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These rules seem to be obstructionist and devoid of sense under present circumstances.

T. D. A. COCKERELL
UNIVERSITY OF COLORADO

# SCIENTIFIC BOOKS

## MANKIND

*Mankind So Far.* American Museum of Natural History Science Series. By WILLIAM HOWELLS. 319 pp. Illustrated. New York: Doubleday, Doran and Company, Inc. 1944. $4.50.

THE book comprises three parts of about 100 pages each: Animals and the Coming of Man, Man and the Coming of Homo Sapiens and, finally, Homo Sapiens and the Coming of Races. In the words of the author, "Of all animals we men are the only ones who wonder where we came from and where we will go." Science has given much serious attention to the successive appearances of man-like creatures, patiently collecting the evidence upon which a reconstruction of his lost history could be based to the end that much new data have been accumulated during the half century now closing. Hence there is need for a clear logical attempt at such reconstruction. Until the appearance of this volume, there was no high-class treatise which the anthropologist could recommend to the scholar as well as to the intelligent lay reader seeking a reliable summary of the subject.

As may be expected, the first part of the book deals with the predecessor of man and could be consistently labeled "from fish to man," a favorite headline in current museum exhibits. The common saying that "scientists agree on nothing" is not strictly true, since paleontologists and anthropologists usually agree that no creatures properly designated as *Hominidae* are known before the Pleistocene Epoch, the régime of the Ice Ages, when, in the words of the author, "the weather was certainly something to talk about." In this section of the book, the author follows closely the broad generalizations of paleontology, but not blindly, since now and then he questions traditional interpretations. In his remarks about fire and cooking, he reveals an honest doubt that fire was so necessary for warmth as to force its invention and use since caves are usually warm enough, but that cooking and a liking for novelty may claim priority as a motive. In more general terms, the author suspects that "fire, flintworking, speech and society" served to increase man's numbers rather than to change his anatomy. However, he looks favorably upon the idea that the increase in numbers due to revolutionary inventions, such as fire, the bow, domestication, etc., might increase individual and group variation, thus leading to the wide range of race diversity in modern mankind. He rejects as unscientific the idea that man somehow sensed a career upon the ground as more desirable than one in the trees. Nevertheless, he imagines there was a great hazard in such a shift because the evolution of a foot was necessary, as the lack of it dooms the chimpanzee and the gorilla to extinction.

The over-all puzzle in the story of the several known species of the genus *Homo* is to reconcile the disappearance of all these species save one, *sapiens,* with the wide variations conceived as entities which we speak of as races. Yet the author reminds us that we are prone to grossly exaggerate these differences, to the end that we really think of "our races" as species, many of us unconsciously running amuck by giving them genus rank. He shows us that anthropologists favor one or the other of two opposing theses: (a) that none of the species of *Homo* save one, *sapiens,* was able to survive the selective rigor of the Pleistocene, but that even his grasp upon the continuity of morphological form was so shattered that he survived in a number of variations of near-species grade; (b) that few, if any, of these early species really disappeared, but that after an interval began a rapid transition by convergent evolution (by no means ended) accelerated by what we call "race mixture," so far leaving us a few sharply marked varieties of man no longer worthy of being rated as separate species. Of contemporary anthropologists, Weidenreich leads in support of *b,* whereas the author of this book bids for leadership in the *a* group. He contends that among the many objections to accepting theory *b* are that it violates the principles of genetics and is out-of-step with comparative morphology, but holds that neither view should be taken too seriously, because the number of available fossils of man is contemptibly small in contrast to the millions of examples of *Homo sapiens.* If new finds of fossil man are made, a less puzzling answer may be forthcoming.

We come now to the third section of the book. Since it is the custom to speak of the varieties of *Homo sapiens* as races, the author accepts that term with the title "Homo Sapiens and the Coming of Races." Beginning with the three great primary strains, White, Yellow and Black, there follow another

hundred pages of interesting condensed discussion, the most satisfactory brief characterization we have seen. Other writers have found this task baffling, leading the reader into hopeless confusion. Possibly one secret in the author's art is that he combines time perspective with plain geographical distribution, thus giving sketches of modern man which can be sensed in terms of the cardinal points—and a fifth dimension, called time. It follows that no one could achieve such a literary triumph without a profound knowledge of the facts of distribution in all these dimensions, in research and years of experience in skilful teaching. Further, limitations of space may have led the author to change his method; whereas in the other two sections of the book he has clearly stated the divergent theories of the leading writers, in this he ignores such contributions as are not easily classified or reduced to simple statements, giving instead his own views of race origins and migrations. A good example of this is the treatment of the Negro and Negroid problems. Whereas in the case of the American Indian, he accepts and follows the traditional American interpretation of an Asiatic origin, he treats the Negro by some bold generalizations, without hinting that many more definite yet often ill-grounded theories are entertained by recognized anthropologists, but begins with a unique diagrammatic ethnographic map of Africa which, for clearness, leaves little to be desired. He then turns to the African Whites, whose restricted habitat seems to be North Africa, an ancient physiographic part of Europe. He sees these White people streaming into Africa by way of the Suez "bottle-neck," but ignores the question as to how the Negro came to be in the Central African forests to assist in forming the intervening Sudan by mixing with the White intruders from the north. The Bushmen of South Africa are accepted as the traditional early inhabitants, while the Pygmies are passed over as a hopeless puzzle as are certain of the Negroids and Negritoes in eastern Asia, startling the reader with the suggestion that both Pygmies and Negroes may be foreigners in Africa.

Nevertheless, a perusal of these hundred pages leaves one with a clear lively picture of where the many varieties of the world's peoples were settled when European navigators "unrolled the map of the world about 1500," and formulates the most pertinent questions that can be asked concerning them even though satisfactory answers are not forthcoming. Whatever weaknesses the book may have are justifiable omissions rather than mis-statements of fact. The appearance of so readable and reliable a book dealing with the races of man is an important scientific achievement.

CLARK WISSLER

## GENERAL CHEMISTRY

*Introductory General Chemistry.* Third edition. By STUART R. BRINKLEY. x + 645 pp. 135 figs. New York: The Macmillan Company, 1945. $4.00.

THIS book is shorter by 32,000 words, or the equivalent space (86 pages) than the preceding revised edition of 1938. It has been extensively rewritten with some changes in the order of presentation and considerable modernization of the factual and theoretical content. The general style is the same: basic considerations, fundamental laws and theory are compressed into the first 30 pages, plus 10 pages later on molecular and atomic weights; the description of chemical substances, reactions and processes is adequate and modern, though brief; the book is built around the presentation of principles and theory with a definite effort to keep illustrative material adequate but at a minimum. Although entitled "Introductory" its use should presuppose a good course in secondary school chemistry or a selected group of students.

A great deal of space is devoted to applications of the modern theories of aqueous solutions. This includes emphasis on the ionic nature of reactions, the ion-electron treatment of oxidation-reduction reactions with many detailed illustrations, and extensive application of the Brönsted point of view to acidic and basic molecules and ions. The revision with respect to the acid-base theory is an outstanding feature of this edition. The difference between the dispersal of salt ions in water and the formation of ions from molecular acids is made clear. Anion and cation acids, molecular and ionic bases are discussed. The hydrolysis of salts is presented in terms of the acidic and basic properties of their ions. Throughout the chapters on the metals the hydration of metal ions and hydroxides is emphasized. This unfortunately leads to cumbersome formulas and equations, and sometimes alternate equations are given, omitting water of hydration.

This will not be an easy book to study; it is a serious, technical book, and for the serious chemistry major it will give an excellent background for subsequent courses.

CECIL V. KING

WASHINGTON SQUARE COLLEGE,
NEW YORK UNIVERSITY

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BINGHAM, MARJORIE T. *Flora of Oakland County, Michigan.* Illustrated. Pp. 155. Cranbrook Institute of Science. $1.00. 1945.

CANNON, WALTER B. *The Way of an Investigator; A Scientist's Experiences in Medical Research.* Pp. 229. W. W. Norton & Company. $3.00. 1945.

DUBOS, RENÉ J. *The Bacterial Cell.* Illustrated. Pp. xix + 460. Harvard University Press. $5.00.

GRINKER, ROY R. and JOHN P. SPIEGEL. *Men under Stress.* Pp. xii + 484. The Blakiston Company. 1945.

HENNEY, KEITH. *Principles of Radio.* Fifth edition, revised. Illustrated. Pp. viii + 534. $3.50. 1945.