inclusions, the latter including DNA and nuclear structure, ribosomes, mitochondria, chloroplasts, granules, and even transfer-RNA. The next chapter is devoted to such aspects as the environment of microbial growth, nutrients, inhibitors, *p*H, radiation, and temperature. A short chapter on metabolic principles precedes a chapter on permeation and two chapters on energy release and biosynthesis. The latter includes protein and nucleic acid synthesis as well as synthesis of smaller molecules. The regulation of metabolism, both genetic and environmental, is treated in the next chapter. The final two chapters deal with growth and reproduction and with differentiation; the latter is primarily concerned with spore formation.

It is difficult to assess the usefulness of a book of this sort. To one who is quite familiar with the field it will seem curiously incomplete in that the author is trying to cover so much information that he can treat very little of it in any depth. But how does it appear to one who is not familiar with the subject? It could provide an overall survey or serve as an introduction to any of several areas of knowledge. But it could also be a source of difficulty because the author rarely mentions the type of experimental evidence available to support the concepts discussed; indeed, he seems to ignore experiment almost entirely. The volume may well be a useful introduction to the subject, but there are enough uncertainties about it to preclude wholehearted recommendation.

W. W. UMBREIT
Department of Bacteriology,
Rutgers University

Paleo-American Prehistory

It is now generally accepted that man was present in the New World during the terminal phases of the last Ice Age. There remains, however, considerable difference of opinion as to when the first migration may have occurred. At one extreme are those who hold that there is no evidence for man prior to the terminal phases of the Wisconsin (Two Creeks interval). Others postulate a very early migration, perhaps even pre-Wisconsin, and accept as evidence for this position a number of localities which have yielded only crude tools with general resemblances to Early and Middle Paleolithic materials in the Old World. Most authorities find themselves somewhat between these extremes. On one hand, they are impressed by the fact that none of the so-called early "pre-projectile" localities have been adequately studied, or by the fact that when they are studied, as in the recent work at Tule Springs, the evidence for early occupation cannot stand careful scrutiny. On the other hand, it is also evident that the earliest firmly dated industry in the New World, the Clovis Complex, with radiocarbon dates clustering between 9000 and 9500 B.C., is markedly unlike any known industry of similar age in Northeast Asia. These differences must have resulted from a long period of isolated development. Two facts—that American Indian languages are diverse and distinct from those of the Old World and that, physically, the American Indian is varied and racially different from the populations in Siberia—are cited as further evidence for a respectable antiquity for man in the New World. The only problem is that the evidence for this antiquity has not been found.

In this book, **Paleo-American Prehistory** (Idaho State University Museum, Pocatello, 1965. 251 pp., $5), Alan L. Bryan presents an integrated theory in support of a very early occupation of the New World. Bryan summarizes all of the major localities, in some instances offers alternative interpretations, and attempts to reconstruct a historical sequence. The reconstruction is formulated on three basic premises: (i) that American projectile point tradition evolved within the New World from a basic leaf-shaped form; (ii) that the several projectile point traditions evolved at different times and in different places; and (iii) that man was present in the New World prior to the initial development in the Old World of bifacially flaked stone points.

I consider this very useful book one of the most thought provoking of those available on this subject, but the nonspecialist should approach it with caution. First and foremost, he must remember that the above premises are only hypotheses, because there is no irrefutable direct evidence to support them. Second, one must be very cautious in using some of the data from this book. For example, Bryan states that ". . . radiocarbon dates more than 25,000 years old have been obtained from southern North American sites which do not yield 'classic' 'early man' projectile points" (p. 2). He does not state, however, that serious doubts have been raised about every one of these localities. Another example—and there are many others—is his use of the data from Sandia Cave, and in particular his dating of the Sandia occupation at 20,000 B.C. (p. 42). In other sections of the book Bryan indicates not only his awareness of this problem (there appear to be reasonable grounds for questioning whether the dated samples came from Sandia Cave), but also his knowledge about the recent work by Haynes which suggests that the initial occupation of Sandia Cave was several thousand years later than 20,000 B.C. Nevertheless, in the synthesis sections, a date of 20,000 B.C. for Sandia Cave is used in a manner that leads the reader to believe there was no question about the evidence.

Unless the reader is aware of the dubious nature of most of the data on which Bryan builds his theoretical framework, he may find himself convinced of the plausibility of the arguments; they remain very questionable, to say the least, when alternative interpretations are given adequate consideration. Although I am prepared to accept as probable the postulation that the American projectile point traditions are of New World origin, I remain skeptical concerning the available evidence to support this position. The proof of the argument must rest on new data, carefully collected and adequately documented.

FRED WENDORF
Department of Anthropology,
Southern Methodist University

History of Medicine

W. D. Foster's book, **A History of Parasitology** (Livingstone, London; William and Wilkins, Baltimore, 1965. 210 pp., $8.25), undoubtedly grew out of his earlier works—*A Short History of Clinical Pathology* (1961) and *"The rise of chemical pathology"* (1963). In the preface Foster says, "There is no book on the history of parasitology in English and I am not aware of one in any other language. This gap in the literature I have tried to fill in outline. . . . The period covered is from ancient times to about 1920 by which time parasitology was a well established branch of biology." He explains that he has not included more modern work because "to assess its relative importance would need a professional parasitologist which I am not.

This book, it is hoped, gives an accurate account of the basic discoveries in parasitology at a level which is comprehensible to the non-professional parasitologist."

Chapter 1 traces parasitology from ancient times until the middle of the 19th century. This precedes chapters about certain particular parasites chosen "because their histories illustrate distinct steps in the history of parasitology as a whole." These chapters, are "The Cestodes," "Fasciola Hepatica," "The Schistosomata," "Trichinella Spiralis," "Hookworms," "Wuchereria Bancrofti," "Dracunculus Medinensis," "The Parasitic Protozoa," "The Trypanosomes," "Entamoeba Histolytica," "Babesia Bigeminum" [his spelling], "The Plasmodia," and the concluding chapter, "Parasitology Established." There is a bibliography and an index of personal names.

The book, except for the story of *Babesia bigemina*, is an outline history of medical parasitology. In such a brief survey, restriction and selection of material are unavoidable, and the author explains this. The book is interesting, well written, and adequately produced. It probably serves the purpose for which it is intended. However, it is not without errors, some of which may lead to misunderstanding. A professional parasitologist might object to lack of depth in treatment of some of the topics selected.

JOSEPH F. OLIPHANT
Department of Biological Sciences, Stanford University

Handbook of Physiology

The **Handbook of Physiology**, section 2, vol. 3, *Circulation* (published for the American Physiological Society by Williams and Wilkins, Baltimore, 1965. 985 pp., $32), edited by W. F. Hamilton and Philip Dow, completes the series on circulation. Volume 1 (1962) dealt chiefly with the blood, with hemodynamics, and with the heart; volume 2 dealt with the blood vessels.

Admirably, the present volume starts out to put these pieces together, in a chapter entitled "Integrated aspects of cardiovascular regulation" (Folkow, Heymans, and Neil). Circulatory control is also analyzed, using analog computer techniques (Homer Warner) and is further discussed in a chapter entitled "Postural changes in the circulation" (O. H. Gauer and H. L. Thron), in one on adaptive changes in the heart to heavy work loads (F. Grande and H. L. Taylor), and in one on effects of conditioned reflexes on the circulation (S. Figar).

Control of the circulation by autonomic drugs is covered by R. P. Ahlquist; the circulatory effects of "psychopharmacological drugs," both ancient (cocaine) and modern (tranquilizers), are described by J. H. Burn, and those of anesthetics by E. M. Greisheimer. Two chapters on the circulatory effects of heat and cold, and of artificial hypothermia (Rudolf Thauer) precede an account of the intriguing sequence of events that occur during the hibernation of hamsters and squirrels (Charles Lyman).

Three chapters, on the interface between circulation and respiration, are on effects of high pressures from diving or from other causes, in whales and men (Karl Schaefer); on effects of respiratory acts, including the Valsalva maneuver (E. P. Sharpey-Schafer); and on hyperventilation and hypoventilation (Dickinson Richards).

Comparative physiology of the circulation in invertebrates and vertebrates is discussed by A. W. Martin and K. Johansen.

The embryology of the heart is treated by J. D. Boyd, and another paper on structure, "Ultrastructure of the vascular membrane" (of the capillaries), is by G. Majno, who traces changes in interpretation of electron micrographs in recent years. The history and present status of pump-oxygenation systems are described by P. M. Galletti and G. A. Brecher.

The treatment of pathophysiology comprises the remainder of the volume, including a discussion of sludged blood (M. H. Knisely), a clear account of the many events occurring in blood clotting (M. Mason Guest), and an outline of the effects of anaphylactic shock on blood vessels (Hiram Essex) and of the causes of clubbing of the fingers (Jean Ginsberg).

Men who have toiled long in the vineyards cover topics of perennial controversy, including shock (Jacob Fine), cardiac failure (James O. Davis), and hypertension (Irvine Page and J. W. McCubbin).

So diverse a group of topics in one volume was not the original plan of the editors, but differing times of arrival of the many manuscripts necessitated changes. The wonder is that the three volumes were published in a period of only 3 years, and, above all, that the quality of most of the chapters is so outstandingly high. It should be added that, throughout the volume, the illustrations are also of high quality. Of enormous value is the comprehensive author and subject index prepared by Williamina Himwich, which makes instantly available the material in all three volumes, for these volumes represent the greatest compendium of knowledge of the physiology of the circulatory system existing today. As such, this section of the handbook represents a magnificent accomplishment by the editors, the late, beloved William F. Hamilton, and his colleague Philip Dow, and by the contributors themselves.

JOHN F. PERKINS, JR.
Department of Physiology, University of Chicago

New Books

General

Acquisitions Récentes en Biologie. Aubier-Montaigne, Paris, 1965. 305 pp. Illus. Paper. Contributors are Jean André, Ernest Bösiger, Gérard Bouhot, François Bourlière, Albert Claude, Alfred Fessard, Manfred Gabe, Pierre P. Grassé, Roger Martoja, Alexis Moyse, Jean Nitsch, Jean Rostand, André Tétry, Jean Valérien, and Étienne Wolff.

Alcoholism. Neil Kessel and Henry Walton. Penguin Books, Baltimore, 1965. 192 pp. Paper, 95¢.

American Ultraminiature Component Parts Data, 1965–66. G. W. A. Dummer and J. Mackenzie Robertson. Pergamon, New York, 1965. 498 pp. Illus. $21.50.

The Amateur Archaeologist's Handbook. Maurice Robbins and Mary B. Irving. Crowell, New York, 1966. 287 pp. Illus. $6.95.

An Annotated Bibliography of Tree Growth and Growth Rings, 1950–1962. Sharlene R. Agerter and Waldo S. Glock. Univ. of Arizona Press, Tucson, 1965. 188 pp. $15. The sections are Tree growth; Growth factors; Taxonomy and distribution; Tree rings; Bibliographies; Semipopular; and Tree rings and archeology.

Astronautics Year. An international astronautical and military space/missile review of 1964. Compiled by David Howard. Pergamon, New York, 1965. 229 pp. Illus. $6.

The Atmosphere in Action. I. J. W. Pothecary. Macmillan, London; St. Martin's Press, New York, 1965. 111 pp. Illus. $3.95.

Audubon in the West. Compiled and edited by John Francis McDermott. Univ. of Oklahoma Press, Norman, 1966. 143 pp. Illus. $4.95.

The Australian Sky. W. J. Newell. Jaca-

(Continued on page 1292)