JOHN HESLOP-HARRISON

BSc, MSc (Dunelm), PhD (Belf), DSc (Dunelm), HonDSc (Belf, Bath, Edin, Hull), FLS, MRIA, FIBiol, FRS

Professor John (Jack) Heslop-Harrison died at his home in Leominster, Herefordshire on 7 May 1998. He was the youngest of three children born to John William Heslop-Harrison and Christian (née Henderson). Shortly after his birth on 10 February 1920, the family moved from Middlesbrough, Yorkshire, to Birtley in Co. Durham. He attended the public elementary school in this mining community and then received his secondary education at Chester-le-Street Secondary School. After winning an Open Entrance Scholarship to the University of Durham in 1938, he read Botany, Zoology and Chemistry at King's College (Newcastle-upon-Tyne) graduating in 1941 with First Class Honours in Botany. He immediately took a radiolocation course and worked for some time in the Orkneys as a civilian Radio Officer in the Ministry of Supply before being commissioned directly into RAOC and from thence into REME. In 1944 he left the Orkneys, having been in command of the main REME Workshop there with the rank of Captain, to join the Anti-Aircraft Command and work on the modification of existing radar equipment for the detection of V2s. When the V2 attack declined he was transferred to SHAEF and was involved with a unit set up to investigate German research stations as they were captured. Thus it was not until he was demobilized in the late summer of 1945 that he was finally able to begin his academic career.

He held a lectureship in agricultural botany in King's College, Newcastle-upon-Tyne for a year during which he completed his MSc thesis on ecology and plant succession on the island of Scarp, Outer Hebrides. In 1946 he was appointed as a Lecturer in the Botany Department in Queen's University, Belfast and less than three years later he was awarded a PhD for his thesis on intersexuality in *Salix* and experimental control of sex expression in various other genera. During this period he was also publishing the results of his field studies on orchids. These studies were carried out in various parts of the British Isles but notably in the islands of the Inner and Outer Hebrides. This work, some of which was published in the *Transactions of the Botanical Society of Edinburgh*, described populations of Dactylorchids (now classified as members of the genus *Dactylorhiza*) in terms of their ecology, morphology, cytology and breeding systems. These clear illustrations of the dynamic aspects of plant taxonomy led to him being appointed as a Lecturer in Botany (1950) and subsequently as Reader in Taxonomy (1953) in University College, London. He was elected a Fellow of the Royal Society of Edinburgh in 1953. His ideas, expressed succinctly in a slim volume *New Concepts in Flowering-Plant Taxonomy* published in the same year, brought taxonomy to life for many students and greatly influenced our thinking on plant evolution and plant classification.

In September 1950, John Heslop-Harrison married Dr Yolande Massey, a lecturer in Botany at Bedford College, London, and a graduate of King's College, University of Durham. This was the beginning of a life-long collaboration that kept the flame of research burning even when administrative, social and family duties were making enormous demands on time and energy. Encouraged by Sir Eric Ashby, the then Vice-Chancellor of Queen's University, John Heslop-Harrison returned to Belfast in 1954 as Professor of Botany. Sir Eric Ashby's encouragement was expressed in a practical way. He allowed Heslop-Harrison to build a "phytotron" in a corner of the garden of the Vice-Chancellor's residence. In these primitive but reliable growth rooms the Heslop-Harrisons pursued their studies of the environmental and chemical control of organogenesis in flowering plants. The Botany Department at Queen's University was relatively small, and when Heslop-Harrison was appointed it was housed in a terrace house and some huts. He organised the physical move to new buildings and, more importantly, he established the framework for the modernisation and expansion of teaching and research in the Department. In 1960, he was invited to become the Mason Professor of Botany in the University of Birmingham. Once again he found a Department housed in an inadequate Victorian building, and teaching courses ready for renewal. Following a period of intense discussion and administrative activity, five departments of the University were united to form a School of Biological Sciences which moved into a fine new building in 1963. He was Chairman of the School of Biological Sciences from 1962 until he left the University of Birmingham in 1967. Research work was fitted around administrative and teaching duties. Experimental work on the control of morphogenesis in the apices of flowering plants could not proceed smoothly because the newly-commissioned phytotron in Birmingham proved to be much less reliable than the more primitive phytotron in Belfast. However, Heslop-Harrison was quick to take advantage of other facilities available on the campus at Birmingham, in particular a transmission electron microscope. He studied the fine structure of chloroplasts in leaf tissue and then started his exploration of pollen grain ultrastructure and of the process of microsporogenesis. His important advances in microscopy were recognised in 1967 by the conferment of the Trail Crisp Award of the Linnean Society. From 1967 to 1971 Heslop-Harrison held the Chair of Botany in the Institute of Plant Development in the University of Wisconsin. During this period, he and his wife, Yolande, continued their work on pollen physiology. They demonstrated that when pollen alights on the surface of a receptive stigma, proteins are released from the outer walls of the pollen grains. These observations formed the basis of further wide-ranging studies of the role of cell recognition mechanisms in the determination of intra-specific incompatibility. They also led to a greater understanding of the human medical condition, hay fever. Heslop-Harrison was awarded the Erdtman International Medal for Palynology (India) in 1971 and the Cooke Award of the American Academy of Allergy in 1974.

Recognition of a different kind had come in 1970 when he was elected Fellow of the Royal Society, London, and in 1971 when he was appointed Director of the Royal Botanic Gardens, Kew. His return to England heralded the beginning of a period of intense administrative activity at Kew where he did much to develop both scientific and conservation activities. At this time he also served on the governing bodies and councils of several research institutes and scientific societies. He was President of the Institute of Biology (1974-77), Vice-President of the Linnean Society of London (1973-1976), Vice-President of the Botanical Society of the British Isles (1973-1975), and Council member of the British Association for the

Advancement of Science (President of Section K, 1974). In addition, he fulfilled numerous advisory assignments both in the UK and abroad. Some of these, such as his chairmanship of the Threatened Plants Committee of the International Union for the Conservation of Nature and Natural Resources, enabled him to support causes about which he felt strongly. His work on committees in India was a reflection of his interest in and appreciation of the botany and botanists of India. Through his membership of the Academic Advisory Council of the New University of Ulster, Coleraine, he was able to return to Northern Ireland and make a further contribution to academic life there. Throughout this period, the Heslop-Harrisons continued to carry out their own research programme, taking advantage of the wide range of plant material available at Kew. They established laboratory facilities in what had formerly been the servants' quarters of the Director's house, installing an electron microscope in the butler's pantry. The award of a Leverhulme Fellowship to Yolande Heslop-Harrison enabled her to take charge of this laboratory.

Heslop-Harrison was essentially a research botanist and so in 1977 he resigned from the Directorship of Kew. After a brief sabbatical period in the United States, he accepted a Royal Society Research Professorship which he held at the University College of Wales, Aberystwyth. He chose to be based at the Welsh Plant Breeding Station. With this support from the Royal Society and with funding from the Leverhulme Foundation (YH-H), and latterly from the AFRC, the Heslop-Harrisons worked at the Welsh Plant Breeding Station until 1985. It would be wrong to say that they then retired. They continued to pursue their investigations of pollen tube growth and physiology, working in an honorary capacity at Aberystwyth for some years. They then set up a laboratory in the basement of their home in Leominster and Heslop-Harrison was working there right up to the time of his sudden death.

Research for Professor Heslop-Harrison was a way of life and it was essentially a personal activity. He did not build up a school of research students nor a laboratory full of supervised post-docs. His collaboration was with his wife Yolande, with some of his former students, notably Professor Hugh Dickinson and the late Professor Bruce Knox, and also with individual research scientists who came to work with him, frequently from overseas. He was an enthusiastic and wonderfully skilful microscopist and he revelled in the mastery of every new technique that became available. His success as a microscopist derived not only from his great manual dexterity and his powers of observation, but also from his ability to produce micrographs that were aesthetically pleasing. The relationship between this aspect of his work and his outside interests, listed in *Who's Who* as photography and painting, is not hard to see.

Heslop-Harrison published extensively. His papers include a number of notable reviews that reflect his reputation for having a phenomenal knowledge of botanical literature. He also helped other scientists to publish their work. He was editor of *The Irish Naturalists' Journal* (1947-1950) and of the *Annals of Botany* (1961-1967) and served for a time on the editorial boards of ten other journals.

Few people who heard Heslop-Harrison give a lecture will have forgotten the experience. He had an imposing presence and a resonant voice, but above all he had the ability to tell his audience the story of his research and to share with them the pleasure that the process of discovery had given him. He gave numerous invited lectures both in the UK and overseas. The award, in 1983, of the Darwin Medal of the Royal Society jointly to Professor Heslop-Harrison and Dr Yolande Heslop-Harrison was a fitting tribute to their life-long collaboration. Further honours included the award of the Keith Medal of the Royal Society of Edinburgh in 1984, the Navashin Medal, Komarov Institute, Academy of Sciences, USSR in 1991, the Linnean Medal for Botany, Linnean Society in 1996, and the Royal Medal, Royal Society in 1996.

Heslop-Harrison will be remembered for his considerable contribution to our understanding of sexual reproduction in flowering plants, for his far-reaching achievements in the administration of teaching and research, and for his gifts of communication in the written and spoken word. Those who knew him socially will remember him as a lively raconteur with a delightful, gentle sense of humour. His students are grateful to him for the way he developed in them a sense of the beauty of plant form and a curiosity about the living processes in plants.

Professor Heslop-Harrison is survived by his wife, Dr Yolande Heslop-Harrison, his son, Professor John Seymour (Pat) Heslop-Harrison, and his grandsons, George and William.

PAT COCHRANE

JACK HESLOP-HARRISON
A PERSONAL APPRECIATION BY SIR WILLIAM STEWART, PRSE

Jack Heslop-Harrison was probably the outstanding botanist of his generation. He was an intellectual giant with a powerful physical frame and personality to match.

But he was also a gentle giant with a quiet sense of humour and a booming voice which reverberated across the room at scientific meetings. I can still see his broad smile of satisfaction when a problem was solved; as well as the furrowing of his brow when he had to put up with bureaucratic bungling – and he saw a good deal of the latter in his time as Director of Kew Gardens from 1971-1976.

He was the son of John Heslop-Harrison, a redoubtable professor of Zoology in his own right, with whom, along with my predecessor as Professor of Biology in Dundee, Alan Peacock, the young Jack and others made their summer sojourn to the Isle of Rona and elsewhere on biological expeditions. I have in my office a cartoon of a visit to Rona, showing his father with his butterfly net, collecting rare species, with young Jack in school uniform – with a comic sticking out of his pocket.

In his career, he assiduously succeeded in avoiding the Oxbridge connection and his botany was done in more down-to-earth places like Durham, Belfast, University College London, Birmingham and Wisconsin – Universities on which he left his indelible imprint – turning modest departments into powerhouses of international excellence. He was a botanical polymath. To say his research centred on reproductive biology understates the breadth of his interests. They spanned the botanical kingdom from algae to angiosperms. The scientific output was outstanding in quality and quantity and he was honoured world-wide for his achievements. A plethora of his former students, post-docs, across the UK and indeed the world, learnt their botanical tools of the trade from their association with Jack – or simply by listening to his inputs at Society for Experimental Biology Meetings (these meetings were not regarded as being well attended unless Jack and his devoted and equally able wife, Yolande, attended), or listening to him put "trumped-up" officials back in their place at meetings of the Agricultural Research Council. It was no surprise that after his Kew and Madison sojourns, his place of choice on returning to the UK was to Aberystwyth (as a Royal Society Professor), and equally it was no surprise that when he "returned" to his home in Leominster, he and Yolande continued to work productively together. The Royal Society of Edinburgh, Scotland, and the world of science as a whole have lost a redoubtable scientist and colleague.

I never worked directly under him, but as a young researcher I watched with awe and learned so much from this intellectual giant. I doubt whether we shall see his like again.