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## HUMANITIES OF SCIENCE

### Science since Babylon

By Prof. Derek J. de Solla Price. Pp. x+149. (New Haven, Conn., and London: Yale University Press, 1961.) 4.50 dollars. 37s. 6d.

THIS book, Prof. Price tells us, had its origin in a set of five lectures given under the auspices of the Department of History at Yale University in 1959. It makes no claim to be a history—even a historical sketch—of 'science since Babylon', but rather by reflecting on certain special aspects of that history to gain some insight into why, or in any event how, science has come to be what it is; and thence to deduce the likely course of its future development. The whole thus constitutes an essay in what Prof. Price wishes to call "the humanities of science".

In five chapters the author approaches the question along three fairly distinct roads: the thesis that the character of a scientific epoch is largely conditioned by the instruments available, hence by the special skills of the contemporary 'practitioners'; a somewhat detailed examination of the great 'mutation' in physics consequent on Roentgen's discovery of X-rays; and a roughly statistical analysis of the growth of science deduced from such 'pointers' as primary periodical publication, abstracts, individual papers, numbers of active scientists and universities.

Despite Prof. Price's well-known virtuosity in the first field, here amplified by some fascinating 'revelations' of his methods, belief in the thesis is not likely to be strengthened by some of the arguments which are adduced. What are we to make of the statement (pp. 51, 13) "... that it was the Germanic region of Luther rather than Catholic Italy that saw the revival of astronomy by Regiomontanus [d. 1476], Kepler and Copernicus"? Or by the description (p. 61) of Hooke as an ingenious artisan "... who though reasonably educated [Westminster School and Christ Church, Oxford] had no special training in science other than ... by apprenticeship ['research assistant' to Willis and later Boyle]?" Who among the early Fellows of the Royal Society, we may ask, had a better preparation in 'science'?

On the other hand, Chapter 5, entitled "Diseases of Science", "... its superabundance of literature, its manpower shortages, its increasing specialization, its tendency to deteriorate in quality"—together with the epilogue, entitled "The Humanities of Science", constitute for the reviewer alike the most convincing analysis of the terrifying *djinn* that optimistic Western man has released from its bottle, and a carefully considered justification for the establishment of 'humanities of science'—call it what you will—as a separate discipline. For this reason *Science since Babylon* is an important, possibly a very important, contribution. It is all the more regrettable that it is exorbitantly priced.

W. P. D. WIGHTMAN

## A SHORT HISTORY OF SCIENCE

### The Mechanization of the World Picture

By Prof. E. J. Dijksterhuis. Translated by C. Dikshoorn. Pp. viii+539. (Oxford: Clarendon Press; London: Oxford University Press, 1961.) 105s. net.

TRIPLY laden by its burden of price, bulk and title, this book cannot be expected to join the ranks of best-selling general histories of science. However, its contents should and probably will be made known to the ever-increasing audience for the history of science. Since the publication of Burt's pioneering work some thirty-five years ago, the 'metaphysical' side of the rise of modern science has received increasing attention, and there is now a fair selection of popular books presenting this story. Up to now each author has had to dig for himself in the secondary literature, scattered among many journals and written in all the European languages. Now those who teach and write on the history of science have a coherent and scholarly account, written in English and with a comprehensive bibliography. There is no longer any excuse for ignorance. Also, those who want to learn something of the history of science and are not satisfied by vulgarization, however high, can study this book with profit and satisfaction.

Prof. Dijksterhuis gives us an example of how to write the history of science. In each of the many topics he covers, he describes briefly what he is going to discuss, and (more important) mentions relevant topics which he is not going to discuss. The history of science has been plagued too long by smash-and-grab methods where one 'scientific' contribution of a man is described and analysed, while the philosophical, religious or social thought in which the contribution was originally embedded is left unmentioned. Also, it is clear that he has thoroughly mastered the technicalities of each problem, and not contented himself with understanding only that part which could easily be popularized. This produces greater accuracy on small and large points. His is the only general account of seventeenth-century mechanics which mentions the significant fact that Newton's laws do not use time-derivatives; " $F=ma$ ", as an explicit statement, dates from Euler. Another example is his simplified diagram of the Ptolemaic world-system: no other such diagram shows both the deferents of the inner planets, and the epicycle-arms of the other planets, as roughly parallel to the line joining Earth and Sun.

The first half of the book is devoted to the background in ancient and medieval thought. The two most attractive problems, cosmological speculation and the causes of motion in inanimate bodies, receive their proper place in the complex of philosophical problems on the nature of reality and the nature of change. Prof. Dijksterhuis covers the whole range of the exact sciences and philosophical thought