

which would demand an international definition, but that the expression 'barn' in the above sense should be accepted since it is in common usage in the United States.

Of the surviving members of the last International Radium Standard Commission, Sir James Chadwick, O. Hahn, S. C. Lind and A. Piccard have joined the new Commission as advisory councillors; and to replace S. Meyer, the present director of the Vienna Radium Institute, Prof. Berta Karlik, has also been invited to become an advisory councillor. It is hoped in this way to secure for the deliberations of the Joint Commission the assistance of these experts, if required. The members of the Joint Commission on Standards, Units and Constants of Radioactivity* are: as delegates of the International Union of Chemistry, Miss E. Gleditsch (Norway), G. Hevesy (Sweden), W. C. Johnson (United States), F. Joliot (France), F. A. Paneth (Great Britain, *president*); G. T. Seaborg (United States); and as delegates of the International Union of Physics, Sir John Cockcroft (Great Britain), L. F. Curtiss and R. D. Evans (United States), J. C. Jacobsen (Denmark), Mme. Joliot-Curie (France) and G. J. Sizoo (Netherlands, *secretary*).

* In the recently published "Description of the International Council of Scientific Unions" (Cambridge, 1950) there are several mistakes in the membership list of this Commission.

¹ *Nature*, **164**, 263 (1949).

² *Nature*, **160**, 778 (1947).

³ *Science*, **103**, 712 (1946); *Phys. Rev.*, **77**, 142 (1950).

OBITUARIES

Prof. Samuel Sugden, F.R.S.

THOSE who had the privilege of being associated with Samuel Sugden will feel his death, which occurred on October 20, with a sense of sharp personal loss. Born in Leeds in 1892, he attended Batley Grammar School, and, the bent of his mind towards science having already declared itself, he entered the Royal College of Science in 1912 and gained the A.R.C.S. in 1914. At the outbreak of war he joined the Forces and served in France. Later he was engaged on work in the Research Department of the Royal Arsenal at Woolwich.

In 1919, Sugden joined the Department of Chemistry at Birkbeck College, London, where he was destined to spend many happy and fruitful years, first as lecturer, later as reader and finally as professor of physical chemistry. At Birkbeck he pursued with striking assiduity and success the researches on the parachor with which his name is linked. Sugden made improvements in the measurement of surface tension, used the equation of D. M. Macleod to introduce the parachor and demonstrated the value of this property in the general revision of formulæ which followed on the adoption of the electronic theory of valency. Somewhat later, stimulated by the theoretical predictions of L. Pauling on the stereochemistry of 4-covalent atoms, he prepared the nickelous derivative of benzyl-methylglyoxime and showed that it occurred in two isomeric forms. Finally, he found that these compounds were diamagnetic and thereby gave strong confirmation of Pauling's theory that such nickel complexes would be planar and diamagnetic.

On the retirement of Prof. F. G. Donnan in 1937, Sugden was appointed to a chair of chemistry in

University College, London. In a comparatively short time he established a vigorous research school engaged on problems relating to structural chemistry and reaction mechanism.

Sugden was always a good citizen willing to give public service, so that the outbreak of the Second World War found him eager to undertake work of national importance. There is no doubt that the vigour with which he discharged the duties entrusted to him undermined his health and led to his untimely death.

Sugden had the gift of lucid exposition which he turned to good account in the well-known books which have helped a generation of chemists. As a teacher and director of research, he established the feeling that pupil and teacher were setting out together on an exciting adventure, and none but the dullest could escape the influence of his infectious enthusiasm. The Chemical Society of London strongly commanded his loyalty and he served it well as honorary secretary, chairman of the Publication Committee and vice-president.

Small in physical stature, he was great in heart and mind. Whether in the laboratory or at home, he was eminently sociable, radiating warmth and good humour. Those who really knew Sugden will think of him as one who combined, in a rare degree, zest for intellectual adventure, physical bravery and gentle kindness.

WM. WARDLAW

Prof. H. C. Bazett, C.B.E.

PROF. HENRY CUTHBERT BAZETT, who died suddenly at sea on July 12 while travelling to attend the International Physiological Congress, had held the chair of physiology in the University of Pennsylvania since 1921, and was at the time of his death president of the American Physiological Society.

Bazett was born in 1885, son of Dr. Henry Bazett, of Gravesend; he went to Dover College and afterwards to Wadham College, Oxford. After qualifying in medicine, he was awarded a Radcliffe travelling scholarship, and spent the year 1912-13 at Harvard. During the First World War, he displayed the courage which was such an outstanding feature of his character, and was awarded the M.C. and was mentioned in dispatches three times. He also started on his observations on man, as shown by his early papers on blood transfusion and shock. After the War, he returned to Oxford as lecturer in clinical physiology and was appointed a fellow of Magdalen College, being in this respect senior to Sherrington. He, and others who had returned from France, proved to be rebellious spirits and did their utmost to introduce reforms in what they considered to be outmoded aspects of the University. His interest at this time was primarily in the clinical aspects of physiology, particularly in the fields of surgery. He was unable to obtain the post that he desired and accepted the offer from the University of Philadelphia of the chair of physiology, the position he occupied for twenty-nine years.

At Philadelphia, Bazett built up a world-famous department, devoting himself essentially to human physiology, developing both fundamental and applied aspects. His main work was on temperature regulation and haemodynamics. These might well be considered two separate and distinct subjects, but they were very happily married by Bazett. This was particularly well shown by his recent work on the role of the venæ comites. The anatomical arrangement of these veins provides an excellent mechanism

for the exchange of heat between arterial and venous blood. Bazett showed, by introducing thermocouples into arteries and veins, that such heat exchange takes place, particularly in a cold environment. Cold venous blood drains from hands and feet via the venae comites and so cools the blood passing alongside in the artery. There may be a drop of 5° – 6° C. in the temperature of the blood from axillary to brachial artery; the venous blood, on the other hand, is warmed and may be in thermal equilibrium when it reaches the axillary vein. In a hot environment, on the other hand, the main venous draining is via the superficial veins, with an increased heat loss from the overlying skin and cooling of the venous blood. If this work is confirmed, it would establish an important venomotor reflex mechanism in temperature regulation.

Bazett's other studies included detailed work on the acclimatization of man to various environments. He was the first to establish clearly that an increased blood volume is an important feature of acclimatization to heat, a finding which at first aroused considerable scepticism, but has since been amply confirmed.

In his work and writings he did not play for safety, but was prepared to be boldly speculative. As a result, Bazett was an exceptionally stimulating colleague and particularly encouraging to young workers. He was always ready, in fact eager, to discuss ideas and suggestions with his juniors, however naive they might be. He never retired to the position of elder scientist. In fact, in his physiological approach he never seemed to grow old, maintaining a zest and an exuberance which made it difficult for much younger workers to keep up with him either mentally or physically.

His advice was continually requested on both sides of the Atlantic during the Second World War. His unselfishness was shown by his readiness to accept the, to many workers, unpalatable task of applying his work to practical problems. He was the leader of the splendid group of Canadian workers in Toronto who made such outstanding contributions in all aspects of applied physiology for the Services.

Bazett's services were in great demand for committee work: he carried out his responsibilities as member and frequently chairman, not perfunctorily, but with lively and happy discussion.

Bazett was due to retire from his chair in a year's time. He then planned to spend his time writing; although he published many papers in his life-time, he did not manage, as he looked forward to doing, to discuss his work and ideas in a more comprehensive form. He was the author of the section on the circulation in Philip Bard's edition of Macleod's "Physiology in Modern Medicine", and he contributed the chapter on "Temperature Regulation" in "The Physiology of Temperature Regulation and the Science of Clothing" edited by L. H. Newburgh, recently published. O. G. EDHOLM

WE regret to announce the following deaths:

Sir Frederick Bain, deputy chairman of Imperial Chemical Industries, Ltd., chairman in 1941 of the Chemical Control Board at the Ministry of Supply, on November 23, aged sixty-one.

Lieut.-Colonel W. G. Liston, C.I.E., of the Indian Medical Service, during 1925–47 bacteriologist, Royal College of Physicians of Edinburgh, known for his work on the relation of rat fleas to the transmission of plague, on October 18, aged seventy-seven.

NEWS and VIEWS

William Sturgeon, 1783–1850

ON December 4 the centenary occurs of the death of William Sturgeon, the Lancashire shoemaker and artilleryman, who by his own exertions gained for himself a place in the roll of honour beside Volta, Ampère, Arago, Oersted and Faraday. His imperishable donation to science, as Sir Ambrose Fleming called it, of the electromagnet, was but one of his gifts to mankind, for by his writings and inventions he added many novelties to electrical science and stimulated the work of others. Never a man of means and towards the end of his life as poor as he began, he gave freely of his talents; never did a private soldier make better use of his time. He was the son of a shoemaker of somewhat idle habits, and the apprentice of another of still less amiable qualities. At the age of nineteen he left the shoemaker's bench to become a militiaman, and a year or two later transferred from the Westmorland Militia to the Royal Artillery at Woolwich, which remained his home for nearly forty years. He was discharged from the Army at the age of thirty-seven with a pension of a shilling a day. He resumed his trade at 8 Artillery Place, Woolwich, but his workroom became his laboratory and it was there he made the first electromagnets worthy of the name, for which in 1825 the Society of Arts awarded him a "Silver Medal and Thirty Guineas as a Bounty". Stimulated no doubt

by the scientific atmosphere of the Royal Military Academy, Sturgeon taught himself mathematics and classics, made experiments which appealed to the cadets, and later on became a lecturer, first at the East India Company's Royal Military Academy, at Addiscombe, near Croydon, then at the Adelaide Gallery of Practical Science, situated at the west end of the Strand, London, and then at the Royal Victoria Gallery of Practical Science at Manchester.

Sturgeon was born at Whittington in north Lancashire on May 22, 1783, and was fifty-seven when he became superintendent of the Royal Victoria Gallery at Manchester; but he had lost none of his vigour and power of lucid exposition. However, the Gallery soon closed its doors, and Sturgeon fell on evil days. His invention of the electromagnet and of the electromagnetic motor, his many original observations, his memoirs, his "Annals of Electricity", his friendship with Joule and other things will cause him long to be remembered. He died at Prestwich, Manchester, on December 4, 1850, at the age of sixty-seven and was buried there; afterwards his admirers placed a marble tablet to his memory in the church of Kirkby Lonsdale, Westmorland, near which he had passed his youth. "Beyond any question," said Fleming, "his name must be inscribed in the records of those whose labours have enabled us yet more to utilise the great energies of Nature for the use and benefit of mankind."