courtesy invariably calls forth.

Sir William Tilden was twice married: first in 1869 to Charlotte, daughter of the late Robert Bush, and secondly, in 1907, to Julia Mary, daughter of the late C. W. Ramie. He is survived by Lady Tilden and by a son of the first marriage, Philip Armstrong Tilden, who has achieved distinction as an architect. The funeral at Northwood Parish Church on Wednesday, Dec. 15, was attended by a large body of mourners, including besides relatives the representatives of societies connected with chemistry, pure and applied, and many personal friends.

W. P. WYNNE.

#### SIR JAMES WILSON, K.C.S.I.

WE regret to record the death of Sir James Wilson, late of the Indian Civil Service, on Dec. 22 at his residence, Annieslea, Crieff. He was a recognised authority on a variety of topics connected with India—administrative, economic, philological, and ethnographic. After his retirement from the Indian service in 1911, when he settled in London, being keenly interested in agricultural matters, he acted as superintending inspector under the Board of Agriculture and Fisheries, and became a governor of the Agricultural Organisation Society; in 1914 he was appointed permanent delegate for Great Britain, Canada, Australia,

New Zealand, and South Africa to the Institute of Agriculture in Rome.

Sir James Wilson was born on Feb. 27, 1853, the son of the Rev. John Wilson, of Dunning, Perthshire. He was educated at Perth Academy and, after passing the Indian Civil Service examination in 1873, graduated at Edinburgh and then proceeded to Balliol College, Oxford, where he obtained the Boden Sanskrit scholarship, but did not stay long enough to take a degree. He went to India in 1875, and was posted to the Punjab. A distinguished administrative career, which included such high official appointments as secretary to the Punjab Government and the Financial Commissioner, membership of the Punjab Legislature, and, on Lord Curzon's selection, secretary to the Government of India in the Revenue and Agricultural Department, and finally Financial Commissioner of the Punjab, was recognised by the award of the C.S.I. in 1900 and the K.C.S.I. in 1909, two years before his retirement.

Apart from his official duties, Sir James Wilson's interest lay especially in investigating the dialects and folklore of his province. He wrote on tribal customs in the Gurgaon, Sira, and Shahpur, compiled a gazetteer of the latter district, and wrote a grammar of Western Punjabi. Similar interests in folklore and dialect after his retirement produced "Lowland Scotch as Spoken in the Lower Strathearn District of Perthshire," published in 1915, "The Dialects of Robert Burns," and recently, "Scottish Poems of Robert Burns in his Native Dialect." He had also completed a book on the dialects of central Scotland.

WE regret to announce the following deaths:

Dr. Laurence Pullar, who, by a gift of £10,000, made possible the survey of the Scottish lochs carried out by the late Sir John Murray, and later, with Sir John, edited the six large volumes containing the results, on Dec. 22, aged eighty-eight years.

Dr. H. Campbell Ross, Director of the McFadden Research Foundation at the Lister Institute of Preventive Medicine, London, on Dec. 14, aged fifty-one years.

Mr. T. S. P. Strangeways, Huddersfield lecturer in special pathology and Director of the Research Hospital at Cambridge, on Dec. 23, aged sixty years.

### News and Views.

THE New Year honours list includes the names of the following men of science and others associated with scientific work:—*Privy Councillor*: The Hon. W. G. A. Ormsby-Gore, Under-Secretary of State for the Colonies and president of Section E (Geography) of the British Association at the Oxford meeting in 1926. *Knights*: Dr. Henry Head, who has made distinguished contributions to our knowledge of the nervous system; Mr. A. E. Kitson, Director of the Geological Survey, Gold Coast Colony; Mr. J. C. W. Reith, Managing Director of the British Broadcasting Company; Dr. D. Milne Watson, Governor of the Gas Light and Coke Company, London. *K.C.B. (Civil Division)*: Dr. G. Macdonald, Secretary to the Scottish Education Department. *C.B. (Civil Division)*: Mr. H. T. Tizard, Principal Assistant Secretary, Department of Scientific and Industrial Research. *C.I.E.*:

Lieut.-Colonel J. W. Cornwall, lately Director, Southern India Pasteur Institute, Coonoor, India; Mr. D. Anstead, Director of Agriculture, Madras; Mr. D. Milne, Director of Agriculture, Punjab. *K.C.M.G.*: Prof. W. Mitchell, Vice-Chancellor of the University of Adelaide, in recognition of his services to the Commonwealth of Australia. *C.B.E. (Civil Division)*: Mrs. Eugénie Strong, Assistant Director of the British School of Archæology in Rome.

LORD BALFOUR, on behalf of the Prime Minister, will receive a deputation on Feb. 15 from the British Waterworks Association, the Salmon and Trout Association, the Society of Medical Officers of Health, and other bodies, who wish to persuade the Government to set up a central authority to deal with the vexed question of river pollution in Great Britain. In our leading article of Jan. 1 we