be recommended not only to engineers and physicists interested in learning the principles of accelerators per se but also to research scientists planning to participate in that nuclear physics research which requires the use of these machines.

Essay on Atomism. From Democritus to 1960. By Lancelot Law Whyte. 108 pp. Wesleyan U. Press, Middletown, Conn., 1961. $2.95. *Reviewed by Cyril Stanley Smith, Massachusetts Institute of Technology.*

THIS book is a good introduction to the idea of atomism, stressing the variety of concepts and the transformation from the initial Democritan division of occupied and void space to our present belief that particles are in some measure a function of their environment. A central part of the book is the chronological table which provides pegs for various discourses. The persisting problem of discreteness *vs.* continuity in knowledge generally is treated with a brevity unusual for a philosopher.

Not all physicists will like *Essay on Atomism* but it is recommended reading for graduate students because of its discussion of how traditional ideas have always carried with them a block against more fruitful alternate patterns of thinking. Perhaps, says the author, "the obstructive element in current theory may conceivably be a persisting excessive reliance on symmetry and invariance." Anyone hoping to make a contribution of fundamental importance who encounters this book will pause before doing the next obviously valuable experiment or theoretical analysis, to seek qualitatively the kind of thought that is needed in physics.

Techniques of High-Energy Physics. David M. Ritson, ed. Vol. 5 of Monographs and Texts in Physics and Astronomy, edited by R. E. Marshak. 540 pp. Interscience Publishers, Inc., New York, 1961. $16.75. *Reviewed by Herman Yagoda, Air Force Cambridge Research Laboratories.*

THIS volume presents an excellent summary of the techniques employed in the detection and measurement of high-energy particles as produced in beam form by accelerators and occurring as a sparse flux in the cosmic radiation. It is devoted largely to methods of estimating the mass, charge, kinetic energy and momenta of the nucleons and associated fundamental particles. David M. Ritson introduces the subject with a chapter on the general properties of particles and radiation whose fundamental tenets are applicable to the diverse detectors of increasing stopping power. About one third of the book is devoted to the construction and operation of diffusion cloud chambers, liquid bubble chambers and the nuclear emulsion. These abound in details of the plumbing essential to their proper operation. The section on nuclear emulsions has scored a first in being the only review that does not exhibit photographs of tracks produced by ionizing particles. This may be taken as a tacit acknowledgement that this detector has definitely arrived.

The prodigious accumulation of information by these devices and related ionization chambers, scintillation and Čerenkov counters, and transistors of which the book treats, necessitates a chapter on the use of digital computers to expedite the flow of data. The volume also treats of beam optics and target preparation and has several valuable appendices, in one of which the diverse techniques are compared with regard to the accuracy of measurements attainable.

Theoretical Aspects of Very High-Energy Phenomena, IUPAP Conf. Proc. (CERN, Geneva, June 1961). J. S. Bell, F. Cerulus, T. Ericson, J. Nilsson, H. Rollnik, eds. 426 pp. CERN, Geneva, 1961. Paperbound. *Reviewed by D. Keefe, Lawrence Radiation Laboratory, Berkeley.*

THE spectacularly successful construction and operation of strong-focusing accelerators in the 30-Bev range at CERN and Brookhaven has raised the problem of what the next step should be in the high-energy field. In the past year three groups—one in Europe, two in this country—have met to discuss the future of high-energy accelerators. Various energies, ranging from 100 Bev to 1000 Bev, have been suggested as possible goals for which to aim. In general, the terms of reference for any preliminary study of such a new machine reduce to three questions:

> Can it be built and made to work?
> Will transport and detection techniques be adequate for successful experimentation in the new energy region?
> Are there experiments which can only be done at such an accelerator and are they sufficient in number and importance fully to warrant its construction?

To provide answers several years in advance can involve at best only an educated guess. Almost all experts agree that the answer to the first two is a simple affirmative; the third question is the one that involves the most crystal-gazing and is illuminated best in this CERN conference report.

One summary paper, by A. Schoch, on the likely design parameters for a high-energy AGS and two short reports on the Stanford and Frascati colliding electron-beam projects complete the contributions concerning accelerators. One session was devoted to the experimental results of high-energy interaction studies using the CERN Proton-Synchrotron and emulsion work on "jets" by the Bristol and Cracow groups. By far the greater fraction of time was devoted to theoretical papers on weak and electromagnetic interactions, the statistical model, diffraction theory, peripheral collisions, and dispersion relations. In each of these fields there are many exciting predictions which can only be checked by experiments at sufficiently high energies. For example, the weak interactions grow enormously in strength, and many