

Obituary.

PROF. J. B. HAYCRAFT.

PROF. JOHN BERRY HAYCRAFT, who died suddenly on December 30, was a figure better known to the older than to the younger generation of British physiologists. A serious illness, which fell upon him (as it fell upon Pasteur) in middle age, affected his scientific work; and the promise and fulfilment of his earlier period have to a certain extent been dimmed.

Haycraft devoted his life to physiology. Throughout it—in spite of ill-health—he held before him the ideal of scientific research. After graduation at Edinburgh he studied abroad in Leipzig. Then, while demonstrator in the physiology laboratory at Edinburgh with Rutherford, professor at the Mason College in Birmingham, interim professor during Rutherford's illness at Edinburgh, and finally professor of physiology at Cardiff, he steadfastly pursued his scientific investigations.

Haycraft's best-known works to-day are perhaps his contributions on animal mechanics and on the senses of taste and of smell in Sir Edward Sharpey Schafer's "Text-book of Physiology"; and his best-known original contribution to physiology is probably his paper on the cross-striation of skeletal muscle (1891). In this latter work he used the ingenious method of taking casts of muscle fibre upon collodion. The impression of the fibre upon the collodion showed the same cross-striated appearance as the original muscle fibre, and Haycraft inferred that the cross-striation is an optical phenomenon due to the varicose shape of the muscle fibrils, which gives different refraction effects in the globular and in the restricted portions of the fibril.

But Haycraft's range of investigation was a wide one: the results of temperature variation (1879); the chemistry of the blood, its coagulation, etc. (1879, 1882, 1884, 1888, 1891); special sense physiology—vision, taste, smell (1883, 1884, 1885, 1887, 1893, 1897, 1910); various contributions to chemical physiology (1889, 1891, 1894); contributions to histology (1879, 1880, 1889, 1890), and to development (1891, 1893, 1895); a theory of amoeboid movement (1880); the "muscle sound" (1890); voluntary movements (1890, 1898); the scratch-reflex (1890); elasticity of animal tissues (1904).

Haycraft's chief interest was, however, the physiology of the heart. He published a series of papers in this field: the cause of the first sound (1890); the movements of the heart within the chest (1891); the time of contraction of the papillary muscles (1896); and the changes in shape of the heart during the cardiac cycle (1896)—the two latter papers in collaboration with Paterson. When he resigned his chair in 1920 it was with the intention of continuing his researches on the circulation, and up to the time of his death he applied himself to problems of the pulse-wave in the physiological laboratory at Cambridge.

Haycraft's illness left behind it an impairment of speech which made the expression of his thoughts sometimes a matter of difficulty. This defect in the mechanism of expression was a severe handicap, but did not dim the clearness of his vision and ideals. So far from

this being the case, it was in the later part of his life that his vision was crystallised in the development of the Welsh National School of Medicine, and in the Physiology Institute at Cardiff, which will be his chief monument.

In his long tenure of the chair at Cardiff—from 1894 to 1920—Haycraft saw and guided the development of the medical school there until it became the Welsh National School just after his retirement. The modern organisation of that school on the basis of a compulsory degree in science for all its medical graduates, a six years' course of study, and whole-time professors in the clinical subjects, owes to Haycraft more than is commonly realised.

Haycraft insisted that physiology must be the basis of medical education, and fought long for the establishment of a modern laboratory in Cardiff. He was exceptionally fortunate in finding a munificent patron in Sir William James Thomas, Bt., and an enthusiastic architect in the late Col. Bruce Vaughan. The result of this collaboration was the building of the magnificent Physiology Institute in spite of endless discouragement and delay. That Institute, even in its incomplete form one of the largest in the country, carries evidence of his foresight in its detail and arrangement; it is one of the most modern and best planned of physiology laboratories.

His friends will remember Haycraft for his determination in face of opposition, for his vision, and for his high ideal of science; but most perhaps for this, that in spite of all the difficulties which he had to face, he did no mean thing. He was a gentleman, and the magnificent institute which was his vision is his fitting memorial.

T. G. B.

SIR JOHN GAVEY.

SIR JOHN GAVEY, who died on January 1, at the age of eighty, was one of the most notable telegraphic and telephonic engineers in this country. He was born at St. Helier in Jersey and began his career in the Post Office in 1870. In 1902 he became Engineer-in-Chief and Electrician to the General Post Office. He was made a Companion of the Bath in 1902, and on his retirement in 1907 a knighthood was conferred upon him.

In his early days at the Post Office, Gavey originated many improvements which greatly increased the speed of automatic telegraphy, and in 1881 he opened the first telephone trunk line connecting two British towns, namely, Newport and Cardiff. In 1894 he succeeded in establishing communication between the opposite sides of Loch Ness, a distance of four miles, by means of the electromagnetic induction between two parallel wires stretched along the banks. This method was subsequently used for establishing communication between lighthouses and the mainland. Gavey was responsible for the organisation of the complete telephone trunk system for Great Britain, and he organised the Post Office telephone exchange system for London. He joined the Institution of Electrical Engineers in 1872, the year after it was founded, and communicated several valuable papers to it. In 1902

he gave in his presidential address to the Institution a masterly summary of telegraphic and telephonic progress, and a list of unsolved problems which proved very useful in directing the ingenuity of inventors along promising lines.

Sir John Gavey served on many international committees, including some of the earliest on radio-communication. He was one of the first to appreciate the importance of Oliver Heaviside's theoretical investigations, and to use Duddell's oscillograph in everyday experimental work. He was very highly esteemed by every one who came in contact with him, and the work he did at the Post Office has proved of the greatest value.

MR. A. H. CURTIS.

By the death of Alfred Harper Curtis on January 10, after a few days' illness, the Imperial Mineral Resources Bureau loses a very able and highly-esteemed member of its staff. Mr. Curtis was the second surviving son of the late Alfred Curtis, Town Clerk of Neath, Glamorgan-shire, and was born on July 12, 1863. Having chosen the profession of engineering, he early gave a practical bent to his studies. As a youth he spent three years with an engineering firm in the Swansea district, and during that time acquired a good knowledge of mining and metallurgical processes. He then proceeded to

Owens College, Manchester, where he studied civil engineering and geology, after which he took up the study of mining, mine surveying, and other subjects at the Royal School of Mines, London, and graduated as B.A. at the University of London.

On leaving the Royal School of Mines, Mr. Curtis travelled widely in many parts of the British Dominions and foreign countries, spending long periods in New Zealand and Japan, investigating and developing mineral deposits. His paper on "Gold Quartz Reduction," read at the Institution of Civil Engineers in 1891-1892, gained for him the Telford premium. While in New Zealand, during the period 1896-1902, he was a member of the council and one of the honorary secretaries of the New Zealand Institute of Mining Engineers, to which, in 1898, he contributed a paper on "The Examination and Valuation of Mines."

During the war Mr. Curtis gave much time to the preparation of reports dealing with the mineral resources of the British Empire and foreign countries. In this capacity he worked for a short time at the Imperial Institute, and compiled the publication on "Manganese Ores" issued by the Institute. He later joined the staff of the Imperial Mineral Resources Bureau, and took a prominent part in the compilation of the statistical and descriptive reports issued by the Bureau.

Mr. Curtis was an untiring and conscientious worker, and his death leaves a gap that it will be difficult to fill.

Current Topics and Events.

At the meeting of the Chemical Society held on Thursday, January 18, it was announced that the council had nominated Prof. W. P. Wynne to fill the office of president, which will be vacated by Sir James Walker on March 22.

THE gold medal of the Royal Astronomical Society has been awarded by the council to Prof. A. A. Michelson, for his application of the interferometer to astronomical measurements. It will be presented at the annual general meeting to be held on Friday, February 9.

PROF. R. A. SAMPSON, Astronomer Royal for Scotland, has been appointed General Secretary of the Royal Society of Edinburgh for the remainder of the current session, in succession to the late Dr. C. G. Knott.

SIR EDWARD SHARPEY SCHAFFER has accepted an invitation to deliver in London next autumn the first Victor Horsley memorial lecture. The lecture, which will be given triennially, is the outcome of the work of a committee formed in 1920 to commemorate the services of Sir Victor Horsley to science and the British Empire. The subscriptions received by the committee amounted to more than 1000*l*.

At the meeting of the Institution of Electrical Engineers to be held on Thursday, February 1, the president will present to Mr. J. W. Meares, late local honorary secretary of the Institution in India, and Electrical Adviser to the Indian Government, a

salver and cigarette box subscribed for by his friends in India on the occasion of his retirement from the Indian Government Service, and as a token of his valuable services to the profession in India.

THE Air Conference, to be held at the Guild Hall on February 6 and 7, will be opened by the Lord Mayor of London. During the Conference the following papers will be presented and discussed: "The Position of Air Transport To-day," by Maj.-General Sir W. S. Brancker; "A Self-supporting Airship Service," by Commdr. C. D. Burney; "The Progress of Research and Experiment," by Air Vice-Marshal Sir W. G. H. Salmond; "Gliders and their Value to Aeronautical Progress," by Col. A. Ogilvie; "Seaplanes," by Mr. C. R. Fairey.

ON Tuesday next, January 30, at 3 o'clock, Mr. R. D. Oldham will begin a course of two lectures at the Royal Institution on the character and cause of earthquakes; and on Thursday, February 1, Prof. I. M. Heilbron will deliver the first of two lectures on the photosynthesis of plant products. The Friday evening discourse on February 2 will be delivered by Mr. C. F. Cross on fact and phantasy in industrial science, and on February 9, by Sir John Russell, on Rothamsted and agricultural science.

THE Grocers' Company is offering a scholarship (one of three), of the yearly value of 300*l*., with an allowance for necessary expenses, the object being to encourage original research in sanitary science. The appointment will be for one year, but it may be