

Sir Harry (Work) Melville

The Society lost one of its most distinguished and long-serving Fellows on 14 June 2000 at the age of 92 with the death of Sir Harry Melville, Fellow of the Society from 1937, Bruce-Preller lecturer (1943), Gunning Victoria Jubilee Prize (1952-56).

Born in Edinburgh on 27 April 1908, the only son of Thomas and Esther Cumming Burnett Melville née Nicol), who resided in the southside at 233 Dalkeith Road, he went first to Preston Street School before entering George Heriot's School in 1916. It does not appear that his school recognised his abilities as the summary report on his leaving in July 1925 recorded "Average intelligence, fairly good worker, quiet unassuming manner, always courteous". Beneath this modest outward appearance was a young man of the highest ability. He entered the Heriot-Watt College probably contemplating a career in engineering and after a year entered the Chemistry Department of the University of Edinburgh with a bursary and graduated with first class honours in 1930. He was awarded a Carnegie Research Scholarship to undertake his PhD studies during the years 1930-1933, the topic proposed being 'Investigation of molecular structure and chemical change by means of band spectra'.

His research supervisors were John E. Mackenzie and Ernest B. Ludlam, both Fellows of our Society. From the latter, whose research experience was in both chemistry and physics including a period with the Nobel Prize physicist Philipp Lenard, Melville would have been stimulated in his development of a wide range of physical properties applied to problems of chemical kinetics of gas phase reactions. It does not appear that Ludlam's deep pacifist convictions, which had led to several terms of imprisonment in the first world war, had the same impact.

His first three years of research were highly productive and papers on the oxidation of phosphorus vapour, the photochemistry of phosphine and of ammonia, the diffusion coefficients of gas mixtures, absorption spectra, surface reactions and reactions of atomic hydrogen were published. In addition to these, some other papers illustrated his ability to design and build ingenious apparatus to expedite experimentation at higher levels of accuracy. Unusually for a research student under supervision there were many papers of which he was the sole or senior author. His PhD thesis *The oxidation of phosphorous at low pressures* was awarded the Society's Gunning-Victoria Jubilee Prize in Chemistry in 1932. The award of an 1851 senior exhibition took him to the Colloid Science Laboratory in Cambridge in 1933 to work with Professor Eric Rideal. This laboratory had research interests spanning a wide range of chemistry, physics and biology and, having a deservedly high reputation, attracted some exceptional workers.

In Cambridge the range of his research interests widened still further. A Fellow of Trinity College from 1933-1944, he was appointed Assistant Director of Research at the Colloid Science Laboratory in 1938. Recognition of his work came in the award of the DSc degree from Edinburgh in 1935, the award of the Meldola Medal of the Institute of Chemistry in 1936 and election to our Fellowship in 1937. He continued to study a wide range of gas and surface reactions and his studies of explosion limits in gaseous oxidation reactions won international recognition. From 1936 onwards his studies extended to polymerisation, a topic that was to become the major focus of his research interests in subsequent years. Rideal's strengths lay in his abundant ideas but his co-workers had to put them into effect by experimental methods and in this particular aspect Melville's experience and inventiveness were invaluable to the whole team of research students and post-doctorals. His colleagues sought a ready sourcebook for experimentation to which they could refer whenever necessary. As a result Harry Melville together with a colleague Adalbert Farkas from the Hebrew University, Jerusalem took up the challenge. Their method was to forego drinks after dinner in the Senior Common Room in Trinity and write separate sections each in their own room. The following day, Farkas' English having been corrected by his co-author, material could be typed. Within a few months the manuscript was complete and then the authors went to Macmillan's office in London. In the late 1950's he told me "We were met by a young chap there called Harold. He's come on quite a bit since then don't you think?"

Experimental Reactions in Gas Kinetics duly appeared in 1939, published by Macmillan and became an invaluable book in the laboratories where gas kinetics was pursued. The print run was soon exhausted in the war years and secondhand booksellers would offer prospective buyers a place in a queue of twenty or more hopefuls.

Photochemical polymerisation reactions were becoming his major research interest and his growing reputation was apparent in his appointment to the Chair of Chemistry in the University of Aberdeen in 1940 and his election as a Fellow of the Royal Society in 1941 "for his outstanding contributions in the study of gaseous reactions and of the mechanism of polymerisation". The outbreak of war put a stop to most of his research work and in 1940 he became Scientific Adviser to the Chief Superintendent, Ministry of Supply from 1940-43 based mainly at Porton Down, and then became Superintendent of the Radar Research Station at Malvern 1943-45. Those who worked with him in later years realised that he never spoke of his work in these

posts. In 1941 and in 1943 he gave review lectures on themes in polymer chemistry including industrial applications. His return to academic life in 1945 saw the beginning of new studies in gas kinetics and in polymer kinetics. In 1948 he was appointed to the Mason Chair of Chemistry in the University of Birmingham, and was accompanied by his research group whose equipment, including glass vacuum lines, was transported in furniture vans. For the next eight years the development of his previous research came to fruition with an enthusiastic group of lieutenants in the young members of staff and a growing school of research students and post-doctorals in the areas of polymer chemistry and gas kinetics. Those working in other areas of physical chemistry also benefited and Melville's support for the development of analytical chemistry in the department was invaluable to that often neglected, but vital, study. His stimulus was also felt at undergraduate level where his lectures created enthusiastic interest from his honours students. It is not surprising that his 1958 Royal Institution Christmas Lectures on "Big Molecules" to younger audiences were highly successful.

The award of the Royal Society's Davy Medal in 1955 and of the Bakerian lecture in 1956 were a recognition of his standing and achievements but also, in 1956, the prospects of his continuing to advance polymer chemistry and gas kinetics in Birmingham with his wise and stimulating leadership changed irrevocably with his appointment to the Secretaryship to the Committee of the Privy Council for Scientific and Industrial Research.

Henceforth he was to be an administrator, though he never ceased to be a scientist. His commitments to Government and other bodies were many and these had been made effective by his long-established and highly-effective use of his time. He had been Chief Scientific Adviser on Civil Defence for the Midland Region, had served as a member of the Ministry of Aviation Scientific Advice Council, the Research Council of the British Electricity Authority, the Royal Commission on University Education in Dundee, in addition to service on the various committees of the Royal Society, the Chemical Society and the Faraday Society. Such duties were supplemented by his cultivation of effective links with industrial research in companies such as Dunlop. His new post brought with it responsibility for the oversight of the fifteen or more governmental applied research laboratories, in addition to the support of pure research programmes in universities through grants to meet the cost of equipment and personnel. During his time at the DSIR there was a very large growth in the financing of scientific research by government. Of prime strategic importance was the provision of research studentships. It was typical of Melville's understanding of university financing at a departmental level that, when asked by the Cabinet Minister to whom he was responsible to suggest something that would enhance governmental standing with academics, he proposed the introduction of the research training support grant whereby an annual grant of £200 accompanied each DSIR research studentship.

A Whitehall reorganisation in 1965 saw the appointment of Sir Harry Melville (he had been knighted KCB in 1958) to the position of first Chairman of the newly formed Science Research Council, a position which he held for two years before moving to his last post as Principal of Queen Mary College, University of London. In 1968 he gave the Betts-Brown lecture in Heriot-Watt University on *Science and Government* in which his careful analysis and predictions offered a perceptive guide to those academics who wished to develop a realistic view of the policies necessary to support scientific research in universities for the remainder of the twentieth century .

In his position as Principal of QMC his administrative colleagues found him to be unflappable, open to argument yet decisive in judgment. Many academic members of staff rarely saw him; unlike his predecessor he never went to the Staff Common Room. His hard work, carried out behind the scenes, saw the College grow in numbers with expansion in law and economics, and particularly in developments in pre-clinical medical education where the linkage of QMC with St Bartholomew's and the London Hospital, the BLQ scheme of the 1968 Todd Report, was made possible through the acquirement of the adjacent Jewish cemetery for the construction of the necessary new buildings. The pioneering venture of QMC Industrial Research Ltd in 1973, which came to fruition in later years, was a further example of his leadership and continuing contact with industry. Melville was deeply concerned with the financial basis of his college and considered that in the division by Senate House of the block UGC grant made to the University of London, the needs of QMC were not being met. His efforts to change this through his membership of the University Court met with little success.

His final service to the University of London was his chairmanship of the Council of Westfield College from 1977 to 1983, a period marked both by further cuts in the UGC block grant to universities and moves toward amalgamation of some of the smaller colleges.

Although his personal involvement in the direction of research ended in 1956, his interest in polymer chemistry never ceased. He was the moving spirit behind the foundation and the work of the High Polymer Research Group and regularly attended its annual meetings in the Manor House, Moretonhampstead. For many years its Chairman, he last attended as a guest with Lady Melville in 1998. His marriage to Janet Marion Cameron in 1942 was a very happy one; they had two daughters and he was known as a devoted

family man. For those who worked with him he leaves the memory of a stimulating personality whose gentle humour was often evident.

I acknowledge with thanks discussions with and contributions from friends, colleagues and associates, particularly Professors B J Aylett, J C Bevington, D C Bradley and T S West, the former Bursar of QMC, Mr W P Richards, the Carnegie Trust and the Headmaster of George Heriot's School, Mr A G Hector.

Brian G Gowenlock

Sir Harry (Work) Melville KCB, BSc, PhD, Hon. LLD, Hon. DCL, Hon DSc (Exeter, Birmingham, Liverpool, Leeds, Heriot-Watt, Essex), Hon. DTech, FRSC, FRS: born 27 April 1908; elected FRSE 1 March 1937; died 14 June 2000.