University of Sussex

Biographical Archive

Chemistry

These brief biographies have been written to record the contributions of academic staff in chemistry during the first 50 years of the University

December 2011

Ronald William Bott 28.07.1924 to 19.01.2008

Bill Bott who died aged 83, was the first sub-dean in the School of Molecular Sciences and was highly regarded by both students and staff for his kindness and generosity of spirit. He made a significant contribution to the setting up of research in organometallic chemistry and organic reaction mechanisms in the fledgling University of Sussex.

Bill was born on 28 07 1924 in Cologne, where his father was serving in the British army. The family soon moved to Aldershot, where Bill was raised and educated. His love of chemistry was evident quickly, and he spent the first half of the war as the assistant gas warden for the whole Aldershot area, assisting his chemistry master in issues of potential gas attacks! He served in the Royal Air Force from 1942 to 1946, becoming a pilot delivering planes from manufacturers to where they were needed, and learning the skills he required later in life to drive his highly polished bright green sports car. After the RAF he became an undergraduate and postgraduate at Queen's University, Belfast. In 1954, Bill obtained a post as lecturer at the then University College Leicester, which became the University of Leicester in 1957. He was warden in Beaumont Hall, in the days when members of staff (provided they were unmarried) were expected to live in student residences in order to lend them some decorum. In this experience Bill developed a genuine commitment to helping students; for their part they found they could confidently turn to him as one who understood their academic problems and frustrations and who was always available for wise counsel and advice.

In research, Bill was an associate of Colin Eaborn, the founding professor of chemistry at the University of Sussex. When Colin went to Texas for two sabbatical leaves and when he was preoccupied with the problems of setting up a new chemistry department in a new university, he left his students in Bill's care and 35 research papers in well-respected journals resulted from this collaboration. Bill was a co-author in a major review (430 pp 2414 references) entitled 'Synthesis and reactions of the carbon−silicon bond' published in 1968 in A.G.MacDiarmid ed. *Organometallic compounds of the group IV elements*.

In 1964 Bill came with his highly polished sports car to Sussex when he was appointed to a post in the rapidly expanding university. He served as sub-dean under several deans. He was able to take from the deans' shoulders much responsibility for academic affairs, admissions, intermissions and student welfare. His easy contacts with faculty, students and administrators and his thorough knowledge of the university meant that many problems could be sorted out on the spot without recourse to cumbersome formal procedures. It is hard now to envisage the work of a sub-dean in the days before computerised records and email but the fact that the systems for management of student assessment, examinations, and evaluation and cataloguing of new library books remained robust long after Bill had moved on, was testimony to the clear-headed thinking that had gone into their conception.

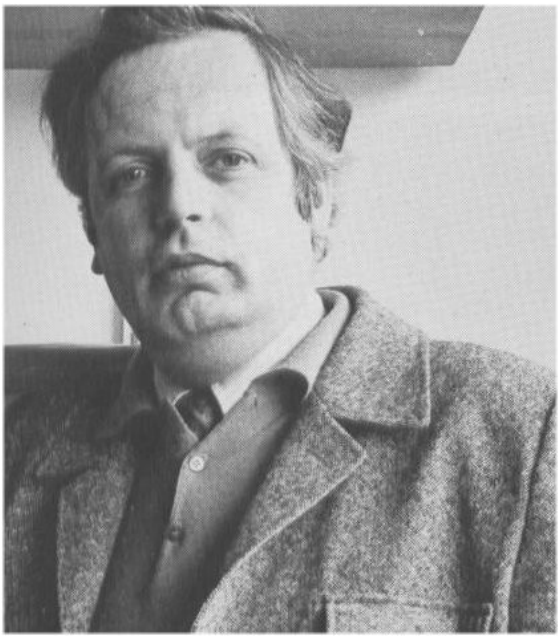
Bill was a bibliophile. His office shelves groaned under the weight of neatly arranged books and journals. [Many of these have been given to the University.] Before research workers had access to the internet their main source of data for everyday use was the department library and one of Bill's biggest contributions to the School was his management of the library in what is now the ITS machine room above the main entrance to the Chichester Building. It was vital that this was close to the laboratories where experiments were conducted. Bill made it a pleasant place to work in and his labelling system meant that data could be found with the minimum effort. Bill's work on infrastructure underpinned that of many other higher profile researchers.

Bill retired in 1981 but he continued to demonstrate in undergraduate practical classes one day a week for many years after that. He was also one of the University's principal invigilators. His meticulous attention to detail and his general unflappability continued to benefit the community as a whole.

Bill had to leave his post as warden in Leicester when he married Vivienne in 1960. She survives him, as do four sons, Simon, Adrian, Julian and Paul, and 5 grandchildren.

David Smith

Ernest Arthur Boucher 22.10.1937 to 12.02.1990



Ernest Boucher, always known as Ernie, was born in Herefordshire in 1937. He obtained a PhD in Chemistry from Bristol University, where he worked with Professor Douglas H Everett, one of the leading authorities on chemical thermodynamics and surface phenomena. After brief periods at Lehigh University, Bethlehem, Pennsylvania and the Open University, Ernie came to Sussex in 1971. He was appointed to enhance activity in polymer science within the School of Chemistry and Molecular Science (MOLS) and he made significant contributions to work on the kinetics and mechanisms of polymer-analogous reactions. His main interests, however, were in classical physical chemistry, often in topics that had been unfashionable since the 19th century, e.g. adsorption, porosity, determination and interpretation of thermodynamic parameters, surface area measurements, fluid-fluid interfaces, crystal nucleation. He was very well read in a wide range of classical physics, especially in thermodynamics.

His principal area of research was in colloidal phenomena, particularly aspects of capillarity. A paper published in the month of his death entitled 'The properties of heavy oil lenses on water' was the thirtieth in a series of very detailed practical and theoretical studies with the running title 'Capillary Phenomena'. Another paper published about the same time on 'Vapour pressure over free and capillary-condensed curved surfaces of aqueous salt solutions and of non-electrolyte solutions', was, like many others by Ernie, written without co-authors. It gave a rigorous thermodynamic underpinning to a series of practical systems.

Ernie was a pioneer in the use of desktop computers to solve numerical problems. Although highly academic, his research had practical relevance over an astonishing range of problems. His studies of polymer reactions were fundamental in understanding carbon fibre production. His work on capillary phenomena received substantial support from the oil industry since it had direct relevance to oil recovery from porous rocks. His work on cloud formation could be used in the study of atmospheric chemistry and the formation of rain. His studies on the adsorption of organic compounds on to ice crystals were relevant to work on the persistence and global distribution of organohalide pollutants.

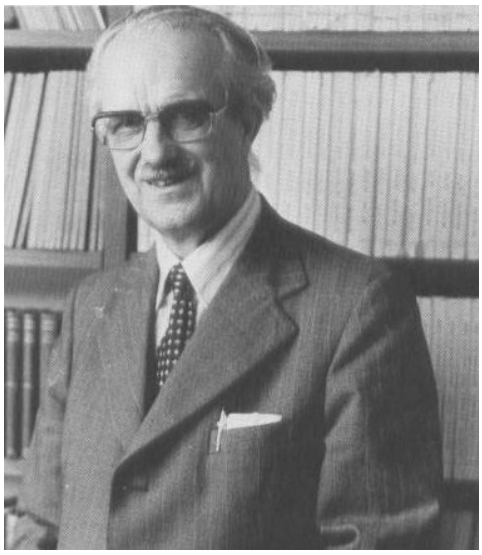
Ernie contributed to the development of the undergraduate curriculum in chemistry, polymer science, and environmental science, and played a part in administration e.g. as examination board

secretary. With Professor John Murrell he wrote a widely respected book, ‘Properties of Liquids and Solutions’, which was based on a core course of that name given to all MOLS undergraduates.

In his later years at Sussex Ernie was subject to bouts of depression, which ended with his untimely death in mysterious circumstances on the beach at Brighton. He was survived by his wife Carol, to whom he was married for 22 years, and two daughters, Catherine Ann (b. 1968) and Linda Alison (b.1970).

John Murrell
David Smith

Joseph Chatt 6.11.1914 to 19.5.1994



Joseph Chatt's early path to an education in science was somewhat unusual in that he remained at the small village school in Welton, Cumberland, until he was fourteen years old because his father, a farmer, mistakenly thought that to be necessary for admission to a secondary school. However, when Joseph did go to the Nelson School, Wigton, he matriculated within two years, and his subsequent performance brought him valuable local scholarships. Remarkably, his mathematics teacher went around the colleges in Cambridge seeking a place for him, and finally an enlightened admissions tutor at Emmanuel College accepted him even though all the allocated places had been filled. There he flourished, and always afterwards felt an intense loyalty to the College; his election to an Honorary Fellowship in 1978 gave him special pleasure.

Chatt's postgraduate work with F. G. Mann was on phosphine and arsine complexes of palladium, and left him with a lifelong fascination for transition metal chemistry. However, it was wartime, and after taking his PhD he was directed to work at Woolwich Arsenal, and subsequently, in 1942, to Peter Spence and Sons Ltd, Widnes, as Deputy Chief (later Chief) Chemist. There his activities were necessarily confined by the interests of the company, and since his inclination was strongly moving towards pure research he left as soon as he was free to do so, moving initially to Imperial College as an ICI Fellow and then soon afterwards, in 1947 to the Butterwick (later the Frythe) Research Laboratories in Welwyn, Hertfordshire. These had just been established by ICI to carry out basic research, and as head of the inorganic group, Chatt was at last able to begin independent research on transition metal compounds, initially on the olefin and acetylene complexes of platinum that for some years he had wished to study. He had only a small group, but he attracted to it very able young people, a good number of whom went on to academic distinction in the field to which he had introduced them.

During his fifteen years at the Frythe Chatt made outstanding advances in transition metal chemistry. Most notable was his exploration (with L. A. Duncanson) of the nature of the bonding between transition metals and olefins, which resulted in 1953 in a formulation that (since it was influenced by M. J. S. Dewar's ideas on silver ion complexes) became known as the Chatt-Duncanson-Dewar model; this later enabled others to elucidate the nature of metallocenes, the discovery of which created an exciting new branch of chemistry. Also of seminal importance were his detailed delineation of the properties of phosphine and arsine ligands and of their potential for stabilization of a wide variety of novel transition metal complexes (including hydrides of types previously thought incapable of existence but which proved to have an extensive chemistry), his observations on the *trans* effects and influences of ligands in complexes, and his classification (with

Arland and Davies) of metal ions into two types depending on their relative affinities for different types of donor atoms; this concept constituted an important advance in understanding and predicting the stabilities of complexes and was developed by others into the less precise but more widely applicable hard and soft acid and base principle. Many in the field accept that more than any other individual he was responsible for the revival of inorganic chemistry, which in many countries, including Britain, had almost died out in the first half of the century, and especially for the rapid growth of the organometallic chemistry of transition metals , which has become one of the most exciting and industrially relevant branches of chemistry.

In1962 ICI decided to close the Frythe and disperse its staff though the Company's Divisions. This prospect did not appeal to Chatt, but fortunately at that time the Agricultural Research Council, under the leadership of its Secretary, Gordon (later Sir Gordon) Cox, himself a distinguished inorganic chemist, decided to set up an interdisciplinary Unit for the study of the biological fixation of nitrogen. Appreciating that at its core the mechanism of that process is a matter of chemistry, Cox invited Chatt to be its Director, with an eminent microbiologist, John Postgate, as Deputy Director. Housed in a building attached to the School of Molecular Sciences at the newly founded University of Sussex, the Unit rapidly became not only the leading centre in the world for research in a very important and highly competitive field but also a model for the successful conduct of multidisciplinary research, with chemists, biochemists, microbial physiologists, and molecular geneticists focused on a central problem. Much of its success stemmed from Chatt's style of leadership; his own dedication, scientific integrity, and firmness of purpose were communicated to all its staff. He did not try to set out detailed and restrictive research programmes, but encouraged those who had good ideas to get on with them; what he expected in return was dedication and excellence, which on the whole they delivered.

Alongside the permanent staff of the Unit there were able young postgraduate students and postdoctoral fellows and numerous visiting workers from abroad. In addition, Chatt and other chemists in the Unit directed the work of postgraduate students in the laboratories of the School of Molecular Sciences (in which he was a professor); there they could carry on work that might have seemed peripheral to the central task of the Unit, but Chatt later acknowledged that again and again the real initial breakthroughs came from the work of the university group, though the subsequent development was taken into the Unit. At the same time the School benefited greatly from the cooperation with the Unit, and Chatt's presence in the School played an importan part in the speed with which it gained an international reputation for its research, especially in organometallic chemistry.

The chemists in the Unit generated a large body of novel transition metal chemistry, and were successful in identifying the sequence of reactions through which nitrogen complexes of metals could yield ammonia or organonitrogen complexes. Outstanding on the biological side was the finding by John Postgate, with R.A.Dixon, that the nitrogen-fixing gene cluster could be transferred from *K pneumoniae* to *E.coli*, which not only opened up a new area of study in biological nitrogen fixation but also had important implications for molecular biology in general.

The importance of Chatt's work was recognized by many awards, including various medals of the Royal Society of Chemistry and the premier award of the American Chemical Society for inorganic chemistry. He became a Fellow of the Royal Society in 1961, and received the Davy Medal in 1979. In 1978 he was appointed a CBE, and in 1981 he received the Wolf Foundation Prize for Chemistry (an award ranking in prestige below only the Nobel Prize , which he could appropriately have received). He was made an honorary fellow of numerous national academies or societies, including the New York Academy of Science, the American Academy of Arts and Sciences, and the Indian National Science Academy. He received honorary degrees from the Universities of East Anglia, Sussex, Pierre and Marie Curie (Paris), and Lund. He was in great demand around the world as a

lecturer, and his strong sense of duty drove him to accept more invitations than he would have preferred.

Joseph had wide interests, and set out to become well informed on any subject that particularly attracted his attention; this was particularly evident in the case of one of his hobbies, numismatics, about which he became very knowledgeable. A person of natural dignity, he was quietly proud of his achievements, but there was no trace of egotism or self-importance. He never lost the common touch, and was at ease with people from all walks of life; he treated them all equally and as his equal. He enjoyed conversation and had a large fund of recollections, some very amusing. He grumbled from time to time, usually about bureaucracy or officialdom, but not with great conviction, for he was at heart contented. He had the advantage of a very happy and tranquil home life and warmly acknowledged the constant support of his wife, Ethel, who survives him, along with their son and daughter.

C.Eaborn

Obituaries have been published as follows.

C. Eaborn and G. J. Leigh, *Biogr. Mems. Fell. R. Soc*., 1996, **42,** 95-110.
Independent 31.05.1994

See also G. J. Leigh, N. Winterton eds *Modern Coordination Chemistry: The Legacy of Joseph Chatt*, Royal Society of Chemistry, 2002, 374 pp ISBN 0-85404-469-8
and John Innes Centre http://www.jic.ac.uk/centenary/key-scientists/chatt.htm

Colin Eaborn 15.03.1923 to 22.02.2004

Most of the account of Colin Eaborn's contribution to Sussex is extracted from the biographical memoir published by the Royal Society. See the references below for fuller accounts of his scientific work.

Colin Eaborn was a distinguished chemist, best known for his wide-ranging contributions to organosilicon chemistry. His 566 publications, published over a 56-year period, covered a broad area that included physical organic chemistry, organometallic compounds generally, and coordination chemistry. He was a founding professor at the new University of Sussex and exercised considerable influence on the development of university education in chemistry during the big expansion of the 1960s. He served on a number of public committees, including the council of the Royal Society from 1978-1980 and 1988-1989, and, as an editor of the *Journal of Organometallic Chemistry*, played an important part in setting high standards of presentation and clarity in the chemical literature.

At the University of Sussex the chemistry subject group, with Eaborn as the first professor, was initially part of the School of Physical Sciences; it was then incorporated into the School of Molecular Sciences (which included some biochemistry, chemical physics, materials science and, from 1974, environmental science) with Eaborn as the first dean. It grew quickly (seven faculty appointments were made in each of the first three years) so there was soon a critical mass to provide intellectual stimulation. There was also money for new buildings and equipment. Eaborn, with enormous and invaluable help from a senior colleague, Eric Peeling, was responsible for working with the eminent architect Sir Basil Spence on the design of the chemistry building and, in spite of initial frustration about mundane matters like services and lighting, came to acknowledge the lasting architectural merit of the Sussex campus. The University caught the public imagination and attracted worldwide attention, so that others were prepared to accept faculty positions. Among the chemists were Professors Ian Scott (FRS 1978), Alan Johnson (FRS 1965), John Murrell (FRS 1991), Michael Lappert (FRS 1979), Ronald Mason (FRS 1975), John Nixon (FRS 1994), and Joseph Chatt (FRS 1961), who brought his prestigious Unit of Nitrogen Fixation from Queen Mary College, which provided enormous intellectual stimulation, as well as practical help, for the chemists on the university staff.

Eaborn became the first Chairman of Science in 1968 and Pro-Vice-Chancellor Science in 1970. He and the Pro-Vice Chancellor Arts, Professor Barry Supple (later Master of St Catharine's College, Cambridge and Director of the Leverhulme Trust) had considerable influence on the allocation of resources within the University. By 1968, there were 221 chemistry undergraduates and 57 others in closely related subjects. The total number of academic staff, research students, post-doctoral fellows and visitors engaged in research was about 160. Building a department of this size in 5-6 years was a remarkable achievement, for which Eaborn must be given considerable credit. He was lucky to have funds to dispense, encouragement from the Vice-Chancellor, enthusiastic and supportive colleagues, and minimum bureaucratic burdens of the kind later associated with teaching and research assessment. He was also lucky to hold office at a time when there was a strong chemical industry and recognition in government of the contribution of chemistry to national well-being, but the possibility of such a rapid expansion ran counter to the conventional wisdom of 1961. Nobel Prizewinner Professor Archer Martin (FRS 1950) and his research group moved to Sussex in 1972 and Professor John (later Sir John) Cornforth (FRS 1953) and his group in 1974, so that, after the award of Cornforth's Nobel Prize in 1975, the department had eight fellows of the Royal Society, two of them Nobel Laureates.

Although chemistry at Sussex remained a distinct subject group, many internal barriers were dispensed with. There was no division into organic, inorganic and physical chemistry, each with its own floor and dedicated equipment, and faculty were encouraged to talk to each other. Eaborn was not himself a notable teacher at undergraduate level but he encouraged innovation in others so that a wide variety of teaching methods flourished. Some courses were taught by teams and some intensively over a week rather than thinly over a term. From 1966-1970 Eaborn chaired a committee examining the relationship between university chemistry courses and the needs of industry. This was the time of noisy student protests and he was denounced as 'a lackey of the military and industrial complex', a better accolade, he said, than that of 'running dog' accorded to one his colleagues. Questionnaires sent to students and teachers revealed a good deal of dissatisfaction with existing courses, which were perceived to rely heavily on memorisation. He therefore proposed, wholly contrary to conventional practice, a new 'degree by thesis', in which candidates were examined by a thesis (based on a research project) and oral presentations, rather than by a series of written papers. When this was introduced at Sussex in 1970, it attracted a new kind of student, often someone who had missed out through the traditional sixth form, but original and self-motivated. Students were prevented from focusing too narrowly on one small area of their subject by a requirement that they passed assessments on general background lectures, and by the appointment of two members of staff, specialists in different areas, to supervise each project. This was a stimulus to interdisciplinary research and one of the happy spin-offs was a project that Harry (now Sir Harry) Kroto has stated was a vital step on the road that led to his Nobel Prize in 1997.

Some of Eaborn's innovations have been abandoned. Chemistry by thesis was discontinued in 1989 as it was considered, after comments on an accident to a third-year postgraduate student, that the Health and Safety Executive would argue that undergraduates working in research laboratories could not be expected to have sufficient experience to make judgments about safe working. Courses that required unconventional timetables were discontinued because of pressure to make more intensive use of teaching space. Many of the interdisciplinary courses that flourished at Sussex in the 1960s and 1970s were discontinued because they did not fit into the pattern of the subject-based assessments of teaching quality imposed in the 1990s. The imaginative work of Eaborn and his colleagues at Sussex and elsewhere has, however, made its mark on Higher Education more generally. There is now a rich variety of courses on offer in UK universities that cross conventional subject barriers. Within degree programmes courses on subjects like organometallic chemistry, bioinorganic chemistry, organic geochemistry or supramolecular chemistry are considered to be normal. Third- or fourth-year projects are now part of most degree courses that include chemistry in the title.

Eaborn retired formally in 1988 but he continued to be active in research. He took a delight in hearing about new results and, even when his health was deteriorating, argued vigorously and sometimes stubbornly about what they might imply. His last comments on a draft manuscript were made in January 2004, only a few weeks before his death. He was married to Joyce, who provided support and companionship for 50 years. Together they enjoyed travelling, gardening and their lovely downland home. His generosity and kindness, the encouragement he gave to others, and his mischievous sense of humour will be remembered for a long time.

David Smith

Obituaries by colleagues at Sussex have appeared as follows.

Bulletin 27 February 2004,
Guardian 12 March 2004,
Independent 26 April 2004,
Times 17 March 2004.
Biogr. Mems Fell. R. Soc. 2005, **51**, 101-118
Angew. Chem. Int. Ed. 2004, **43**, 4978

John Frederick Grove 10.03.1921 to 22.10.2003

John Grove was born in Sheffield. When his father, the zoologist A. J. Grove, moved to what became Queen Mary College, John also moved to London and studied chemistry at King's College from 1939 to 1941. He began research with Professor A. J. Allmand on polycyclic aromatic hydrocarbons but most of the results were lost in the bombing. John joined the Imperial Chemical Industries laboratories at Jealott's Hill in 1944 and then in 1946 moved to the Butterwick (later the Akers) Laboratories of ICI at The Frythe, Welwyn. His early research involved the application of physicochemical measurements to biologically active compounds but it was in the study of microbial metabolites that he made his name. His research covered the transition between classical, often lengthy, chemical degradation and the application of modern, rapid spectroscopic methods. The widely used tables correlating the frequency of the carbonyl component were first published by Grove and Willis in 1951, whilst he made pioneering use of nuclear magnetic resonance in natural product chemistry in the late 1950s and 1960s. He made major contributions to the determination of the structures of a number of microbial metabolites including the antibiotics griseofulvin and viridin and the plant hormone gibberellic acid.

After the Frythe closed in 1964, John held a number of positions including a Bye Fellowship at Gonville and Caius College in Cambridge. He joined the Agricultural Research Council Unit of Invertebrate Chemistry and Physiology at Sussex in 1970 as Principal Scientific Officer and was made an Honorary Reader of the University. He continued his research on the serious problems of the trichothecene mycotoxins, on which he became a world authority. He studied the microbiological chemistry of Dutch Elm Disease and devoted considerable time to the inspection of trees in the Brighton area in efforts to curb the disease. In the laboratory he was always ready to help new research students master the techniques of experimental organic chemistry and he kept a close watch on communal equipment to ensure that it was properly treated.

He was a quiet person, though not without a sense of humour. He enjoyed walking, watching cricket, and supporting Yorkshire. When he retired from the AFRC in 1982 he continued to work in the laboratory a Sussex until financial constraints brought his experimental work to an end. Nevertheless he remained a familiar figure in the library of the Royal Society of Chemistry at Burlington House until his death after a short illness.

Jim Hanson

Alan Woodworth Johnson 20.09.1917 to 05.12.1982

Alan Johnson was professor of Organic Chemistry at Sussex from 1968 to 1982 and honorary director of the Agricultural Research Council Institute of Invertebrate Chemistry and Physiology.

He was born in South Shields, brought up in the North East of England during the Depression, and obtained a scholarship to Morpeth Grammar School. His first job in 1933 was to check the gas levels in the holds of tankers at Swan Hunter shipyards, for which he was paid 8s 5p (42 p), less deductions (1s 2d) per week. He often remarked that if he survived, the welders could go in. After evening classes he obtained a Royal Scholarship to Imperial College in 1936, graduated within two years in 1938, and was awarded his Ph D in 1940. After further wartime research at Imperial College, he moved to Imperial Chemical Industries Dyestuffs Division in Manchester. In 1946 he obtained an ICI Fellowship to work with Lord Todd in Cambridge and was elected to a Fellowship of Christ's College in 1951. In 1955 he moved to the Jesse Boot Chair of Chemistry at the University of Nottingham, before coming to Sussex in 1968. He was elected Fellow of the Royal Society in 1965.

Alan's research at Imperial College and later in Manchester was on the chemistry of acetylenes and on vitamin A. Amongst other publications this led to a two-volume book on the chemistry of acetylenes. In Cambridge, however, he developed his interest in natural products. For research on organic chemistry under the direction of Todd, Cambridge was an exciting place to be. As part of this collaborative work, Alan made significant contributions to the study of the porphyrins and vitamin B_{12}, various antibiotics, aspects of aphid chemistry and plant germination factors (work that he carried on in Nottingham).

The ARC Unit of Invertebrate Chemistry and Physiology at Sussex eventually had its own building attached to the Unit of Nitrogen Fixation (now the Arundel Building). Alan built up a strong research team within the unit and under his direction it was involved in the study of insect pheromones, the chemistry of the *Scolytus* beetle and its relationship with the fungus causing Dutch Elm Disease, and on the insecticidal metabolites of entomogenous fungi. He also had his own university research team studying porphyrin chemistry and, in collaboration with Mike Lappert, the biochemical mechanism of action of the B_{12} co-enzyme in the ethanolamine:ammonia lyase enzyme. In 1972 he was given the Chemical Society award for synthetic organic chemistry in recognition of his work on porphyrin chemistry. Research into the germination factors for parasitic plants (*Striga* and *Orbanche* species, 'witchweeds') led to the synthesis of some simple biologically

active analogues. In field studies these compounds stimulated the germination of the parasitic weeds but in the absence of their hosts, these weeds withered and were then destroyed. Subsequent sowings of valuable crops flourished. Although these compounds have formed the basis for further developments overseas, Alan was always disappointed that they were not supported here.

Alan played an important part in the governing bodies of the Royal Society (elected fellow in 1965), the Royal Society of Chemistry (as secretary, vice-president, and from 1977-8, president), the National Research and Development Corporation and the British Technology Group. He also served on a number of committees of the Science Research Council and Agriculture and Food Research Council. When he retired in 1982, the Royal Society of Chemistry held a symposium in his honour, with lectures given by some of his former students, many of whom held senior positions in other universities. Despite his heavy involvement in work outside the University (he once flew to Canada for the day to attend a meeting in Ottawa) Alan maintained his regular teaching commitments, often coming to give his 9 am lectures before dashing to the station. He was sociable and enthusiastic and not averse to having a drink with his students. He had a strong sense of humour with quick repartee that would rapidly thaw any social ice. His popular lecture on 'Sex and Violence in the Insect World' was very much in demand from undergraduate chemical societies around the country. His sudden death, two months after his retirement, deprived the chemical community of an excellent ambassador for bio-organic chemistry.

Jim Hanson

A detailed account of Alan Johnson's work is given in E. R. H. Jones and R Bonnett, *Biogr. Mems Fell. R. Soc.* 1984, **30**, 318-348. Another article by Jones appears in the *Oxford Dictionary of National Biography* and an obituary in *Chem. Brit.* November 1983 pp 931-932.

A tribute by Sir John Cornforth was published in *The Bulletin* 11 January 1983, and other obituaries appeared in *The Times* 10 December 1982 and *The Sussex Express* 16 December 1982.

An interview with Alan Johnson was published in *Chem. Brit*. 1977 (8) 296.

Archer John Porter Martin 01.03.1010 to 28.07.2002

Archer Martin was one of two Nobel Prizewinners who joined Sussex in the 1970s [The other was John W (Kappa) Cornforth]. By that time the School of Chemistry and Molecular Sciences had built up a reputation as an intellectually stimulating and prestigious research institution.

He was born in London in 1910, went to Cambridge with the intention of becoming a chemical engineer, but, under the influence of J B S Haldane, decided to read biochemistry for Part 2 of the Tripos. He then worked at the Nutritional Laboratory on a range of projects and completed his Ph D at Cambridge with Sir Charles Martin (no relation) in 1938. His seminal work with R L M (Richard) Synge on the separation of organic compounds, especially amino acids, was at the Wool Industry Research Association and later at the National Institute for Medical Research. This required a combination of clear strategic thinking and hands-on practical skills. The work led to the award of the Nobel Prize in Chemistry in 1952. An account in non-technical language is given in the lecture delivered at the award ceremony. The principles of counter-current separations were developed into what is called partition chromatography. Paper chromatography was one version, commemorated on a postage stamp in 1977. The later gas-liquid chromatography is now used routinely in all chemical, biochemical, medical, forensic and environmental laboratories throughout the world.

I first saw Archer Martin some time in the 1950s when I was an undergraduate in Cambridge. He asked someone to hold what looked like the end of a toilet roll and I remember the gasp as he unfurled it across a large lecture theatre to show a chromatographic trace of the components in petroleum. We all knew that this was a complex mixture of components but it was amazing to see them separated and displayed. Later when I came to lecture on separation techniques to environmental science students at Sussex, I read the elegant Nobel Prize-winning paper by Martin and Synge, setting out why chromatography works.

At Sussex from 1973 -1978 Martin continued his life-long work on the separation and purification of proteins and polypeptides, this time by electrophoresis. His small research group, funded by the Medical Research Council, included Frank Hampson and Des Turner, the future Member of Parliament for Brighton Kemptown. A specific project was on the isolation of an insulin-releasing polypeptide secreted in pig gut, but the group also worked on the development of several novel electrophoresis techniques that could be used more generally for the large-scale purification of

proteins. His research did not overlap significantly with that of other researchers in the University, but several benefited from Archer's extraordinary engineering skills in the repair of minute components of, for example, thermal conductivity detectors.

In 1974 Archer was offered a post at the University of Houston, Texas but his work there was short-lived due to the lack of research funds and in time to the onset of Alzheimer's disease. He returned to Europe in 1979 and after a long illness died at this home in Herefordshire in 2002, leaving his wife Judith, two sons and three daughters.

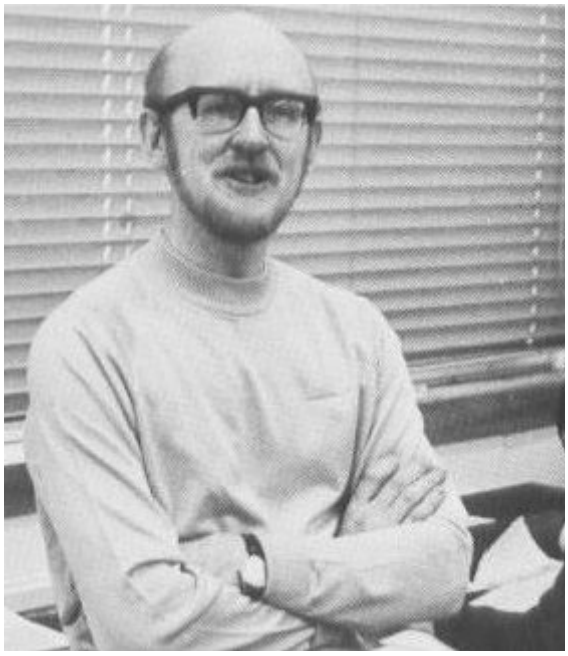
Although he could write with clarity and skill and give wide-ranging accounts of general scientific issues, he was difficult to engage with in conversation, and without small talk. He was innovative in tackling specific research problems but did not have the same success as a leader of a research team. Perhaps that is why, according to one account, his most important work was described in the ninth of the 200 or so papers he published.

David Smith

Several comprehensive obituaries of Archer Martin have been published e.g.

Daily Telegraph 03.08.2002
Guardian 05.08.2002
New York Times 06.08.2002
Independent 07.08 2002
See also P. J. T. Morris in the *Oxford Dictionary of National Biography.*

John Brian Pedley



Brian was born in Yorkshire in 1935 and died 13 May 2005, aged 70. He went to Keighley Boys Grammar School, then to the University of Manchester for his undergraduate and post-graduate study. His Ph D supervisor was H A Skinner, a leading expert in the applications of thermodynamic measurements. After publishing papers from Manchester in 1957, Brian took up a Fellowship at Leeds, where he worked with A S Carson. He was appointed a lecturer at UMIST in 1962 and came to Sussex in 1964. His expertise was on the use of bomb calorimetry for the determination of heats of reaction of metal hydrides, halides and organometallic compounds. These very reactive substances are extremely susceptible to hydrolysis and/or oxidation so great care had to be taken in purification and sampling. Brian became a skilled experimentalist though the process left him short of two fingers. He gained considerable insight into the difficulties of obtaining accurate thermodynamic data and in assessing uncertainties both in his own work and that of others. He was to put this to good use later in his career.

Brian continued his thermochemical measurements at Sussex, particularly in collaboration with Professor Michael Lappert. These were combined with He(I) photoelectron data and computational studies on homoleptic metal alkyls, amides and alkoxides of Groups 4, 13 and 14.

With Professor John Murrell, he published computational studies on potential energy surfaces of CH_5^+ and the $CH_2 + H_2 \rightarrow CH_4$ system.

Brian became widely known for his compilations of thermodynamic data and worked with leading international authorities such as the National Bureau of Standards in Washington. He published 10 compilations of data in book form, some running to several editions, and numerous other tables in scientific journals. The earlier CATCH tables (Computer Analysis of Thermodynamic CHemical data) covered organic and organometallic compounds, chromium, molybdenum, tungsten, phosphorus, nitrogen, silicon and halogen compounds. Later work was on metal oxides with important applications in the nuclear power industry. Because thermodynamic measurements are frequently combined it is essential for users to know the uncertainties in the data they obtain from other laboratories. Brian developed methods for checking the internal consistency of entries in his tables and these, together with his earlier practical experience, enabled him to provide the critical assessments of reliability that his readers required.

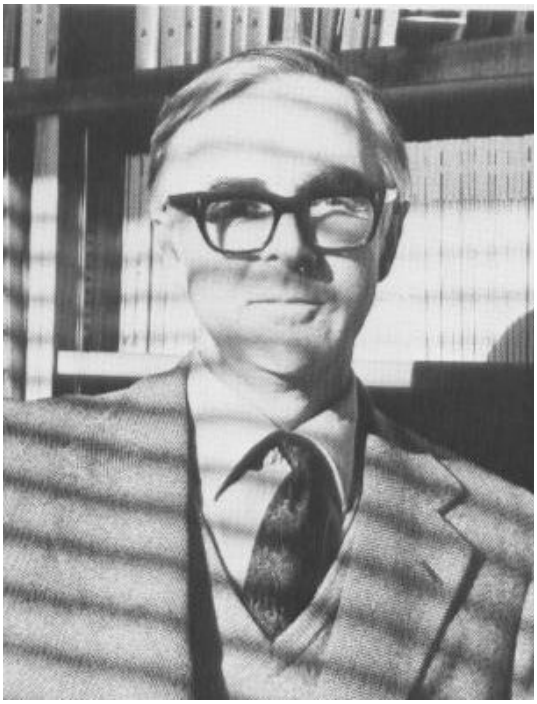
Brian was a respected and well-liked teacher. With his research background and tidy mind it was inevitable that he should be asked to teach *Thermodynamics*, a course taken by all chemistry students. In days when PowerPoint presentations were unknown he distributed meticulously prepared handwritten copies of his lecture notes. He spent time finding ways through workshops to introduce students to the concepts of statistical thermodynamics, which many people find difficult. For many years he chaired the School Joint Committee, which provided feedback about courses and valuable information about teaching programmes to those responsible for them. Part of this work was to organise weekends at the Isle of Thorns, when recent graduates came to talk to final-year students about their experiences in employment. All this was done with careful attention to detail and by giving time over the weekend far beyond the call of duty. The rapport built up between students and faculty was excellent.

Brian was kind, generous, considerate and easy to get on with. He was interested in music and sang in a choir. He left Sussex in1988, returned to Haworth in Yorkshire in 1988 and lived happily there for a number of years. The University of Leeds provided a base for his scientific work and he continued to publish papers on thermodynamic data in collaboration with P. G. Laye and A. S. Carson.

He married Maureen, a fellow student at Manchester, but the marriage was later dissolved. After his return to Yorkshire he found happiness in a second marriage. He is survived by Maureen, their son John and daughter Anne, and his second wife June.

Michael Lappert
David Smith

Eric Robert Alfred Peeling 20.7.1920 to 4. 4.2005



Eric Peeling was brought up in Muswell Hill in North London and went to Highgate School. He graduated from University College during the Second World War and joined the group of students working with Professors E. D. (Ted) Hughes and Sir Christopher Ingold on the active species in the nitration of aromatic compounds, a topic of vital importance in the dyestuffs and explosives industries. To escape bombing the research group was evacuated to Aberystwyth, where painstaking and groundbreaking work eventually established that the active species was the nitronium ion NO_2^+. The results were published in letters to *Nature* in 1946 and more fully in a series of detailed papers in the *Journal of the Chemical Society* in 1950. After obtaining his PhD, Eric was appointed to a post at Cardiff Technical College and moved to the (then) University College, Leicester in 1947. At that time this was a small institution with about 120 students working towards external London degrees. Eric was among those who worked to increase student numbers and build up research capability so that the college could be granted full university status in 1957.He published a number of papers on physical organic chemistry including some on platinum-catalysed hydrogenation.

In 1961 Colin Eaborn was appointed as the first professor of chemistry in the new University of Sussex. He needed someone to oversee the design and building of new laboratories and to help to build up a team of technical support staff. His first move was to persuade Eric to take on this task and come to Sussex as a senior lecturer early in 1962, several months before the first science students were admitted. For Eric the following 10-15 years proved to be an extraordinarily creative and satisfying period; he was in his element. Chemistry was housed temporarily in the first stage of the physics building (now Pevensey I) so that there was time to negotiate with the architects Basil Spence and Partners about things like layout of services, design of fume cupboards and distillation units. Eric pored over plans with architects, kept an eagle eye on builders, drew up specifications, liaised with suppliers of laboratory equipment, and, with the University accountants, kept the school in the black. The new chemistry building was not only good to look at but also 1960s state-of-the art space for research and teaching. The project was completed in three stages (now Chichester I-III) and, at the end, the building housed 300 undergraduates and 160 research workers. Although changes in heritage and health and safety legislation meant that the building had to adapt to new demands, there has never been any suggestion that it (unlike other buildings on campus) should be

demolished. Its light, pleasantness and user-friendliness have cheered all of us who have worked in it.

In addition to giving time to the furnishing of laboratories and offices, Eric worked hard to build up a team of skilful, dedicated and happy staff. He was calm, fair, firm, sound in his judgments, persuasive, charming and always kept his rather sardonic sense of humour. He inspired loyalty from the technical staff, who spoke of him with genuine affection as 'Uncle Eric.' It was characteristic of the early days at Sussex that all staff – porters, cleaners, technicians, academics, secretaries, administrators, students and tea ladies – were valued as people (Where else would a leaving party for a cleaner be attended by two Nobel Prizewinners?). This notion that all members of a team mattered, to which Eric contributed so much, was a key factor in enabling chemistry rapidly to achieve international standing. One group of people that were particularly grateful to Eric and his wife Marion were those appointed to academic positions in the first three years of the University. We were callow and inexperienced; they were slightly older and wiser, but never offended by youngsters who thought they knew it all. They showed us great kindness and gave us much encouragement and good advice.

Amid all this Eric found time to develop and teach courses in physical chemistry, interview candidates for admission (in those days we wrote personally to the head of each candidate's school), and do his share of wider university administration by serving on committees.

He retired in 1981 but the traditions of fairness, cooperation and collegiate responsibility that he and others encouraged lived on and underpinned the high reputation that the subject group continued to achieve in the 1980s and 1990s.

Eric was devoted to his family. He and Marion had married in 1943, when they were both students at University College and they were proud of their children, Janet, Alan and Nic. They were generous in their hospitality and a visit to their home was lively, sometimes noisy, and always interesting. Eric had many interests: e.g. photography, gardening, decorating, car maintenance and was knowledgeable about electronic equipment and gadgets. Marion died in 2002 and Eric cared for her with warmth and kindness in her last few years.

David Smith

Graham Leslie Pratt 12.06.1935 to 22.01.1989

Graham Pratt was born in London and spent his early childhood there and in Yorkshire. He attended the Strand Grammar School at Tulse Hill, and won an Exhibition to Emanuel College, Cambridge in 1953. Here he became a Scholar on the basis of his first year examinations. He obtained a double first, remained at Emanuel and obtained his PhD in 1960, working with the distinguished gas kineticist Howard Purnell and the Nobel Prizewinner R. G. W. Norrish. He was then elected a Research Fellow at his College and his work at Cambridge was published in a series of detailed scholarly papers in *Nature*, the *Proceedings of the Royal Society Part A*, and the *Transactions of the Faraday Society*.

Gas kinetics - the study of reactions in the gas phase - underpins understanding of processes such as combustion, explosions, pyrolysis of hydrocarbons in chemical industry, and the mechanisms of reactions in the atmosphere. Counterintuitively, gas phase reactions are exceedingly complex; interactions between pairs of molecules nearly always involve complex multi-step pathways or take place on the walls of the container, so that sorting out the many competing processes requires considerable cunning and very clear thinking. One of Graham's wry comments - "The only simple reactions are those that have been inadequately studied" - reflects his experience.

He was appointed to a Lectureship at the University of Sussex in 1963 and spent the whole of his working life there. He continued his experimental work on gas kinetics with his research group, making use of the then newly available techniques of gas chromatography and mass spectrometry, which he had learnt in Cambridge, to separate the often complex mixtures of products from gas reactions and to disentangle the processes leading to their formation. He was a very accomplished apparatus builder, and he put his engineering skills to good use both in the impressively complex gas lines and pumps in his laboratory, and in keeping his car in working order. He published a series of about 20 full-length, carefully argued, and widely cited, papers in the *Transactions of the Faraday Society*, one of the leading international journals in his research area These covered the reactions of hydrocarbons under a wide range of temperatures and pressures and a group of them described 'wall-less' reactors of an original design to eliminate surface reactions. Much of this research was supported by the gas industry.

His incisive mind contributed to his teaching of a variety of courses in Physical Chemistry and his concise handout on the measurement of uncertainty and the combination of errors was used by many generations of students in practical courses. In 1969 he published a book “Gas Kinetics”, based on lectures given to students majoring in chemistry, chemical physics, theoretical chemistry, materials science and biochemistry. This described the advances made possible by the rapid development of new experimental methods and provided students with a series of worked examples. The book remained for many years the standard work on the subject. He had brief sabbatical periods at the Universities of Ife and Wisconsin.

Graham was self-effacing and rarely said anything unkind. For several years he acted as Laboratory Director, where his unflappability, fairness and unfailing reliability were respected by all.

Outside work, he was active in gliding, and a good tennis player. He died in 1989 following early retirement after a sudden illness. He is survived by his wife Veronica and a daughter Rachel.

Such was the respect and admiration of colleagues that a fund was initiated to provide financial support for Graham’s daughter when she became of age to enter higher education or to begin a career. A very wide range of contributors, local, national and international, gave generously to this cause, a testament to the esteem in which Graham was held both personally and professionally. The proceeds of the fund were presented to Rachel at a special dinner on the occasion of her 18th birthday.

Richard Jackson
Tony McCaffery
David Smith

Alastair Ian Scott 10.4.1928 to 18 April 2007

Early Years

Ian Scott was brought up in Beith, Ayrshire where his father was the village dentist. Perhaps because his grandfather was a pharmacist, it had been suggested that he might study pharmacy at the Royal Technical College, Glasgow (now Strathclyde University). However, his interest in the fundamentals of pure chemistry led him to take an honours degree in Chemistry at Glasgow University which he followed with Ph D studies in that University under the supervision of Prof J. W. (later Sir James) Cook and Dr (later Professor) R A Raphael. The work involved the synthesis of naturally occurring tropolones, the structures, containing the novel seven membered aromatic system, having recently been postulated by Michael Dewar.

On graduation in 1952, Ian moved for a year to a post-doctoral fellowship in Columbus, Ohio with Melvin Newman. At that time in the UK, it was necessary for all graduates to participate in military service and, on his return to Scotland, Ian completed these obligations by working in the explosives division of ICI at Ardeer in Ayrshire on rocket fuels. He was then accepted as a Glaxo Fellow by Professor D H R (later Sir Derek) Barton at Birbeck College, London, working on steroid synthesis. When Barton moved to the Regius Chair at Glasgow, Ian moved with him, staying at Glasgow as lecturer when Barton moved to Imperial College, London in 1957.

Ian's later work with Barton involved natural product synthesis using phenolic oxidative coupling and in his first independent studies he continued to use this method for the synthesis of the natural products griseofulvin and picrolichenic acid. He then developed a novel hydroperoxidation process to provide a commercially useful partial synthesis of the antibiotic tetracyclin from more common fungal metabolites. Studies in the diterpene area at this time led to the revision of the stereochemistry of several diterpene families and very early application of circular dichroism to the study of organic compounds was made at this time.

In 1962 Ian moved to the University of British Columbia as Professor and while there completed the synthesis of colchicine which he had begun in Glasgow. He also began his first studies in biosynthesis and, with Tom Money and Frank McCapra, made the key discovery linking the whole of the large and important class of indole alkaloids to the monoterpenes. A synthesis of the alkaloid

colchicine was also completed by a route which mimicked a putative biosynthetic scheme. This brought together two of Ian's earlier interests, tropolones and phenolic oxidative coupling.

The Sussex Years 1965 – 1968

In 1965, Ian returned to the UK, taking up one of the earliest Chairs in Chemistry at the University of Sussex. He has stated (*Bioorganic and Medicinal Chemistry*, 1996, **4**, 965 – 985) that it was at Sussex that he laid down the theoretical and experimental basis for the three main themes with which he was to continue his research for the next thirty years. These were the biosynthesis of porphyrins and corrins; indole alkaloids; and antibiotics.

On arrival at Sussex, his main task was to set up a laboratory which combined organic chemistry with facilities for plant and microbial cultures. This was achieved very quickly and, together with the efforts of the other members of the early Sussex Faculty, the Laboratories were soon set up with excellent state-of the art spectroscopic and other equipment. Research developed in the fields of indole alkaloid, polyketide and terpenoid biosynthesis and his work on circular dichroism led to the development of new rules for the determination of the absolute configuration of olefins. The stereochemistry of the taxane family, of which the anti-cancer drug taxol is a member, was also defined by the group at that time.

Unfortunately by 1968, Ian felt that the increasing demands that he be involved in departmental administration were having a detrimental effect on his research and so, when the offer of a Chair came from Yale University, he accepted and returned to North America.

The Post Sussex Years

At Yale, Ian made the decision to introduce the use of cell-free systems and pure enzymes to his work, so that biosynthetic pathways could be followed more precisely. Work on porphyrins and corrins, begun at Sussex, now started to make rapid advances and the Scott group discovered the ubiquitous biosynthetic precursor of the porphyrins such as haem and chlorophyll and of the corrins such as vitamin B_{12} using ^{13}C NMR studies. Isolation and structure elucidation of two new intermediates of B_{12} biosynthesis and further biosynthetic experiments allowed some insight into the vital ring contraction process involved in the biosynthesis of the vitamin.

Work also continued on indole alkaloid synthesis and developments were made in the field of polyketide synthesis with the discovery of the aromatic precursor of two fungal tropolones.

By 1977, it became evident that further advances would require dedicated high field NMR instruments, and an offer by Texas A and M University to build a well-supported interdisciplinary laboratory was taken up and Ian again moved laboratories. Further progress was made in all three major areas of the group's research. However, in 1980, just three years later, when the Forbes chair at Edinburgh University was made vacant by John Cadogan's move to BP, Ian moved back to the UK with excellent support both from Edinburgh and the UK funding councils, securing one of the largest grants ever awarded by EPSRC at that time. The stay in Edinburgh was to last but two years as Ian moved back to Texas A and M with greatly improved facilities in 1982.

In his second spell at Texas A and M, where he remained for the remainder of his academic career, Ian decided to introduce molecular biology to his laboratory and to set up a collaboration with a group at Rhone Poulenc in Paris which allowed them to pursue the final assault on the biosynthesis of vitamin B_{12}. This pathway was worked out by Scott and by the independent research of the groups of Sir Alan Battersby at Cambridge and of Peter Jordan at Southampton so that the pathway from aminolevulinic acid to vitamin B_{12} was elucidated in its entirety by 1994.

Ian passed away in 2007 following a heart attack, leaving his wife of 57 years, Betty, a son William and daughter Anne and six grandchildren.

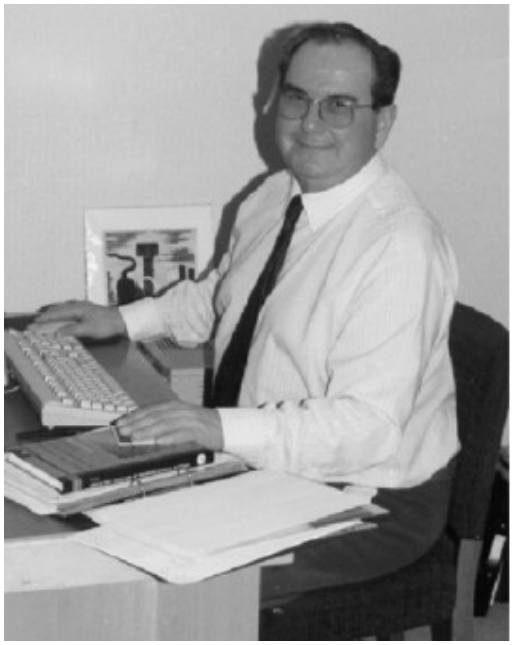
Awards

During his long and fruitful career Ian received many awards for his work. He was elected to The Royal Society (1978) and The Royal Society of Edinburgh (1981) and received the Corday Morgan Prize (1964), the Centenary Prize (1994) and the Natural Products Award (1996) from the Royal Society of Chemistry; the Tetrahedron Prize for Creativity in Organic Chemistry (1995); the Bakerian Prize (1996) and the Davy Medal (2001) from the Royal Society, the Royal Medal (2001) from the Royal Society of Edinburgh; the Ernest Guenther Award (1976), the AC Cope Scholar Award (1992) and the Nakanishi Prize (2003) from the American Chemical Society; and the Robert A Welch Award in Chemistry (2000) from the Welch Foundation. He was also Texas Scientist of the year in 2002.

Douglas Young

An obituary appeared in *Angew. Chem. Int. Ed.* 2007, **46**, 6768.

Colin Frederick Simpson 1932 – 2009



Colin Simpson was born in Bournemouth to parents who were very keen on theatre, so that Colin was put on the stage, both touring and in London, from the age of 12 until he was 17, when he decided, on the advice of Alistair Sim (with whom he had appeared on the London stage), to go back into education, matriculating at Bournemouth Municipal College. Instead of a stage career, he was drawn to chemistry, obtaining an external London Special Chemistry degree in 1956. He spent the following two years working in the Public Analysts department in Bournemouth, before moving to the British Petroleum research centre at Sunbury-on-Thames in 1958.

At Sunbury, Colin was introduced to the rapidly developing separation technique of gas chromatography (GC), for which AJP Martin and RLM Synge had received the 1952 Nobel Prize. GC is the perfect method for separation and analysis of complex hydrocarbon mixtures and Colin's early work was on GC analysis of anti-knock additives for petrol. At that time at Sunbury Dennis Desty was pioneering the replacement of the inefficient, packed GC columns by coated glass capillaries and, working alongside Desty, Colin became one of the earliest experts in capillary GC methods and their application in petroleum product analysis.

In 1965, Colin left BP to take up a one-year Wilkins Aerograph fellowship at Brunel College of Advanced Technology, (now Brunel University) to carry out research in GC separation of chiral molecules. For this work he was awarded the University of London MSc in chemistry.
Colin joined the University of Sussex in 1966, in what was then the School of Molecular Sciences. He was one of a very small group of Experimental Officers, non-teaching posts on the academic ladder, intended to support research needs for complex instrumentation. He set up a major support laboratory for GC and also became one of the pioneers of developments in the use of coupled methods, in which GC is used to separate compounds which are then passed to a second instrument for further analysis. Colin worked on coupled GC and mass spectroscopy (MS) at a time when MS

was far from the routine method it has become with today's computer power. He was also involved in early work on elemental analysis by coupling GC with optical plasma spectroscopy, and in researching improved detectors, column design and instrument design.

By the late 60s the limitations of GC in analysis of the large, involatile, molecules common in modern organic chemistry were becoming severe, as was the poor separating power of the open liquid columns used by organic chemists, and chromatographic analysis was revolutionised by the development of instrumented high-performance liquid chromatography. The generous research funding then available to universities allowed Sussex to buy one of the first commercial HPLC instruments and Colin rapidly became expert in its design and use. His interest in liquid-based separation methods was also stimulated by the opportunity to collaborate with AJP Martin, who was in Sussex from 1973 to 1978, funded by the Medical Research Council. Colin collaborated with his group, particularly with Frank Hampson, in researching applications of liquid chromatography and capillary electrophoresis in protein separation.

Colin's position as an Experimental Officer at Sussex was not always the easiest for a person ambitious to make a research contribution. Whilst Colin saw himself as a researcher, others felt that his primary role should be to support other people's research, and this sometimes lead to frustration on both sides. It is to Colin's credit that he was able to carry out enough independent research during his time in Sussex to be able to submit a thesis in 1979 and to be awarded the PhD of the University of London.

In 1979, Colin left Sussex to take up an academic position at Chelsea College, which had become part of the University of London in 1971. This appointment gave him the opportunity to expand his research interests and to become involved in teaching. He moved from Chelsea to Birkbeck College in 1981, becoming Senior Lecturer in Analytical Sciences. At Birkbeck he helped to set up and run an MSc programme in analytical sciences which graduated over 250 students during Colin's tenure.

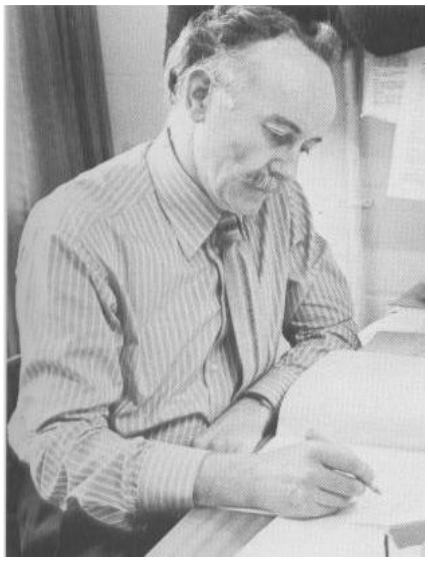
In 1997, Colin took up a post as University of London, Research Fellow at King's College, from which he retired in 1999.

Over his long career in separation science, Colin published more than 100 papers on all aspects of chromatographic separation. He also organised, and contributed to, regular courses and workshops on separation science, for the Royal Society of Chemistry. Several of these led to edited books which became important reference sources. He supervised more than 25 PhD students, working on both the theory and practice of chromatography.

Colin was an excellent lecturer, a quality inherited from his early experience as an actor. He lectured and consulted widely, and for several years ran courses in chromatography in Thailand. In 1992 he was awarded the Royal Society of Chemistry Silver Medal for Contributions to Separation Science and Detection, cited "for fundamental contributions in separation science, particularly in the development of detectors for gas chromatography, and for furthering the understanding of the separation mechanisms involved in the development of bonded phases for high performance liquid chromatography". He was awarded the Jubilee medal of the Chromatographic Society in 1997. Colin lived in Brighton throughout his time working in London, and always enjoyed socialising with his many friends, whether over a pint in the pub or at the excellent dinner parties which he and his wife organised regularly. He is survived by his wife Phillida, son, Keith and daughter Catherine, and a son, Laurence, from a previous marriage.

Norman Billingham

Peter Simpson 7.8.1934 to 3.7.2000



Peter was a deeply committed university teacher who made a significant contribution to the rapidly expanding new University of Sussex, and to the development of chemistry teaching at the school/university interface through his writings and work as a national examiner.

Peter was born in Liverpool, the son of a merchant seaman. In 1940 the family was bombed out and evacuated to Storth in what is now Cumbria. Peter went to school at Heversham Grammar School, Milnthorpe (now part of Dallam School), after which he gained a place at Magdalene College, Cambridge. National service intervened, however, and he spent two years in the Royal Signals Corps where he was commissioned as a second lieutenant. He went up to Magdalene in 1955 and, following the award of a first in his natural sciences Tripos examinations, was elected as an honorary scholar. He completed his Ph D at Cambridge in 1961 under the supervision of Dr B C Saunders, who had worked on the development and neutralisation of organophosphorus nerve gases during World War 2. His work was published in a much-cited paper in 1963.

After teaching at the King's School Worcester for a short while he came to Sussex in 1963 to work as a post-doctoral researcher with Colin Eaborn on the stereochemistry of the reactions of optically active germanium compounds. Soon afterwards he was appointed as a lecturer and began independent research on the stereochemistry of reactions of cyclic phosphorus(iii) and phosphorus(v) esters. He collaborated on this topic with colleagues at the Institute of Organic Chemistry in the Technical University of Łódz in Poland.

It soon became clear, however, that Peter's main interest was in teaching and in using new technology to help students learn. He was one of the first members of faculty to write programs that students could interrogate. In those days computers were slow and cumbersome compared with those that are ubiquitous today. One day, at tea, Peter told us that his computer had caught fire. Drawing on his experience in teaching first year students of chemistry, biology and preclinical medicine he wrote a series of programs entitled *Basic Concepts of Organic Chemistry*. The built-in questions enabled a student to establish whether a stage had been understood sufficiently to proceed to the next one. Those who answered incorrectly were led back by a series of careful steps so that they could try again. Peter had a gift of being able to sense the difficulties students would find and the many mental blocks that had to be carefully removed before real understanding could be attained. He was particularly sensitive to the needs of those students majoring in biology, biochemistry and environmental science, whose school background in chemistry was sketchy. After

trials with students at Sussex, the programs were published by Chapman and Hall and they are still freely available on the internet.

Peter also encouraged his colleagues to use television in the teaching of practical work. He realised that a demonstration before a class began was not necessarily the most efficient way to teach techniques, as students were not ready to take in the finer points. When however they were face-to-face with equipment in the laboratory their motivation in getting it to work was much stronger. That was the moment for them to look again at finer details of the demonstration from a clip in an adjacent room. In days when videos can be instantly captured on mobile phones it is difficult to understand the effort that had to be put into the preparation of these early teaching aids. Elaborate apparatus had to be carried across campus and set up in a television studio, and fixed equipment was needed to view the presentations.

Peter was also instrumental in introducing a new undergraduate programme on Chemistry with Education, which was part science degree and part certificate of education. In preparation for this he persuaded a number of chemists to learn something about educational theory in a series of seminars with colleagues from the education department. The degree programme ran for a few years but did not attract enough students to make its continuance worthwhile. He was also a pioneer of statistically validated examination methods as a replacement for the rather ad-hoc judgements then prevalent.

Another innovation was much more successful. Peter, together with Professor Stefan Sjöberg of the University of Uppsala, organised an exchange programme for both faculty and students. Inevitably, more Swedish students wished to come to the UK than British students were prepared to go to Uppsala, but exchange of faculty was more evenly balanced. All took part in regular teaching in their partner universities and learnt a great deal about course organisation and presentation. Teaching in both institutions was enriched, a point recognised by the award of an honorary Ph D to Peter from the University of Uppsala in 1988.

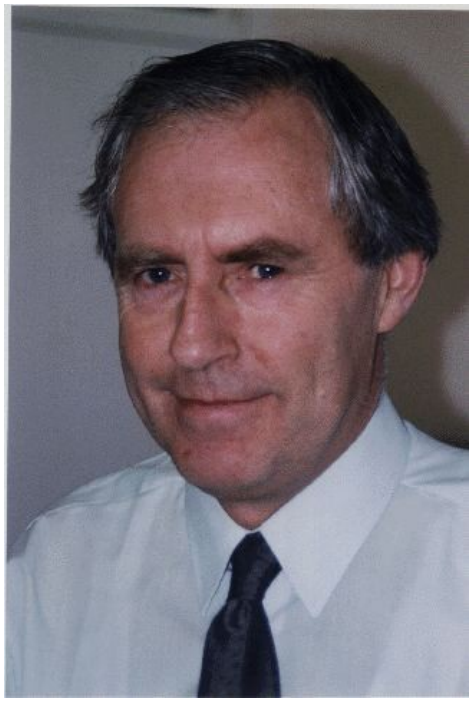
Peter was especially interested in student motivation and the way in which they progressed from school to university. He was co-author, with W R Keen and M J W Rogers, of a substantial (861 pp) textbook: *Chemistry: facts, patterns, principles* (1985) for students in their final years at school. This was commissioned by Professor D J Millen and Sir Ronald Nyholm in an attempt to break down some of the artificial divisions within chemistry and present an integrated approach to the subject at least in introductory studies. For many years Peter was a chief examiner at the Oxford and Cambridge Schools Examination Board and so had considerable influence over the teaching of school chemistry at both a national and international level. For a number of years, he was a governor at Varndean Sixth Form College, Brighton, and was chairman of the governors from 1987 to 1992.

Although Peter was never highly ambitious for himself, he gave a lot of time to the welfare of others. He was an excellent colleague and popular with students. He was interested in music and will be remembered for his Gilbert and Sullivan take-offs at school parties.

Towards the end of his life he suffered from motor sensory axonal neuropathy, a degenerative disease, which may have been related to his early research in organophosphorus chemistry in days when laboratory safety was not taken very seriously. He bore it cheerfully despite an enormously difficult period when he and his wife, Ann, were in different wards of the same hospital, each suffering from terminal diseases. Ann died of pancreatic cancer exactly eight weeks after Peter's death on 3 July 2000. They left two sons, Danny and Andrew, and an adopted daughter, Kate.

David Smith, Norman Billingham

Roger Taylor 30.04.1935 to 01.02.2006



Roger Taylor was a distinguished physical organic chemist, who made notable contributions in the areas of electrophilic aromatic substitution, gas-phase elimination and fullerene chemistry.

He was born in Edmonton and, after an education disrupted by the war, returned to London in 1945 where he attended the Latymer School. He obtained his B Sc (1956) and Ph D (1959) degrees at University College Leicester, then part of the University of London. His research with his supervisor Colin Eaborn was on cleavage of organosilicon substituents from aromatic compounds. As a Fulbright scholar at Washington State University and as a NATO fellow at Oxford, he worked on the kinetics of gas-phase thermal eliminations before his appointment as lecturer at the then new University of Sussex in 1963. He was subsequently promoted to Reader and Professor and was the author of more than 350 papers and six books.

He carried out wide-ranging research, much of it with his own hands, on hydrogen-exchange in aromatic compounds and obtained extensive kinetic data by detritiation studies. He mapped out in impressive detail the relative reactivity towards electrophiles of various positions in aromatic systems and provided direct physical evidence with which to test theoretical predictions. He summarised the results in an important book *Electrophilic Aromatic Substitution*, published in 1990, and this became the definitive text in this area.

He continued to study gas-phase eliminations and used Hammett correlations to analyse mechanisms and the variations of charge distribution within the transition state. The pyrolysis of 1-arylethyl acetates provided new insight into aromatic reactivity.

In collaboration with Professor Harry Kroto he achieved the first chromatographic separation of the fullerenes C_{60} and C_{70} in 1990 and went on to apply his expertise in physical organic chemistry to documenting the reactions of this new class of compounds. He sought to understand the pattern of addition of hydrogen, halogens, as well as alkyl and aryl groups to the fullerene core. The hydrogenation products $C_{60}H_{18}$, $C_{60}H_{36}$ and $C_{59}NH_5$ were seen as resulting from an increase in aromatic character. Similar explanations were invoked for fluorinations to give the tortoise-shaped $C_{60}F_{18}$, the Saturn-like $C_{60}F_{20}$**,** the compound $C_{60}F_{15}\{C(CO_2Et)_2\}_3$ (the first fullerene that is also an

all-*trans*-[18]annulene), and fullerene oxides. He showed that alkylations involved reactions of fullerene anions with positive alkyl groups and so led to different addition patterns. Arylations were different again, since they involved electrophilic substitution of halogenofullerenes into aromatics. He published *The Chemistry of Fullerenes* (1995), *Lecture Notes on Fullerene Chemistry A Handbook for Chemists* (1999), and chaired the IUPAC Fullerene Nomenclature Sub-Committee.

His work was recognised by the award of a D Sc from the University of London in 1972, a framed certificate from Thomson-Scientific as a highly cited author, and the Josef Loschmidt Prize of the Royal Society of Chemistry in 2002. He was in demand as a plenary lecturer at international conferences and collaborated widely throughout the world.

Roger's tidy mind made him a particularly good administrator. He took over from Bill Bott the running of the departmental library and oversaw its move from over the foyer to space vacated by the Unit of Nitrogen Fixation. Before on-line journals became available bound copies took up an enormous amount of space and much physical as well as intellectual effort was required to keep them in order. At the time when the reputation of chemistry at Sussex was at its peak the library was one of the most important resources underpinning the work of the department. Roger was given a year's leave from teaching to organise the meeting of the British Association meeting at Sussex in August 1983. This was a huge administrative task, involving liaison with many different subject groups, but under Roger's leadership it was smoothly accomplished.

His interests outside chemistry included gardening, playing jazz, sport, especially tennis, and the village where he lived for over 40 years doing much to improve its amenities and promote community activities. He is survived by his wife Joyce, daughter Melanie, son Adam and three grandchildren.

David Smith

Obituaries have been published:

Bulletin 10 February 2006 Reproduced in *The Sussex Express* 3 March 2006

Fullerenes, Nanotubes, and Carbon Nanostructures, 2007, **15,** 79-80

The Electrochemical Society Interface 2006, **15**, 19

Comptes Rendus Chimie 2006, **9**, 861 in J-F Nierengarten, N Martin eds 'Chimie des fullerènes Fullerene Chemistry' *Comptes Rendus Chimie*, 2006, **9**, 859-1116, dedicated to the memory of Roger Taylor.