

BOOK REVIEWS

EXPERT ASSENT

Public Knowledge

An Essay concerning the Social Dimension of Science. By J. M. Ziman. Pp. xii+154. (Cambridge University Press: London, 1968.) 22s. 6d.; \$4.50.

"SCIENCE is public knowledge": that is the main theme of Professor Ziman's lively essay. The objective of science, he contends, is not just to explore nature, but to achieve the widest possible consensus of rational opinion: "the scientific enterprise is corporate", the joint social product of "invisible colleges" of experts. A castaway on a desert island may indulge in technology or art, but not science. Professor Ziman gives little credence to the popular image of the scientist as artist, fanatically pursuing some abstruse line of research, caring only for truth and not for recognition, and driven by his daemon, just like his brother the poet, who starves in a garret nearby. This image of the dedicated scientist may be a caricature; but it would be no less of a caricature to pretend that scientists bow three times to the Corporate Scientific Enterprise before beginning their work of adding a few more bricks to this edifying edifice. In reality, a critic might say, scientists (if given the chance) merely pursue the research that appeals to them most: or, to twist plain words into the absurdity of an abstraction, science is therapy for scientists. Their activity may contribute to the corporate scientific edifice, but they give it little thought. Another critic might dismiss those "invisible colleges" of experts as grandiose names for small cliques of conformists, who do more to hinder science than to help it. Although such criticisms deserve to be mentioned, they do not really damage Professor Ziman's thesis: it is valid within limits, and his argument is convincing within those limits, which he is well aware of.

His book is, however, much more than a mere thesis. He also explains what science is about and how scientists do their work. He writes in plain English too, in a style so winning and direct that even his statements of the obvious sometimes rise to the level of "what oft was thought but ne'er so well expressed".

Professor Ziman is scornful of academic studies in the philosophy of science, which he calls "arid and repulsive" and "almost meaningless to the average working scientist". Too many people become indoctrinated at school with the idea that science is some kind of fixed holy writ; in fact, in the research phase, "science is romantic in its chaos . . . if everything were already clear, then there would be no research to do". The alleged "logic" of scientific procedures also receives some sharp knocks: instead the emphasis is on the unexpected discovery, most often made by applying common-sense untrammelled by current orthodoxies. Professor Ziman also stresses the importance of the scientific literature, the repository of that consensus of "public knowledge", and he leads in to the subject with the provocative sentence: "all our elaborate apparatus and skilled technicians exist only to add a few more pages to the books on the shelves".

Any non-scientist who wishes to know how scientists really work could not do better than read this little book.

D. G. KING-HELE

FATHER AND SON

Life of John William Strutt

Third Baron Rayleigh, OM, FRS. By Robert John Strutt, Fourth Baron Rayleigh. Pp. xxvi+439. (University of Wisconsin Press: Madison and London, 1968.) \$10.

THERE is no sense mincing words about it, this is an extremely dull book about a very dull personality. Originally published in 1924, this account of the life of Lord Rayleigh has now been reprinted with a few editorial revisions and several annotations by John Howard. The art of scientific biography is a notoriously difficult form to master, requiring as it does scientific acumen, the industry of a bibliophile and the ability to construct an interesting story. More importantly, it demands a sophisticated and balanced integration of the development of the man and the growth of the scientist. If Lord Rayleigh's son and biographer had these qualities, he certainly kept them well disguised.

The elder Lord Rayleigh, in spite of his important contributions to theoretical and experimental physics, led a quiet, uneventful life of a kind characteristic of late Victorian gentry. The excitement and vigour of his scientific work was thus in sharp contrast to his largely undramatic personal career. Inexplicably, the biographer focuses almost exclusively on describing the routines and vagaries of Rayleigh's personal life and tells us next to nothing about Rayleigh's ideas, or about the factors that led to his important discoveries, or about the style and development of his theories. Instead, we are led through a dreary summary of the history of the Strutt family, an account of Rayleigh's extensive travels, his domestic and social life at his family estate and his work in government. Rayleigh's brilliant work on acoustics, black-body radiation, dimensional analysis and engineering physics is scarcely touched on, the excuse being that the biographer's aim was "not so much to give an account of my Father's scientific work as to depict him as a man" (page xxi). When scientific matters do arise, they are treated as anecdotal asides, designed more to poke harmless fun at Rayleigh's colleagues than to throw light on the significance and importance of Rayleigh's friendships with Kelvin, Maxwell, Thomson, Stokes, Waterston and Dewar. It is a symptom of the biographer's misplaced veneration for his subject, and a sign of his poor feel for the significant, that he devotes an appendix to recounting the jokes and jests his father used to tell.

In spite of the incomplete picture this book provides, it does contain much material (including excerpts from correspondence) that will be invaluable to the future writer of Rayleigh's biography. But those of us who have a high respect for Rayleigh's work can only wish that this biography had been left to languish unread on library shelves rather than resurrected, for it can only serve to discourage a proper study of Rayleigh's life and career.

LAURENS LAUDAN

HISTORY OF CHEMISTRY

Chymia

Annual Studies in the History of Chemistry, Vol. 12. Edited by Henry M. Leicester. Pp. 236. (University of Pennsylvania Press: Philadelphia; Oxford University Press: London, 1967.) 81s.

RECENTLY *Chymia* has been a problem to its friends, who are fond of it and its highly respected editor. They have to wonder now, however, whether it still justifies its independent existence. What should be the character of a publication which assembles the work of several authors? *Chymia* exemplifies a problem which is probably common in other disciplines but is particularly striking in the