

work on the control of artillery bombardments, and also in getting the scientific approach to such problems appreciated by the fighting units. He was in charge of operational research with the army during its advance through Italy.

Hudleston was the author of "Chemical Affinity" (1928) and numerous papers in the *Journal of the Chemical Society* and the *Transactions of the Faraday Society*. His main interests were in the complex chemistry of fluorides and fluosilicates, and in the theory of the liquid state.

He was also deeply interested in teaching methods, and was held in the highest regard by his students and colleagues. He continued to give whole-hearted service to the community, as well as to the College, after the Second World War; he was chief technical reconnaissance officer in the Cardiganshire Civil Defence organization, and was on a Civil Defence course at the time of his last illness.

C. W. DAVIES

Dr. Frank Wenner

DR. FRANK WENNER, for many years chief of the section devoted to resistance measurement at the National Bureau of Standards, Washington, died on February 7 at the ripe age of eighty-one. The early years of his scientific career were spent in various teaching posts, first at Knox College where he had graduated in 1895, and afterwards at the

University of Wisconsin, Iowa State College, and the University of Pennsylvania. He then joined the staff of the National Bureau of Standards, and for thirty-six years worked on problems centring around the precision measurement of electrical resistance. It was fitting that this work should culminate in a new absolute determination of the ohm. The project was started by Wenner in 1929, and a provisional result was submitted in 1938 to the international committee then engaged in making the transition from the old international unit, based on the standard column of mercury, to the absolute unit. Later, the method was more fully developed by Thomas, Peterson, Cooter and Kotter, who, on publishing the final result in 1949, expressed the opinion that the Wenner method is "the best yet devised". It is undoubtedly one of the very few methods that will survive in the future practice of the national standardizing laboratories.

Wenner was also interested in geophysics and developed an electrical seismometer, for which he was awarded the Wetherill Medal of the Franklin Institute, and a method used by the Iceberg Patrol of the U.S. Coast Guard for measuring the salinity of sea water.

After his retirement from the National Bureau of Standards in 1943, he continued to work as a consultant to various organizations, and he was still active in consulting work at the Bureau when a stroke caused his death.

L. HARTSHORN

NEWS and VIEWS

Charles Algernon Parsons (1854-1931)

SIR CHARLES ALGERNON PARSONS, engineer, inventor and scientist, whose researches revolutionized electric power-station practice and marine propulsion throughout the world, was born in London a century ago on June 13, 1854. He was educated privately and at Trinity College, Dublin, where his father, the distinguished astronomer William Parsons, third Earl of Rosse, had been chancellor. After studying mathematics under E. J. Routh at St. John's College, Cambridge, and passing out as eleventh Wrangler in 1877, he began his engineering training with a four years apprenticeship in the Armstrong Works at Elswick. During 1884-89 he was junior partner in Clarke, Chapman and Co., of Gateshead, where on April 23, 1884, he took out his first patent for the compound steam turbine, which he rendered suitable for the generation of electricity and afterwards for the propulsion of vessels. The *Mauretania* and *Lusitania* were the first great ships propelled by Parsons's turbine. In 1889 he founded at Heaton, near Newcastle upon Tyne, C. A. Parsons and Co., where he manufactured parabolic reflectors for searchlights. His growing interest in optics led him to purchase the Derby Crown Glass Works. His British patents number more than three hundred and include an improved variety of gramophone and a non-skid device for motor tyres. His attempt to make diamonds proved a failure. Many honours came his way, including a K.C.B. in 1911 and the O.M. in 1927. He was elected to the Royal Society in 1898, receiving the Rumford Medal in 1902 and the Copley Medal in 1928, and served as president of the British Association in 1919. He died on a voyage to the West Indies on February 11, 1931. Parsons was a tremendous worker with remarkable powers of con-

centration, being a keen, critical observer, and all his life he was a firm believer in the importance of research in industry. As a person, he was modest and gentle, and hesitant in manner and speech.

Electrical Engineering in Nottingham:

Prof. H. Cotton, M.B.E.

PROF. H. COTTON, who retires from the chair of electrical engineering in the University of Nottingham on September 30 next, studied physics and electrical engineering in the University of Manchester, where he graduated with first-class honours in 1910. He then obtained practical experience at the Municipal Electric Power Station, Hanley, and with the Westinghouse Co. (now Metropolitan-Vickers Electrical Co., Ltd.) at Trafford Park. From the outset he intended to enter the teaching profession, and he was appointed assistant lecturer in physics and electrical engineering at the Technical College, Huddersfield; later he became lecturer at the Technical College, St. Helens. During the First World War he served in France for three years with the Meteorological Section R.E.; he was awarded the M.B.E. (Military Division) and commissioned in the field. Following demobilization in 1919, he was appointed senior lecturer in electrical engineering at the then University College, Nottingham. Here it was necessary to build up a department literally from ground-level. At first he had to bear the whole of the teaching for the external degree course of the University of London, for special courses in mining electrical engineering, for day and evening courses. The work in mining engineering necessitated a special study of the applications of electricity to coal mining, and he published a standard treatise on the subject "Electricity Applied to Mining" in 1929. For some