good historical survey of the development of the theory of elementary particles, the treatment as a whole tends to be formal rather than physical. This is by no means a disadvantage, since there is no real agreement among theoretical physicists that the present formalism can be adequately related to experiment. The text contains not only the usual material on quantum electrodynamics, but also considerable attention is paid to higher spin fields. It concludes with a very interesting chapter on the theory of propagators. Due to the inevitable time lag between writing and publication, the book contains no hint of the extension of the concept of isotopic spin due to Gell-Mann and Pais, or of the recent work on dispersion relations. Otherwise it should serve very well the purpose of bringing the reader to the point where he can understand current papers on field theory.

UNIVERSITY OF CALIFORNIA
RADIATION LABORATORY H. PIERRE NOYES
LIVERMORE, CALIFORNIA

Die Wissenschaftliche und Angewandte Photographie. Fünfter Band. Die Technik der Negativ- und Positivverfahren. By EDWIN MUTTER, Hamburg. KURT MICHEL, Editor. Springer-Verlag, Mölkerbastei 5, Wien 1, Austria. 1955. xix + 396 pp. 17 × 25 cm. Price, Ganzleinen US $15.70.

Dr. Mutter's book is part of a handbook-like survey of scientific and applied photography, intended to be a continuation or resumption of the well known Handbook by A. Hay and M. von Rohr. This volume deals with the negative and positive processes of black and white photography with silver halide gelatin emulsions. It is intended to serve the scientist, the student and the practical worker. The first chapters of the book contain a presentation of the basic facts and concepts of photographic technique, a discussion of photographic chemicals, and an introduction to the theories of latent-image formation and of the development process. There follows a comprehensive treatment of the various photographic techniques, such as development, fixation, washing, drying, intensification, reduction, toning, desensitization, hypersensitization and latensification. Nearly one-third of the text is devoted to a collection of formulas and specific processing instructions. The character of topics covered by the book varies greatly, ranging from basic theoretical problems to such practical topics as the construction of developing tanks and the toxicity of photographic chemicals. Unavoidably, the treatment of many of the topics is superficial; some have not been brought up to date, and some techniques are included which may be considered as obsolete. To many readers the latter will be quite welcome since many techniques, which have now disappeared from common practice, are interesting and contain possible points of departure for future developments. Every effort has been made to make the book a useful reference work. About 350 pages of text are preceded by a remarkable table of contents whose 370 titles and subtitles show the structure of the book in great detail. The text is followed by a list of nearly 700 references including about 100 patents, and, finally, by a 20-page index. Anyone interested in the technical aspects of photography will find this volume informative and useful.

KODAK RESEARCH LABORATORIES
EASTMAN KODAK COMPANY FRANZ URBACH
ROCHESTER 4, NEW YORK

The Chemistry of Phenolic Resins. The Formation, Structure, and Reactions of Phenolic Resins and Related Products. By ROBERT W. MARTIN, Shell Development Co., Emeryville California. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1956. xi + 298 pp. 15.5 × 23.5 cm. Price, $9.50.

There has been a need for a semi-critical survey in English of the chemistry of phenolic resins in the same pattern as Hultzsch's "Chemie der Phenolharze" in German. Martin's new book certainly satisfies this need. In the opinion of the reviewers, it is the best book that has been written on phenolic chemistry.

The literature has been extensively covered into 1955—there are 1373 references. A very large number of topics are treated with excellent review and detail. The author has been particularly effective in presenting different viewpoints on controversial areas of the subject without losing the semi-critical approach. In one sense, there are those who would have been happy to have the personal—and perhaps more critical—view of such an expert in the field as Mr. Martin on some of these controversial areas. However, this cannot be classified as a criticism of the method of presentation or of the book in general. It might have increased the significance of the discussion on many of the points on mechanisms and kinetics to have drawn on more evidence outside the area of phenolic chemistry, although again one cannot regard this as a criticism of a well-written book.

On page 264, there could have been more discussion on the point of acid catalysis. On page 267, there is no analysis of the possibilities of why novolak resins are essentially linear and short chained. Sprengling's work and that of Imoto could have been discussed in this connection. But these and other minor items are likely a matter of individual preference that do not detract from the value of the book.

This is a book that should be on the shelf of every organic chemist. For those working in the field of phenolics, it is a necessity.

DEPARTMENT OF CHEMISTRY
POLYTECHNIC INSTITUTE OF BROOKLYN
BROOKLYN 1, NEW YORK C. G. OVERBERGER

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