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.

WINDSOR C. CUTTING

Department of Pharmacology and Therapeutics
Stanford University School of Medicine
San Francisco, California

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.

A. WEINSTEIN

Institute for Fluid Dynamics and Applied Mathematics
University of Maryland

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

phases of the subject. Although their size limits detailed discussion of specific points, the essential features are treated adequately. There are numerous tables and graphs giving various representative data. Comprehensive lists of references, one following each chapter, will also be found useful.

H. Y. FAN

Department of Physics, Purdue University

Hevea: Thirty Years of Research in the Far East. M. J. Dijkman. Coral Gables, Fla.: Univ. Miami Press; Waltham, Mass.: Chronica Botanica, 1951. 329 pp. $6.00.

The natural rubber industry is founded on *Hevea brasiliensis,* which with all its close relatives, is native to the Amazon Valley. The tree has come into significance in the twentieth century as a cultivated plant. Early developments, until halted by World War II, were especially great in Indonesia. A fungus that causes a devastating leaf blight has held American plantings in check, but under forest conditions the fungus does not build up a great enough concentration of spores to be serious. Fortunately, the disease has not been introduced to other parts of the world.

In times of crisis, the United States has invested heavily in the exploitation of wild rubber of various kinds and has also spent money freely for rubber research. The past decade has witnessed such expenditure, and a fair share has gone to *Hevea* investigations. Prior to 1941 the great majority of studies on *Hevea* as a cultivated plant were carried on in the Far East. Many of the most important publications are accordingly written in Dutch.

Dr. Dijkman is Dutch—born in Java, educated in The Netherlands, and with wide rubber experience in Java. He is now assistant professor of tropical botany at the University of Miami. He attempts in this book to summarize the literature on rubber in the Far East and to relate to it publications from other areas that are pertinent. The chief value of his work is that he overcomes for us the barrier of language and has seemingly reviewed in accurate manner the *Hevea* reports in Dutch. That service is highly useful. But evidently he himself occasionally stumbles over language barriers: in at least one instance he has confused the contributions of two different American writers—he repeatedly refers to Adolpho Ducke, the Brazilian botanist who has published extensively on *Hevea,* as "Duke."

The book has 17 chapters devoted to the whole range of topics relating to the cultivation of *Hevea,* with references at the end of each chapter. Included are 116 figures, 93 tables, and 5 appendices giving data on rubber exports by countries, acreages in rubber, comparative yields for clones, characteristics of certain clones, a glossary, etc. The volume has one index for authors, another for subjects, and is an excellent source of specific information.

J. T. BALDWIN, JR.

Department of Biology
College of William and Mary

Scientific Book Register

Principles of Mathematical Logic. D. Hilbert and W. Ackermann; trans. from the German by Lewis M. Hammond, George G. Leckie, and F. Steinhardt; Robert E. Luce, Ed. New York: Chelsea Pub., 1950. 172 pp. $3.50.

Dynamic Aspects of Biochemistry. 2nd ed. Ernest Baldwin. New York: Cambridge Univ. Press, 1952. 544 pp. $5.00.

Eiweiss ('Albumin.') Heinrich Hellmann. Stuttgart, Germany: Curt E. Schwab, 1952. 163 pp. 5.80 DM.

Electronic Analog Computers (D-C Analog Computers). Granino A. Korn and Theresa M. Korn. New York–London: McGraw-Hill, 1952. 378 pp. $7.00.

Management Controls in Industrial Research Organizations. Robert N. Anthony, with assistance of John S. Day. Boston, Mass.: Division of Research, Harvard Business School, 1952. 537 pp. $6.75.

The Counter-Revolution of Science: Studies on the Abuse of Reason. F. A. Hayek. Glencoe, Ill: Free Press, 1952. 255 pp. $4.00.

Methods of Algebraic Geometry, Vol. II; Book III: General Theory of Algebraic Varieties in Projective Space; Book IV: Quadrics and Grassmann Varieties. W. V. D. Hodge and D. Pedoe. New York: Cambridge Univ. Press, 1952. 394 pp. $7.50.

The Human Pelvis. Carl C. Francis. St. Louis: Mosby, 1952. 210 pp. $5.00.

Handbook of Engineering Fundamentals. 2nd ed. Ovid W. Eshbach, Ed. New York: Wiley; London: Chapman & Hall, 1952. 14 sections. $10.00.

Annual Review of Medicine, Vol. 3. Windsor C. Cutting, Ed., and Henry W. Newman, Assoc. Ed. Stanford, Calif.: Annual Reviews, 1952. 442 pp. $6.00.

Thermodynamics and Statistical Mechanics. William P. Allis and Melvin A. Herlin. New York–London: McGraw-Hill, 1952. 239 pp. $6.00.

The Auger Effect and Other Radiationless Transitions. E. H. S. Burhop. New York: Cambridge Univ. Press, 1952. 188 pp. $5.50.

Automatic and Manual Control. Papers contributed to the Conference at Cranfield, England, 1951. A. Tustin, Ed. New York: Academic Press; London: Butterworths, 1952. 584 pp. $10.00.

A Course in College Chemistry. V. R. Damerell. New York: Macmillan, 1952. 587 pp. $5.50.

Foundations of Analysis: The Arithmetic of Whole, Rational, Irrational and Complex Numbers. A Supplement to Text-Books on the Differential and Integral Calculus. Edmund Landau; trans. from the German by F. Steinhardt. New York: Chelsea Pub., 1951. 134 pp. $3.25.

The Origin of Life and the Evolution of Living Things: An Environmental Theory. Olan R. Hyndman. New York: Philosophical Library, 1952. 648 pp. $8.75.