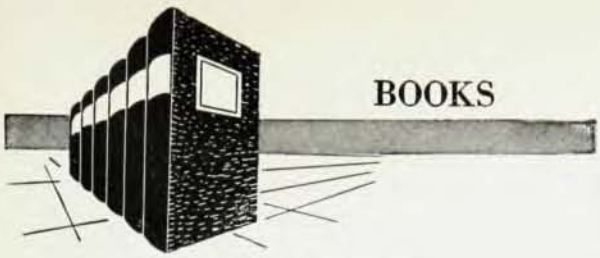

BOOKS

Cosmic Ray Survey

COSMIC RADIATION. Colston Papers based on a symposium promoted by the Colston Research Society and the University of Bristol, September 1948, published as a special supplement to the British journal Research. 189 pp. Butterworth's Scientific Publications, London. Interscience Publishers, Inc., New York, 1949. $5.50.

The Colston Research Society has made a valuable contribution to research through its publication of the papers presented at the symposium on cosmic radiation held in September, 1948 in the University of Bristol. This symposium is characteristic of many similar meetings that have been held to discuss the status of developing fields of modern physics. There are a few principal papers that present the general history and current status of special fields and a larger number of short reports. These short reports vary from the presentation of material that had previously appeared in full in the journals to notes of progress on incompleted experiments or proposals for new experiments.

The extensive reports by B. Rossi on the "Disintegration and Nuclear Absorption of Mesons"; C. F. Powell, "Properties of π and μ Mesons of Cosmic Radiation"; and W. Heitler, "Cosmic Ray Mesons and Meson Theory," are the most important sections of the report. Each of these authors has prepared a survey of the status of a portion of the field of cosmic ray physics that is comprehensive and systematic. The experimental work reported by Rossi and by Powell has been so well established by many observers that the present picture of the cosmic ray mesons is not likely to change in the near future. On the other hand, the theory of mesons presented by Heitler leaves one with the impression that the experimenters are, at the moment, well ahead of the theorists.

As is typical of a symposium, the general subjects of the papers are properly arranged in groups but there is no satisfactory correlation between the papers in each special field. A few authors have added a remark from the discussion but almost no references are made to other papers in the same field presented at the Bristol symposium. The reports present well the character of a modern physics symposium except for the valuable informal discussions that coordinate and adjust the results of the various observers into a more useful single picture of the field. As a substitute for these informal discussions, a short, composite, and critical summary of the material presented would have added to the value of the symposium report.

The section on technical subjects includes a description by A. Zawadzki of an amazing apparatus that is spread over a height of 23 meters, mostly in vacuum, and which requires 540 Geiger counters, many with 30 micron glass walls, each individually recorded together with an electric deflecting field of one Mev applied to electrodes five meters in length. (Artificial mesons might be cheaper.)

The publishers are to be congratulated on the fine printing. The reproductions of cloud chamber and emulsion track pictures are excellent. With the present tendency of American journals to economize by printing on poor paper, crowding pages and lines and reducing the size of figures, it is a pleasure to read a series of papers so well printed. The elegance of this volume is in some measure indicated by the lavishness of the publisher in beginning every article on the right side of the page so that there are thirty blank pages in the book.

R. B. Brode
University of California at Berkeley

Revelations

LUMINESCENT MATERIALS. By G. F. J. Garlick. 254 pp. Oxford University Press, London, 1949. $5.50.

The avalanche of books and reviews in the field of luminescence that has appeared since the end of the war almost gives one the impression that there are more books than facts. It is perhaps a sign of weakness in the methods that are being employed to fathom this field as a whole that most every investigator working in it feels compelled to write a book in order to make certain that the true viewpoint, namely his own, is adequately expressed. The situation is somewhat reminiscent of that centering about the field of chemical valency in which viewpoints often are adopted more or less in the manner of religious revelations rather than on a sound basis resulting from the combination of quantum theory and experiment.

Actually the reviewer must hasten to add that he considers this a very good book, among the best two or three which have appeared. By this he means, of course, that the viewpoint adopted is closely parallel to his own, but then he feels that this is a genuinely reasonable viewpoint since it falls, he believes, in line with the traditional development of atomic physics and chemistry, which has proved so fruitful, in which one attempts to accumulate overwhelming evidence in support of the models employed in the most elementary cases before proceeding to complex ones. In brief, Garlick's book attempts to summarize what may be called the fundamentals of the field; he is willing to focus attention on the most elementary luminescent systems in spite of the fact that these systems may not be those of most immediate importance for application. Although the great practical value of luminescent materials makes it difficult for many of the most prominent investigators in the field to devote more than a small fraction of their effort to work which is carried out with this point of view, the reviewer believes that our understanding will advance only in proportion to the amount of work of this type so that it should receive special emphasis. Garlick renders a great service to the field in focussing attention principally upon this aspect of the development.

The first three chapters prepare the general background for the book. In them, the author reviews the most pertinent facts of the theory of solids which have bearing on the interpretation of luminescent systems and outlines the experimental techniques which are available