Book Reviews

The Merck Index of Chemicals and Drugs. 6th ed. Rahway, N. J.: Merck & Co., Inc., 1952. 1167 pp. $7.50; thumb-indexed, $8.00.

Our children's great-grandfather was not long out of medical school when the first edition of the *Merck Index* appeared in 1889. Any book that has weathered the changes in medicine and chemistry that have taken place since then deserves real scrutiny. The original purpose and design must have been sound indeed. As stated in an earlier preface, they were that the book should be "a condensed, comprehensive and reliable Encyclopedia of Chemicals and Drugs for the chemist, pharmacist, physician and those in allied professions." The book remains just that, even though the growth of chemistry surely has swelled it beyond the original authors' most expansive dreams.

One thousand of the 1100-odd pages are filled with an alphabetical listing of chemicals, some 8000 in all, with a brief statement of structure, physical characteristics, and use. It is thus more than a dictionary and is, in fact, a concise encyclopedia. Also, as is obvious from the number of entries, it is not only a collection from medicinal chemistry, but from other fields as well. Inorganic, as well as organic, compounds are considered. One might say that this portion of the book differs from the *Handbook of Chemistry and Physics* and the Eastman catalogue in being larger and more annotated, and from the multivolumed Heilbron's *Dictionary of Chemical Compounds* in being more compressed and medicinal. For the average worker in biology and medicine this compromise is exactly right and probably has had much to do with the long life of the book.

Therapeutic credulity has stiffened in the past 63 years, and it is pleasing to see that the statements of medical usefulness of previous volumes have been deleted right and left. In this respect, the *Index* should not be confused with the smaller *Merck Manual,* in which a good deal of credulity is still visible.

The remaining sections of the book are mostly in an appendix containing some 30 useful lists or tables, which run from organic "name" reactions to the Greek alphabet and four-place logarithms. Once one has learned what these sections are, they become useful indeed. The usual error is in not realizing that they exist, and it will pay the new user to look them over attentively.

In a sense, it is a pity that this volume differs from some of the previous editions, in that the authors remain anonymous, for it would be nice to know to whom one's thanks for such a classic should be directed.

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Tensor Analysis: Theory and Applications. I. S. Sokolnikoff. New York: Wiley; London: Chapman & Hall, 1951. 335 pp. $6.00.

This book appears exactly half a century after the publication of the first extensive report on the tensor calculus by its creators, G. Ricci and T. Levi-Civita. The theory of relativity produced a rash of enthusiasts for the new calculus. But there were many, even among the greatest mathematicians, who were temperamentally not inclined to become adepts of the art of indices. Today, most scientists have adopted a more dispassionate view on tensors and will welcome the appearance of another excellent book on the subject.

The book consists of six chapters: "Linear Vector Spaces," "Tensor Theory," "Geometry," "Analytical Mechanics," "Relativistic Mechanics," and "Mechanics of Continuous Media."

As one might expect from an author of many successful textbooks, the presentation is well balanced and makes pleasant reading. An interesting feature is a formulation of the essential ideas of nonlinear mechanics of continuous media in the most general tensor form.

Some details in the exposition may be evaluated differently by various readers, but it seems certain that *Tensor Analysis* will take its rightful place among the standard texts.

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The Oxide-Coated Cathode, Vol. 1: ***Manufacture***; Vol. 2: ***Physics, Including Thermal Emission from Metals and Semi-Conductors.*** G. Herrmann and Phil S. Wagener; trans. from the German by Phil S. Wagener. London: Chapman & Hall, 1951. Vol. 1: 148 pp., 21s; Vol. 2: 311 pp., 42s.

The authors have given in two volumes of moderate size a well-organized presentation of a subject on which a large amount of work has been done. The first volume deals with the techniques of manufacture, their effects on the properties of the cathode, and the methods of measuring different characteristics of the cathode. Such information is useful not only for those primarily interested in production but also for those doing research in this field. The second volume presents the physics of thermionic emission. The first section gives a concise but clear treatment of emission current from metals and from metals with adsorbed films of foreign material. A discussion of ionic solids and energy bands in semiconductors is then presented in sufficient detail for an understanding of the nature of oxide-coated cathodes and their emission properties as discussed in the remainder of the book. The derivations of the equations are clear and easily understood.

These two books are up to date and cover most