

offspring. The business side of the factory was looked after by his brother Thomas.

The rest of Perkin's life was devoted to pure research. He has himself told us that he determined not to let the manufacturing career check his scientific life. It is not at first glance easy to understand why he could be happy in the study of such subjects as magnetic rotation. To quote Levinstein, "this physicochemical work is of great difficulty but I should have thought of quite exceptional dullness for a man who had created vast industries."

I saw a good deal of Perkin in this last phase of his life, when it was hard to believe he had been so active as a young man. Most of us, like my own father, carry on such activity until incapacitated: the contrast between Perkin and Duisberg of the

I.G. at the same advanced age was a remarkable one. Perkin followed a rigid and austere vegetarian diet, and it may be that it contributed in some way yet to be discovered to this change of outlook. But he was by disposition a man of most retiring nature.

It is the duty of the chemical societies to keep the memory of Perkin from fading from the public mind. His achievements were startling and will be remembered when the names of the statesmen of to-day are long forgotten. There is a great tradition to be kept alive.

"A crown of fame! Fulfilment of thy work
well done,
And knowledge of a people's gratefulness."

E. F. A.

Obituary Notices

Sir Henry Fowler, K.B.E.

HENRY FOWLER, who died on October 16, at the age of sixty-eight years, was born at Evesham on July 29, 1870. His technical education started at the Mason Science College, Birmingham, and was continued at the Railway Mechanic's Institute at Horwich during his apprenticeship in the locomotive works of the Lancashire and Yorkshire Railway. Whilst at Horwich, Fowler gained the first Whitworth Exhibition to be awarded to a student of the Institute. After service under Sir John Aspinall, with whom he was associated in a series of classic experiments on train resistance, Fowler left Horwich to become gas engineer of the Midland Railway at Derby, where, a few years later, he became works manager of the locomotive works, under R. M. Deeley, whom he eventually succeeded as chief mechanical engineer in 1909. During the Great War, Fowler successively held the positions of director of production, Ministry of Munitions; superintendent of the Royal Aircraft Factory, Farnborough; and assistant director-general of aircraft production, Ministry of Munitions; for these services he was created C.B.E. in 1917 and K.B.E. in 1918.

Consequent upon the amalgamation of the railways of Great Britain in 1923, Fowler was appointed deputy chief mechanical engineer, and two years later he succeeded George Hughes as chief mechanical engineer of the L.M.S. Railway. From January 1931 until December 1932 he was assistant to the vice-president, and during these two years he was able to devote the whole of his energies to research and development, unhampered by the large volume of administrative work inseparable from his earlier appointments.

Although responsible for the design of several new locomotive types including the well-known "Royal Scot" class, perhaps Fowler's greatest flair was for works' organization. He also realized the vast

economies that could be attained by the standardization of locomotive parts, and he was an early and successful exponent of the policy of reducing the number of different types of locomotive to a minimum.

Fowler was always an enthusiastic participator in the activities of the various institutions to which he belonged, and he ultimately became president of the Institution of Mechanical Engineers, the Institute of Locomotive Engineers, the Institution of Automobile Engineers and the Institute of Metals. His keenness in furthering the interests of such bodies was coupled with a deep sense of the importance of technical education and scientific research to industry. He did a great deal to facilitate the higher technical education of the many apprentices and pupils who passed through the Derby works during his time, and he was always ready to give up his leisure to address educational and scientific bodies, and to give freely of his accumulated experience.

Of Fowler's scientific work it is difficult to speak fairly. He had no time for carrying out personally many of the investigations which he, often before his colleagues, saw were necessary; but he had an extraordinary gift of encouraging others, both within and without the railway service, to follow the lines he had indicated: and he was always most generous in providing facilities for trying out other people's ideas. In all this work he maintained an almost boyish enthusiasm, and was never happier than when he was able to spare the time to discuss the progress of some particular research with those who were actually conducting it. He was also skilful in securing the interest of eminent scientific workers in his locomotive and metallurgical problems, and he undoubtedly established for the former Midland Railway a reputation for sympathy towards scientific methods.

Fowler would probably have agreed that crank axles and boilers were the subjects that fascinated

him most, and his investigation into the life of the former was an almost classic example of the statistical use of a vast mass of metallurgical evidence. The many problems connected with the locomotive boiler also held a great appeal, and he could never resist the temptation to inspect personally any boiler that had developed some peculiar defect in service. Even on his many visits abroad, he invariably took his boiler-suit with him and excited the admiration of his hosts (and of the writer) by his skill in negotiating the not always easy entrance to the barrel or firebox of a locomotive. Therein he showed how thoroughly he understood the value of personal observation, which is so essential in engineering and metallurgical research.

T. M. H.

Prof. P. A. Murphy

PAUL ALOYSIUS MURPHY, whose death at the age of fifty-one years occurred on September 27, was born in Co. Kilkenny. After courses at the Albert Agricultural College, Glasnevin, and the Royal College of Science, Dublin, extending over five years, he was appointed to a temporary post under the Irish Department of Agriculture and started research in plant pathology. Later, with a Development Commission scholarship, he proceeded to the Imperial College of Science and Technology, London, and to the K. Biologische Reichsanstalt, in Berlin-Dahlem. Leaving Germany in 1914, and being rejected on medical grounds for active service, he completed his scholarship period at Cornell University. He was then appointed plant pathologist in Prince Edward Island by the Canadian Government. He returned to Ireland in 1921 to similar work in the Department of Agriculture there, and six years later was appointed to the newly created chair of plant pathology in University College, Dublin, which he held until his death.

Murphy's scientific work was very largely concerned with research on potato diseases. After having helped to show the bacterial nature of the so-called 'black leg' disease and to prove that the blight fungus (*Phytophthora infestans*) was capable of producing sexual spores—a much-vexed problem up to that time—he worked out the cytology of the peculiar mode of sexual reproduction in the newly discovered allied species *P. erythroseptica*. Later, he considerably extended his work on the bionomics of *P. infestans*, but devoted much attention to virus diseases such as leaf roll, mosaic, crinkle and streak. His contributions to a scientific knowledge of these obscure diseases were particularly extensive and important, and received world-wide recognition. As a result of his investigations and those of a few other pioneers, the production of healthy stocks of potatoes has been placed on a sound scientific basis, and important advantages to practical agriculture have already accrued. To mark his eminent work in the sphere of potato husbandry, Murphy was awarded the John Snell Memorial Medal by the National Institute of Agricultural Botany in 1927.

At his old college at Glasnevin (now incorporated with University College, Dublin) Murphy developed

a vigorous school of plant pathology, and the sound work of himself and his colleagues there, not only on virus diseases but also on others, such as onion mildew, swede dry rot, sugar-beet crown rot and American gooseberry mildew, is a testimony to its wide scope and to Murphy's inspiring and untiring devotion to research in plant pathology.

Murphy graduated at the University of Dublin (Trinity College) in his student days and was awarded the Sc.D. degree in 1922. He was a member of the Royal Dublin Society and a valued member of its Science Committee. For his published researches, the Society awarded him the Boyle Medal in 1933, and at the time of his death these were approaching fifty in number. He was also a member of the Royal Irish Academy, of the Phytopathological Society of America and of the Agricultural Research Council's Committee on Virus Diseases of Plants.

Murphy's loss will be deplored in wide circles, for he was always ready to help other workers. Many of them, both at home and abroad, will gratefully remember his generosity in the distribution of strictly dependable material—the product of his own careful and protracted work—which greatly facilitated their own investigations. He leaves a widow and two sons, for whom the deepest sympathy is felt.

G. H. P.

MR. ROSSE BUTTERFIELD, of High Cote, Riddlesden, Yorkshire, curator of the Keighley (Yorkshire) Corporation Museum, who died recently at the age of sixty-four years, was a well-known naturalist of the West Riding. He came of a Wilsden family of naturalists and his father was a well-known authority; another member of the family was the late Mr. Ruskin Butterfield, formerly curator of the Hastings Museum. Mr. Rosse Butterfield did much valuable work in connexion with organizations of naturalists, and he was himself known for his work in entomology. He had been the curator at Keighley Museum since 1910 and was due to retire next year. Under his guidance the development of the Museum collections and of education in natural history has made rapid strides. He was a member of the executive of the Yorkshire Naturalists' Union and was secretary of the Keighley Naturalist Society. He was a member of the committee of the Bradford Natural History and Microscopical Society and was recorder for Hymenoptera. Formerly, Mr. Butterfield was curator of the Bronte Museum at Haworth.

WE regret to announce the following deaths:

Sir James Barr, C.B.E., consulting physician to the Liverpool Royal Infirmary, known for his work on the diseases of the blood vascular system, on November 16, aged eighty-nine years.

Prof. J. W. Bews, principal of Natal University College and professor of botany in the College, aged fifty-three years.

Prof. William McDougall, F.R.S., professor of psychology in Duke University, North Carolina, aged sixty-seven years.