

The Perkin Tradition

DURING the Easter holidays of 1856, a young man of eighteen years of age was experimenting at home in Shadwell in chemistry. He followed up the coloured product of the reaction instead of chasing after a more orthodox crystal line substance and, strangest of all, had the curiosity to try to dye silk with it. A mauve skein resulted, and the aniline dye industry was born!

Perkin's father was a builder, and, looking back, he must have been a man of remarkable character. Not only did the son 'experiment' at a very youthful age, as in those halcyon days was customary, but also he seems to have been encouraged to try his hand in many directions, until finally, between twelve and thirteen years of age, he came to chemistry and to Thomas Hall at the City of London School. He next sought to go to the Royal College of Science: this was going a little too fast for the father, for chemistry was scarcely a profession in those days, but, with Hall's assistance, the young Perkin had his way and was allowed to study under Hofmann.

Mauve was discovered at home, and perhaps its properties received more discussion in the family circle than they would have done in a laboratory. In any event, Perkin there and then started to make his dye, while his father risked most of the capital which he had accumulated by a life of great industry to build and start the works. There can be no more outstanding example of confidence in a young son and paternal enterprise. Such a thing is utterly impossible to-day in any country; the name of George Fowler Perkin should be highly honoured by posterity.

W. H. Perkin was fortunate in another way; there was no school certificate or matriculation examination to dominate his education. What is the use of trying to turn out all the boys to-day in a common mould when we are really every one of us different: the examination system destroys any chance of incipient genius and is the negation of education, scientific or otherwise. Perkin would have probably passed his examination, but the preparation for it would have left him no time to express his individuality. Surely this is the chief lesson to be drawn at the time of celebrating the centenary of his birth.

The call to invent, to prosecute research, is strongly hereditary, though perhaps latent in the founder of the family. Sir William passed it on to all three sons, particularly to W. H. junior, and it is a loss to science that there has been no third generation.

The story of the Perkin adventure has been often told, in the greatest detail and from many aspects, particularly in relation to the rise and fall of the industry in England, its transference to Germany and its more recent resurrection here. The jubilee of the discovery in 1856 gave the chemical world an opportunity to honour Perkin. The centenary of his birth was celebrated on November 24 last by a memorial lecture given by Dr. Herbert Levinstein in the hall of the Leathersellers' Company, and arranged by the Society of Chemical Industry and the Chemical Society. The selection of speaker was a happy one; Levinstein's father maintained a dye industry in Great Britain during the darkest days of its difficulties, and father and son supplied a nucleus on which it was possible to condense other efforts when the upswing began. No more comprehensive, illuminating, balanced and graceful address has ever been forthcoming on this subject; the simplicity of its language makes it of wide appeal. The societies must give it full publicity; it should at least be read by every member of Parliament, to make them realize the significance of chemical effort for the benefit of man; perhaps educationists may be led to ponder also how they are going to preserve further Perkins for us and not destroy them in their teens.

Perkin's ability as an 'applied chemist' was remarkable. At an age when the young men of to-day are still playing games, he made discoveries in dyeing practice which Levinstein rightly regards as a more considerable achievement than the laboratory discovery of mauve. The new mauve dyed silk direct, but very irregularly: he found it dyed level shades if applied to silk in a soap bath, a novel method which has never since gone out of practice. Mauve would not dye cotton, far and away the most important textile fibre, without a mordant: Perkin, in 1857, when he was nineteen years of age, discovered the tannin method, since found of general application to basic colours. He did much also to make calico printing with the new dyes possible.

Perkin only remained seventeen years in industry, selling out when he was thirty-five years old; he had amassed what was for him in those days a competence. In so doing he displayed great shrewdness, as after events disclosed, in leaving the industry when it was in a very flourishing condition. In later life he showed relatively little interest in the industry, and some have blamed him for cutting himself so soon adrift from his own

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