Book Reviews

The March of Archaeology. C. W. Ceram. Knopf, New York, 1958. xviii + 326 pp. Illus. $15.

This latest work from the facile pen of Ceram is a companion volume to his earlier *Gods, Graves, and Scholars* and was planned in conjunction with that book. The pattern is similar, and the contents include the same general subject matter. In the present instance, however, the story is mainly told by pictures, the text being held to a minimum. The illustrations used were selected after long and careful sorting of pictorial material in institutions both in this country and abroad. Many are reproductions of new photographs, published for the first time. For the earlier periods of archeological activity, the excavation work and many of the finds are illustrated by contemporary drawings and engravings, while excavation work and finds relative to recent researches are depicted in excellent photographs.

For the most part, the archeology reviewed by Ceram is that generally referred to as "classic." This is attributable to his purpose in preparing the book—namely, the tracing of the historical and cultural continuity extending from Sumeria through Babylon, Assyria, Crete, Greece, and Rome to modern times. There is no reference to or discussion of the vast field of prehistoric archeology and the unraveling of the story of the cultural growth which led to the tremendous revolution in man's way of life that occurred in the New Stone Age, when he became a food producer instead of a food gatherer and was able to turn his efforts to things which culminated in the art objects and great cities described by Ceram.

In Book I the story begins with the finding in 1485, by workmen along the Appian Way, of a sarcophagus containing the perfectly preserved body of a girl of ancient Rome; it continues on through the discovery of the buried cities of Pompeii and Herculaneum and the part played by Johann Joachim Winckelmann in helping archeology get under way as a scholarly study of antiquity; it follows Heinrich Schliemann in his search for and finding of fabled Troy, his excavations there, and the subsequent completion of the Schliemann projects at Troy, Mycenae, and Tiryns by Arthur Evans.

Book II pertains to Egypt and starts with the observations of the German traveler Johannes Hellfrich, made in 1565, when he first saw the sphinx near the great pyramids; discusses the significance of the Egyptian sphinx and the work of numerous men who have tried to solve its riddle; describes the various pyramids and explains their purpose; gives careful consideration to the subject of mummies and mummification; and reviews the extensive excavations in the tombs in the Valley of the Kings, from the days of frankly acknowledged looting to the most recent and strictly scientific digging. Attention is also given to hieroglyphs, to the Rosetta stone, and to the deciphering of Egyptian inscriptions.

In Book III stories of early travelers to Babylon and Persepolis are recounted, the problems involved in the decipherment of cuneiform script are presented, and the excavations by Austen Henry Layard in the palaces of Nineveh, by Robert Koldewey at Babylon, and by Leonard Woolley at Ur are described. In the case of the latter there is reference to the methods employed in digging and preserving archeological materials.

The author digresses from his general Old World theme in Book IV and considers Middle American archeology—that is, the manifestations in Mexico and Central America. In that connection he reviews the first accounts of the conquest of Mexico, illustrating his remarks with pictures from native manuscripts recording the event, and tells how the Spaniards almost wiped out all possibility of understanding the history of the area by their methodical extirpation of the Indian culture. The impression made by the first specimens of Indian art to reach Europe is described, and several pictographic native manuscripts are considered in detail. Attention is given to the work of the early explorers Kingsborough, Waldeck, Stephens, and Catherwood, and illustrations from their publications are an important feature of the book. Reference is made to the important studies of the Abbé Brasseur de Bourbourg and, of course, to the more recent investigations by scholars from the United States and Mexico. The possibility of Egyptian and East Indian influences is reviewed, and the objections of Americanists to such ideas are mentioned.

Book V is devoted to retrospect and perspective and includes a chronological table of the history of archeology as it is delineated in the pages of this volume. In it the author points out that the 322 illustrations show Western man's growing awareness of his own past and illustrate the fact that, as more knowledge becomes available, the past is assuming wider and more global meanings. With respect to new discoveries he mentions the Dead Sea scrolls, recent finds in Jericho, the new information on the Hittites, wall frescoes in the Maya area, and the results now being obtained from underwater archeology and aerial surveys.

In his introduction Ceram calls attention to the fact that this volume, like its predecessor, is a literary work rather than a scientific one. In that he is correct. The lay reader no doubt will find much of interest in this "picture book to be read" and should add to his fund of knowledge by perusing it. Specialists may find some items which will be new to them. The chronological table will be useful for purposes of reference, although there may be disagreement about the importance of some of the discoveries which are included and about the omission of others. The numerous black and white illustrations are well chosen, and the 16 color plates, showing a wide variety of subjects, are unusually good.

As the publishers suggest, those who have read *Gods, Graves, and Scholars* will unquestionably enjoy this book, but it should prove equally enjoyable to those who are not familiar with its predecessor. It deals with art and archeology rather than with straight archeology, and for that reason it will no doubt be well received by the general reader.

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Queues, Inventories and Maintenance. The analysis of operational systems with variable demand and supply. Philip M. Morse. Wiley, New York; Chapman and Hall, London, 1958. ix + 202 pp. Illus. $6.50.

This is the first of what should be a very useful series of publications in the field of operations research. It is planned as a kind of expanded introduction to queuing theory; a second monograph is to be devoted to computational methods, machine techniques, and numerical tables applicable to the problems discussed in the present book. A possible third volume will be concerned with detailed solutions (with tables) of main-

tenance problems, to which the present book devotes a chapter.

Queuing theory was born over half a century ago, when Erlang analyzed telephone-traffic problems. Fluctuations in service demands, as varying numbers of customers began to dial numbers, posed problems in the utilization of facilities. To handle peak loads with zero or negligible waiting time would require uneconomically large facilities. Inadequate capacity leads to intolerable delays and customer dissatisfaction. This combination of a fluctuating demand for service coupled with penalties if too much or too little servicing capacity is provided is characteristic of queuing problems.

It is only in the last decade or so that the ubiquity of problems of this sort has been recognized and that "nontelephonic" studies have been made. The stacking of airplanes over an airport and the building of frequently idle runways are the penalty brackets of fluctuating air traffic. Similar problems arise with respect to toll booths on highways, bridges, and tunnels; docking facilities in ports; scheduling of public transportation; maintenance of inventories (here the penalty brackets are lost orders and excessive inventory costs); choice of the proper number of clerks and checkout aisles in a supermarket, of telephone clerks in a telephone-order retail business, of the number of spaces in a parking lot; or determination of the size of the maintenance crew needed to keep a number of machines in operation when breakdown occurs randomly.

One suspects that there must be many similar cases which are somewhat disguised, such as that of a manufacturing establishment with a variable demand for a particular technical service. The decision here is whether to contract for the services or acquire the necessary capability to perform them. Another case might be that in which one must decide whether to establish an enterprise when competing enterprises already exist. This could be profitable if customer queues have engendered dissatisfaction but could be disastrous if adequate service is available. Here, of course, the availability of other techniques of competition complicates the problem. When adequate service pre-exists, however, this factor might only shift the impact of the disaster to a different victim or otherwise distribute the losses.

This book will appeal to specialists in operations research and to others concerned with the technicalities of queuing problems in whatever context they occur. It partly fills a gap in the textbook literature which will be even better filled when the later monographs of the series appear. The mathematical level is not difficult, though mathematical maturity is assumed. As one would expect, some knowledge of probability theory is taken for granted. Indeed, I felt on a number of occasions that if the author had made a little more allowance for the "rustiness" of the mathematics of many scientists, ease of reading would be greatly increased for nonspecialists in operations research and the book would also appeal to many of the more able undergraduates. As it stands, probably only graduate students and the ablest undergraduates will be able to get through it.

The book's 11 chapters discuss arrival and service time distributions, single and multiple exponential channels, simulation of nonexponential distributions, transients, infinite queues, queue discipline and priorities, and problems of inventory control and of maintenance of equipment. Tables and graphs of relevant functions are provided. Calculations are made showing how to evaluate the balance between service cost and customers lost and between mean wait and service cost; customer impatience is discussed. Optimization of the number of service channels, effects of priorities on delays, and a number of inventory and maintenance "strategies" are also considered.

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The Chemistry of the Steroids. W. Klyne. Methuen, London; Wiley, New York, 1957. 216 pp. Illus. $3.50.

Chemistry of the Steroids. Charles W. Shoppee. Academic Press, New York; Butterworths, London, 1958. vii + 314 pp. $9.

These two monographs with the minor difference in title are written with a widely different end in view. The small monograph by Klyne is intended primarily for the nonchemical reader, and the major emphasis is given to the steroid hormones. It attempts to lay a foundation for the subject and to indicate the major properties and reactions of the naturally occurring steroids and their relatives. To me, the treatment appeared too specialized for biologists and perhaps better suited to a chemist interested in an introduction to this field of natural products. A series of references to reviews and texts appears at the end of the book.

Shoppee's monograph "sets out to present as concisely as possible the present state of knowledge." The more important references up to the end of 1955 and a few in 1956 are cited; this listing appears to be relatively complete. The highly compressed style will discourage the casual reader, but there is a wealth of well-presented and well-organized information. The inclusion of a great deal of subject matter that must be regarded as historical at this time seemed of questionable value to me, but this surely is a minor criticism of so great a task.

Both monographs are useful additions to the chemical literature and will find their place among the reference works in this very active field of investigation.

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Historia Natural del Maíz. Separata de la Revista de la Academia Colombiana de Ciencias Exactas, Fisicas y Naturales, vol. X, No. 39. Daniel Mesa Bernal. The Academy, Bogotá, Colombia, 1957. 106 pp.

The expressed purpose of this publication is to present for readers of Spanish a panorama of the history and importance of maize in early times and a résumé of the theories about its center of origin. Two chapters outline the problem, give brief statements about the historical sources, and summarize the importance of maize as the key to pre-Columbian civilization in America.

In the discussion of the theory of Asiatic origin, the Oriental members of the Maydeae are unfortunately placed on an equal footing with those of America. The statement that, of these Old World genera, *Coix* is most closely related to maize cannot be accepted without more clarification. There seems to be something wrong with the statement about the depth at which fossil pollen of *Euchlaena* was found in Mexico.

Four areas—Mexico and Guatemala, Colombia and Venezuela, the Andean plateau, and the La Plata region—are discussed as possible centers of the origin of maize agriculture. The chapter on Colombia and Venezuela is particularly appreciated because of its full treatment of an area which has received too little attention in the past.

Both sides of each controversial point are given objectively, and there is seldom a hint as to which side the author prefers. This results in an array of ideas, some much sounder than others, which, without supporting evidence, seem to be of equal value. In fact, there is nothing to indicate that the author has made any study of the subject except from the literature. We may wish also that he had made himself a little more clear in discussing such things as degree of variation, number of varieties, and primitive characteristics.

A plate and 35 text figures break the monotony of the large, double-column, closely printed pages. A few typographical errors have been noted: misspelled names (Cutler, Weberbauer), a chapter incorrectly numbered (8 or 9), and a figure inverted (page 36).