The passing of Jack Heslop-Harrison marks the end of an outstanding international scientific career and represents the loss of a distinguished contemporary British botanist. British by birth and by acclaim in that he held Fellowships of the Royal Society and the Royal Society of Edinburgh, together with Membership of the Royal Irish Academy. International, in so far as his many career appointments were divided between Great Britain and the United States and involved scientific colleagues from many nations.

Jack began his lifelong commitment to plant sciences in 1941 with a first-class honours degree in Botany from King’s College, Newcastle-upon-Tyne, then part of the University of Durham and where his father was Professor of Botany. His further academic progress was delayed by the Second World War during which he served, initially, as a civilian Radio Officer with the Ministry of Supply, based in the Orkney Islands. After being commissioned into the Royal Army Ordnance Corps and transferring (on its formation) to the Royal Electrical and Mechanical Engineers, he was demobilized in 1945. It is tempting, but speculative, to believe that these experiences provided the foundations of the technical ingenuity which characterized Jack’s subsequent work.

At the conclusion of the war, he returned to Durham University to complete an MSc whilst holding a Lectureship in Agricultural Botany, and then moved to the Queen’s University of Belfast as Lecturer in Botany during which he researched for a PhD, which was achieved in 2 years. In 1950 he moved to a Lectureship and, subsequently, a Readership in Botany at University College, London but returned to Queen’s University as Professor of Botany in 1954.

In 1961 Jack was appointed Mason Professor of Botany in the University of Birmingham and his 6 year tenure saw the continuing emergence of his interest in pollen grain development, initially the appearance and function of cytoplasmic connections between meiocytes in anthers and, latterly, the establishment of a hypothesis for sporopollenin synthesis involving tapetal precursor origin and subsequent polymerization in the extracellular space.

The move to the United States in 1967 marked the beginning of a long and fruitful interaction with the University of Wisconsin at Madison where he held a series of Professorial appointments in the Institute of Plant Development. This was a productive period which cemented his considerable reputation in the fields of pollen grain biogenesis and pollen/stigma interactions. His elegant, pioneering work on the fine structural and cytochemical aspects of pollen grain development demonstrated clearly that the complex outer grain wall is a repository for mobile protein fractions which are released shortly after the pollen alights on the receptive stigma surface. Later he showed that, in certain plant families, the stigma surface has an extra-cuticular glycoprotein layer (pellicle) which contains lectin-binding receptor sites. These pollen wall and stigma proteins were shown to have a fundamental role in the control of intraspecific incompatibility. Most excitingly, his researches progressed to the definition of in vitro systems showing specific binding between pollen wall and stigma surface proteins. This was the first system of its kind in higher plants. Whilst epoch-making in their own right, these studies also pointed to the possibility of similar principles governing other classes of cell-cell interactions, as in host-parasite recognition and somatic graft incompatibility—areas on which Jack hypothesized in a range of elegant publications. The work, overall, stands as an eloquent testament to his supreme skills in interpretive microscopy and microanalysis, culminating in election to a Fellowship of the Royal Society in 1970.

In 1971 Jack returned to the U.K. to become Director of the Royal Botanic Gardens at Kew. This prestigious appointment was an obvious high point in his (then) already distinguished career and it allowed him to apply his wide-ranging skills as a developmental biologist in continuing the trend towards an experimentally based programme at the RBG, which had begun a few years earlier with the establishment of the Jodrell Laboratory and the acquisition of Wakehurst Place.

In a sense it was also a return to his early interests in taxonomy and plant geography but, inevitably, the administrative and representational demands of the office ate into the time available for personal science. Nevertheless, his studies continued outside working hours and without technical assistance. He resigned in 1976, moving to a short-term Visiting Professorship at the University of Massachusetts, Amherst and then returning to the U.K. to take up a Royal Society Research Professorship based at the University of Wales, Aberystwyth. This choice was partly driven by the wish that his son, Pat, should pursue his initial degree studies in Philip Wareing’s department but also by the perceived research opportunities inherent in the extensive genetic resources underlying the forage, cereal and brassica breeding programmes at the Welsh Plant Breeding Station, where he and Yolande (funded by Leverhume for work on insectivory) established their laboratory. This arrangement allowed him to interface with John Cooper’s developmental genetics group.

During the 7 years spent at Aberystwyth there was a resurgence of productivity and a clear contentment with the absence of any demands other than those imposed by the momentum of research. The emphasis of his work shifted to a fascination with the extremely high growth rates of pollen
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tubes through the host stigma tissue with a particular interest in the organization and turnover of cytoskeletal components—exemplified by the role of microtubules in positioning the nucleus of the angiosperm pollen tube and cyclical transformations of actin elements. He also took the opportunity to travel widely and to work in the laboratories of former associates and students.

It is superfluous to state that, throughout his career, Jack published voluminously across a wide spectrum. A recital of the list would occupy more space than any Editor would view as reasonable. His many friends and scientific associates will all have their favourite examples but, to me, the conspectus which he wrote with Hans Linskens, as an introduction to the co-edited volume 17 of the new series *Encyclopaedia of plant physiology*, encapsulates much of his insight and philosophy. Of course, he continued to publish right to the end, often jointly with Yolande.

Jack made huge contributions to the administration of science. He was President of the Institute of Biology (1974–75), Vice-President of the Linnean Society (1973–76), Vice-President of the Botanical Society of the British Isles (1973–75), Council Member of the Royal Society (1975–78) and Vice-President for the U.K. of the 12th International Botanical Congress in Leningrad (1972–75). He also received many distinctions and awards. For example, a D.Sc. from Queen’s University (1971), the Trail-Crisp medal of the Linnean Society (1967), the Gunnar Erdtman International medal for Palynology (1973), the Cooke Award of the American Academy of Allergy (1974) and the Samuel Weiner Distinguished Scientist Award [University of Winnipeg] (1975). The list of appointments to public service and governmental bodies is equally impressive. He chaired the Executive Committee of the NVRS, Wellesbourne, was a Governor of the Plant Breeding Institute, Cambridge prior to privatisation, and served for several years as a Council member of the John Innes Institute. He was a member of the SRC Biological Grants and Scholarship Committees and also of science committees for ABRC, UGC, NATO and the British Council.

Jack was Editor of Annals of Botany (1961–67) and Honorary Member of the Annals of Botany Company since 1985. He also served the editorial boards of ten other journals.

During his career he delivered a series of named invited lectures, such as the George Bidder (SEB), the Croonian (Royal Society), the William Wright Smith (Edinburgh) and the Ghosh (Calcutta). Those who heard him lecture were inevitably carried along by the lucidity of his delivery and the tide of erudition and enthusiasm. This recital of achievements gives only a partial picture of the man. He had great stature, both physically and intellectually, and an appearance which belied his age. As a colleague he was always helpful, constructive and generous with his time. His memory for science and the associated literature was phenomenal, stretching far beyond the expected confines of his research field. Jack’s work was invariably characterized by novelty of approach and an ingenuity of technique. He never depended on expensive or complex equipment and could wring a virtuoso performance from the most modest of resources. I have, for example, clear recollections of a system for pollen protein separation based upon PAGE in 100 µl microcaps run in a homemade reservoir and evaluated by autoradiography. As a microscopist, he was simply superb. Throughout much of his career he worked in close collaboration with Yolande and it was evident to the outside observer that both drew strength and inspiration from their shared endeavour.

By his passing, science has lost a distinguished practitioner and all of us who knew him will feel the loss of a friend. As scientists we rejoice in his many achievements. As friends we extend our sympathies to Yolande and Pat and wish them strength for the future.

John Stoddart