

OBITUARY NOTICE.

WILLIAM PALMER WYNNE.

1861—1950.

WILLIAM PALMER WYNNE, Emeritus Professor of the University of Sheffield, died on February 16th, 1950, three days after his 89th birthday. A man of slight build and stature, in later years frail in appearance, with a somewhat ascetic yet attractive countenance, he always looked younger than he was and retained his faculties, memory, and acute intelligence to the end of his long life. He came of a long-lived family for his father reached the age of 89 and his paternal grandfather 79. His father, William Palmer Wynne, was born in 1835, the son of John Wynne, boot and shoe manufacturer, of Stafford, and married Anne Bates, daughter of an ironmonger of Allerley, Coventry. There were ten children of this marriage—seven sons and three daughters—William Palmer Wynne, the subject of this notice, born on February 13th, 1861, at Stafford, being the eldest. The father was employed in the grandfather's business until it was wound up when, in 1871, he moved to Birmingham as manager of a similar business.

The elder William Palmer Wynne and other members of the family belonged to the religious sect of Plymouth Brethren, whose doctrines bred a home atmosphere of such austerity as to create in the young child inhibitions and lack of self-confidence which were never quite eliminated, although home life became more genial after the family moved to Birmingham when he was ten years old. To this early upbringing it is tempting to trace those sterling qualities of mind and heart which showed themselves in later life. Living through a period when science and religion were in open conflict he retained sincere religious convictions.

During his school days Wynne showed ability above the average by winning prizes, first at the Stafford Grammar School and later at King Edward's School, Birmingham, where he spent five years, from 1871 to 1876, the last year in the sixth form under the Head Master, the Rev. E. F. M. MacCarthy. The first suggestion of his future life interest came at this period, for, during his last year at school, he studied chemistry under Dr. George Gore, who later became a Fellow of the Royal Society, and at the examination he was bracketed first boy of the school. Gore was self-taught in chemistry and an unconventional teacher, but he had had experience in the chemical industry and possessed the gift of arousing enthusiasm in his pupils. He told them of his experiments, well-known to the scientific world at the time, with hydrofluoric acid, of his attempts to isolate fluorine (not accomplished until many years later by Moissan) and of the effect of intensive drying in reducing chemical reactivity (long before Baker's and Dixon's classical work). There was no school laboratory in which the boys could work but Wynne improvised experiments at home with a "Statham's Chemical Cabinet" and became fired with the ambition to become a chemist.

There appears to have been no suggestion of sending the young enthusiast to the University and young Wynne had to start on the hard road to a scientific career by becoming apprentice to a firm of manufacturing pharmacists, Messrs. Southall Brothers and Barclay, to whom he was introduced by Dr. Gore. He worked in the analytical department and it may well be that this early experience in his most impressionable years intensified an inborn passion for exactitude which later was a feature of his scientific work. He was fortunate in attracting the attention of his chief, Mr. H. W. Jones, to whose guidance he admitted he owed more than he could express. Realising his ability, Jones suggested that Wynne should study for London Matriculation (of which Wynne had never heard). Having passed this examination Wynne became an evening student in science at the Birmingham and Midland Institute, where he found an inspiring teacher of chemistry and physics in Mr. C. J. Woodward, whose task it was to train students for the examinations of the Science and Art Department. Such teachers at that time had an incentive which modern teachers lack, their remuneration depending on results. Wynne caused his teachers little anxiety on this score for he won valuable prizes during his three years of evening study at Birmingham and found time for both classes and field work in botany and geology. Eventually in 1881, he was awarded a free studentship at the newly constituted Normal School of Science at South Kensington, which later became the Royal College of Science. The problem of maintenance in London, which must have given rise to anxious family discussions, was solved by loans from three of his uncles, and in the autumn of 1881 Wynne started the Associate course in chemistry. From this time forward his connection with teaching institutions was unbroken.



WILLIAM PALMER WYNNE

[To face p. 1936.]

His student days in South Kensington appear to have been uneventful. Chemistry was studied under Professor (later Sir Edward) Frankland, Japp, and P. F. Frankland, all famous men, physics under Guthrie, and geology under Judd. For his work in geology, in which he always maintained an interest, he was awarded the Murchison prize. At that time it was the ambition of all aspiring chemists to spend a period of study in Germany and, when in 1884 Wynne was awarded the Associateship of the College and also obtained the London B.Sc. degree with 1st class honours, he hoped to do this but found it impossible to obtain the necessary funds. Instead, he spent the next year as a research student under Professor Japp, jointly with whom his first paper was published.

Wynne's subsequent career, after a brief experience (1885—1886) as a lecturer in advanced chemistry and physics at Rutherford College, Newcastle-on-Tyne, falls into three periods: 1886—1904 in London, during which his most important researches, including the famous naphthalene research in collaboration with H. E. Armstrong, were accomplished; 1904—1931 at Sheffield; and 1931—1950 in retirement.

In March 1886 Armstrong, who two years before had been appointed Professor of Chemistry at the newly founded Central Technical College in Exhibition Road, was seeking a research assistant. Japp had evidently formed a high opinion of Wynne, and, no doubt well aware that Armstrong's demands on an assistant would be exacting, strongly recommended him for the post. Wynne accepted Armstrong's unsought invitation, and so began the association of these two men, fruitful in chemical research for many years and in mutual regard and friendship for the rest of their lives. Wynne became accepted as a member of the Armstrong family, and had for them a very warm affection. Two years were spent as whole time assistant to Armstrong, during which the naphthalene research got well started. Wynne then became assistant lecturer and soon afterwards lecturer in the chemistry department of the College, but in 1891, at the invitation of Professor (later Sir Edward) Thorpe, returned to the Royal College of Science as Assistant Professor in succession to Japp, a post which he held until 1902. In 1904 Sir William Tilden succeeded Thorpe as Professor at the Royal College; to both of these eminent men Wynne confessed to have been greatly indebted for encouragement and example, although their personalities were markedly different. Other colleagues at this time who achieved eminence among British chemists were M. O. Forster, G. T. Morgan, and J. A. Philip.

In July, 1902, further promotion came to Wynne when he was elected to the Chair of Chemistry at the College of the Pharmaceutical Society, a post which gave much quiet pleasure to the man who had started his working life 25 years before as apprentice to a pharmacist. The hold of London did not last much longer, as in 1904, at the age of 44, he moved north to Sheffield where, as Professor of Chemistry at the University College, soon to become the University, he was to spend more than a quarter of a century.

Practically the whole of Wynne's significant scientific research work was carried out in the period 1886—1897, during his association with Armstrong. It ceased suddenly, and only a few papers by him appeared subsequently, scattered over the years, several of them in his old age. Why this is so is something of an enigma but the explanation is probably to be found in some peculiar personal traits. He loved nothing better than working quietly in a research laboratory and was a most skilful experimentalist. Perhaps the circumstances which stopped his work with Armstrong in 1897 had some lasting effect on Wynne. During the period of his lectureship at the Central and after taking up his duties at the Royal College of Science, Wynne carried on with the naphthalene research in Armstrong's private laboratory at the Central in his spare day-time, in the evenings, at week-ends, and during vacations. He had access to the College with a master-key, and for years everything went smoothly. Suddenly, in December 1897, without warning, Wynne was told that he could not be admitted to the College in this way. Administrative authority could not allow one who was not a member of the College staff to have a master key and enter the College at all hours without signing a book. Armstrong, taken equally unawares, advised Wynne to keep away from the College for a few days, whilst he arranged matters "in harmony with the views of those under whom I work." But the days became months and the months years whilst harmony eluded the disputants. In November, 1903, Wynne was still writing to Armstrong about the matter, stating the terms under which he could resume; planning to work five evenings a week up to 9.30 p.m. and on Sundays in order to bring the research to an end, he hoped, in 12—18 months. He was then Professor at the College of Pharmacy. By March, 1904, various committees had agreed to let Wynne work at the Central, but there was to be no master key! In any case it was too late. Six of Wynne's best years had been lost to research. As silent witnesses to this abandoned enterprise, half-completed preparations in

beakers and under watch-glasses remained in a corner of Armstrong's laboratory until he was forced to vacate it in 1914, when they were removed to Sheffield.

The collapse of the Armstrong collaboration does not, however, in itself explain why from this time forward Wynne accomplished so little original work. One reason must be that he found it very difficult to collaborate with junior colleagues, even when opportunity came—his standard was so high. He was perhaps too afraid of committing himself to a false conclusion from an experiment which he had not carried out with his own hands. At Cambridge, free from other responsibilities, he was able to devote himself to the laboratory, and bring his work up to the standard he thought necessary for publication.

Wynne was called to Sheffield at a critical time in the growth of that City as a centre of education. The University College—Firth College as it then was—had reached a stage when expansion had become necessary. A new building for housing University College, apart from the applied sciences, had been started, and the College was applying for University status, a privilege granted the following year, 1905, one year later than the founding of the University of Leeds. Consequently Wynne was faced, in addition to the normal duties of a Professor, with many problems of re-organisation, into which he plunged with whole-hearted zeal. He soon found that the plans were not adequate to allow for the future growth of the chemistry department which he foresaw and, with the assistance of the Principal, had them redrafted. It was, in fact, only 4 years later that the expanding chemistry department had to take over the rooms allotted to botany, and again six years later zoology was pushed out into new quarters. After the first world war yet more temporary accommodation for chemistry had to be found. In the early years there were many other problems to be faced. His staff, inherited from the University College, was one laboratory boy, and most of the equipment, including all lecture apparatus, being the property of his predecessor, had disappeared. However, the new University opened its doors to students in May, 1905. Some idea of the growth of the University during and after Wynne's time may be gathered from the fact that in 1905 it had only about 150 full-time students, whilst in 1947 there were about 1355, in addition to 1880 part-time.

It is clear that from the day of his appointment to Sheffield Wynne did not see himself merely as Professor of Chemistry but as a Professor of the University. There were few aspects of the life of the University in which he did not take an active interest, and he was especially concerned with the welfare of the students, not only educationally but also socially. He made it his business to see that as much as possible was done to overcome the disadvantages of a non-residential university. In the general administration of the University he played a prominent part from the beginning, serving first on the Council in 1906, becoming Dean of Pure Science in 1911 and holding that office continuously for 20 years instead of the normal 3 years. The last fact alone testifies to the regard in which he was held by his colleagues and to the confidence of the Council in his abilities. His outlook was broad and fair, the health of the whole body of the University being put above the sectional interests of any Department. Most university teachers have to choose, in some degree, between administration and research as their main interest beyond teaching. In Wynne's case the preference was always with the former, and one is forced to the conclusion that at heart he enjoyed it and found more satisfaction in the day-to-day tasks of the University than in the personal pursuit of new knowledge, although he was fully alive to the importance of research as one of the activities of a scientific department and encouraged his staff to devote themselves to its pursuit as much as possible. Normally Wynne should have retired in 1926 at the age of 65, but by invitation of the Council of the University he served another five years, the maximum time permitted under the Charter.

Wynne will long be remembered at Sheffield for his constructive work for the students' welfare. A movement started in the chemistry department by Mr. (later Canon) Bolton to form a Students' Representative Council received his whole-hearted support and he became its Treasurer. At that time any students wishing to indulge in games or athletic sports were continually faced with the difficulty of having to depend on hired playing fields with little or no dressing accommodation. Wynne, although he had never been an athlete or player himself, made it a personal hobby to do all he could to ensure that adequate facilities for these healthy pastimes should be made available. Having tramped the outskirts of Sheffield with the games captains in search of a site, of which few suitable were available in that hilly district, he persuaded the University Council in 1909 to purchase 15½ acres of land at Norton Woodseats. Part of the ground was ready for cricket and Association football next year, but money for the development of the site was always hard to get. Wynne never relaxed his efforts, which were supported by Sir Albert Hobson, Treasurer and later Pro-chancellor of the University, himself a

cripple, who when he died left a legacy of £5,000, as a memorial to two sons killed in the war of 1914—1918, for the building of a pavilion. Owing to the fall in money value which had taken place the sum was insufficient for a worthy building but Wynne with the assistance of Sir William Clegg persuaded the Council to provide the money to complete the building as a memorial to Hobson. Many features of the building were Wynne's ideas, including the fine maple floor of the tea room which was afterwards used regularly for dancing. He was himself a neat and enthusiastic dancer, regularly attending students' dances and continuing to indulge in this recreation until past 80 years of age. As promoter of such social activities and as chairman of the Athletics Committee he was, in the words of Dr. Chapman, "no longer the rather severe professor or the awe-inspiring Dean but the affectionate and deeply respected father of a large and lively family. . . . To work with Wynne in this field was an unmixed pleasure and rich experience." He looked back on this side of his work for the students with joy and satisfaction. The gratitude of the students was shown by the presentation to him in 1931 of the one thing needed for his beloved pavilion, a big clock in the front, to the cost of which students of every faculty and many generations subscribed.

Wynne's kindly nature, wore a rather different aspect in the laboratory and the lecture room. By temperament he was exact, precise, methodical, tidy, having all those virtues in which the average student is wanting. Slovenliness and untidiness whether in thinking, writing, or experimenting were abhorrent to him. A strict disciplinarian, he sought at all times to instil these qualities into his students, in addition to a sound knowledge of chemistry. His visits to the laboratories were occasions to be dreaded by those who did not conform to his standards, for he did not scruple to criticise with withering comment and biting sarcasm. His methods did not court cheap popularity, but gained him a wholesome respect. He had behind him the experience of years of research carried out with a lone hand, research which could not have been brought to fruition without the precision and attention to detail on which he was insistent. He was the kind of teacher who is more appreciated by students when they become mature than in their youth. In his lectures Wynne concentrated on the younger students, aiming at giving them a secure foundation. The lectures were, as would be expected, models of clarity, and their value is testified to by those who attended them at South Kensington as well as at Sheffield. Himself shouldering the burdens of administration, he left his staff time for original work and for fitting themselves for higher positions, a quest in which he never failed to encourage them.

Life for Wynne was by no means finished when he retired from Sheffield at the age of 70, but entered on a new phase. Sir William Pope, who had been one of his pupils in the S. Kensington days, put at his disposal a room in the University Chemical Laboratory at Cambridge, and here Wynne spent 15 happy years. He found pleasure in completing and publishing some of the work on naphthalene and toluene chemistry which had been left in an unfinished state many years before, doing everything with his own hands in the neat and methodical way habitual to him. During this time also he re-arranged and catalogued a unique collection of specimens of naphthalene compounds, about 460 in number, purifying and recrystallising many of them, all of which were of his own preparing. This collection was offered to, and gratefully accepted by, the Dyestuffs Division of Imperial Chemical Industries Limited and is now housed in handsome display cabinets in the research building of that Company at Blackley, Manchester.

To show his appreciation of the hospitality given him by Cambridge, he voluntarily undertook for the Chemical Laboratory some of the duties of a librarian by collecting and cataloguing the widely dispersed books belonging to the department and getting them properly housed in a central reference library. This episode provides another typical illustration of Wynne's love of order and tidiness. To this note his life was tuned. At Cambridge Wynne was given the honorary degree of M.A. and was made a member of the high table of Sidney Sussex College, a privilege which assured him of contact with the intellectual life of the College. When he reached the age of about 85 Wynne began to find laboratory work fatiguing. About this time, too, the appointment of a new Professor with consequent reorganisation and extension of the research activities of the organic laboratories at Cambridge so increased the demand for space that Wynne surrendered the room where he had spent the autumn of his life. So in 1946 he moved to Manchester to live with his daughter, Mrs. Grant. Declining health prevented his taking much part in chemical activities in Manchester, but he was not too far from Sheffield to pay a visit to his old University whenever a function offered an excuse. He read a great deal at this time and corresponded with a few surviving friends, in clear handwriting which was a pleasure to see and a joy to read.

Throughout his life Wynne gave freely of his time to the work of scientific societies, especially

the Chemical Society. He was an abstractor from 1887 to 1891, and from 1900 to 1903 was editor. He had two periods as Honorary Secretary of the Chemical Society, 1898—1899 and 1903—1905, and served on the Council first as an ordinary member from 1892 to 1896, afterwards as an Officer of the Society for many years. He first became a Vice-President in 1905, was President 1923—1925, his last year as Vice-President being 1948. He served on the Council of the Royal Society 1919—1921 and was President of Section B of the British Association for the Advancement of Science at the Birmingham meeting in 1913. He did much examining work for universities, for the Institute of Chemistry, and for the Board of Education. Outside science he represented the diocese of Sheffield in the National Assembly of the Church of England for ten years, 1925—1935.

From 1934 to 1943 Wynne was a member of the University Grants Committee, in which capacity he had the opportunity to try to remedy some of the disadvantages under which the Universities suffered as centres of chemical research, to which he called attention in his Presidential Address to the Chemical Society in 1925.

Wynne had, in spite of a rather reserved manner and more than a touch of cynicism, a great capacity for friendship and for inspiring devotion. He was deeply attached to the Armstrong family, especially to H. E. and his eldest son E. F., whose death was a great shock to him. Other intimate friends were Pope, Crossley, and Forster whom he outlived, and Dr. Martha Whiteley with whom he formed an enduring friendship whilst at the Royal College of Science. At Sheffield he had many devoted friends and, as Miss Turner says, all sorts of people would do anything for him. Many sought his advice, which was often very difficult for those lacking his courage to follow. His pleasures were largely those which could be enjoyed in company, walking, climbing, golfing, dancing, music, and the drama.

Wynne was twice married. In 1887 he married Margaret Emma Curtis, daughter of the proprietor of the Brighton Gazette, by whom he had a son Francis who died in the United States in 1908 at the age of 20, and a daughter Dorothy who survives him. In 1907 he married Alice Julia Seelenmeyer, daughter of a pharmacist at Melbourne, Australia, by whom he had a son, Leonard, who was killed in a motor accident in 1939 at the age of 30.

The chemical enquiry with which Wynne's name will always be associated is that concerned with the determination of the orientation of isomeric naphthalene derivatives and with the laws of substitution in the naphthalene series. The subject was of both scientific and technical interest at the time. In Germany naphthalene compounds were assuming growing importance as components of new and better azo-dyes than were obtainable from benzenoid compounds, and a more systematic knowledge of naphthalene chemistry was wanted on that score. German dyestuff firms provided Armstrong with many of the materials with which they worked, including several naphthylaminedisulphonic acids. Armstrong had projected and started work on this theme in 1880 with an assistant, Graham, but for 5 years, until Wynne joined Armstrong in 1886, it had been at a standstill. From the start Wynne took up the subject with enthusiasm and for the next eleven years important results came out steadily. If Armstrong was the initiator and guide, Wynne provided the sustaining force which kept the research going. After Wynne stopped work, in the unfortunate circumstances already related, although Armstrong had other assistants and opportunities, he produced nothing more in this field. It has frequently been commented that this important work was published only in the form of brief notes (40 in all) in the *Proceedings* of the Chemical Society, giving only summaries of results obtained without details of methods used or analytical data. It was Armstrong's deliberate choice to withhold detailed publication until the whole story could be told, his view being that the experimental methods used were in general sufficiently well-known to trained chemists. His plan was upset by the unexpected stopping of the work; no doubt, he hoped that at some time it could be resumed and brought to a stage for writing up in full. Wynne partly atoned for this omission by writing for Thorpe's Dictionary of Applied Chemistry a masterly summary of the chemistry of naphthalene which, when interest in dyestuffs and their intermediates forcibly revived in this country after the first world war, was of the greatest assistance to British chemists.

A fairly complete survey of the joint work has already been published in the Obituary Notice of H. E. Armstrong (*J.*, 1940, 1421) and it would be superfluous to repeat it here. This covered the characterisation with certainty of the ten dichloro- and fourteen trichloro-naphthalenes and the establishment of the orientation of a large number of di- and tri-derivatives of naphthalene including the important naphthylamine- and naphthol-sulphonic acids. These orientations depended eventually on conversion of each substance into one or other of the

known di- or tri-chloronaphthalenes, on the assumption that no migration took place. This assumption was proved by many experiments to be reliable, but Wynne recently called the writer's attention to one instance, discovered at the very end of the collaboration, in which it was invalid. When 1 : 8-dichloronaphthalene-3-sulphonic acid was heated with 1% sulphuric acid at 290° to remove the sulphonic group it yielded the expected 1 : 8-dichloronaphthalene, but with stronger acids it gave the isomeric 1 : 5-dichloronaphthalene (with much charring) and, when superheated steam was passed into a suspension of the material in a mixture of sulphuric and orthophosphoric acids, the 1 : 7-isomer was obtained. It was then found that 1 : 8- changes almost quantitatively into 1 : 5-dichloronaphthalene when heated with hydrochloric acid at 300°; no other dichloronaphthalene suffers any such conversion and it is unlikely that an unsuspected change has invalidated any of Wynne's conclusions.

In the years following the 1914—1918 war Wynne found time occasionally to return to the study of naphthalene, with the assistance of Miss E. G. Turner who joined his staff during the war, having formerly been an undergraduate at Sheffield, acted as his secretary for many years and remained his friend after his retirement. With her he resumed the study of the sulphonation of the trichloronaphthalenes and the characterisation of the tetrachloronaphthalenes obtainable from them by replacing the SO₂Cl group by chlorine. He also studied the tetrachloronaphthalenes derivable from the tetrachlorides of 1 : 4- and 1 : 5-dichloronaphthalenes and eventually completely characterised seven of the 22 possible tetrachloronaphthalenes, a further seven being left with the positions of three of the four chlorine atoms known. The work was, however, only brought to this stage of completion during his retirement at Cambridge and was published after his 81st birthday (*J.*, 1941, 243; 1946, 61). One of his last efforts in naphthalene chemistry was the preparation, in collaboration with J. Chatt, of a new tetranitronaphthalene, almost certainly the 1 : 3 : 5 : 7-compound, which was required so that its explosive properties might be examined. This work was published in his 84th year (*J.*, 1943, 34).

Another line of research which Wynne sustained through the years was concerned with the chemistry of the chloro- and sulpho-derivatives of toluene. It had its roots in the naphthalene research, starting when Wynne required a quantity of 3 : 4-dichlorotoluene for the preparation of 3 : 4-dichlorobenzaldehyde to use in the synthesis of 1 : 2 : 8-trichloronaphthalene. It should be readily obtainable from 3-chloro-*p*-toluidine, to be obtained by chlorinating aceto-*p*-toluidide, but direct chlorination of this gave a complex mixture from which a pure product was difficult to isolate. Wynne therefore studied the use of sulphuryl chloride as chlorinating agent. From aceto-*o*-toluidide this gave almost exclusively the 5-chloro-derivative, but again the *para*-isomer gave a mixture of mono- and higher chloro-derivatives. Working on a considerable scale (he used 5 kg. of aceto-*p*-toluidide) Wynne subjected the isolated chlorinated base to the Sandmeyer reaction (replacing NH₂ by Cl) and by fractionally distilling the product obtained over 2 kg. of practically pure 3 : 4-dichlorotoluene. To obtain material of the highest purity, however, he sulphonated this, fractionally crystallised the barium salt (incidentally examining many other salts), and eventually hydrolysed the purified sulphonic acid back to 3 : 4-dichlorotoluene. This laborious work, of which the above is a very bare outline, constituted Wynne's thesis for the degree of D.Sc. of London University. The thesis reveals well the writer's zeal and his determination to verify each conclusion by every possible means. If the naphthalene work had been published as fully, much valuable experience now lost would have been made available to other workers. Whilst at the Royal College of Science Wynne extended this work, with collaborators, to the study of other dichlorotoluenes and their sulphonic acids. Twenty years after, with W. A. Silvester, the constitutions of some of these sulphonic acids were established at Sheffield (1914—1915, 1919), but Wynne could not bring himself to publish the results until 1936 when, at Cambridge, he had been able to do some more work himself. At the same time, in his 77th year, other work on the same subject carried out with Miss Turner and G. M. Bennett was released.

Wynne's scientific work, like everything he undertook, reveals a man with an infinite capacity for taking pains. He worked mainly with a class of substances, sulphonic acids, which most chemists shun and in this field he was undoubtedly a master.

E. H. RODD.