Book Reviews

X-Rays and Gamma Rays

The Encyclopedia of X-Rays and Gamma Rays. George L. Clark, Ed. Reinhold, New York; Chapman and Hall, London, 1963. xxviii + 1149 pp. Illus. $35.

Within the past few years George L. Clark has edited several encyclopedias—*Encyclopedia of Chemistry, Encyclopedia of Microscopy,* and *Encyclopedia of Spectroscopy*. Now we have *The Encyclopedia of X-Rays and Gamma Rays*. The field of x-rays, particularly x-ray diffraction, is Clark's specialty, and so one would expect a very good job here. Massive (1149 pages) and weighty (6 lb) though the encyclopedia is, this expectation unfortunately is not realized. There are some very good articles in the encyclopedia. Unfortunately, however, there are also all too many very bad ones, and they tend to outweigh the good ones. I cannot attempt to evaluate all of the articles—there are about 400 of them—but I have looked at every page.

For whom is this encyclopedia written? I cannot tell. Some of the articles are extremely elementary; some are so difficult that they are beyond my comprehension. An encyclopedia is as good as its index, because only through the index can one hope to find the information one seeks. Unfortunately the index is extremely poor. If we look up "uroliths" in the index, we are referred to page 178. A much better article on the same subject appears on page 589, but one would never find it by using the index. If we are interested in "balanced filters" the index refers us to only a brief paragraph on page 246, but there is a good treatment in another article on page 391. There seem to be no articles on space groups, space lattices, symmetry elements, the Mössbauer effect, anomalous dispersion or virus structures. Although we can learn, by referring to the index, that a kX unit is 1.00202 Å, nowhere can we discover why we are plagued by kX units.

Many articles are devoted to trivia. Thus, we have more than a column and a half devoted to "Titania–Opacified Enamel Diffraction Analysis" (p. 1052). It is not quite clear why articles of this character belong in an encyclopedia. There cannot have been too serious an attempt at editorial supervision. Extensive duplication is found throughout the volume, and from time to time we are treated to some real nonsense. At the bottom of the first column on page 110 we learn that x-rays can be "monochromatized by a two-slit collimater." On page 242, under a discussion of the Laue method, we are seriously told that "Front-reflection photographs may be used for identification while back-reflection photographs may be used for precision lattice constant measurements."

In the preface (p. xv) Clark says ". . . it would have been foolhardy to try to reproduce the very extensive material and tables on Space Groups . . . [since they are covered so competently in the] *International Tables of Crystal Structures*. I agree. But, in view of this, why devote 12 pages to three and four place tables of wavelengths when better five and six place tables are available in the *International Tables for X-Ray Crystallography?*

It really is a pity; there is much good material here. Proper editorial supervision could have cut this six-pound volume down to four, and the thoughtful expansion of the index from 10 to 25 pages would have enhanced the usefulness of the encyclopedia tremendously.

One is accustomed to blurbs on the jackets of books, which somewhat exaggerate the quality of the book's contents. The blurb on this book jacket starts with the following sentence: "The world's foremost authorities on radiation science have pooled their vast wealth of experience into this major scientific encyclopedia." I cannot accept Clark's statement on the first page of the preface: "With very few exceptions the list of authors in the following pages is the 'Who's Who' of radiation science in the world." My own list would have very little overlap with the list of contributors to this encyclopedia.

Technically the *Encyclopedia* is a good job. The printing is clean, as is the reproduction of the many photos and figures. The binding seems sturdy enough to stand heavy use. Unfortunately, while undoubtedly many copies will be bought, not too many of them will be heavily used; a few futile tries at finding what one wants will be, for most users, discouraging enough. I cannot recommend this book.

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Rutherford Jubilee

Rutherford at Manchester. J. B. Birks, Ed. Heywood, London, 1962; Benjamin, New York, 1963. x + 364 pp. Illus. $12.50.

The Rutherford Jubilee International Conference was held in September 1961 at Victoria University (Manchester) to mark the 50th anniversary of the Rutherford scattering law and the discovery of the atomic nucleus. This volume includes the lectures that four of Rutherford's former colleagues (E. Marsden, C. Darwin, E. N. da C. Andrade, and N. Bohr) delivered at the commemorative session, Rutherford memorial lectures given in the past (by H. R. Robinson, A. S. Russell, and P. M. S. Blackett), and selected reprints of early work concerned with the discovery of the nucleus.

The lectures yield a clear picture of Rutherford as a scientist and a research director—so clear, in fact, that the reader almost feels that he personally participated in the Manchester program. The events leading up to the discovery of the nucleus, and the subsequent development of Bohr's atomic theory, are traced with such care that the book will be indispensable to anyone deeply interested in the history of science.

Because several years separated the original delivery of some of the lectures, there is a good deal of repetition.