

appointment as engineer to the Todmorden water-works. In 1891 he commenced his career as professor in the Manchester College of Technology, where he had previously devoted untiring energies to founding the department by holding evening classes. In 1906, the Victoria University of Manchester conferred on him the degree of M.Sc.Tech.; and practically all the institutions and societies interested in his subjects had recognised his great abilities.

It is no exaggeration to say that the death of Prof. Radcliffe will be sincerely mourned all over the globe by former students, the numbers of which must literally run into thousands. Apart from his sound teaching, his wonderful kindness and modest, genial disposition have made his one of the most regretted losses his college and profession have ever sustained.

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MR. T. W. STRATFORD-ANDREWS.

MR. T. W. STRATFORD-ANDREWS, who died on February 17, was a director of many companies connected with electrical industries. He was born in 1870 and educated at King's College, London, and his practical training in engineering was obtained at the works of Siemens, Schuckert, in Berlin.

Mr. Stratford-Andrews succeeded his father as managing director of the Indo-European telegraph line in 1899, but before assuming his new duties he took part in the expedition which went 800 miles up the river Amazon to lay an extension of the Western Brazilian telegraph cable. In 1897 also he rode on horseback through Russia and across the Caucasus to Teheran to inspect the route of the Indo-European land line. This journey he described in a little book entitled "Overland to Persia." In 1913 he covered the same ground again in a motor car accompanied by his wife and his sister. He was decorated by the Shah of Persia for his services, and received the thanks of the Russian Government.

Mr. Stratford-Andrews was the first to introduce direct automatic Wheatstone working on the Indo-European system. He also initiated, in conjunction with Sir Henry Kirk of the Indo-European (Government) department, direct operation at high speed between London and Karachi, a distance of 5600 miles. In his later years he took the greatest interest in radio-telegraphy and telephony, and he was chairman of the Radio Communication Company. His wide knowledge and technical insight were much appreciated by his numerous colleagues.

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PROF. IGNAZ VOGEL.

THE death occurred on December 29 last of Prof. Ignaz Vogel, a well-known agricultural bacteriologist and mineralogist. He was born on April 15, 1871, at Altenkunnstadt in Franconia, and after studying chemistry under Emil Fischer at Würzburg he graduated in 1893. Taking up physiological and bacteriological research work, he became assistant to Prof. Dunbar at Hamburg, where he remained till 1900. He was then appointed to the position of bacteriologist at the agricultural experimental station of Posen, being transferred five years later to the Emperor William Institute at Bromberg. In 1914 he was called to Leipzig as director of the bacteriological department of

the Agricultural Institute of the University of Leipzig, where he succeeded Prof. Löhnis, who had received an appointment as agricultural expert in the United States.

Prof. Vogel published at Marburg a number of researches on the occurrence and the transformation of the various kinds of sugar in the bodies of plants and animals, most of which appeared in the *Zeitschrift für Biologie*. Later he turned his attention to the study of the bacteria of the soil, and of solid and liquid manure. He published numerous papers concerning the fixation of atmospheric nitrogen in the form of ammonia, and the transformation of this substance into nitrates and albumen, most of which appeared in the *Zentralblatt für Bakteriologie*. In the "Handbuch der Milchwirtschaft" he edited the agricultural section.

The researches of Vogel have contributed greatly to the increase of agricultural production by showing how the various methods of manuring can be properly adjusted to the qualities of the soil. In his university work he trained a number of able pupils, being always willing to communicate his great knowledge to his colleagues. All those who have been able to enjoy his teaching and society greatly regret the loss that agricultural science has suffered through his premature decease.

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PROF. A. N. FAVARO.

ON September 30 of last year, there passed away at Padua, Antonio Nobile Favaro, widely known for his numerous contributions to the history of mathematics and physics. Born at Padua on May 21, 1847, educated at the University of Padua and at the engineering schools at Turin and Zurich, he entered in 1875 upon his long career as professor of projective geometry at Padua. His "Lezioni di statica grafica" (1877) were soon after translated into French. So early as 1873 he began the study of the history of science by a contribution on the evolution of planimeters. For nearly half a century he worked assiduously on questions dealing with the history of mathematical instruments, with papers and letters of Tycho Brahe, N. Tartaglia, Leonardo da Vinci, and others.

The researches for which Favaro is best known, and which mark the crowning effort of his long career, are on the life and work of Galileo and his friends. In 1887, Favaro received a commission from the Italian Government to edit the complete works of Galileo. He devoted nearly thirty years to this task and brought out the "Edizione Nazionale" of Galileo's works in twenty volumes, which serves as a model to other governments as to what can and should be done in editing the works of great men of science. As by-products Favaro brought out a series of publications, "Amici e corrispondenti di Galileo Galilei," consisting of more than forty parts and constituting an important contribution to our knowledge of science in Italy during the sixteenth and seventeenth centuries.

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FLORIAN CAJORI.

WE regret to announce the following deaths:

Dr. Norman Dalton, senior physician to King's College Hospital and formerly professor of pathological anatomy in King's College, London, on March 9, aged sixty-five.

Prof. J. D. Van der Waals, professor of theoretical physics in the University of Amsterdam, on March 8, aged eighty-five.