Book Reviews

Man in Search of His Ancestors. The romance of paleontology. André Senet. Translated by Malcolm Barnes. McGraw-Hill, New York, 1956. 274 pp. Illus. $5.50.

In Search of Adam. The story of man's quest for the truth about his earliest ancestors. Herbert Wendt. Translated from the German by James Cleugh. Houghton Mifflin, Boston, 1956. 540 pp. Illus. + plates. $6.50.

The revelation of the Piltdown hoax and, at the same time, the widespread publicity involving the numerous discoveries of man-ape remains in South Africa have apparently whetted public appetite for popular accounts of human evolution. The effects have been twofold: an increase in the willingness of magazines of mass circulation to give simplified, heavily illustrated versions of discoveries in human paleontology, and the multiplication of popular books dealing with the subject. Unfortunately the number of new and sensational finds can never keep pace with the artificially stimulated curiosity of the public. The result is, that although a certain amount of information may be successfully transmitted, much of this hastily composed literature tends to become repetitious and wearisome, as only stale and warmed-over facts can become.

Taken individually, many of these treatises are unexceptionable and useful works. It is in the mass that they present a certain monotony, which is inescapable and which, perhaps, encourages a kind of languor even in the authors, so that, for example, we find André Senet, in *Man in Search of His Ancestors,* confessing that his account of Darwinism and Lamarckism is "oversimplified." There thus emerges a sort of "why bother when the going gets tough?" attitude, which encourages the same reaction in the public.

There are annoying little expressions which begin to grate on the professional reader. The Old Man of La Chapelle has a brain that was "abnormally developed." Bishop Wilberforce and Huxley are dextrously manipulated into having their great debate over Neanderthal man. The tooth of *Gigantopithecus* is assigned without further warning to a "gigantic ape or man from 8 to 10 feet tall." Although this theory is no longer seriously held in reputable quarters, it has an irresistible attraction. *Meganthropus,* for example, is carefully calculated to have had a height of 7 feet 6 inches. The researches of Weidenreich on the brain are confused with the work of Robert Broom. Clairvoyantly, *Sinanthropus* is assigned a rudimentary language because of certain muscular insertions on the skulls. The American paleontologist Marsh becomes March.

When bunched, these statements look more appalling than when they are scattered through the book, which begins with the Piltdown hoax and runs quickly backward to the dawn of life itself. The attempt to enliven the story with material of the human-interest variety has produced some of the errors noted here. The general public, says Senet, "has acquired a few false notions." It is regrettable that this readable and by no means unappealing book will not do all that it might have done to reduce them.

Herbert Wendt, in his *In Search of Adam,* has produced a lengthier and, at the same time, more concentrated book. He has confined his attention primarily to the human story and has, a little more successfully and accurately than Senet, made use of American historical materials. Some of the European material is of particular interest to English and American readers, because it gives details of continental anthropologic history which have hitherto been less available to the general public.

Unfortunately, there are also dogmatic expressions upon still unsettled problems. The Swanscombe cranium is asserted, without proof, to be a "genuine early Neanderthal specimen" and the Piltdown *cranium,* as distinct from the jaw, to be a "direct ancestor or contemporary of the Aurignac or Cro-Magnon peoples." Wendt asserts that the mastodon was used as a draft animal by the Maya but that "it probably went out of fashion." One wonders, on the subject of "fakes," intentional and otherwise, why the relation of the famous *Hesperopithecus* tooth to the Bryan antievolutionary campaign and the Scopes trial could not have been told, since so much other interesting gossip has been introduced. Certainly the world laughed at the Scopes episode, but should we forget, we scientists, that in 1927 the public had a chance to laugh at the scholars and their "million-dollar tooth" as well?

Occasional expressions, once more, cause lifted eyebrows, even though they are well-intentioned. For example, Australia "drifted away" from the Asiatic mainland in Cretaceous times." When sexual selection was invoked to explain the rise of man, the objections "were not really significant." Once more an author bows out of a formidable problem.

In Search of Adam is an uneven popular treatment of a complicated subject. It is extensive and novel in its fullness of European detail. It will sell and be widely read. It contains, at the same time, apocrypha and dramatization after the best modern manner, which will sound a trifle dated in perspective. This is a fault of public taste, but unfortunately it seems to create an appetite which can be served only by more spectacular discoveries narrated in an increasingly breathless prose.

LOREN EISELEY
University of Pennsylvania

Handbook of South American Geology. An explanation of the geologic map of South America. Geological Society of America Memoir 65. William F. Jenks, Ed. Geological Society of America, New York, 1956. 378 pp. Illus. + maps.

This volume is intended to accompany the geologic map of South America published in 1950. Because compilation of the handbook was delayed for several years, many of its chapters are more up-to-date than the map. Hence, the book serves both as a detailed explanation and as a supplement, bringing the map abreast of current geologic knowledge.

The book consists of chapters on the several South American countries, each written by a geologist or a group of geologists familiar with the particular area. Despite the multiplicity of authors, a good balance of subject matter is maintained, and the treatment of geologic details is remarkably uniform from one country to another. The editor should be highly commended for insuring this balance and essential uniformity, while at the same time permitting each author considerable individuality of presentation.

Emphasis is on stratigraphy and to a lesser degree on structure. Igneous rocks and land forms are treated very briefly in most of the chapters but are discussed at length in a few. Economic geology is omitted altogether in order to hold the book to reasonable dimensions. Most of the authors take pains to point out the

more important gaps in present knowledge—what geographic areas have not been sufficiently explored and what unsolved problems exist in the better known areas. Illustrations are limited to a few geologic cross sections, detailed maps of small areas, and maps designed to correct or to supply more detail to the large map. The list of references at the end of each chapter is short, but includes papers to which an interested reader can turn for more complete bibliographies.

The volume holds to its purpose as a handbook, attempting no more than a concise description of the rocks and structural features shown on the map. There is no effort to synthesize an over-all picture of the geology of South America or to relate South American geology to the rest of the world. This means that the book is hardly suitable for reading from cover to cover by anyone without previous knowledge of South American geology and place names. But as a reference book it is excellent, providing an authoritative and convenient means of getting information quickly about the geology of any South American country.

KONRAD B. KRAUSKOPF
Stanford University

Handbuch der Physik. vol. XIX, *Electrical Conductivity,* 1. S. Flügge, Ed. Springer-Verlag, Berlin, 1956. 411 pp. Illus. DM. 82.

This volume is one of a series constituting the *Encyclopedia of Physics* edited by S. Flügge. It consists of four chapters. Each chapter is beautifully done with very little overlapping of subject matter. Some overlapping is found: J. C. Slater's figure 42 and Harry Jones' figure 4 illustrating the displacement of the electronic wave packet when a metal is subjected to a potential gradient are the same but with different notations. Other cases of repetition appear but these are, in general, necessary for a complete treatment of the subject and are helpful to the reader.

The volume opens with a thorough treatment of the electronic structure of solids (136 pp.) by Slater, and may be considered a discussion of methods of solving Schrödinger's wave equation for a crystal consisting of nuclei and electrons. Slater chooses typical solids to illustrate the principles involved in finding the potential in which an electron moves and treats in detail the periodic potential problem. He traces this from the free-electron theory, through the tight-binding and cellular approaches, to the augmented plane-wave method and shows the limitations or advantages of each. He is very lucid in pointing out that the free-electron approximation, although it appears to agree with more elaborate methods of calculation especially in describing conductivity, is not a true representation of the situation. Slater also carefully points out that the complete solutions are involved and have not been carried through in actual cases, although he sees hope for this in the advent of modern digital computers.

Slater's treatment of electric conductivity hits the high points. He outlines the relation of energy-band theory to electric conductivity, to semiconductors, and discusses the impurity problem. He closes his chapter with a treatment of electron interactions and discussions of chemical bonds and magnetic properties of solids.

The second chapter (90 pp.) by A. N. Gerritsen deals with the conductivity of metals. The emphasis is on experimental methods and results. He discusses the effects of melting, pressure, lattice defects, magnetic transformations, and impurities on the electric resistivity of metals and gives correlations between conductivity and atomic numbers and electronic configuration of the elements. His discussion of the conductivity of anisotropic metal crystals permeates the whole chapter and is generally good. However, on page 140 he states that experimental results for a polycrystalline material agree with Voight's equation and yet on page 155 he states that no experimental values are available for polycrystalline material. Apparently, Gerritsen's view is that all metal crystals are quasiisotropic. This chapter's great merit lies in the compilation of accepted values for resistivity and temperature coefficients of resistivity of metals.

In the third chapter (89 pp.), Harry Jones gives a thorough mathematical treatment of the theory of electric conductivity including thermal conductivity. He discusses the statistical and wave theories of conduction and proceeds to calculate the resistivity of a metal based on the Debye and Einstein solid models. He discusses the thermoelectric and galvomagnetic effects. Also he does not overlook a discussion of the anomalous skin effect where the electronic mean free path exceeds the classical skin depth. This chapter is highly mathematical and profuse with derivations but is an ideal companion for Chapter 1.

The volume closes with photoconductivity (80 pp.) by G. F. J. Garlick. This chapter is written clearly and the various diagrams illustrating the conduction band, the filled band, the Fermi limit, and the forbidden gap for the electronic energy-band of a crystal are excellent, indeed. His discussion of the barrier-layer theory of photoconductivity is especially good. The photovoltaic and photo-electro-magnetic effects are also discussed. This chapter closes with a discussion of the photoconductivity of specific solids, inorganic and intermetallic compounds, and organic systems. Nearly all materials of commercial import are considered.

This volume is highly recommended to those interested in the theory of solids. The electronics engineer would also do well to have this book as a reference. The book is especially valuable in that it indicates gaps in our knowledge and points the way for further research on the solid state.

WALTER J. HAMER
National Bureau of Standards

Psychology of Industrial Conflict. Ross Stagner. Wiley, New York; Chapman & Hall, London, 1956. 550 pp. Illus. $8.

Using the thesis that "wars begin in the minds of men; so do strikes and other forms of industrial conflict," Ross Stagner has attempted to construct out of the materials of psychological research a consistent theoretical framework for the analysis—and possible amelioration—of industrial conflict. Drawing upon his extensive experience and background in psychology and as a member of the Institute of Labor and Industrial Relations of the University of Illinois, he has performed an invaluable service in collating and organizing a great number of empirical studies in the field and of challenging both management and union people—those who have the motivation and background to stay with a complex treatise frequently written in technical language!—to reexamine their own insights and conclusions concerning management-union relations. But the framework itself seems to have only limited applicability to the problems at hand.

Although he does not deny the relevance or usefulness of the "macroscopic" approaches of sociology and economics, Stagner's framework is emphatically that of psychology—of individual psychology—and its principal structural members are the concepts of perception, motivation, frustration, and aggression. Although these concepts, as developed in recent research, do illuminate some small aspects of the problem, their overall inadequacy for the purpose of consistent analysis is reflected by the extent to which reference to them is absent from the treatment of major areas of concern.

The first six chapters develop the concepts of perception, motivation, and frustration and aggression, and the application of the psychological principles in these areas to management and union groups. Two succeeding chapters deal