and anthropological books and papers in Chinese, Japanese, and Western languages. Under present circumstances, however, this is rather like looking a gift horse in the mouth. If and when a means is established whereby our own scholars can pursue research in China, we will begin to develop real knowledge and insight into this great, if alarming, experiment. Even then we will continue to be indebted to Yang for this thoughtful and provoking set of studies.

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Dosimetrie und Strahlenschutz. Physikalische und technische daten. R. G. Jaeger. Georg Thieme, Stuttgart, Germany, 1959 (order from Intercontinental Medical Book Corp., New York). xii + 282 pp. Illus. $11.80.

This collection of basic data, formulas, tables, and diagrams fills an urgent need for material on radiation dosimetry and radiation protection. Selection and arrangement of the material reflect the great experience of the author, an expert in the field for many years. There is no doubt that this monograph will become a standard work in every radiation laboratory.

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Levels of Knowing and Existence. Studies in general semantics. Harry L. Weinberg. Harper, New York, 1959. xiv + 274 pp. $4.50.

General semantics emphasizes the symbolic transformations which all of our experiences must undergo in the process of being evaluated. The most crucial of these transformations is the passage from the nonverbal (sensory) to the verbal (categorized) level of cognition. Essentially, then, the latter is a "map" of the former and, by extension, a map of the "real" (objective) world. Since verbal knowledge is cast in language, and since language has its own structure (syntax, analogies, conventions, and so forth), it follows that the verbal levels of cognition can and do bring serious distortions into our picture of the world.

This outlook has obvious relations both to the philosophy of language and to the philosophy of science; indeed, the intimate relation between language and cognition has been pointed out in other schools of thought (for example, in logical positivism). However, Alfred Korzybski, who gave the name "general semantics" to this outlook, has put special emphasis on its psychiatric implications. He believed he had outlined a general theory of sanity, applicable not only to individuals but to cultures and to the whole human race.

Perhaps because of this emphasis, general semantics has attracted relatively wide attention in the United States, where a public concerned with problems of self-help and mental health is always potentially present. Some of this interest has been siphoned off into cultist activity, but there have also been salubrious and constructive results. A number of gifted and devoted teachers have used general semantics as the central idea in a philosophy of communication with excellent pedagogic results. Accordingly, several popularizations of general semantics have appeared, each using the "system" as leverage for expounding ideas in the study of language, psychology, human relations, the arts, and even medicine and law.

The present volume follows the pattern of the previous popularizations and is, perhaps, closer to Korzybski's formulation than any of the others. In a way, this faithful account is one of the book's merits, for it allows the reader to follow Korzybski's ideas as originally stated without wading through the atrocious verbiage of *Science and Sanity* (the principal source book) in constant danger of mistaking obscurity for profoundness. But in this close adherence to the teachings of the Master lies also the book's shortcoming. Together with Korzybski's challenging insights and tantalizing conjectures, Weinberg carries along the shaky generalizations and, most unfortunately, the scientism—that is, the appearance of scientific rigor assumed by reference to technical investigations—which bear, at best, an analogical relation to the matter at hand.

Happily, Korzybski's treatment of neurological and "colloidal" aspects of behavior is omitted. A factual account of current methods of "semantitherapy" is informative and welcome, and so is the chapter on religion, particularly the reference to Zen Buddhism (a statement on existentialism might also have been included to advantage). Here Weinberg comes closest to stating convincingly the principal theme of his book and the ethical meaning of general semantics: Both direct experience and rational cognition are attributes of human condition; both must be open to man. In order that the one should not exclude the other, we should become aware of their distinct modalities and of their relation to each other and to the external world. This awareness is the content of sanity.

ANATOL RAPOPORT
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Readings in Linear Programming. S. Vajda. Wiley, New York, 1958. vii + 99 pp. $3.

This little book is something of an expository tour de force. In less than 100 pages, its 24 chapters give a representative collection of worked out examples of problems in which linear programming can be used. The references (approximately 100) will enable the interested reader to go more deeply into the literature of the subject.

Linear programming deals with maximizing or minimizing an "objective function," which is a linear function of a set of variables subjected to linear equations or inequalities (referred to as constraints). Nontrivial cases arise when there are more variables than equations. It is remarkable what a large variety of practical problems can be treated by this technique. Personnel allocation, smooth patterns of production, blending of aviation gasolines, product selection, ship scheduling, airlift, warehouse, and transportation problems, maximal flow through a network, and trim loss reduction are a representative rather than an exhaustive list of applications. Even zero-sum, two-person games can be solved (in the sense of von Neumann's theory) by methods of linear programming.

A feature of the book is the use of elementary mathematics throughout; the examples are generally worked out almost entirely by simple arithmetic. The exposition is generally clear, although its conciseness may cause difficulty to readers with limited mathematical background. The worker in the field of operations research will find the book a simple, readable introduction to the varied problems and literature of the subject. Managerial personnel may find it useful in developing a feeling concerning justifiable uses of oper-

ations research in general and linear programming in particular in their organization. Research workers in many fields will find this a rapid and fairly painless introduction to another field.

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British Pharmaceutical Codex, 1959. Pharmaceutical Press, London, 1959 (order from Rittenhouse Book Store, Philadelphia, Pa.). 70s.

The appearance of a new edition of the *Codex* is a welcome event to the pharmaceutical profession in the United States and in Great Britain. The 1959 edition maintains the high standard of excellence and utility which one has come to expect of this compendium.

The general format of monographs and appendices has been retained, with necessary additions and deletions reflecting current therapeutic trends. The discussions of the actions and uses of, and the symptoms and treatment of acute poisoning by, each drug, are especially noteworthy and generally excellent.

New appendices dealing with milliequivalent strengths of solutions for intravenous use, bioassays for chloramphenicol and for neoarsphenamine ophthalmic ointments, and uniformity of the diameter of tablets may be of interest to the American drug industry.

Although the *Codex* has no legal status in the United States, pharmacists, physicians, and many chemists will find it a valuable reference work in the general area of therapy.

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Ancient Mexico. An introduction to the pre-Hispanic cultures. Frederick A. Peterson. Putnam's, New York; Allen and Unwin, London, 1959. 313 pp. Illus. + plates. $7.95.

In 1842 and 1843, John Stevens published his *Incidents of Travel in Central America* and *Incidents of Travel in Yucatan*, giving to the general public its first view of the great ruins of the Maya region and paving the way for future archeological work in this fascinating area.

At the same time, 1843, William Prescott published his classic *History of the Conquest of Mexico*, performing the same service regarding the Aztecs and their neighbors. The stream of books that appeared during most of the next century added but little to what these two scholars had to say, since all relied primarily on the same sources: early Spanish and native accounts. While these accounts contained an abundance of material, they were vague in historical perspective and naturally emphasized the two powers dominant at the time of the conquest, the Aztecs and the Maya. The Spanish records, in most instances, were strongly slanted to the conquerers' point of view.

Studies of Maya epigraphy led to the deciphering of the native calendar and, eventually, to a fairly accurate estimate of the development of Maya civilization over ten centuries of time.

It was not until George Vaillant began his series of stratigraphic excavations in the Valley of Mexico (1928) that a similar time perspective began to emerge for this region. During the past 30 years, scientific work in archeology has gradually filled in the picture to a point where it is now possible to present, in skeleton form, a prehistoric sequence for Middle America, reaching back to 10,000 B.C.

For the most part, in recent years, professional archeologists have confined their writings to special topics or areas; there have been many books on the fashionable subject of pre-Columbian art, but no one has seriously tackled the formidable task of preparing a general work.

This year two publications have appeared which attempt to present this complex picture to the lay reader. One, published in Mexico, is *Esplendor del Mexico Antiguo*, a massive two-volume work in Spanish, written by many specialists; the other is *Ancient Mexico*, the subject of this review.

Frederick Peterson, a trained archeologist, has done a fine job of organizing and presenting, in compact form, a mass of material covering 10,000 years in time and dealing with such diverse topics as music, engineering, agriculture, art, religion, war, education, dress, political organization, and astronomy. These and many similar subjects are treated in satisfactory detail with due regard to space and time.

The book is divided into two main subdivisions. The first deals with the succession of cultures from the earliest mammoth hunters, through the beginnings of simple sedentary societies and the eventual rise and fall of a series of civilizations, and it culminates with the Spanish conquest, which almost completely destroyed native culture.

The remainder of the book describes the activities and accomplishments of the ancient Mexicans as recorded by native and Spanish chroniclers and as deduced from archeological investigations.

In spite of the mass of factual material presented, *Ancient Mexico* is written in readable and entertaining style. As an authoritative, popular account of Mexican prehistory, it fills a real need and certainly will serve its intended purpose as a general introduction to pre-Columbian Mexico.

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Information Theory and Statistics. Solomon Kullback. Wiley, New York; Chapman and Hall, London, 1959. xvii + 395 pp. Illus. $12.50.

Information Theory and Statistics, a combination text and treatise, is a carefully written volume on mathematical statistics; it is filled with excellent examples and exercises, and augmented by a glossary of terms. Written for the advanced, mathematically trained student, it is not a book for casual reading, nor is it a book for a reader unfamiliar with matrices, probability theory, and some measure theory.

The novel aspect of the book is its illustration of the process by which science fills the gaps between previously distinct disciplines. The gap filled here is that between information theory and mathematical statistics. That information theory is "a branch of the mathematical theory of probability and mathematical statistics" was self-evident from Shannon's work. But this was lost sight of. Information theory was initially studied not by the statistician but by the communications engineer. The combination of the concept of entropy (until then exclusively in the domain of physics and chemistry) with concepts of communication, messages, and "information," seemed remote from the discipline of mathematical statistics, but Kullback shows, with a wide range of examples and applications, how the logarithmic measure of information can bring new order back into the field from which many of Shannon's tools were borrowed. Starting with a simple deri-