

more broadcast publicity. The physics and chemistry of developers is very well described and the chapters on sensitometry are of special excellence.

The final chapter, "The Structure of the Developed Image," was written by F. D. Perrin, one of the five authors who contributed to the first edition of 1942 and to the present volume. (The others are L. G. S. Brooker, B. H. Carroll, R. P. Loveland and A. Weissberger.) This chapter is of special merit and forms a fitting conclusion for the book. The author considers first the fundamental mathematical concepts required for an understanding of image structure and gives proper emphasis to the optical

transfer function; this leads to a description of the imagery of points, lines and edges and to a discussion of the resolving power of emulsions. His treatment of the errors of density and position is excellent. The value of *MT* curves is demonstrated throughout. Recent studies of granularity and of image evaluation are of special interest. The relation of the photographic process to the varied technologies of information recording and storage forms the conclusion to this chapter and to the entire volume.

The design, figures, tables and illustrations are of the highest quality. The references are extensive, accurate and most helpful for the interested

reader. Author and subject indices are, as always in a volume such as the present one, indispensable.

Along with their editor, the authors of the 23 chapters manifest their high competence together with a clarity of exposition and an accuracy of description of the diverse branches of photographic theory. All their colleagues who employ photographic techniques in their own researches are indebted to them for the excellence of this superb treatment of the photographic process.

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An astrophysicist, Father McCarthy is a member of the staff of the Vatican Observatory at Castel Gandolfo.

One-volume encyclopedia

ENCYCLOPEDIA OF PHYSICS. Robert M. Besançon, ed. Reinhold, New York, 1966. 832 pp. \$25.00.

by H. M. Otte

Should the need arise to fill a lull in the conversation during a social evening's gathering of scientists, one could broach the topic of the value of "Encyclopedias of This and That." The editor of this particular volume felt that an *Encyclopedia of Physics* would be of use to physicists who need information outside of their own special areas of interest, to teachers and librarians who must answer inquiries, to students who wish to add to their funds of knowledge, and to engineers and scientists who encounter physical concepts in pursuit of their professions. For this diffuse but large audience Besançon obtained the contributions of 320 "internationally" prominent authorities each of whom wrote about one article (some two and a half pages long) in his field.

No attempt was made to hold all articles at the same technical level; in fact, the level for each entry was supposedly aimed at those readers who would be most likely to look for information on that specific topic. In effect, the contents of each article were left to the discretion of the author, who in most cases provided references to summary articles and books; cross references to other articles in the *Encyclopedia* were added where they were thought to be of help.

Unquestionably the most difficult problem for the editor was deciding which topics to include and which to leave out since space was clearly at a premium. The choice of audience ensured inclusion of introductory articles on physics, on the history of physics, on measurements, and on symbols, units and nomenclature, plus general articles on the major areas of physics, as well as more detailed ones on the divisions and subdivisions of the major areas. Entries were also made on subjects that include both physics and other disciplines, such as astrophysics or mathematical biophysics. It is an easy temptation to judge the book not on what has been included, but rather on what has been omitted, since the omissions have necessarily been many, in some cases in areas that were supposedly to be emphasized. Thus, no mention could be found of the nomenclature for the elastic constants (that is, compliances and stiffnesses).

The contributors and their contributions are listed at the beginning of the book and present an imposing array. A most creditable feature of the book is the very comprehensive and detailed index, although a brief perusal did reveal at least one omission: under "Dislocation," no reference is made to page 145, where there is an important discussion of the topic. Finally, this reviewer feels that it would be of great interest, if not also

actually of considerable value, to be able to determine to what extent such books as this one do indeed fill a genuine need and if so, how well.

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BOOKS RECEIVED

ELEMENTARY PARTICLES AND FIELDS

Many-Body Theory. Part I of 1965 Tokyo Summer Lectures in Theoretical Physics. Edited by Ryogo Kubo, 1966. 160 pp. Benjamin, New York, \$6.75

Exchange Reactions. Symp. Proc. (Brookhaven, 1965). 417 pp. IAEA, Vienna, 1965, \$9.00

High Energy Physics. 1965 Les Houches Lectures. C. DeWitt and M. Jacob, eds. 509 pp. Gordon and Breach, New York, 1965. Cloth \$10.50, paper \$8.50

Lectures on High Energy Physics. Conf. Proc. (Hercegovina, 1961). B. Jaksic, ed. 532 pp. Gordon and Breach, New York, 1965. \$29.50

High Energy Physics. Part 2 of 1965 Tokyo Summer Lectures in Theoretical Physics. Edited by Gyo Takeda. 121 pp. Benjamin, New York, 1966. \$5.75

Accélérateurs circulaires de Particules. Introduction à la Théorie. By H. Bruck, 358 pp. Presses Universitaires de France, Paris, 1966

Internal Conversion Processes. Conf. Proc. (Nashville, May 1965). Joseph H. Hamilton, ed. 669 pp. Academic Press, New York, 1966. \$22.50

Methods in Computational Physics. Advances in Research and Applications. Nuclear Particle Kinematics. Berni Alder,