thermal convection and boiling, and the most recent work on boundary layer flows with dissociation or reactions. With the exception of these topics, all of which came into prominence just at the time of, or after, the author's death, volumes I and II contain essentially all the important fundamental material in the field of heat transfer. These deficiencies are, however, insignificant when one views the total work.

S. P. Kezios has preserved the author's style and intent. We owe him a debt of gratitude for having completed this excellent, up-to-date summary of the science and art of heat transfer. It will take its place in the list of classical treatments which every graduate student must study and master. Max Jakob left us his own monument.

MYRON TRIBUS
College of Engineering,
University of California, Los Angeles

The Extra Pharmacopoeia. Martindale. vol. I. Published by direction of the Council of the Pharmaceutical Society of Great Britain. Pharmaceutical Press, London, ed. 24, 1958 (order from Rittenhouse Book Store, Philadelphia). xxx + 1695 pp. £3 5s.

Although it is not well known in the United States, *The Extra Pharmacopoeia* has served for 75 years as a useful therapeutic commentary on the official *British Pharmacopoeia* and *British Pharmaceutical Codex*. The new 24th edition contains information on well over 20,000 drug preparations. The general arrangement is alphabetical, but drugs are grouped where possible. Thus, for example, under "quinine," other antimalarials are also considered; in this instance the recording of names, doses, toxic effects, antidotes, contraindications, and uses requires about 30 pages. Short two- or three-sentence abstracts from the literature document many of the points.

This useful and handy book deserves much wider acquaintance in America.

WINDSOR CUTTING
Department of Medical Microbiology,
Stanford University

Organic Colloids. Bruno Jirgensons. Elsevier, Princeton, 1958 (order from Van Nostrand, Princeton, N.J.). xiv + 655 pp. Illus. $16.95.

The purpose of this book is to give an elementary, general survey of a borderline subject. The treatment is divided into two parts. The first 16 chapters give a cursory account of the physics and physical chemistry involved in preparing and studying organic colloids, together with a modicum of their organic chemistry. Deliberately, many of the physical equations are flatly stated, with little or no attempt made to show how they were derived, but, at the end of each chapter, excellent references to the literature are provided. A laudable feature, which might well be widely emulated, is the footnote on each odd-numbered page which guides the reader to these bibliographies.

The next 18 chapters discuss selected groups of organic colloids, including macromolecular hydrocarbons and vinyl derivatives; linear and cross-linked polymers; various detergents, dyes, lipids, pigments, polysaccharides, proteins, and nucleic acids; and some biochemical topics, such as blood, milk, cells and tissues, and biocolloids in disease. In most instances, the chemical formulas are satisfactory, although double bonds are omitted from benzene rings and the Haworth (perspective) formulas for sugars have been shorn of their perspective (without which they are always misleading and sometimes erroneous).

This is essentially a reference book; it has a complete author index (16 pages) and a general subject index (11 pages). It should prove useful to those neophyte biophysicists and physical chemists who need an up-to-date outline of the relevant organic chemistry; similarly, biochemists and organic chemists will find it a convenient source for the physical chemistry involved in this field. Although it cannot be regarded as a textbook, it could well serve for collateral reading.

R. STUART TIPSON
Division of Chemistry,
National Bureau of Standards

Mathematical Foundations of Information Theory. A. I. Khinchin. Translated by R. A. Silverman and M. D. Friedman. Dover, New York, 1957. 120 pp. $1.35.

Dover Publications is to be congratulated on making this translation of two papers by an outstanding Russian authority on probability and statistics available to Westerners unable to hurdle the language barrier. Both papers are largely expository, setting forth the work of Shannon and later results obtained by Feinstein and McMillan, along with some original work. The book is marked by rigor, elegance, and clarity, and the smooth-flowing text betokens an excellent job of translation.

The first paper, "The entropy concept in probability theory," is motivated by the idea that the entropy concept is destined to become a permanent part of probability and statistics and is concerned with its precise formulation and general mathematical properties. This is certainly one of the best places for a mathematically mature reader to get a sound introduction to information theory in a few pages (28).

The second paper, "On the fundamental theorems of information theory," is a masterly presentation of the essential mathematical content of modern information theory, filling logical and mathematical gaps in previously available treatments. While the level is perhaps too difficult for the average engineer, mathematicians, statisticians, theoretical physicists, and information theorists will find the book perhaps the soundest discussion of foundations, and thus the most solid base for further development, available.

JEROME ROTHSTEIN
Edgerton, Germeshausen, and Grier,
Boston, Massachusetts

The Senses. Wolfgang von Buddenbrock. Translated by Frank Gaynor. University of Michigan Press, Ann Arbor, 1958. (First published as *Die Welt der Sinne*; ed. 2, Springer, 1953.) 167 pp. Illus. $4.

This book is the latest number in the Ann Arbor Science Library. All of the titles that have appeared so far in this series are translations from the well-known German series of brief popularizations, *Verständliche Wissenschaft,* published by Springer-Verlag.

Wolfgang von Buddenbrock is emeritus professor of zoology at the University of Mainz. He has written several books on comparative physiology, including some popularizations.

The book attempts to describe the role of the senses in animal and human behavior, drawing examples from a wide variety of species. The first part takes up general questions concerning all the senses; the second part has individual chapters on eight different senses. In the brief compass of the text there can be no attempt at completeness; material is selected for mention because it is important or because it is intriguing. The presentation is simple, informal, and lively, and the reader who is unacquainted with the field will undoubtedly pick up much information.

Unfortunately, such a reader will pick up many errors as well. One striking case is due to the translation: ". . . we . . . confront the lowest with the highest when we compare the nervous system of an octopus with the inexplorable seat of the soul of man, his brain" (page 34). Here the German referred not to an octopus, which actually has a highly developed nervous system, but to "eines Polypen"—a coelenterate—which has a primitive nerve net. (The reader can de-