

1906, when MM. Fabry and Perot took up the same investigations by the new method of superposed fringes, he gave them the full benefit of his earlier experience and every assistance in his power. The remarkable concordance (the difference was not much in excess of one part in ten million) between the results of the two investigations is sufficient testimony to the accuracy of the earlier work, and although possibly it must be admitted that fortune played its part, and that the absolute accuracy was not quite so high as the agreement between the two results appeared to indicate, an accuracy not inferior to one part in a million may, in any case, safely be considered to have been attained.

Dr. Benoît was associated also with the researches of Dr. Ch. Ed. Guillaume, the present director of the Bureau, into the properties of invar, and was closely concerned with the early standardisation of the 24-metre Jäderin surveying wires, which are now almost universally employed in the measurement of geodesic base-lines. He was further interested, from his earliest days, in questions of electrical standardisation, and spent much time in determining the value of the standard ohm. This work, however, was not part of the regular programme of the Bureau, and the pressure of his other duties prevented him from devoting so much attention to it as he would have liked; but for a period the standard ohm produced by Benoît was the accepted type for precision measurements, and the value he obtained was very close to that accepted at the present time. He was still at work on this subject when failing health and eyesight caused him, in 1914, to tender to the Comité International his resignation of the directorship which he had held with so much distinction.

To appreciate the value of Benoît's work and his unsparing labour and painstaking attention to every detail making for precision of results, it is necessary to read the "Travaux et Mémoires" of the Bureau during the period of his direction. In appreciation of his services the Comité International, on his retirement, appointed him honorary director, and he was present in the autumn of 1921 at the sixth Conférence Générale des Poids et Mesures, showing all his old enthusiasm for the work which had filled his life. He had a most unassuming and charming personality, and those who had the privilege of knowing and collaborating with him will feel a very real and personal loss in his death. He was past president of the Société Française de Physique and correspondant of the Institut de France, of the Bureau de Longitudes, and of the Académie des Sciences, honorary fellow of the Physical Society of London and of the Société Française des Électriciens, and officer of the Legion of Honour.

J. E. S.

#### JOHN WANKLYN McCONNEL.

A COMBINATION of business ability and legal training with real experience of agriculture as well as of textile engineering, directed by a passion for constructive organisation, brought the late Mr. J. W. McConnel to occupy an exceptional position as an exponent of industry in relation to science, and his

death on May 25 at the age of sixty-seven is more than premature. His grandfather founded the firm of McConnel & Co., fine cotton spinners, whose mills are now the second largest in the world, in 1797, and Mr. McConnel was thus one of the aristocrats of the industry. The purchase by McConnels of the English patent rights of the Heilman Comber gave him, as a young man, an exceptional experience with the one new machine which the industry has evolved during the century; this experience influenced his outlook in later years, and seemed to render him much less convinced of finality than most cotton spinners, and hence more eager for the application of scientific methods. Incidentally, it may be mentioned that he was one of the first two students in the then new school of engineering at Cambridge. Thus he was led to advance a scheme for the formation of a special department in Manchester University at the British Association meeting of 1915; but, failing to secure a permanent endowment, he obtained the co-operation of the Fine Cotton Spinners' and Doublers' Association to undertake the proposed scientific work, which has since steadily developed into an experimental department of the combine with workshops and spinning mill as well as laboratories.

The original intention was merely in advance of public opinion, for only two years later Mr. McConnel became chairman of a provisional committee of the Department of Scientific and Industrial Research. He resigned the chairmanship, after two years' work, before the British Cotton Research Association was actually constituted, but not before he had laid the foundations of an immense organisation which embraces the whole industry, and aims at breaking down the watertight compartments into which a highly efficient but conservative industry had segregated itself. It is pleasant to recall the graceful acknowledgment of this "spade work" recently made by Mr. Kenneth Lee at a luncheon when H.R.H. the Duke of York formally opened the Shirley Institute, Mr. McConnel being present as a guest.

The thesis of essential community of interest between grower and spinner had found a strong supporter in Mr. McConnel. Travels to the West Indies, Egypt and the Sudan, supplemented by an active personal supervision of a very large cotton-growing plantation in Mississippi, and of his own estate in Ayrshire, placed him in an exceptional position as an authority on spinning who also knew a great deal at first hand about cotton-growing. Having first applied this experience in laying the broad foundations of the British Cotton Industry Research Association, he developed it further on the committees set up by the Board of Trade, his appendix to the Textile Committee's report leading to the formation of the Empire Cotton Growing Committee, and when the committee was transmuted into the Empire Cotton Growing Corporation under royal charter, Mr. McConnel became chairman of its council.

Mr. McConnel was most remarkable in an ability for learning new methods, subjects, and viewpoints which would have been unusual even in a much younger man. The work he initiated for the cotton industry was neither superficial nor conspicuous, but its effects will endure, and he will be remembered as one of those who thought for to-morrow as well as for to-day.