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CEMENT AND CONCRETE RESEARCH

Obituary

Memorial of Harry Francis West Taylor (1923–2002)

H.F.W. Taylor, ''Hal'' to his colleagues, began his scientific career at the University of London where he received a BSc (1943) and PhD (1947). He pursued postgraduate studies at Birkbeck College, London (1948–1953) where he worked on a range of topics, including protein crystallography, then in its infancy. Methods and equipment were incredibly primitive by today's standards: Hal used to recount that his introduction to crystallography commenced by having to build his own rotating anode X-ray tube! While the general regime of the time was one of austerity, an incredible atmosphere of optimism prevailed: science knew no boundaries; it could and would be used to end war and cure all the ills of society. On the other hand, scientists were a privileged class and had a duty to society to work hard and effectively. Those who knew Hal will appreciate how these considerations motivated his professional career.

In this period Hal was also involved in studies on mineral and silicate chemistry, working for various periods at The Building Research Station (later, Building Research Establishment) and Dr. (later Professor) R.M. Barrer and Professor J.D. Bernal. Thus when Hal was offered a permanent post at Aberdeen, to which Barrer had also gone, Bernal advised Hal to give up protein crystallography in order to pursue mineral chemistry and, in particular, expand research on cements. This excellent advice was heeded and set Hal on a career which has so greatly advanced our knowledge of inorganic cements.

On arrival at Aberdeen, his interests initially turned to the mineralogy and crystal structures of the naturally occurring calcium aluminate and silicate hydrates. The naturally-occurring phases are often poorly crystallised and consist of intimate mixtures which can only be resolved with patience, skill and a full knowledge of polarizing light microscopy. In addition to solving many crystal structures, he quickly realised the potential of electron microscopy and diffraction and created facilities which, at the time, were world-leading. With the late Dr. J.A. Gard, he solved mineral structures for which only poorly-crystallised or disordered minerals or fine-grained synthetics were available. An analogy between the structures of tobermorite, jennite and of C-S-H, the poorly ordered cementing phase, was postulated and did much to advance the ''crystallochemical'' school of C-S-H structure as contrasted with the ''gel school'' which hitherto prevailed. Hydrothermal chemistry was used to demonstrate the synthesis and stability of the most important lime-alumina-silica-water phases and the essential identity between the synthetics and natural minerals was confirmed.

Hal was a meticulous writer: his publications are characterised by clarity, logic and precision in the use of English. Not surprisingly, therefore, he was frequently asked to write books and reviews on cement chemistry. A multi-authored two volume book appeared in 1964 but was soon overtaken by new developments. Writing his own book—a long cherished ambition—had to wait until late in life but the first edition (1990) and fully revised second edition (1997) have probably become the most widely read single text on the subject. The book has been translated into several languages and, moreover, several pirate editions-perhaps the ultimate accolade of a successful science book-were also made!

Hal was an excellent supervisor of students in the best traditions of one-to-one scholarship. He never had many students at any one time but those whom he took on were intensively trained. This could occasionally be an unpleasant experience for slackers: faulty logic and shortcuts were quickly detected and analised in forthright terms. But on the whole he was fortunate in the choice of research students, many of whom went on to fill responsible posts in science and industry. His enthusiasm for cement science was unbounded and he gave unstintingly of his time and intellect to others, often without seeking acknowledgement of his contribution.

Perhaps less widely recognised were his contributions to teaching. Following in the traditions of The University of Aberdeen, he assumed a full share of lecturing, tutorials and laboratory work including the most difficult assignment: lecturing on chemistry to the elementary classes. These classes contained many students who pursued chemistry as the best of the least-desirable course options available to them; their motivation presented a significant challenge. He experimented with automated learning even in the pre-PC era and his highly successful scheme for the organisation of the laboratory classess persists to this day with but slight modification.

Hal disliked committee work but was unable to avoid it entirely. A term as head of department, 1977–1980, was not administratively a great success. It was increasingly a time of stringency and retrenchment within the University and he became disappointed at the lack of realism exhibited by

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colleagues concerning change and the need for change. After the completion of his headship in 1980 he took partial retirement with the intention of returning full time to research. But he found obstacles placed in the way of his research by fellow academics, often of less achievement and distinction than himself. This led to his final retirement from Aberdeen and in retirement, a series of honorary Professorships, first at the Imperial College, London and subsequently at Leeds. This was a relatively happy period: he could continue to guide students while remaining largely free from administrative duties. He also pursued numerous consultancies and, of course, his writing.

Formal retirement also meant more time for outdoor pursuits. Indeed, no mention of his life can be complete without a description of his climbing activities: mountaineering was an essential compliment to his professional and academic career. He knew from memory routes up literally hundreds of peaks: all the Scottish mountains, many of the European alpine peaks as well as others in the Americas, Asia and Africa. He maitained a peak of physical perfection until late in life when increasing heart trouble forced an operation. Initially successful, the benefits of the operation gradually diminished. However he remained professionally active and only succumbed while returning home from a meeting on white Portland cement: Hal was an expert on the colour of cement and had contributed notably to the discussions. None of us can control our destiny, but this was what Hal would have wished: he never had to experience a long drawn out period of invalidity.

Hal's career attracted many honours and distinctions. He was an honorary editor of this Journal and on the editorial boards of numerous others. He was a Fellow of numerous organisations including the Royal Society of Edinburgh. He received the Kroll medal and prize of The Institute of Materials and The Copeland award of The American Ceramic Society amongst many distinctions.

He is survived by his wife, Joan, and a son, Robin, to whom we extend our deepest sympathies.