

upon the problems of the leather industry, he revelled in pursuing their general theoretical bearing, and wherever they carried him he read himself in with great thoroughness. It was typical of his mental proclivities that he should have been the translator of the first text-book of practical physics—Kohlrausch's—that found general use in physical laboratories in Great Britain. His later researches on gelatine were of fundamental importance and exhibited his power of dealing with the most abstruse problems of colloid chemistry.

Beyond this, Procter was a man of wide culture, keenly interested in languages, literature, and philosophy. He was an excellent countryman and had much of the artistic sense which has appeared so strongly in his sons.

The value set upon Procter's work was so great that when the time arrived for his retirement, a movement took place for the establishment of a research laboratory which should serve as a memorial and as a place where he could continue his investigations. This project secured international support, and in 1914 Procter became the first honorary director of the international research laboratory at Leeds bearing his name. The honour done to Procter was fully earned by the scientific and industrial value of his labours, but it was intensified by the respect and affection in which he was held for his personal qualities. His fine character, his devotion, unselfishness, and modesty, together with his great companionableness, endeared him alike to his pupils, his colleagues, and the members of the industry to which he rendered such memorable service.

Procter was elected fellow of the Royal Society in 1923 and received the honorary degree of D.Sc. from the University of Leeds. He was honorary president of the International Association of Leather Trade Chemists, of which he was a founder, and he received the freedom and livery of the Leathersellers' Company. He died on Aug. 17 at Newlyn, Cornwall, where he lived in happy retirement after leaving Leeds. A. S.

PROF. E. B. TITCHENER.

THE announcement of the death of the English psychologist, Prof. Titchener, in his sixty-first year, which occurred after a short illness at Ithaca, N.Y., on Aug. 3, will be received in Great Britain with mingled feelings of regret and surprise. Regret will be felt for the loss of one who spent his abundant energies so generously in nursing to adolescence a new-born science. Surprise will be felt at the tidings that Titchener remained an Englishman, despite his thirty-five years' residence at Cornell University, and that with his full record of work he had only attained the age of sixty years at the time of his death.

Edward Bradford Titchener was born at Chichester on Jan. 11, 1867. From Malvern College he entered the University of Oxford in his nineteenth year, where he became a classical scholar at Brasenose, obtaining first class both in Moderations in 1887 and in *Literae Humaniores* in 1889. He

took his B.A. in 1890, his M.A. in 1895, and in 1906 he was awarded the degree of D.Sc. at that University. From classics and philosophy he passed to the study of physiology at Oxford, and worked there as a research student during the year 1889-90. Attracted to experimental psychology, he proceeded to Leipzig, where he studied under Wundt and obtained the Ph.D. degree in 1892. Returning later in this year to Oxford, he began to inquire into the possibility of obtaining a permanent teaching post in experimental psychology, while he was giving university extension lectures in biology. He was advised by Burdon Sanderson, however, that there were no immediate prospects in England, and consequently he accepted the immediate offer of an assistant professorship in psychology at Cornell.

Here from 1892 onwards Titchener spent the remainder of his life. In 1895 he was made Sage professor of psychology, and in 1910 his professorship became attached to the Graduate School of the University. His specific aims at Cornell were to emancipate psychology from the leading-strings of philosophy, to establish undergraduate, as well as post-graduate, instruction, to compile a graded series of text-books in psychology, and to organise laboratory research in the subject. His achievement of these aims was indeed remarkable. Within twelve years he had established a completely independent department of psychology, in which finally he had a staff of two professors, two instructors and three assistants. He had an annual entry of nearly one thousand undergraduates. In 1896 he published "An Outline of Psychology" (replaced in 1910 by his "Text-book of Psychology"). In 1898 his "Primer of Psychology" appeared (which in 1915 was replaced by "A Beginner's Psychology"). In 1908 his book on "Feeling and Attention" was published, followed in 1909 by "The Experimental Psychology of the Thought Processes."

Titchener's *magnum opus*, however, a thirteen years' task, the financial cost of which, he used to say, nearly ruined him, was his "Laboratory Manual of Experimental Psychology," issued in four volumes during the years 1901-5. While preparing this monumental work, he devised and standardised many useful pieces of apparatus for laboratory teaching. It was translated later into most European languages, and into Chinese and Japanese. It was the source of many later more elementary text-books, and it led to requests for his help in planning psychological laboratories in practically every part of the world.

In 1917 a commemorative volume of essays, marking the close of twenty-five years' teaching work at Cornell, was presented to Titchener by his friends and students. By the end of 1923 the number of his published articles had amounted to 190, while the papers issuing from his students (for which he was personally responsible) numbered 158. From 1894 until 1920 he acted as American editor of the British philosophical periodical, *Mind*, and during the years 1894-1925 he was associate editor, and finally editor, of the *American Journal of Psychology*.

Titchener's unbounded energy and his abilities

were suitably rewarded in the United States. He became Lowell lecturer at Cambridge; he was invited to give special courses of lectures at Columbia, Illinois, and elsewhere. He received the honorary degrees of D.Sc. at Harvard, Litt.D. at Clark, and LL.D. at Wisconsin. But throughout he remained a loyal British citizen and faithful to Cornell, refusing posts and honours that would have involved a change of nationality or a change of residence. He was offered, but declined, not only the chair of psychology at Harvard on Münsterberg's death, but also the presidency of Clark University, which became vacant on the retirement of Stanley Hall. As an Englishman, he could never be a candidate for admission to the U.S. National Academy of Sciences.

Though, however, so loyal as to nationality, Titchener's psychological sympathies ever centred around Wundt, in whose laboratory at Leipzig he had received his first introduction to experimental psychology. His attitude towards his students and his organisation of laboratory work were also typically German. His admiration for Wundt led him to translate into English the third edition of the "Physiologische Psychologie." Taking his manuscript to Germany, he found that Wundt was already issuing the fourth edition of this large work. Titchener set himself forthwith to make a translation of the fourth edition, only again to find on its completion that he had been overtaken by the fifth edition. Still undaunted, he began to translate the fifth edition, and he finally published a part of this translation. He also translated Külpe's "Outlines of Psychology." At the time of his death he was engaged on a work of his own, which he hoped to issue in the form of a "Systematic Psychology" in three or four volumes, the first of which he had practically completed before he passed away.

Titchener's married and domestic life was an exceptionally happy one. His home on Cornell

Heights was delightful to visit. He suffered from all the virtues and failings of an unusually emotional temperament. He was unduly sensitive to neglect or injustice, and he did not easily brook any disagreement from his psychological views, especially on the part of his students and staff. On the other hand, no one could surpass him in kindness and generosity to his friends. He spent practically all his time in the laboratory or in his home; he was so rarely seen in the streets that it became a standing joke as to how he passed from one to the other. During his last years he began to form a collection of Oriental coins, which with his usual thoroughness he made one of the finest in America, learning Arabic in order to be able to read their inscriptions. He was interested in music, and during the years 1896-98 he acted as professor in charge of music at Cornell University.

WE regret to announce the following deaths:

Sir John Denton, K.C.I.E., formerly chief engineer and secretary to the Government, Panjab Irrigation Branch, who was responsible for many of the great canal and irrigation schemes of the Panjab and Upper Burma, on Aug. 29, aged seventy-seven years.

Prof. J. Pulfrich, of the Zeiss optical works, Jena, the author of numerous publications dealing with his investigations with the spectrometer and refractometer, aged sixty-nine years.

Dr. Henry P. Talbot, for many years professor of analytical chemistry in the Massachusetts Institute of Technology, and a vice-president of the American Association in 1907, on June 18, aged sixty-three years.

Prof. Stuart Weller, professor of palaeontological geology in the University of Chicago, who specialised on the faunas of the Mississippi valley, on Aug. 5, aged fifty-six years.

Dr. William P. Wilson, formerly professor of botany at the University of Pennsylvania, and since 1894 director of the Philadelphia Commercial Museums, on May 12, aged eighty-two years.

News and Views.

THE Government scheme for linking up the Dominions with Great Britain by radio telegraphy has now been completed by the opening of the short wave beam stations in India. The fact that the Indian beam stations can work at high speed continuously for many hours during the monsoon period shows that the beam receiving aerials are little affected by atmospherics. The English transmitting station is at Grimsby and the receiving station is at Skegness, which are both in direct communication with the Central Telegraph Office of the G.P.O. in London. The corresponding transmitting and receiving stations in India are at Kirkee, near Poona, and Dhond, 48 miles east of Poona, which are both linked directly with Bombay. Transmission from Grimsby to India takes place on wave-lengths of 16.2 and 34.5 metres (about 18,500 and 8700 kilocycles per second respectively). At Grimsby a five-mast aerial system, quite distinct from the three-mast aerial system of the Australian service, has been built. The masts are

277 feet in height with a distance of 650 feet between them. They are erected in a straight line which cuts at right angles the great circle passing through Grimsby and Dhond. The reflector behind the active aerials focusses the waves in a south-easterly direction on to the receiving aerials in India. A similar system has been built at Kirkee to concentrate the waves in a north-westerly direction towards England. Within a few weeks' time the Marconi Company will inaugurate a commercial beam radio service between Great Britain and South America and also one with the United States. Experiments have proved that it is possible to carry on radio telephony simultaneously with high-speed radio telegraphy. There is every prospect, therefore, that before the end of next year, it will be possible for telephone subscribers in England to call up subscribers in any of the Dominions overseas.

THE celebration, on Aug. 30, of the golden wedding of Prof. H. E. Armstrong and Mrs. Armstrong was