George Porter

Stainforth, Gran Bretagna, 6/12/1920 – Canterbury, Gran Bretagna, 31/8/2002

Titolo Professore di Chimica, Royal Institution of Great Britain, Londra

Nomina 24/6/1974

Principali premi, riconoscimenti e accademie

Nobel Prize for Chemistry (1967); Davy Medal of the Royal Society (1971); Kalinga Prize, UNESCO (1976); Rumford Medal of the Royal Society (1978). Fellow of the Royal Society (1960), President since 1985; Foreign Assoc. of the National Academy of Sciences, Washington (1974); Corr. Member of the Göttingen Acad. of Sciences (1974); For. Corr. Member of La Real Academia de Ciencias, Madrid (1978); For. Hon. Member of the American Acad. of Arts and Sciences (1979); American Philosophical Society, Japan Academy, Portuguese Academy.

Riassunto dell'attività scientifica

His research in the last forty years of his life was mainly in the area of photochemistry and the study of very fast chemical reactions. In 1949 he introduced the technique of flash photolysis for the study of chemical events in the microsecond region and, over the years, has extended this, by using pulsed lasers, into the nanosecond and picosecond regions. These methods led to observations of many new free radicals and on the triplet states of both gases and liquids. He also introduced the technique of 'trapped atoms and radicals in a glass cage', which subsequently became known as matrix isolation. Recently his principal application of these techniques has been to the primary processes of photosynthesis. Studies *in vivo* have elucidated the mechanism of light harvesting and he has devoted much attention to making models of the photosynthetic system *in vitro* with the ultimate objective of providing a practical artificial system for solar energy collection and storage.

Pubblicazioni principali

Flash photolysis and spectroscopy. A new method for the study of free radical reactions. «P.R.S.», *A200*, 284 (1950); *The absorption spectroscopy of Sub. of short life*. «D.F.S.», *9*, 60 (1950); *Studies of free rad. reactivity by the methods of flash photolysis. The photochemical reactn. btw. chlorine and oxygene*. (with F.J. Wright). «D.F.S.», *14*, 23 (1953); *Trapped atoms and radicals in rigid solvents* (with I. Norman). «P.R.S.», *A230*, 399 (1955); *Prim. photochem. Proc. in aromatic molecules*. Part 3. *Absorptn. spectra of benzyl, anilino, phenoxy & rel. free radicals* (with F.J. Wright). «T.F.S.», *51*, 1469 (1955); *Intramolecular & intermolecular energy conv. involving change of multiplicity*. (with M.R. Wright). «D.F.S.», *27*, 18 (1959); *Acidity const. in the triplet state* (with G. Jackson). «P.R.S.», *A260*, 13 (1961); *Energy trans. from the triplet state* (with F. Wilkinson). «P.R.S.», *A264*, 1 (1961); *Mechn. of third-order recombn. reactions*. «D.F.S.», *33*, 198 (1962); *Prim. photochem. proc. in arom. molecules*. Part. 10. *Photochem. of substituted benzophenones* (with A. Beckett). «T.F.S.», *59*, 2051 (1963); *Reactivities of n-#* and charge-transfer states in the photo pinacolisation of ketones* (with P. Suppan). «P.C.S.», 191 (1964); *The electronic spectra of phenyl radicals* (with B. Ward). «P.R.S.», *A287*, 457 (1965); *Reactivity, radiationless conv. and electron distr. in the excited state*. Proc. of the 13th Conf. on Chem. at the University of Brussels, 1965, Interscience Pub., London 1967, p. 79; *Nanosecond flash photolysis* (with M.R. Topp). «P.R.S.», *A315*, 163 (1970); *Picosecond time-resolved energy transfer in porphyridium cruentum*. Part. 1. *In the inact alga* (with C.J. Tredwell, G.F.W. Searle and J. Barber). «Bioch. Bioph. Acta», *501*, 232 (1978); *Trans. and Strorage of Chem. and Radn. Potn*. «J.C.S., Fara.», Tr. 2, *79*, 473 (1983); *Prim photoproc. in quinones and dyes*. I. *Spectroscopic detn. of intermed*. (with N.K. Bridge). «P.R.S.», *A244*, 259 (1958).

Commemorazione – George Porter (hereafter GP) was an outstanding physical chemist and highly-successful populariser of science. He died in hospital on 31 August 2002 in his eighty-second year, in the cathedral city of Canterbury, in Southern England, not far from his home in the hamlet of Luddenham. In 1967, for his invention and application of the technique of flash photolysis starting twenty years earlier, he shared with Manfred Eigen and Ronald Norrish the Nobel Prize in Chemistry, awarded that year for 'studies of extremely fast chemical reactions, effected by disturbing the equilibrium by means of very short impulses of energy'. He became a member of the Pontifical Academy of Sciences in 1974. GP was born on 20 December 1920 in Northern England, in the village of Stainforth in the West Riding of the County of Yorkshire, where he spent the first eighteen years of his life. Stainforth was then one of many farming and coal-mining communities near the town of Doncaster – Roman Danum. His father was a local builder, who in his spare time served as a lay Methodist preacher and school governor; one of his grandfathers was a coal miner. Most of his contemporaries at the local elementary school would have entered full-time employment on reaching the statutory leaving age, then fourteen. But GP was amongst the lucky few who at eleven years of age qualified on academic grounds to enter the secondary grammar school in the nearby mining village of Thorne, where chemistry became his best subject. The award of a scholarship in 1938 enabled him to enrol in a bachelor's degree course in chemistry at the University of Leeds. We note here, in passing, that local education authorities in the West Riding did their best to encourage academically-gifted children of modest financial means to enter secondary grammar schools. They also offered scholarships to those who eventually qualified to enter university degree courses. In his autobiography Home is where the wind blows, Fred Hoyle, the eminent astronomer and cosmologist, who hailed from the Bradford area, entertainingly explains how in the mid-1930s, having taken his bachelor's degree at Cambridge, he persuaded the West Riding authorities to continue financing his academic studies, so that he could pursue postgraduate research under the nominal supervision of Paul Dirac. Other eminent scientists hailing from the West Riding include (at least) three Nobel laureates – the ionospheric physicist Edward Appleton of Bradford, the nuclear physicist John Cockcroft of Todmorden, and the inorganic chemist Geoffrey Wilkinson, also a native of Todmorden. GP's interest in chemical kinetics was stimulated by his studies at Leeds, where he completed his degree in 1941. In parallel with his chemistry studies he undertook an obligatory extra course in radio physics. This introduced him to the electronics and pulse techniques that he was to apply so effectively when, some years later, he became engaged at Cambridge in research in physical chemistry. The radio-physics course was designed to meet growing demands for suitably trained personnel made during the early years of the Second World War by the British Armed Services, as they made operational use of the newly-developed techniques of radar. As a radar officer in the Royal Navy from 1941 to 1945, GP saw active service in the Atlantic and Mediterranean theatres of war. Armed with a chemistry degree and his wartime experience of radar, in 1946 GP started graduate research towards a PhD under the supervision of Professor Ronald Norrish in the Department of Physical Chemistry of the University of Cambridge. Within a few years he had developed and started applying his highly original technique of flash photolysis, thereby revolutionising the study of fast chemical reactions. Throughout the whole of his subsequent academic career – from 1955 to 1966 at the University of Sheffield (also in the West Riding of Yorkshire) as Professor of Chemistry; from 1966 to 1985 at the Royal Institution in London as Director (in succession to Lawrence Bragg), Fullerian Professor of Chemistry and Director of the Davy Faraday Research Laboratory; and from 1985 until the end of his life at Imperial College London as Professor of Photochemistry and Chairman of the Centre for Photomolecular Sciences – GP was to lead or remain involved with research groups working in the area of physical chemistry that he had helped pioneer. To paraphrase the account of GP's scientific work given in the Academy's Yearbook for 2001: – 'My research over the last forty years has been mainly in the area of photochemistry and the study of very fast chemical reactions. In 1949 I introduced the technique of flash photolysis for the study of chemical events in the microsecond region and, over the years, have extended this, by using pulsed lasers, into the nanosecond and picosecond regions. These methods led to observations of many new free radicals and the triplet states of both gases and liquids. I also introduced the technique of 'trapped atoms and radicals in a glass cage', which subsequently became known as 'matrix isolation'. Recently my principal application of these techniques has been to the primary processes of photosynthesis. Studies in vivo have elucidated the mechanism of light harvesting and I have devoted much attention to making models of the photosynthetic system in vitro with the ultimate objective of providing a practical artificial system for solar energy collection and storage'. GP enjoyed the celebrity status resulting from his Nobel Prize award and his success as a popular lecturer, exploiting it in his dealings with politicians and government officials when expressing forthright views on science and education. Reputedly seeing the search for knowledge as the highest aim of mankind, he criticised proposals for concentrating research in selected centres on the grounds that this might 'stifle the original mind and encourage the safe and mediocre', and he attacked the spread of an anti-science lobby in the United Kingdom, condemning what he saw as 'skimping on long-term research and the concentration of scientific spending on short-term get-rich-quick projects'. As Director of the Royal Institution – with its tradition going back to Humphry Davy and Michael Faraday of providing stimulating popular lectures by leading scientists – he was ideally placed for promoting public appreciation or understanding of

science. A natural communicator and a pioneer of scientific programmes on television, he could engage the attention of audiences ranging from schoolchildren to advanced research workers. Amongst the many honours showered on GP in recognition of his research and wider contributions to science was an invitation to succeed biophysicist Andrew Huxley as President of the Royal Society of London, in which capacity he served from 1985 to 1990. Whilst continuing to fight for more and better research in basic science and better science education, he supported and expanded the Royal Society's initiatives in the public understanding of science, and he became involved in issues of human rights affecting scientists in China, the Soviet Union and elsewhere. In 1990, the year in which he handed over the presidency of the Royal Society to pure mathematician Michael Atiyah, he was created Baron Porter of Luddenham and added service on the Select Committee on Science and Technology of the House of Lords to his many other activities. I knew GP largely by reputation. Both of us hailed from mining communities near Doncaster and attended local elementary and grammar schools, but he was my senior by nearly a decade and our paths crossed no earlier than the mid-1970s. Our main dealings took place a decade later, in connection with Gresham College in the City of London. On my taking up the part-time professorship of astronomy there in 1985, I was asked to suggest measures for improving the College's effectiveness. To this end I started considering what practical steps would be needed to expand the scope of the College's activities through collaborative ventures with other bodies and to restore some of the College's traditional links with the Royal Society. Dedicated since its foundation in 1597 to the promotion of the appreciation of the arts and sciences, Gresham College continues to offer free public lectures in London, but it needs partners in carrying out its activities in the highly-specialised modern world, where the important subject of astronomy is just one of the physical sciences. I was grateful at the time for GP's helpful encouragement and advice in this matter. Associated with the resulting reforms was the appointment of a bemused GP several years later to serve (from 1990-93) as the thirtieth Gresham Professor of Astronomy. When writing this commemorative address, I was conscious that my own field of science, geophysics, gives me no special qualifications for commenting usefully on George Porter's personal research work. This I leave to others such as Graham Fleming and David Phillips, who have prepared a detailed biographical memoir for publication next year by the Royal Society. In what I was able to write I relied heavily on commentaries by many of his friends and colleagues, to whom I must express my gratitude. With the passing of George Porter, chemistry lost an outstanding practitioner, and science as a whole lost an energetic expositor and champion of its causes.

Raymond Hide