

BOOK REVIEWS

ATOMS FOR STUARTS

Atomism in England from Harriot to Newton

By Robert Hugh Kargon. Pp. viii+168. (Oxford: Clarendon Press; London: Oxford University Press, 1966.) 42s. net.

SINCE Kurd Lasswitz's pioneering study of the *Geschichte der Atomistik* appeared in 1890 our knowledge of atomic theories in the post-Renaissance period has grown rapidly. The corpuscularian ideas of Descartes and Gassend in France and Hobbes, Boyle and Newton in England, in particular, have been the subject of intensive research. Most scholars have followed Lasswitz's internalist approach, treating the development of atomism as essentially the interplay of explanatory ideas put forward by a few great scientists, wholly divorced from the social, political and theological realities of their age. By ruthless chopping of contrary fact a simple picture of the growth of atomism in the seventeenth century can be drawn: this sees the scientists of the period, in reaction against the stilted, imprecise, categorized qualities of mediaeval aristotelianism, as irresistibly attracted to the vivid, quantitative, open-ended explanations afforded by models of small, hard, "massy" bodies in motion. In Kargon's present view such an idealized portrait is both ahistorical and inadequate: to gain a balanced insight into the historical part played by atomist theories of matter in England in the Stuart period it is necessary not only to take account of the many secondary figures responsible for the acceptance and dissemination of the ideas proposed by the gifted few, but also to assess the cultural milieu in which they lived.

In his book Kargon has not always succeeded in integrating these opposed internalist and externalist attitudes, and too often it is difficult to seize the essence of a particular scientist's atomic point of view through a blurring fog of historical detail. Certainly, his close-knit narrative communicates an immense amount of unfamiliar information. In step with the recent revival of interest in this long underestimated Elizabethan giant, we are urged to look on Thomas Harriot as the father of English atomism even though his influence was virtually restricted to his friends Torporley and Warner. Thereafter in quick succession we are given a summary of Bacon's early atomistic views and a condensed account of the Gassendist revival of Epicurean atomism (introduced into England by Hobbes, Digby, Cavendish and especially Walter Charleton), while the concurrent impact of Cartesian mechanical philosophy is traced in the writings of Robert Boyle, Isaac Barrow and Newton. It is less easy to identify general conclusions in this mass of narrowly documented if not wholly pertinent detail, but he asserts sensibly that, because Greek atomistic ideas were too closely involved in philosophical dispute over the existence of the "indivisibly" small to be a viable basis for quantitative explanation, not till a kinematics (and indeed dynamics) of the motion and impact of bodies had been formulated was it possible to have a physically useful atomic model. Disappointingly there is not a single diagram in the book—he gives no examples of how individual atomists differed

in their technical accounts of such intractable phenomena as the simultaneous reflexion and refraction of light at an interface, the shapes of crystals or gravity. The vulnerability of atomism in the early century to the popular charge of being intrinsically pagan and so atheistic is stressed, while Bacon and Barrow are provocatively cited as the sources for Newton's concept of hypothetical method, but many readers will find that this book's real value is in its excellent bibliography.

D. T. WHITESIDE

EDITORS WANTED

Chymia

Annual Studies in the History of Chemistry, Vol. II. Edited by Henry M. Leicester. Pp. 208. (Philadelphia: University of Pennsylvania Press; London: Oxford University Press, 1966.) 40s. net.

THE most interesting paper in this volume is that by J. B. Phillips, *Liebig and Kolbe, Critical Editors*. This is the sort of historical essay which has something useful to say to any practising chemist of today; in this case, about the assessment and communication of research. It is doubly interesting because it makes one ask: how critical are the editors of *Chymia*?

The other twelve papers vary remarkably in merit. The extended view is taken by N. A. Figourovskii, who does his fellow historians of other countries a substantial service by a detailed study of *Chemistry in Early Russia*. In contrast, a single instructive episode is described, with his usual lucidity, by W. A. Smeaton (*Macquer on the Composition of Metals*). V. M. Schelar, in a well organized account of the origin of the third law of thermodynamics, faces up bravely to a topic which the average historian of chemistry passes fearfully by.

One would rightly expect any editor to welcome these papers as they stand, but not that of W. D. Miles on the European travels of J. C. Booth, the American consulting analyst. This pedestrian selection of extracts from a manuscript diary ends with a quotation from Edgar Fahs Smith: "[Booth's] idea was that the laboratory should be a miniature factory and the factory a mammoth laboratory". Had this quotation come first and been used as a guiding light for the interpretation of the diary extracts, Miles could have produced a paper of far greater value. It is an editor's duty to try to draw out of a writer the best that is in him, to be constructively critical, which could have been done in this case.

The same failure of constructive editorship is to be seen in the paper by N. L. Jain on *Chemical Theories of the Jains*, which contains, for example, confused references to "electrical properties of substances" at a period apparently (it is not at all clear) around the first century A.D. when there were no electrical concepts of the sort used in the context. Again: "The atoms have Brownian movement. This makes the atoms dynamic rather than static. This movement may be due to natural or internal causes or to external forces. Sometimes this may be so vigorous that the atoms traverse the whole universe in a moment". What justification is there for calling a random motion of this vague sort a "Brownian movement"? The matter theories of other periods or cultures can be very interesting, but no service is done to their study when insufficient effort is made to protect the reader from confusion with modern concepts or terminology.

If the editors of *Chymia* expect its papers to have style and substance, they could surely, with their great experience, guide their contributors into tidier writing and clearer thinking. Liebig and Kolbe may have overstepped the mark at times, but it would be better for the editors of *Chymia* to take this risk rather than that of allowing *Chymia*'s good reputation to decline.

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