

and have an alternative one worked out within a few hours.

After the War, Dr. Dye succeeded Mr. F. E. Smith, now Sir Frank Smith, as head of the Electrical Standards Division, and established his reputation for highly accurate work in the measurements he carried out on the primary electrical standards and units, including standards of inductance and capacity. He devised a new method for accurate measurement of the vertical component of the earth's magnetic field, and the apparatus he constructed for this purpose is now the principal instrument in regular use for absolute measurements at the Abinger Magnetic Observatory. More recently he had devoted himself to the development of new methods of time measurement for precise standardisation of radio frequency, and had already achieved results of a very high order, using a specially controlled tuning-fork and a quartz oscillator. He was a member of the Radio Research Board and of the British National Committee of the Union Radio-Scientifique Internationale, of which he was secretary; and at the Congresses at Washington, Brussels, and, last year, at Copenhagen, he acted as chairman of the Commission on Radio Standards. He was elected a fellow of the Royal Society in 1928, and was a member of the Council of the Physical Society.

SIR ARTHUR DUCKHAM, G.B.E., K.C.B.

THE death of Sir Arthur Duckham, which occurred with tragic suddenness on Feb. 14, is a great loss to the nation. He stood in the forefront of British industries and, at the age of fifty-two years, in the fullness of his powers, seemed destined to play a great part in the campaign that lies before our industrial leaders. Trained as an engineer under the enlightened regime of Sir George Livesey at the South Metropolitan Gas Company's works, Arthur Duckham evinced at an early age the inventive skill, enterprise, and energy which bespoke a great future. In conjunction with Col. H. W. Woodall at Bournemouth, he brought to success the well-known Woodall-Duckham process for the continuous carbonisation of coal in vertical retorts. From this achievement he passed to other work connected with furnace construction and carbonisation, and built up the great organisation

of Woodall-Duckham enterprises, of which he was the leading spirit.

Duckham's labours extended widely beyond this commercial enterprise. Early in the War he was brought into action in connexion with munitions supply and, by his exceptional gifts, soon attained a leading position in this exacting and vital work. His services were recognised by conferment of K.C.B. in 1917. He was a member of the Sankey Coal Commission in 1919 and, in an individual report, favoured State ownership of mineral rights but not of mines. In 1928 he spent seven months in Australia as chief of a small commission of English industrialists appointed to advise on trade opportunities with that country. Further recognition of his public services was marked by the conferment of G.B.E. in 1929.

Duckham had a full appreciation of the part to be played by science in modern industry. Without extended formal scientific training, he had the scientific instinct and outlook. In his own business he had an elaborate and highly efficient scientific intelligence service which secured all necessary aid for his various enterprises. He was ever ready to plead the cause of science, and he had occupied the presidential chair of the Institution of Chemical Engineers and the Society of British Gas Industries. He was president-designate of the Federation of British Industries for 1932.

Sir Arthur Duckham was endowed with qualities of character and temperament which, in all walks of life, made an instant appeal and secured for him a quite exceptional measure of regard. His loss will be felt as a personal bereavement throughout a very large circle.

WE regret to announce the following deaths:

Sir Frederick William Andrewes, F.R.S., emeritus professor of pathology in the University of London, a pioneer of bacteriology in Great Britain, on Feb. 24, aged seventy-two years.

Dr. George Claridge Druce, F.R.S., curator of the Fielding Herbarium in the University of Oxford, on Feb. 29, aged eighty-one years.

General G. Ferrié, formerly president of the Committee on Longitudes of the International Astronomical Union, on Feb. 16, aged sixty-three years.

News and Views

Prof. A. W. Williamson and Japanese Development

MUCH attention is being given at present to affairs in the Far East, in connexion with which it is of interest to recall the pioneer efforts of nearly seventy years ago of Prof. Alexander W. Williamson, F.R.S., the distinguished chemist, to enable Japanese youth of high rank to obtain a knowledge of European methods in education, the arts and sciences, commerce, and manufactures. In association with him was a small band of men, inspired by his enthusiasm and example. Williamson was born at Wandsworth in 1824, and he died in 1904. Educated mostly abroad, he was a

pupil of Gmelin, at Heidelberg, and Liebig, at Giessen. In 1849 he was elected professor of practical chemistry at University College, London, with which the chair of general chemistry was later (1855) combined; he remained in the service of the College for thirty-nine years. Williamson was foreign secretary of the Royal Society from 1873 until 1890, and a Royal medallist of that body. On two occasions he was chosen president of the Chemical Society.

THE opening for Williamson's scheme came in 1863, when he received, through a London merchant having trading connexions in the Far East, an offer to send