

International Library Association. Here, again, our space forbids us to catalogue his almost inexhaustible list of honours, but we must mention that he was a Commander of the Legion of Honour, and he held the Order Pour le Mérite. He was elected a Fellow of the Royal Society in 1858.

Lord Avebury married firstly Ellen, only child of the Rev. Peter Hordern, and secondly Alice Augusta Laurentia, daughter of the late General A. A. L. Fox-Pitt-Rivers, a granddaughter of the second Baron Stanley of Alderley. He is succeeded by his eldest son, the Hon. J. B. Lubbock, who is a partner in the banking firm of Robarts, Lubbock and Co.

PROF. J. T. NICOLSON.

THE early death of Dr. J. T. Nicolson, professor of mechanical engineering in the Manchester School of Technology and in the University of Manchester, will be much regretted by a wide circle of friends. His health during the past six months had given serious cause for anxiety, but had improved sufficiently to allow him to return to his duties. There followed a sudden relapse, and he died at Macclesfield on May 27 after a brief illness.

Prof. Nicolson was born at Amble, in Northumberland, in 1860, and received his early education at Watson's College, Edinburgh. He was then apprenticed to Hawthorne Leslie and Co., Newcastle-on-Tyne. From there he gained a Whitworth scholarship and entered Edinburgh University, where he graduated in 1889, obtaining the D.Sc. degree some years later. After graduation he spent two years in Charlottenburg, where he investigated the strength of materials under Prof. Martens. After holding the position of assistant-lecturer in engineering in the University of Cambridge, he was appointed in 1892 professor of mechanical engineering in McGill University, Montreal. He took an active part in the equipment of the engineering department and in arranging the courses of instruction for students. During his stay in Montreal he undertook an investigation with Prof. Callendar on the valve-leakage of steam on the surface of cylinders. This important investigation led to the award of the Telford premium to the authors. Prof. Nicolson resigned his professorship in Montreal in 1899 in order to take charge of the engineering department of the School of Technology, Manchester, and was largely responsible for the whole engineering equipment of that institution—an equipment which in variety and extent is even now unsurpassed in this country. When degree courses were instituted in the School of Technology in connection with the University of Manchester he was appointed the first professor of mechanical engineering, a position which he held until his death.

Prof. Nicolson's tenure of the chair at Manchester was marked by several important and extensive investigations. He made detailed experiments on rapid-cutting steels, in which he showed

the relations between the cut and speed and the durability. The results of these investigations were published as a report by the Manchester Association of Engineers in 1903, and were well received by the engineering profession. As was characteristic of Prof. Nicolson, he immediately applied the experimental results to the improvement of the design of machine tools.

During the last few years of his life he took up the question of the transfer of heat to boilers. The late Prof. Osborne Reynolds had predicted in 1874 on theoretical grounds that the rate of transfer of heat from a gas or fluid to a solid surface should increase with the velocity of movement. This was confirmed for fluids by the experiments of Dr. Stanton in 1897. Prof. Nicolson, in an elaborate series of experiments, showed that the same result held for gases. He then applied this idea to the design of boilers and condensers, the essential point being that the heated gases were driven at a high speed through the tubes of the boiler, the water circulating in the opposite direction. As a result of an extended trial of a 60-h.p. boiler over sixty days, it was found that the efficiency of such a combination was considerably greater than that of the ordinary boiler. There has been much difference of opinion among engineers as to the practicability of this idea, but Prof. Nicolson himself had the strongest belief in the greater overall efficiency to be obtained by his methods.

The training of Prof. Nicolson fitted him admirably to fill the position of a professor of engineering, for he had not only a wide scientific outlook, but took a keen interest in the practical side of his profession. This is shown by the promptness with which he applied the results of his scientific investigations to the improvement of engineering practice. He was a man with strong opinions on engineering questions, and vigorously supported his position when attacked. His personal integrity, straightforward character, and sympathy with their scientific difficulties endeared him to his colleagues, while his vigorous personality and ability as a teacher made a strong and lasting impression on all his students. Owing to his increasing deafness he was unable in recent years to take that active part in administrative matters for which his wide outlook well fitted him. His premature death is a great loss to science, and will be much regretted by his colleagues both in Manchester and Montreal.

NOTES.

THE home list of honours conferred on the occasion of H.M. the King's birthday on June 3 includes three new Privy Councillors, seven new baronets, and twenty-six knights. The only fellow of the Royal Society in the list is Prof. E. A. Schäfer, professor of physiology in the University of Edinburgh, who has received the honour of knighthood. The same honour has been conferred upon Prof. J. H. Biles, professor of naval architecture in the University of Glasgow. Prof. T. H. Middleton, formerly professor