

## **PROFESSOR WILLIAM JOHNSON, FEng, FRS**

### **OBITUARY**

**By Professor Steve Reid**

Professor William (Bill) Johnson died on 13<sup>th</sup> June 2010. He was born in (Lower) Openshaw, a working class district of Manchester in April 1922. Bill completed his secondary education at Central High School for Boys, coincidentally in Whitworth Street in the centre of Manchester, just across from the Manchester College of Science and Technology ('Tech', which later became UMIST) from where he graduated in 1943 and where he eventually became a Professor in the Department of Mechanical Engineering.

After graduation in 1943, Bill served in R.E.M.E., reaching the rank of Lieutenant on release from the army. Much of his fascinating life is described in his candid autobiography entitled "Record and Services, Satisfactory", published by the Memoir Club, the title deriving from a letter of his performance in the army..

Returning to England from Padua in Italy in 1947, Bill became an assistant principal in an administrative grade in the Home Civil Service but, to break the monotony, he became a part-time postgraduate student studying the History and Philosophy of Science at University College, also taking an external London degree in Mathematics. Bill always retained an interest in both of these subjects, alongside his major interest of Solid Mechanics as evidenced from his list of publications, in excess of 400 papers..

Bill was always an educator, starting his teaching career at Northampton Polytechnic in 1950 before moving to a Lectureship in the Mechanical Engineering Department at Sheffield University, which allowed him to initiate and develop his research interests in metal forming, especially the application upper bound techniques and slip-line field theory, the field in which he established his international reputation. His move to Manchester University ('Owens' as opposed to 'Tech') to work in the Department of Engineering, enabled him to develop further his work on plasticity, especially applied to forging. This interest in high speed metal forming presaged the interest he would later extend into the subject of Impact Mechanics.

In 1960, the up and coming Johnson (aged 38) was appointed to the chair in Mechanical Engineering at 'Tech' vacated by Professor Henry Wright-Baker, famous, amongst other things, for his role in 'unwrapping' some of the Dead Sea Scrolls'. There, given the opportunity by the Principal, Lord Bowden, to develop Mechanical Engineering, rather than focussing on his own subject he chose to create a Department with broader, across-the-board, national, indeed international, research standing and teaching capability. Johnson established the three Divisions of Applied Mechanics, which he led, Fluids and Thermodynamics led by Professor Roland Benson and Machine Tools led by Professor Frank Koenigsberger.

In Applied Mechanics, Bill built up the research ethos and assembled a formidable capability in experimental and theoretical solid mechanics, principally 'growing' the staff from research students and supplementing these with judicious appointments. His achievements were many, including the publication of several books and

monographs. Principal amongst these were “Plasticity for Mechanical Engineers” which he wrote with P.B. Mellor (1962) and which was revised and reprinted 1970 as “Engineering Plasticity”. His other main book, “Impact Strength of Materials” (1972) is similarly recognised as a key postgraduate text, still providing an excellent introduction to research in this field. Bill’s other major contribution to research was the establishment of the International Journal of Mechanical Sciences (IJMS) in 1960, followed by his founding of the International Journal of Impact Engineering (IJIE) in 1983, due to the rapid growth in this field which was tending to unbalance IJMS. Both journals were initially published by Pergamon Press owned by Robert Maxwell, for whom Bill had great respect, based on their military experiences, and now by Elsevier.

During the period 1960-1975, Bill led a very productive, cosmopolitan, research group with research students coming from all over the world, many recruited through the Applied Mechanics MSc course, which he developed as a novel and successful preparation for research. Several of the subsequent PhD students and members of academic staff who had their initial research training under Bill’s guidance, themselves were appointed to Chairs in the UK and in many countries abroad for example China, Singapore, Canada, USA etc., itself a strong testimony to his great academic influence.

In 1975 he was invited to take the Chair of Mechanics in the Engineering Department at the University of Cambridge and so left Manchester. There he gained national recognition by being elected FRS, Fellow of the Royal Society, in 1981, and FEng (later FREng), Fellow of the Royal Academy of Engineering in 1983. This delighted Bill, his wife Heather, and all his friends. After taking early retirement from Cambridge, he then spent ten years from 1982 to 1992 at Purdue University Indianapolis, USA, where he was a Distinguished Professor.

Bill was awarded several honorary degrees including those by UMIST and the University of Sheffield. He was also elected a Foreign Fellow of the Academy of Athens, Greece, membership of the Russian Academy of Science and the Indian National Academy of Engineering. In closing, Bill Johnson’s life can certainly be summarised: “Record and Services, more than Satisfactory”

Bill was also a family man. Throughout his career, Heather supported him in all his activities with her renowned hospitality to all and the provision of secretarial duties for the IJMS and his prolific output. She died in 2004. Their five children, Philip, Chris, Helen, Jeremy and Sarah, eleven grandchildren and two great grandchildren survive him.