LAUDATIO DUNCAN DOWSON

Patrick De Baets

It is a great honour to introduce Professor Duncan Dowson, on the occasion of the presentation of the Sarton Medal awarded by the Faculty of Applied Sciences.

After a 40 years-long, distinguished academic career, Prof. Dowson since 1993 is Emeritus Professor of the University of Leeds. Nevertheless, his scientific activities have not slowed down. As a research professor in Leeds he is still involved in tribology -the science of friction, wear and lubrication-, he encourages young researchers, helps them developing and loves them making scientific progress. Tribologists world-wide know professor Dowson as the editor of the outstanding journal 'Wear' and as a member of the editorial committee of several other international journals. They also make great chance to meet him as a presenting author on one or other tribology conference. It is a great honour to us that he is now attending the Symposium on Computational and Experimental Methods in Mechanical and Thermal Engineering organised at the occasion of the 100th anniversary of the Laboratory of Machines and Machine Construction of our Alma Mater.

Professor Dowson graduated in 1950 in Mechanical Engineering after having started studies in mining and minerals. The legend tells that it was a lecturer's enthusiastic explanation about fluid mechanics that made him change his final degree to mechanical engineering. Fascinated by fluid mechanics and intrigued that all machinery moves and works efficiently without grinding, without excessive friction, depending on the performance of a very thin, extraordinarily thin, lubrication film, he made a PhD thesis on the cavitation in lubricating films in 1952. After that he went to Whitworth Aircraft Company, but not for long. His old professor convinced him to take up a lectureship at Leeds, with the promise that it would only be for two or three years. A whole life dedicated to Leeds University, to tribology more specifically, has become the result.

In 1966 Duncan Dowson became professor in fluid mechanics engineering and tribology. He was the first professor in the world to have a chair which included the word 'tribology'. Many of his colleagues judged this risky, the more that at that moment the word tribology was nearly non-existent. Indeed, it was freshly introduced by a Lubrication Engineering Working Group which had been formed by the British Minister of State for Education and Science in order to establish the position of lubrication education and research in the United Kingdom, and the industry's need thereof. This group, of which Duncan Dowson was a member, felt desirable to introduce one single word to embrace friction, lubrication and wear. The final choice 'tribology' was based on the Greek τριβοσ (rubbing) and was defined as 'the science and practice of interacting surfaces in relative motion and of the practices related hereto'.

In these pioneering years Professor Dowson studied the failure mechanisms of gears. He believed that the theory of Osbone Reynolds (1886) about the lubrication of bearings could also be applied to gears, which operate under much less favourable conditions. The first solutions which covered factors such as elastic deformation, rheology and gear teeth contacts, took 18 months to calculate by hand. Probably this experience lead to Professor Dowson's conviction that mathematical theories are of little use if they can't be practically applied. Anyway, the end result of this tremendous work was the theory of elastohydrodynamic lubrication, published in a 250 pages thick book, and honourable awards to its author.

The interests of Professor Dowson were not only confined to machinery. He also applied the theory of elastohydrodynamic lubrication to human and artificial joints. This subject was really fascinating him and he set up a bioengineering group at Leeds university. He is author of a book on 'Mechanics of joints and joint replacement' and today still is member of the editorial board of several biomedical journals.

Characteristic for Professor Dowson's research is its fundamental character combined with a high applicability. Professor Dowson strongly believes that universities can not be immune to the needs of industry. At Leeds he created an industrial unit of tribology to encourage cooperation with industry and to solve practical engineering problems.

As a real academic Professor Dowson is endowed with a 'universal' mind and very broad interests. Driven by scientific curiosity and interest in the influence of social, economic and historical factors upon the development of engineering and tribology, Professor Dowson wrote a 500 pages book on this subject, 'History of Tribology'. With respect to the goals of the Sarton committee Professor Dowson will resume in his lecture the developments in the science of friction, wear and lubrication. I am convinced that we will enjoy his talk 'Tribology from Leonardo (da Vinci) to the third millenium; - Millimetres to nanometres.'