

## OBITUARY NOTICE.

SIR ROBERT PICKARD.

1874—1949.

THE death of Sir Robert Pickard on October 18th, 1949, at the age of 75 brought to a close a notable career of varied interests and removed from our midst a strong and vigorous personality whose impress has been left on several spheres of activity in science, technology, and education.

Robert Howson Pickard, born at Balshall Heath, Birmingham, on the 27th September, 1874, was the elder of the two sons of Joseph Henry Pickard, a tool manufacturer in Birmingham, and of Alice, daughter of Robert Howson of Birmingham.

He received his schooling at King Edward's Grammar School, Camp Hill, Birmingham, which he attended from 1883 to 1891, and where he was one of the pupils of the gifted headmaster, the Reverend Jamson Smith.

From 1891 to 1895 he was a student at Mason University College and obtained the B.Sc. degree of London University in 1895 with first class honours in Chemistry. At the time of Tilden's departure from Mason College for the Royal College of Science in 1894, Pickard was senior student and secretary of the students' Chemical Society, and in the following year he became President of the Union and also a post-graduate student under the new professor, P. F. Frankland. To both these distinguished teachers Pickard at different times acknowledged his great indebtedness.

Pickard was always a keen sportsman and at Camp Hill was Captain of School Cricket in 1890—91 and later played both cricket and rugby for Mason College.

In January 1896 he proceeded as an "1851 Exhibitioner" to the University of Munich, where, under the direction of Thiele, he carried out research work concerned principally with the rearrangement of hydroxamic acids and in June 1898 obtained the degree of Ph.D. *summa cum laude*. The results of this investigation were published in *Annalen* and *Berichte*. He then returned to Birmingham and spent another year divided between chemical research and bacteriology. He was awarded the D.Sc. of London University in 1899.

In July, 1899, Pickard received his first appointment, that of Head of the Chemistry Department of Blackburn Technical School. He set about with characteristic energy and industry to improve the laboratories and extend the facilities for the teaching of chemistry, so that the students attending this provincial technical school were enabled to prepare for the external degrees of the University of London. In a relatively short time research work was started in collaboration with members of his staff and subsequently with senior students.

Pickard's main interest as a chemist lay in stereochemistry and particularly in the relation between chemical constitution and optical rotatory power. Apart from his work in Munich, his first scientific publication was a joint one with Frankland on "The Rotation of Optically Active Compounds in Organic Solvents" and there can be little doubt that this, together with Frankland's influence, gave the general direction to Pickard's chemical interests.

One of his earlier investigations involved an attempt to resolve racemic alcohols into their optically active forms by combining them with either menthyl or bornyl isocyanate and submitting the resulting urethanes to fractional crystallisation. The method however proved unsatisfactory, as hydrolysis of the optically active urethanes could only be effected under conditions which resulted in the liberated alcohols being partly racemised.

Shortly afterwards, in collaboration with his colleagues at Blackburn, he devised a method of resolving racemic secondary alcohols into their optically pure isomerides which proved both convenient and of general application. The alcohols are converted, by reaction with the anhydride of a dibasic acid, usually phthalic or succinic, into acid esters which form with the commoner alkaloids crystalline salts of sufficient stability to allow of their separation into diastereoisomeric forms by fractional crystallisation. The derived optically active acid esters readily undergo hydrolysis under mild conditions and yield the liberated alcohols in a condition of optical purity. This method is of such practical convenience as to allow of the ready preparation of optically active alcohols in relatively large amounts and has thus put at the service of chemists a means of obtaining optically active and chemically reactive compounds of simple constitution for a wide variety of purposes.

By application of this procedure the four borneols, (+)- and (-)-borneol and (+)- and (-)-isoborneol, and the four menthols, (+)- and (-)-menthol and (+)- and (-)-isomenthol, were readily prepared and a comparison was made of their rotatory powers.

The same method was also used to prepare a number of homologous series of optically active

alcohols and of their esters in order to study the effect, on rotatory power, of a growing chain in alcohols of the structure  $\text{CHRR}'\text{OH}$  where R and R' could be independently varied and in carboxylic esters of the structure  $\text{R}''\text{CO}\cdot\text{O}\cdot\text{CHRR}'$  where R, R', and R'' may be similarly changed. The rotatory powers of these groups of compounds were determined, with light of different wave-lengths, both for the homogeneous state at different temperatures and for solutions in various solvents at different concentrations.

The main conclusions drawn from this lengthy and laborious investigation were :

(i) Compounds of simple chemical constitution containing an unbranched chain of five (or ten) carbon atoms may exhibit an enhanced rotatory power—this effect, in all probability, being due to the chain of five carbon atoms all but returning on itself.

(ii) This normal chain of five (or ten) carbon atoms need not be directly attached to the asymmetric carbon atom, but when indirectly attached the disturbing influence is much less pronounced.

(iii) This special stereochemical influence of the chain of atoms is usually increased by the action of solvents and in some cases where the influence is latent in homogeneous liquids it can become quite pronounced in solution.

(iv) The molecular rotatory powers of the members of a homologous series of compounds alter (usually increase) in a continuous manner as the series is ascended, rapidly at first, and then much more slowly, so that they tend towards a constant value.

(v) The rotatory powers of a whole group of optically active compounds of closely related chemical constitutions and of their derivatives can be correlated by an extension of the "characteristic diagram" method devised by Armstrong and Walker (*Proc. Roy. Soc.*, 1903, A, 88, 338).

These results, together with some others dealing with the rotatory powers of menthyl carbamates and menthyl carbamides, were discussed in an appreciative manner by Professor P. F. Frankland in his Presidential Address on "Some Stereochemical Problems" delivered to the Chemical Society in 1912, an action which gave much pleasure to his old student Pickard.

Pickard was elected to the Fellowship of the Royal Society in 1917 whilst still at Blackburn, in itself a notable achievement and a great honour to a provincial technical school.

He published a few more papers on these topics after moving to Battersea Polytechnic but gradually his administrative and other duties drew him away from participation in purely chemical subjects, although he always liked to assume a paternal attitude to the activities of the Chemistry Department which he visited whenever he had a few moments to spare.

From 1908 to 1920 he combined the duties of Head of the Chemistry Department with those of Principal of the Technical School at Blackburn, and thus found wider opportunities for the exercise of his developing administrative abilities.

During this period he was from time to time consulted by cotton manufacturers of the surrounding district on various problems and difficulties encountered in this local industry, and it is certain that he came to see quite clearly that the application of more scientific methods to this complex industry would result in great improvements to many processes which at that period were carried out by empirical and indeed rough rule-of-thumb methods. This experience undoubtedly laid the foundation of the very real and lively interest which he developed and the extensive technical knowledge which he gradually acquired, both of which he was later to put to such good and effective use during his Directorship of the British Cotton Industry Research Association at the Shirley Institute.

From 1900 to 1920 Pickard was consultant chemist to the Corporation of Blackburn with the duties of examining the supplies of water and gas and the town's sewage effluent.

Early in 1920, Pickard was appointed Principal of Battersea Polytechnic, a position he held with marked success until 1927. During this period he fostered more advanced studies and his vision and determination greatly helped to widen and encourage the University side of the Polytechnic's teaching activities during those difficult post-war years. There is little doubt that the general life of the Polytechnic was stimulated by his presence and capable supervision. He mixed freely with students of all departments and played a vigorous game of badminton with members of his staff, and a less vigorous game of cricket with students.

As Pickard's interests and activities were widely spread it has seemed most convenient to deal with these in separate sections.

*Services to the University of London.*—In 1926 Pickard became a member of the Senate of the University of London and remained so for 22 years until failing health compelled his retirement in 1949. He was Vice-Chancellor from 1937 to 1939 and by virtue of this office was a member of the Court of the University, a body to which he was subsequently appointed in

1945 and on which he served until 1948 when he declined re-nomination. He was elected Chairman of Convocation in 1948.

The Principal of the University has kindly supplied the following appreciation. " Throughout the last 23 years of his life he was a well-known figure in University affairs and rendered valued services to the University as an ' elder statesman ' during the last five years of his life. He took a leading part in the discussions of the post-war plans of the University and was Chairman of two important Councils, the Finance and General Purposes Committee and the External Council. In his capacity as Chairman of the External Council he had much to do with the development of more intimate relations between the University and the four university colleges which still take the External degree of the University of London."

*Other Services to Education.*—He became a member of the Surrey Education Committee, as a representative of London University, when it was reconstituted after the Education Act of 1944, and he served on the Secondary Education and the Further Education Committee and became especially interested in the work of the latter where his advice and knowledge were highly esteemed.

He gave the Committee great help in drawing up and administering their scheme for Award of Major Scholarships and Exhibitions to students taking university courses, and also in planning the expansion of higher technological education in the County.

A development which took place during his period of service was the decision of the County Council to make an annual grant of nearly £30,000 to the University of London.

The Chief Education Officer writes : " It is very unusual for a member who is not a member of the County Council to be selected to Office on the Surrey Education Committee but Sir Robert Pickard was so highly esteemed by his colleagues that they selected him Vice-Chairman of the Further Education Committee."

He served as Honorary Secretary of the teachers' panel of the " Burnham Committee " dealing with salaries for teachers in technical colleges and art schools, 1922—1925, and from 1920 to 1923 was a member of the Consultative Committee of the Board of Education. From 1930 to 1940 he was a Member of Council of Manchester High School for Girls and from 1940 to 1948 Chairman of the Governing Body of Roedean School.

He served as a Member of Council of the Leatherseller's Technical College from 1924 to 1948.

He was also at different times a member of the Courts of the Universities of Birmingham and Manchester.

*Royal Institute of Chemistry.*—Pickard became a Fellow of the Institute of Chemistry in 1902 and in later years developed a keen interest in its affairs, particularly those concerned with the education and training of chemists. He was a member of its Council during the periods 1923—1926, 1944—1946; Vice-President 1927—1930, 1939—1943; President 1936—1939 and Censor 1936—1944.

During his Presidency he delivered the eighth Gluckstein Memorial Lecture (in 1936) with the title " An Experiment in Co-operative Research in the Cotton and Other Textile Industries " in which he summarised his views and experience as the Director of a large Research Association.

*Chemical Society and Chemical Council.*—Pickard joined the Chemical Society in 1897 and served on the Council, 1916—1920, 1926—1928, and as Vice-President, 1931—1934, 1937—1940 : he was for many years a very regular attendant at the Society's meetings. The Historical Review of the Chemical Society 1841—1941 states (p. 154) : " In the Society he has for years been a watchful and outspoken critic of its methods and organisation and his criticism has been constructive. He was one of those who proposed the formation of a Reconstruction Committee in 1932 and was its most active member. The various recommendations of this important committee were put into effect and resulted in an extension and an invigoration of the Society's activities. His foresight and experience have been of great value to the Finance and General Purposes Committee, on which he served for several years, and to Council. Directly, in such activities as these, and indirectly as Chairman of the Chemical Council (1931—1938), he had a great influence on the development of the Society in the last decade."

*Industrial Research.*—Pickard's experience in Lancashire had led him to a deep-rooted belief, to which he frequently gave expression, that the application of the results of fundamental research to industrial processes would result in valuable technological developments, and he told the writer of this Notice that pressure was exerted on him about 1920 to take an active interest in the new Research Association movement. It is certain that the pressure only needed to be gentle to start him off on this course, since his inclinations had been tending in this direction for some time, and his desire for an administrative post of the type afforded by the supervision of a research association had been steadily growing. His recognition that the

undertaking of long-range investigations would constitute an essential part of the work of research associations led to his becoming a champion of co-operative research associations in general.

The growth of the Research Association movement is the most marked development in the organisation of industrial research in this country since the first world war, and there can be no doubt that the movement's present vitality and vigour owe much to Pickard's long participation.

*British Leather Manufacturers' Research Association.*—In 1920 Pickard, on the strong recommendation of a representative committee, became the first Director of the newly-formed British Leather Manufacturers' Research Association and was quick to seize the opportunities afforded by such an appointment. These activities he combined with his duties as Principal of Battersea Polytechnic which he had assumed earlier in the same year, and his resolution and capacity for work enabled him to do justice to these combined responsibilities.

He now proceeded to transform his beliefs into practice and show how science should be applied to industry. He soon recognised that the histology of hides and skins and the physico-chemical examination of tanning solutions and of proteins were of fundamental significance in attempting to deal with the difficulties which, despite centuries of empiricism, still confront the leather manufacturer, and accordingly he gathered together a highly competent staff of research workers which included the late Dr. D. Jordan-Lloyd amongst its first members.

He soon became convinced that if an industry was to receive substantial benefit from its research association the work of the staff must be made known to and applied by members of the industry, and so visits to works and surveys of processes were arranged and organised. Although he was Director for only 7 years he maintained his connexion with the British Leather Manufacturers' Research Association, in the first place as consultant and later as honorary consultant, until the time of his death.

He was a loyal and devoted servant of the leather industry, pre-eminently as a planner and an organiser, and in these capacities he rendered notable service which has been freely recognised by the industry as a whole: he did not attempt to make any profound contribution to the scientific studies of the research association.

In recognition of his services to education and to the application of scientific research to industrial processes he was elected an Honorary Liveryman of the Leathersellers' Company in 1938.

*British Cotton Industry Research Association.*—Of Pickard's numerous activities the one with which his name is most closely associated is that of his Directorship of the British Cotton Industry Research Association—a post to which he was appointed at the age of 53 whilst still alert and vigorous, with a varied experience behind him which included an "apprenticeship" of 7 years as Director of the British Leather Manufacturers' Research Association.

When the Directorship of the Cotton Research Association fell vacant in 1927 through the death of Dr. A. W. Crossley the post was advertised but Pickard would not apply. It is no secret that he had felt some disappointment at not being called to fill the position when the Research Association was formed in 1919. Fortunately there were those in Lancashire who realised that Pickard was the man for the post and a deputation came to London and induced him to return to Lancashire. Thus he entered on what proved to be the most fruitful period of his career.

He found that a vast amount of first-class scientific knowledge had been accumulated, but that after six years the industry was getting impatient and looking for more practical results. He saw that the time was opportune for an intensive application of the knowledge already gained and for the introduction of special means to link the scientists more closely and effectively with the practical men from the mills, and in 1928 a liaison officer was appointed and a liaison department formed. At the same time investigations of both a fundamental and a technological character were actively pursued and on a steadily increasing scale, so much so that several extensions of accommodation had to be provided during the ensuing 15 years—including a three-story block of laboratories and a large work room to house weaving machinery, which were formally opened in 1936 by the late Lord Derby.

Pickard tackled with understanding the special difficulties facing the Director of a large research association in an industry divided into several distinct sections, *e.g.*, spinning, weaving, bleaching, and finishing. He came to realise that one important function of such a research association is to envisage the industry as a whole rather than as a collection of component groups of firms with sectional interests and requirements.

The success of his policy taken in combination with the life and vigour he infused into the

Shirley Institute community may be gauged from the fact that when he retired after 17 strenuous years the Research Association was recognised on all sides as an essential part of the textile industry and its name was known throughout the world.

By the time he had retired in 1943 the Shirley Institute with a staff of more than 350, including 80 graduates, had become a splendid organisation in the building up of which he had exerted all his powers of initiative, drive, and administrative ability, and in which he took great pride.

Pickard regarded his stay at the Shirley Institute as the most congenial and productive period of his career—it certainly provided an opportunity where his unusual combination of qualities could be exercised to the full.

In all councils and committees of which he was a member, Pickard expressed his views and opinions with clarity and force—on occasions not unmixed with a modicum of truculence—and was always listened to with attention even by those who disagreed with him. His information on matters of fact was always valuable and there were many occasions on which he was able to draw attention to the terms of Government orders or other official decisions which had escaped the notice of his colleagues but which were highly relevant to the subject under discussion.

He was fond of attending committee meetings and, apart from very occasional lapses into impatience, he was an admirable committee man: the agenda had been carefully studied and pondered on and it was seldom that he failed to contribute at least one useful or constructive suggestion.

During this period of office as Vice-Chancellor of the University of London the Board of Studies in Chemistry gave a dinner in Pickard's honour, at which the late Professor J. C. Philip made the well-received jest "What we all admire about Pickard is his downrightness—not that that excludes uprightness!" Both downrightness and uprightness were indeed the salient qualities of the man.

To the end he was a personality and a man of affairs, frank and fearless in manner. His highly developed critical faculty was in frequent evidence, but in turn he accepted criticism without resentment and usually respected the more highly those who could return some of his critical sallies.

To some his outward bearing was rather aloof or even harsh, but to know him intimately was to recognise a very human man with a high sense of moral values, whose word was his bond.

In 1901 he married Ethel Marian, daughter of Henry Wood of Edgbaston and Dudley and had one son and one daughter. He was created Knight Bachelor in the Coronation Honours of 1937. His family life was a happy one until a few years ago when he suffered two severe blows in the death of his wife and shortly afterwards of his only daughter. He leaves an only son, at whose home in Surrey he died in his sleep.

I am indebted to the Registrar of the Royal Institute of Chemistry, to Dr. F. C. Toy, C.B.E., of the Shirley Institute, and to Dr. H. Phillips, Director of The British Leather Manufacturers' Research Association, for help in the compilation of this notice.

J. KENYON.

---