

stable quality, so that if those who have an undue number of accidents in their first year of exposure are eliminated, the subsequent accident ratio of the group is diminished. A similar relationship has been found to hold for motor accidents. The elimination (on paper) of those who sustain an undue number of accidents in an initial period of exposure reduces the accident rate shown by the remainder of the group in the subsequent period. The report suggests that data are already available, in the records of the insurance companies, for

giving a trial to this method of accident prevention on a large scale. The novelty of the method, as compared with judicial disqualification, lies in the facts that it makes use of information provided by minor accidents and that it is dissociated from any question of blame, since a man cannot be blamed because his reactions are slower than those of others. Yet it appears reasonable that he should be removed from a position in which he is a danger to himself and others, or by appropriate tests be prevented from reaching this position.

Obituary

SIR JAMES WALKER, F.R.S.

THE death of Sir James Walker at Edinburgh on May 6, in his seventy-third year, severs one of the last links between classical and modern physical chemistry. Closely connected in work and friendship with the three great founders of the science on the Continent—van't Hoff, Ostwald and Arrhenius—Walker may be justly regarded, indeed, as the protagonist of physical chemistry in Great Britain during the last forty years. His text-book, "Introduction to Physical Chemistry", has passed through ten editions since its first appearance in 1899, and has probably assisted more students towards an easy, yet serious, appreciation of the science than any other single volume. Several of the more significant chapters of the subject—for example, those on hydrolysis and amphoteric electrolytes—were largely his own original work. Walker was also, however, a skilled organic chemist, and his success in attacking purely technical problems was exceptional. In an age of increasing specialisation, he retained to the last an unusually wide range of interests, and kept himself up to date in a great many diverse fields. Remembering the bitter controversies in which he participated as a young man, while the revolutionary ideas regarding the nature of solutions were being forced upon his reluctant seniors, he was always particularly open-minded in his attitude towards the work of the second generation of physical chemists which has recently effected another revolution in this same field. He recognised quite complacently that, if they could see farther than Arrhenius, it was, after all, only because they were standing on Arrhenius's shoulders.

Born in Dundee in 1863, and educated at Dundee High School, Walker entered the University of Edinburgh in 1882 and was inspired by Crum Brown to seek an academic career in chemistry. After obtaining the degree of D.Sc. for his thesis on "The Dehydration of the Metallic Hydroxides by Heat", in 1886 he proceeded to Baeyer's laboratory in Munich to engage in organic research, but at the end of six months, learning that Ostwald had been appointed professor of physical chemistry at Leipzig, he hastened to become the first British pupil of that new school, and graduated therefrom as Ph.D. in

1889 with a thesis on "The Affinity Constants of Organic Bases".

For the next three years, Walker served as research assistant to Crum Brown at Edinburgh, his most outstanding contribution being on the electrolytic synthesis of organic acids. In this period falls also the inauguration of the Alembic Club, an association of assistants in the chemistry department which afterwards undertook the publication of fundamental papers of historical interest—the Alembic Club Reprints—with gratifying success.

An introduction to Ramsay at the memorable Leeds meeting of the British Association in 1890, where van't Hoff and Ostwald triumphantly vindicated their views against a mass attack of their opponents, led Walker in 1892 to enter Ramsay's laboratory in University College, London, first as a research worker and later as an assistant. In 1894 he was selected to succeed Percy Frankland in the chair of chemistry at University College, Dundee, and for fourteen years he occupied that post in his native town, adding steadily to his reputation for research, teaching and administrative ability. He was elected a fellow of the Royal Society in 1900, and when his old teacher, Crum Brown, resigned in 1908, Walker was appointed to fill the vacancy at Edinburgh.

Here Walker found that his first and most urgent duty was the reorganisation of the laboratories, which had become entirely inadequate. The solution of this problem was delayed until after the War, but the new Department of Chemistry at King's Buildings, completed in 1924 and still unrivalled in Great Britain, constitutes a fitting memorial to his twenty years occupancy of the Edinburgh chair. During the War he rendered valuable services to the country by erecting and equipping, in conjunction with some of his colleagues in the Department, a factory for the manufacture of T.N.T. which produced as much as fifty tons of the explosive weekly. The efficiency of the plant may be illustrated by the statement of the Department of Explosives Supply that its figures for nitrogen economy during the months of September and October, 1918, constituted a record for the country.

In 1921 Walker received a knighthood and was also elected to the presidency of the Chemical Society.

His expert advice was sought by many committees—such as the Fuel Research Board, the Advisory Council for Scientific and Industrial Research, the University Grants Committee, and the Carnegie Trust—to all of which he gave generous and conscientious service. He was awarded the Davy Medal of the Royal Society in 1926. The Royal Society of Edinburgh honoured him at the beginning of his career with the Makdougall-Brisbane Medal in 1895, and at its close with the Gunning Victoria Jubilee Prize in 1933. He was an LL.D. of the Universities of St. Andrews and Edinburgh.

Although he retired from the Edinburgh chair of chemistry in 1928, Sir James Walker maintained for several years an active interest in his old department, visiting it almost daily and participating in a most stimulating manner in its various research activities. His many friends hoped that this Indian summer of his life-time would prove of long duration, but it was not to be. As his body weakened, his visits became regretfully rarer, but the spirit of James Walker was going strong to the very end.

Walker was a man of singular simplicity and charm, working unselfishly always for his department and for his profession. He possessed a remarkable gift

for languages (for years he abstracted Russian papers for the *Journal of the Chemical Society*) and an intense love of music. He is survived by his wife, the daughter of Lieut.-Colonel W. Sedgwick of Godalming, whom he met as a research student at University College, and by a son, Dr. Frederick Walker, now lecturer in geology in the University of St. Andrews. His scientific progeny, however, including not only those who have studied directly under him but also those who have been inspired by his writings, are legion. Wherever physical chemistry is mentioned among English-speaking chemists, the first name that springs to mind is that of Sir James Walker.

JAMES KENDALL.

WE regret to announce the following deaths :

Dr. Charles E. St. John, research associate at the Mount Wilson Observatory, Pasadena, and associate of the Royal Astronomical Society, on April 26, aged seventy-eight years.

Prof. Hugo de Vries, For.Mem.R.S., emeritus professor of botany in the University of Amsterdam, on May 20, aged eighty-seven years.

News and Views

Sir Robert Muir, F.R.S.

By common consent, Sir Robert Muir, professor of pathology in the University of Glasgow, is the leader of British pathology, as was shown by the enthusiasm with which his colleagues gathered together last year to testify to their respect and affection for him and to celebrate his seventieth birthday. The recent award to him of the Lister Medal is a proper recognition of the value of his work to surgeons as well as pathologists. This Medal is awarded triennially, irrespective of nationality, for distinguished contributions to surgical science; it consists of a bronze medal and a sum of £500. Sir Robert is an old-fashioned all-round pathologist, morbid anatomist and bacteriologist, and his own researches have covered a wide field—anæmia, immunity, tumours, iron metabolism, etc. He has illuminated any subject to which he has been drawn to pay attention, and his comprehensive knowledge has been spread beyond his immediate pupils by two popular textbooks on pathology and bacteriology, the latter originally written in partnership with his friend James Ritchie, and by the number of his pupils who hold chairs and other positions of distinction in pathology in Britain and the Dominions, where they no doubt reproduce some of his teaching though they can scarcely duplicate his personality.

Prof. P. Zeeman, For.Mem.R.S.

PROF. PIETER ZEEMAN is seventy years of age on May 25 and in consequence retires from the professorship of physics and directorship of the Physical Institute of the University of Amsterdam. In order to allow his many admirers an opportunity of showing

their appreciation of his important contributions to science, it is proposed that a jubilee volume be published, to which thirty distinguished physicists have already promised contributions, and that a Zeeman fund, a Zeeman medal or some similar method of encouraging research be founded. A general committee with representatives from all parts of the world has been formed with an executive committee under Prof. J. D. van der Waals, Jr., with T. L. de Bruin, of 33 Gerard Terborgstraat, Amsterdam S. as secretary and treasurer to carry out the proposals, and an appeal is now made for funds in support of the scheme. Pieter Zeeman was born in Zeeland at the mouth of the Schele and was educated at the University of Leyden. In 1890, when twenty-five years of age, he was appointed assistant on the physics staff, and held the post of *privatdozent* when six years afterwards he detected the effect of a magnetic field on the light sent out by a source placed in the field, each line of the normal spectrum being split up into a number of components each polarised and in general displaced. Prof. Lorentz based his explanation on the motion of electrons in the field, but this has been replaced by the quantum theory of the permitted energy of the emitter, which explains the anomalous, as well as the normal, effect. Zeeman was appointed professor of physics in the University of Amsterdam in 1900, was Nobel laureate in physics in 1902, was elected a foreign member of the Royal Society in 1921 and awarded the Rumford Medal of the Society in 1922. The most important of Zeeman's later work was concerned with the convection of light by moving liquids and solids. He found that its magnitude depends on the dispersion