

THE PERKIN JUBILEE CELEBRATIONS

THE discovery of mauve by W. H. Perkin in 1856 had consequences reaching so far beyond the dye-making and dye-using industries that, while the celebration in London of the centenary was fittingly initiated by the Society of Dyers and Colourists, the celebration was appropriately sponsored also by the Royal Society, the Chemical Society, the Society of Chemical Industry, the Royal Institute of Chemistry and the Association of British Chemical Manufacturers. The proceedings opened on May 7 with a reception to the principal overseas guests at the Tallow Chandlers' Hall, and on the following morning the Perkin Exhibition at the Science Museum, South Kensington, was opened by Dr. R. P. Linstead, to whose part in establishing the structure of the phthalocyanines Sir Robert Robinson, who presided, paid a happy tribute. Dr. Linstead, before declaring the exhibition open, made two points. Emphasizing Perkin's youth and initiative, he referred to the danger of so over-organizing research that initiative and enterprise are discouraged if not suppressed. Secondly, he stressed the remarkable speed with which Perkin's discovery was brought to production, and remarked that this also has its meaning for us to-day. Besides illustrating the attendant circumstances of the discovery and the subsequent development of the industry, the exhibition included a number of interesting letters from contemporaries of Perkin.

The main feature of the celebration was a series of four lectures which dealt with different aspects of Perkin's discovery and its results. In the first of these, Prof. John Read surveyed the life and work of Perkin, presenting a vivid picture of the scientific and technical setting in which the discovery was made, and bringing out above all the human qualities of the young chemist who made it, the difficulties which he had to overcome and the magnitude of his pioneering effort, not only in manufacture but also in the application of the new colouring matter. Moreover, Prof. Read was careful to portray not merely Perkin as the discoverer and manufacturer of mauve but also his subsequent career as a research chemist, in the course of which his synthesis of coumarin was a step towards the beginning of the synthetic perfume industry, as the reaction known by his name later permitted von Baeyer's synthesis of indigo; Perkin's deep interest in religion and in music was also emphasized.

In the second lecture, on May 9, Mr. Clifford Paine, development director of Imperial Chemical Industries, Ltd., drew on his forty years experience in the dyestuffs industry to give a masterly account of the development of the dyestuffs industry since Perkin's day, in which the principal features were indicated in a way readily intelligible even to a non-technical audience. Mr. Paine noted the way in which the industry has turned full circle in that, while Perkin's mauve came from an unsuccessful attempt to prepare quinine, the discovery of paludrine at Blackley has rendered the synthesis of quinine of no pharmaceutical importance. To recapitulate the outstanding advances of successive decades would not do justice to an address which abounded in touches, as in the references to the level of research expenditure and

the difficulties over laboratory glassware in the First World War, which were obviously based on Mr. Paine's personal experience. A moving moment in the celebrations was when Dr. Herbert Levinstein, who had been managing director of Levinstein, Ltd., when Mr. Paine joined the firm, and was the sole living link with the jubilee celebrations of 1906, rose to express the thanks of the audience.

Mr. Paine himself presided when, on the afternoon of May 9, Mr. J. G. Evans, technical director of the Bradford Dyers Association, read a paper on "The Tinctorial Arts To-day". Mr. Paine reminded the audience that a quarter of a century earlier Mr. Evans had assisted Prof. H. E. Armstrong in his lecture "At the Sign of the Hexagon" in the same lecture theatre of the Royal Institution, and on asking for guidance as to the order of the demonstrations had been instructed to "Use your intelligence, man". Mr. Evans began by reading Perkin's original patent and, enlarging on the dyeing materials at the disposal of the dyer in Perkin's day and the available techniques, stressed the importance of Perkin's contributions in the application of mauve and allied dyestuffs. These contributions were even more important than the discovery of mauve itself and have remained in use to-day long after mauve has been superseded. Mr. Evans indicated the way in which new dyestuffs and changing requirements for fastness have set new problems for the dyer, and referred particularly to the problems arising from the advent of new fibres and new dyestuffs. To meet the demand for increased productivity, continuous methods of dyeing are being introduced, and Mr. Evans mentioned the limits within which such methods are applicable. The vote of thanks was moved by Mr. C. M. Whittaker, who, like Mr. Evans, was originally engaged on the dyemaking side of the industry before becoming connected with the dyers, and who took the opportunity to stress the part which co-operation between the makers and users had played in the renaissance of the British dyestuffs industry.

Sir Alexander Todd's lecture on "The Development of Organic Chemistry since Perkin's Discovery", delivered on May 10, drew the smallest audience; but his fascinating survey was fully as intelligible to a non-technical audience as the three preceding lectures. Enlarging on the position of organic chemistry at the time of Perkin's discovery, only four years after Frankland's introduction of the idea of valency had given organic chemistry, or the chemistry of carbon compounds, a chance to grow, Sir Alexander gave his own view of the few simple conceptions which made the modern edifice of organic chemistry possible: Kekulé and Couper's independent introduction of the idea of the combining capacity of quadrivalent carbon atoms; Butlerow's postulate that structure determines properties; Kekulé's benzene ring structure; and the ideas of van 't Hoff and Le Bel regarding stereoisomerism, with Thiele's theory of partial valency. In the past fifty years, the major influences on the development of organic chemistry have come from physics, and in the last fifteen years dynamic aspects especially have been to the fore.

Sir Alexander emphasized the close connexion, in the latter half of the nineteenth century, of the development of organic chemistry with the rise of chemical industry, and showed how in this field science and industry have worked hand in hand. He believes that the future of industrial organic chemistry is assured, though he foresees no radical departures. While in the latter half of the nineteenth century there were few chemists working on the chemistry of living matter, in the past fifty years there has been a striking return to the original objectives of organic chemistry, and, thanks largely to new experimental techniques, academic organic chemistry may well be on the threshold of striking developments, especially in the natural products field. We now have the necessary knowledge and technique to embark on the study of such problems as the relation between chemical structure and biological action and the mechanism of biological action with reasonable hope of success. Organic chemistry, without doing the job of biology or becoming a mere handmaid to biochemistry, is likely to continue to be concerned, as was Perkin, with the natural products.

The form of the centenary celebrations thus differed considerably from that of the jubilee celebrations in 1906. The presence of Dr. Levinstein provided a living link, as already noted, and the reception at Guildhall on May 8 and the banquet on May 9 gave some measure of resemblance, and especially in the international character of the gathering. Lord Salisbury, in his tribute to Perkin, stressed appropriately the importance to Britain of being alert to make the fullest and speediest use of existing knowledge, as well as being active in research, and Mr. Paine, in proposing the toast of the guests, contrived a happy reference to the British industry's Perkin medallist, the late Mr. J. Baddiley.

Nevertheless, the celebrations, for all the excellence of the lectures, left a certain sense of disappointment

or frustration, and this bears on a further feature which the jubilee and centenary celebrations have in common. In 1906 a Perkin Research Fund was established and is administered by the Chemical Society. In connexion with the centenary celebrations, it is hoped to raise £100,000 to found Perkin Centenary Scholarships designed "to promote, advance and encourage technical education in relation to all aspects of the fabrication or application of colouring matters". The proposal is timely, and Lord Salisbury's speech was well calculated to commend it. Not only was that speech, however, unnoticed in the daily Press, but also the whole opportunity which the centenary celebration offered of commending a career in technology to youth was ignored. That opportunity is not likely to recur speedily, and the excellence of the lectures testifies to what was missed. It is easy to suggest reasons for the comparative seniority of those present, though equally easy to suggest ways in which youth might have been encouraged to attend to receive inspiration. But the contrast between the treatment by the Press of the celebrations in 1906 with those of 1956 suggests some neglect of responsibility. *The Times* could find nearly three columns for the proceedings at the Royal Institution and the banquet in 1906; but in 1956 neither lectures nor the Lord President of the Council received a line. The *Manchester Guardian* published an admirable supplement on the centenary, but did not report the celebrations, and only in *The Times* was there a brief note of the exhibition at the Science Museum. Yet the fine-chemical industry is of even greater significance now than it was in 1906. Without the imaginative co-operation of the Press, it seems idle to hope that youth can be brought to realize the opportunities which technology offers, or public support and understanding secured for the expansion of technical and technological education that Britain's economic future demands.

RESEARCH ON THE HUMID TROPICS

THE UNESCO PROGRAMME

IN the humid tropical regions, as in other parts of the world, the development of the land to meet the needs of rapidly growing human populations and the ultimate attainment of a satisfactory equilibrium between man and his environment, depends on scientific research. The need for fundamental research is especially great in these regions, partly because scientific activity has been centred mainly in the temperate zones and partly because so much of the research which has been done in the tropics has been applied and short-term in its aims. To-day the need for research on the problems peculiar to the humid tropics is particularly urgent, not only because there as elsewhere populations are rapidly outgrowing their food supplies, but also because at a time when large areas of tropical Africa and Asia are passing from a Colonial to a more or less independent status, countries which formerly depended on Colonial powers for the staffing and impetus of their research programmes will in future try to depend wholly or to a large extent on their own resources. For this reason, and because a great many of the scientific problems of these regions are world-wide

or at least common to more than one country, the help of United Nations specialized agencies such as the World Health Organization, the Food and Agriculture Organization and the United Nations Educational, Scientific and Cultural Organization is both timely and necessary. Unless stimulus and support are given to fundamental research in the humid tropics by powerful international bodies, research in such countries is likely, for political and economic reasons, to be even more narrowly 'applied' and *ad hoc* in the future than it has tended to be in the past.

It was considerations of this sort which prompted the proposal that Unesco should develop a programme to assist research in the humid tropical regions parallel and complementary to the programme which it initiated in 1951 for research on the arid regions. The proposal was approved at the eighth session of the General Conference of Unesco held at Montevideo in November 1954, and in accordance with the resolutions of the Conference a preparatory meeting of specialists in humid tropics research was held at Kandy in Ceylon during March 22-24 last. Since