

on the accession of William and Mary. Of his not very conspicuous activity in this function the main testimony is a correspondence, duly reprinted in this volume, with John Covel, the vice-chancellor, about the confirmation of the statutes of the University; some other minor information on Newton's election may be found in the study by M. B. Rex, *University Representation in England 1604-1690* (Allen and Unwin, 1954). He was not re-elected in 1690 and his endeavours in the ensuing years to obtain a suitable office did not go without humiliations which—one gathers from hints in the correspondence (see Nos. 377, 384, 420, 423)—he seems to have acutely resented.

Newton's interest in public affairs cannot be separated from his earnest and deep-going studies of ancient history and especially of the early history of Christianity, in which he sought the foundation of political law and order in the same spirit as he tried to derive from the analysis of natural phenomena the law and order which God had designed for his creation. In this volume we are given the first correct text of one of his most considerable works in this field, together with two previously unpublished additions to it (Nos. 358, 359, 360), and are thus enabled to form an opinion of the true character and value of this little-known and often misunderstood aspect of his thought. After reading the long "historical account of two notable corruptions of Scripture, in a letter to a Friend", I do not hesitate to put this pamphlet on a par with the *Provinciales*. Certainly, there is nothing in it of the fiery Frenchman's passionate eloquence and biting sarcasm, but the same merciless exposure of fraud and delusion is here as effectively achieved by restrained statement and cool logic. This does not mean that Newton's composition is artless: he knew how to use rhetorical devices, and it requires great skill to display such erudition without becoming tedious, to develop intricate arguments with such unflinching clarity and to formulate conclusions with such forceful concision. But the greatest beauty of the epistle lies in its candour. One sentence in it might be the motto of every scientist: "There cannot be better service done to the truth than to purge it of things spurious".

L. ROSENFELD

## PROBABILITY AND INDUCTION

### Theory of Probability

By Prof. Harold Jeffreys. Third edition. (The International Series of Monographs on Physics.) Pp. viii+447. (Oxford: Clarendon Press; London: Oxford University Press, 1961.) 84s. net.

THE appearance of a third edition of this book is an indication of its permanent place in the literature on probability. Its avowed object, quoted from the preface to the first edition, "is to provide a method of drawing inference from observational data that will be self-consistent and can also be used in practice". It is thus essentially a book on the use of probability in induction. A substantial part of the book is occupied with discussions of statistical testing and estimation procedures, although recent developments in the analysis of time series and other stochastic processes are not seriously considered, so that the discussion of statistical procedures should presumably be regarded as illustrative primarily of the author's approach.

In this new edition one or two additions and rearrangements of material have been made; for example, there is some amplification of the discussion

of the problem of finding self-consistent rules for assigning values to prior probabilities. Such rules, while they tend to make the theory more epistemological and conventional in character, in contrast to inverse probability procedures based on personal prior probability assessments, help to make this work one of the most impressive attempts so far to formulate an explicit induction procedure founded on probability. However, I am far from alone in thinking that the procedure still has serious disadvantages as well as advantages, so that the optimum degree of formalization of the induction problem remains a matter for legitimate debate. The formal method of assigning prior probabilities to theories and hypotheses not only involves the task of numerical assessment of these probabilities but also first an enumeration of all the hypotheses and an acceptance that one of them is true (compare Einstein's remark that every scientific proposition, being man-made, is false).

Probability can alternatively be studied as a purely mathematical subject, or in relation to observed statistical regularities. Statisticians are largely concerned with the use of probability in this last sense; it is important to recognize this, and not slur over it, as advocates of inverse probability have a tendency to do. The author's thesis is not helped by such remarks as (in the new preface): "Adherents of frequency definitions of probability have naturally objected to the whole system. But they carefully avoid mentioning my criticisms of frequency definitions, which any competent mathematician can see to be unanswerable". This remark is provocative and misleading. It ignores the dependence of modern probability theory, as formulated, for example by A. N. Kolmogorov, on frequency (cf. *Foundations of the Theory of Probability*, English translation, p. 3. New York, 1950). Jeffreys, in fact, makes no reference to Kolmogorov, and is also in other ways curiously uneven and cryptic in his references to relevant literature. Writers such as R. B. Braithwaite and R. F. Harrod, who scarcely see eye to eye with Jeffreys, are not listed in the index. Even L. J. Savage and I. J. Good, authors of books advocating inverse probability methods, but with the use of prior probabilities more personal than those of Jeffreys, get no mention. One feels that writers on induction have a particular obligation to appraise other points of view fairly and comprehensively, as part of the evidence before them on the merits and demerits of their own case.

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## HISTORICAL AND PSYCHOLOGICAL ORIGINS OF SCIENCE

### The Origins of Science

An Inquiry into the Foundations of Western Thought. By Ernest H. Hutten. Pp. 241. (London: George Allen and Unwin, Ltd., 1962.) 28s. net.

THE aim of this book is to explain science from its historical and psychological origins." The drive behind Dr. Hutten's enterprise is dissatisfaction with the alleged failure of philosophers to re-fashion the categories of criticism within which the Greeks, through their relative ignorance of science, were compelled to work; his cure for this is to recognize a much less sharp boundary between inner and outer experience, reason and emotion, than has traditionally been the custom; his method, the reinterpretation