

attempt to collect and publish in a single volume the papers presented at a symposium in this now well-established series. The editors point out in defense of this procedure that it serves to retain the unity of the subject matter; this was also the objective of the Rochester meeting. If prompt publication had made this volume available by the fall of 1962, it would not have been without value in this respect. However, the excessive delay that has occurred between the symposium and final publication of the papers has greatly reduced the value of this volume, particularly in view of the fact that many of the papers have the character of progress reports.

This volume, following the organization of the symposium, is divided into four sections that deal with plasma diagnostics and communications, energy conversion, flight applications, and controlled fusion. The pattern of subsequent symposia is apparent in that magnetohydrodynamic electrical power generation is the topic most strongly represented. Presumably, this situation has arisen because workers in plasma physics and its actual and potential applications to communications and fusion reactors have ample opportunities to present their work elsewhere. The area of propulsion and flight applications similarly offers alternative outlets for presentation and publication.

One particularly pleasant feature of the volume is that it contains an account of the original MHD generator experiments undertaken by Karlovitz and Halasz at the Research Laboratories of the Westinghouse Electric Corporation in 1938. In the field of MHD power generation, the paper by J. J. W. Brown, on power plant economics, should be read by all those concerned with the ultimate utilization of this process. Other papers on MHD power generation indicate trends toward topics that are receiving an important share of current research efforts. This category includes those dealing with closed-cycle power systems operating from nuclear heat sources, and with the utilization of nonequilibrium ionization in MHD generators. Although the direct a-c generation of electric power is no longer advocated with plasma-type MHD generators, the paper on fringing effects should be consulted by those who are concerned with the use of a liquid metal as the working fluid in closed-cycle power systems.

Papers in the other major areas cover a variety of topics ranging from specific plasma diagnostic techniques to plasma accelerators and confinement schemes. Speculative engineering is represented through reports on MHD control of vehicle re-entry and thermonuclear propulsion using superconducting magnets.

The organizers of subsequent symposia in the series have abandoned plans to publish proceedings volumes, and, instead, have arranged to circulate preprints. The volume under review is tangible evidence in support of this procedure, and its chief value will be its service as part of the record of the evolution of engineering interests in the topic of magnetohydrodynamics.

WILLIAM D. JACKSON
*Department of Electrical Engineering,
and Research Laboratory of Electronics,
Massachusetts Institute of Technology*

Science for the Layman

La Science Contemporaine: Les Sciences Physiques et leurs Applications.
vol. 1. Louis Leprince-Ringuet, Ed.
Librarie Larousse, Paris, 1964. viii
+ 360 pp. Illus.

The first part of this two-volume compendium is edited by Louis Leprince-Ringuet, well-known investigator of cosmic rays. It is devoted to the physical sciences and has as its main purpose the enlightenment of those among the general public who are eager to keep informed, but whose knowledge of the theoretical and experimental principles of research is feeble. No attempt is made, however, to state and to elucidate the nature of these principles. The easier way is chosen of describing some of the giant modern research installations and then discussing certain important results achieved with their aid. The fact is stressed that modern research is largely cooperative and that individuals and small groups have less and less chance to compete with the large organizations, a point of view with which I am only partly in agreement.

First, the large installation (the synchrotron at Cern, near Geneva) for the acceleration of protons up to 28 billion electron volts and the results achieved with the analysis of the many new elementary particles of matter are described. This is followed by a com-

prehensive discussion of the instruments and radio telescopes used by optical (classical) astronomers and radio astronomers. The conventionally known cosmic objects are competently described, but too little of the most recently gathered information on the properties of these objects and on astronomical discoveries is offered.

The description of rockets used for space research is stimulating and presents a wealth of facts and principles on propulsive power plants and propellants, as well as on astronomical results already achieved with high flying missiles and satellites, the good discussion of which will certainly be appreciated by the eager lay reader. Interesting vistas into the future of nuclear and electrothermic (plasma ejecting) jet engines are also presented.

Next follows a competent chapter on the design of optical instruments that will make possible the recording and the analysis of all of the essential properties of light which emanates from cosmic, macroscopic, and microscopic bodies. The marvels of modern electronics and their applications to the fields of communication, to the analysis of information, and to ultrafast computing are presented in lucid detail.

There is also a good chapter on nuclear energy and what has been achieved so far to mobilize the insights gained for military, industrial, scientific, and medical purposes. Of particular interest is the discussion of what some have termed the most difficult problem of physics—that is, the mastery of nuclear fusion and its use for the production of inexhaustible quantities of energy. Finally, the organic chemistry of the macromolecules is discussed, and it is briefly indicated how this new scientific discipline has arrived at the threshold of the understanding of the essential processes of life itself.

The book is profusely and well illustrated, partly with excellent color photographs. There is only one formally unfortunate feature: volume 1 has no name or subject index, which, it is promised, will be incorporated in the indexes of the second volume.

Generally, the book is to be recommended highly.

F. ZWICKY
*Mount Wilson and Palomar
Observatories, and
Department of Physics,
California Institute of Technology*