SIR CHARLES HARINGTON, F.R.S.

Bassano

Obituary Notice

SIR CHARLES HARINGTON

(1897–1972)

Charles Robert Harington was born in 1897 and died on 4 February 1972. He was educated at Malvern College and at Magdalene College, Cambridge, where he read chemistry. He then moved to Edinburgh to work under G. Barger, who exerted a profound influence on his scientific development. This was followed by a short period in the United States, where he worked with H. D. Dakin and D. D. Van Slyke. On his return to the United Kingdom Harington accepted a post at University College Hospital Medical School, London, in 1922. In 1928 he became a Reader in Pathological Chemistry and a Professor in the University of London in 1931. In 1942 he was appointed Director of the National Institute for Medical Research.

Harington received many honours, which included an Sc.D. of Cambridge and an honorary degree from the University of Paris. He was elected a Fellow of the Royal Society in 1931 and gave the Croonian Lecture of the Royal Society in 1944. He received the Royal Medal of the Royal Society also in 1944 and the Gold Medal of the Society of Apothecaries in 1953. Harington was knighted in 1948 and was created a K.B.E. in 1962.

University College Hospital Medical School 1922–1942

During this period Harington did almost all his research, and an adequate account of his work will not be attempted here. This is being done by Sir Harold Himsworth and Dr. R. V. Pitt Rivers in the Biographical Memoirs of Fellows of the Royal Society (Vol. 18), which will appear in November 1972.

It may suffice here to mention briefly some of Harington's outstanding scientific achievements. In 1926 and 1927 he published three papers, one with his former teacher G. Barger, in which the structure of thyroxine was established and its synthesis described. Harington then extended his interest to other iodine-containing compounds, such as diiodotyrosine, the optical isomers of thyroxine and related problems. Another contribution was the synthesis of glutathione, which was a major achievement.

Another of Harington's major interests just before the last war was immunochemistry. His general aim was to produce antibodies to biologically active substances, such as hormones or drugs, by introducing by chemical means appropriate chemical

groups into proteins that would then be used as antigens. In this he achieved some success, but the war prevented him from exploiting this idea to the fullest extent. Apart from these topics he published papers on the synthesis of α -amino- β -hydroxy-L-glutaric acid, on thiolhistidine, on 3,4-dihydroxy-phenylalanine and on insulin. The techniques he employed were largely those of the classical organic chemist, and he had skill and craftsmanship of a high order. However, Harington's outlook and approach were essentially those of a biologist and with this combination he was in a true sense a biochemist. Indeed, his knowledge of medicine and his interest in clinical problems were such that many of his colleagues found it difficult to believe that he had no formal medical qualifications. His influence on the younger clinical staff at University College Hospital was indeed very great. Harington was always available for consultation and advice, and many young research workers, such as H. P. Himsworth, M. L. Rosenheim, M. Maizels, P. D'Arcy Hart, J. H. Humphrey and P. H. Gell, all of whom later achieved distinction, either worked in his laboratory for various periods of time or were helped by being able to discuss with him their results in a critical manner.

Editorship of the *Biochemical Journal*

A full account of the early history of the *Biochemical Journal* was published in 1949 by R. H. A. Plimmer, a former member of the Society, and some extracts of this book, especially those concerning the *Biochemical Journal*, are reproduced in the scholarly book written by R. A. Morton and entitled *The Biochemical Society, Its History and Activities 1911–1969*. No record is available about the manner in which the first Editors, W. M. Bayliss and A. Harden, were chosen, but Plimmer, who was the Honorary Secretary between 1911 and 1919, remembers how delighted he was when both accepted the invitation to edit the *Journal*. Bayliss and Harden, Plimmer believes, were chosen as representing the physiological and chemical aspects of biochemistry respectively. Later H. W. Dudley, who had taken the place of W. M. Bayliss in 1924, found that editorial work did not give him enough time to do his own research and he therefore resigned as an Editor in 1929. Harington, who had been Joint Honorary Secretary of the Society for just over a year, together with R. Robison, then

joined Harden as an Editor. The size of the *Journal* was steadily increasing, and so were the complexity and diversity of the papers submitted. The Editors must have felt this problem acutely in relation to papers of a more physicochemical character, and thus F. J. W. Roughton in 1935 became a third Editor to deal with papers of a marked physicochemical or mathematical character. A few years later in 1937 the composition of the Editorial Board (a term that was not used at the time) was further changed by the resignation of Harden as Senior Editor or just 'Editor' and his replacement by Harington, who, from 1937 until the end of 1942, edited the *Journal* with the assistance of three associate editors, S. J. Cowell, F. Dickens and F. J. W. Roughton.

Harington wrote some notes on his period of editorship in Morton's book, to which reference has already been made. For part of the period concerned, i.e. from 1933 until 1939, I was in Harington's department, first as a Ph.D. student and later as a Beit Memorial Research Fellow, and was thus able in his small department to observe Harington's work as an Editor from close quarters. He spent a large part of his time in the laboratory doing experiments; his teaching duties were light and the administrative load of a Head of a Department was also not heavy at that time. Harington enjoyed working at the bench, and editorial work cannot have occupied more than about a third or a fourth of his time in working hours. But I believe that at least four to five evenings a week and most weekends were fully taken up with work for the *Journal*. Harington, with another Professor, shared a typist-secretary who did all the typing of letters for the *Journal* and for the Department. Harington himself prepared all the papers for the press and read personally the proofs of all the papers that were published in the *Journal* during his Editorship. Indeed his life was regulated by the publication schedules of the *Journal*, and he arranged his holidays in such a way as to allow him to return the proofs punctually to the Cambridge University Press.

Professor F. Dickens, F.R.S., kindly prepared notes giving impressions of Harington's Editorship and from which he allowed me to quote: 'Late in 1937 Harington asked me and S. J. Cowell to join him as Editors, F. J. W. Roughton having already served in this capacity since 1935. The Editors met in Harington's room at University College Hospital Medical School one afternoon a month from then onwards. In about three hours we got through all the papers for that month, although of course we had put in a large amount of work on them already. By to-day's standards our procedure was drastic and arbitrary; very few papers were sent to referees, quite a number were turned down without any reason being given, and others were almost rewritten by the editors. The fact that the authors did not arise and smite us under this treatment must, I think, be

attributed to two things. First, publication times for acceptable papers were quite short. Second, there was never any question that Harington's judgment was utterly impartial and devoid of favouritism. Perhaps I may cite a personal instance; in July 1938 I was preparing to submit three papers to the *Journal* on the hexose monophosphate metabolic pathway which I had thought I could bring to the regular editorial meeting at University College Hospital Medical School, as this was being held only a few days after the closing date for receipt of authors' typescripts. When I suggested this to Harington he insisted that editors should have no such privilege of by-passing regular editorial procedures, so I sat up two nights typing these papers, which I fear will always bear the mark of such hasty composition!

Harington was an excellent editor and saw to it that we kept a similar standard. He hated verbosity, and I well remember the curt editorial treatment administered to one of Britain's most eminent biochemists who had written something to the effect that: "the oily, viscous residue which remained in the dish after evaporation of the solution in an evacuated desiccator readily succumbed to the familiar and well-tried method of rubbing with a glass rod, when it promptly and almost completely became converted to a semi-solid mass". Harden's historic performance over some 25 years as Senior Editor was well maintained by Harington during the years 1937-1943 when he was Senior Editor.'

Harington wrote clear and concise English; he disliked pomposity and unnecessary scientific jargon. This attitude influenced and even dominated his editorial work. The high standard and reputation for clear style and presentation that the *Biochemical Journal* enjoys to-day is to a large extent due to the influence that Harington exercised during an important period of the *Journal's* development.

In appreciation of his services, Sir Charles Harington was granted honorary membership of the Biochemical Society in 1961.

Directorship of the National Institute for Medical Research

In 1942 Harington was appointed Director of the National Institute for Medical Research, which was then housed in a rambling Victorian building in an attractive part of Hampstead, within a few hundred yards of Hampstead Heath. Harington succeeded H. H. Dale, who had presided over the Institute for about 20 years and had made it one of the outstanding international centres of medical research. Dale, who was one of the greatest medical scientists of his generation, had dominated the Institute by a combination of outstanding scientific ability and a forceful personality. The staff were a closely knit community and small in number by present-day standards.

Harington knew that he had to develop his own style as a Director, especially as it was known that some time after the war the Institute would expand considerably and be moved to new premises at Mill Hill. Harington probably considered the most important task of a Director was to attract first-class scientists, to give them good facilities and encouragement without encroaching upon their scientific independence. He was a competent administrator, quick in making decisions and painstaking in his attention to detail. On the administrative side he delegated very little, and even his Heads of Divisions were not encouraged to participate to any great extent in overall planning of the Institute's policy or in detailed administration. Thus the National Institute was an ideal place for those research workers who wanted to devote all their energies to research and not to spend much time on administration.

The National Institute had always encouraged research in biochemistry and in the chemistry of natural products. Thus E. J. King and M. L. Rosenheim's classical work on the structure of cholesterol was done at Hampstead, and so was the work on vitamin D, associated with the names of R. K. Callow and R. B. Bourdillon. H. W. Dudley, F. G. Young, C. Rimington and T. S. Work, among others were at the National Institute in Dale's time. However, when Harington became Director biochemical activities expanded further. Thus, even before the move to Mill Hill occurred, several biochemists, such as A. J. P. Martin, G. J. Popják, Rosalind Pitt Rivers, H. R. V. Arnstein and the writer of this memoir joined the staff. When the Institute moved to Mill Hill in 1949 there was a further expansion also, involving the Division of Biochemistry.

It was a tradition at the National Institute to encourage co-operation between scientists working in different departments, and this was strongly supported by Harington. Thus the most fruitful co-operation between J. W. Cornforth and G. J. Popják, which lasted for many years, began at Hampstead. There was also a most productive collaboration between D. F. Elliott, who was by training an organic chemist, and younger pharmacologists who worked on kinins and related problems. R. R. Porter started his work on immunoglobulins while he was at Mill Hill, and Rosalind Pitt Rivers, working with J. Gross, discovered tri-iodothyronine. In the immediate post-war period the National Institute was the first centre in this country that used both radioactive and stable isotopes in biological work on a large scale. In this A. S. MacFarlane played an important part. Perhaps the most outstanding piece of biochemical research done at Mill Hill during that time was the discovery and development of gas-liquid chromatography by A. J. P. Martin and A. T. James. It is impossible in the space available to give a full account of all the

biochemical activities at the National Institute during Harington's directorship, but it is clear that after about 1945 the Institute became one of the most important centres of biochemical research in the United Kingdom. It was both a pleasant and exciting place in which to work and most of the credit for this must be given to Harington.

Work for Biochemistry on the International Level

During 1947 the Biochemical Society began long deliberations about the possibility of setting up an International Union of Biochemistry. Throughout these important discussions Harington took a leading part. Both Chemistry and Physiology had had international conferences and congresses for many years, and the two Unions of Chemistry and Physiology respectively have histories that go back to the early part of this century or to the end of the 19th Century. Biochemistry had neither a Union of its own nor comprehensive international congresses. It was decided by the Biochemical Society to aim in the first place at arranging a truly international congress of biochemistry. Committees were set up with a view to holding the first International Congress of Biochemistry at Cambridge in August 1949 under the Presidency of A. C. Chibnall. E. Baldwin and F. Dickens were appointed joint secretaries. The Congress was a resounding success, with about 1700 biochemists attending. The closing session of the Congress voted in favour of a resolution to set up a multinational Committee with Harington as Chairman. As Professor Dickens informs me, the Committee had already met unofficially a few days before the plenary session. Harington made, to quote Dickens, 'an excellent Chairman and handled well the rather delicate division of interests among some of our international members'.

The International Committee were instructed 'to approach the International Council of Scientific Unions with a request for recognition as the international body representative of biochemistry, with a view to the formal constitution as the International Union of Biochemistry as soon as possible'. This resolution was passed by acclamation.

It took 6 more years before the International Union of Biochemistry had been officially recognized, and during this interval Harington played a very active part in helping to get the new Union established. Together with F. Dickens he drafted the Statutes, which had to be submitted to the I.C.S.U. before admission to the official recognized group of International Unions could take place. Harington also continued as Chairman of the International Committee and throughout he was unwavering in his support of an independent Union. Together with R. A. Peters, F. Dickens and J. N. Davidson,

Harington must be considered as one of the founders of the International Union of Biochemistry.

Personal Aspects

Harington was essentially a very shy person, who appeared to many who did not penetrate his reserve as being cold and somewhat forbidding. In fact he was a man of strong emotion and capable of great affection and generosity. He was particularly kind to younger research workers, and there are many

scientists, including the present writer, whom he helped and advised at critical stages in their careers.

Harington was possessed of a strong belief in justice and of an unusually marked sense of duty, which at times seemed almost puritanical. He had a feeling for quality and a great loyalty for the causes and institutions with which he was associated throughout his life.

A. NEUBERGER