

the role of microorganisms in the genesis and breakdown of petroleum and natural gas, and in the deposition and destruction of sulfide minerals are given major attention. Except for the sections dealing with *Thiobacillus ferrooxidans*, the book is based largely on Russian investigations, and pertinent material from other sources is given scant treatment or is ignored.

A far too brief chapter deals with the methods, problems, and pitfalls of biogeochemical research, and the authors are laudably critical in discussing the investigations and conclusions of some of their colleagues. Unfortunately, this criticalness does not apply throughout, and many of the generalizations are based on inadequate and unconvincing data. For example, it is stated that by determining the argon-nitrogen ratio one can decide whether nitrogen in a natural gas is of atmospheric or biochemical origin. Although such a method may permit one to determine the maximum contribution of atmospheric nitrogen, it certainly cannot distinguish between the biological or the abiological origin of the nonatmospheric nitrogen. The discussions of the physiology and metabolism of geologically important bacteria are oversimplified and sometimes in error. Thus, the cleavage of a fatty acid in methane formation is described as follows: "An acetic acid molecule is detached from the fatty acid simultaneously with the attachment of carbon dioxide and water molecules." The book suffers unduly from deficiencies in translation and editing, and some of the disturbing errors may have this origin. One is startled to see in two places "mucous membranes" of bacteria instead of sheath (or less likely, capsule). The distortion in the title and the discussion of Table 12, which have been translated from English into Russian and back, recalls the fate of Mark Twain's Jumping Frog of Calaveras County on its round trip from the United States to France.

The book, nevertheless, should be of considerable value to those engaged in biogeochemical research, since it summarizes much Russian literature that is not readily available and permits an assessment of the level and significance of this area of Russian science. The neophyte, however, should beware lest he be left with more positive conclusions than the current state of the science warrants.

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13 MARCH 1964

Drug Addiction

The Road to H: Narcotics, Delinquency, and Social Policy. Isidor Chein, Donald L. Gerard, Robert S. Lee, and Eva Rosenfeld. Basic Books, New York, 1964. xiv + 482 pp. Illus. \$12.50.

On the basis of their intensive study of narcotic users in New York City during the 1950's, Chein and his associates have fashioned a book which does three things. It provides detailed explication of their research process and findings. It depicts the wretched misery associated with use of narcotic drugs. And it makes a powerful appeal for change in public policy toward narcotic usage and addicted persons.

The book is aimed at a wide audience including psychiatrists, police officers, lawmakers, and others concerned with the narcotics problem. The authors do not attempt simplified writing for the probable majority of readers having but limited knowledge of research design and statistical method. They present the full complexity of their research process and explain technical features in footnotes and in 85 pages of appendices. The nontechnical reader can understand it, but he will find some of the reading rather heavy going.

The research was concentrated on the 16- to 20-year-old male drug users in three boroughs of New York City. A wealth of data is presented about the distribution of drug use among juveniles, social and economic correlates, the cultural context, the personality of the adolescent addict, and the family of the addict. Chein and his associates found that most juvenile drug users had been initiated to the use of drugs by peers, not by adult drug pushers; that initial use of drugs does not inevitably lead to regular use; that regular use does not inevitably lead to addiction; that delinquent street gangs do not contribute significantly to the spread of the use of drugs; that use does not result in an overall increase in juvenile crime if direct violations of narcotic laws are discounted.

The authors come to the challenging conclusion that the most horrible consequences of opiate addiction arise directly from its *de facto* illegality. They defend this conclusion by tight and eloquent argument. Their remedy: reduce the illegality associated with

drug use. They propose giving the medical profession total discretion to prescribe opiate drugs for addicts. They do not propose giving any addict all the narcotics he wants. They propose individual assessment of and the best possible treatment for a distressed human being.

The authors regard enforced hospitalization with skepticism, and they apparently reject involuntary treatment of any sort. Clinical workers will question this, since some addicted persons seem to benefit from treatment when brought to it coercively.

This book effectively combines rigorous scientism, psychological perceptiveness, and compassion. It represents a major contribution and should be read by all concerned with the narcotics problem.

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Anthropology and Linguistics

The Japanese People: Origins of the People and the Language. Isao Komatsu. Kokusai Bunka Shinkokai (Society for International Cultural Relations), Tokyo, 1962 (order from East West Center Press, Honolulu). xxii + 64 pp. Illus. Plates. Paper, \$2.50.

Scientific data on the earliest inhabitants of Japan have become more numerous and reliable during the last decade, and this small, well-illustrated volume provides a readable account (in English) of the evidence now available from geology, pre- and protohistoric archeology, physical anthropology including blood group data, and linguistics including glottochronology. Man, using the hand axe, may have been in the Japanese Islands 150,000 years ago; blade tools may go back to 60,000 B.C. Pottery appears surprisingly early (one carbon-14 date of 7000 B.C. comes from charcoal associated with earliest Jomon potsherds, but 4500 B.C. is probably a more reasonable date for the first Japanese pottery). Agriculture came in quite late, possibly only around 300 B.C. Earlier views that the aborigines of Japan were all physically similar to the surviving modern Ainu in the north are contradicted by finds of some Neolithic skeletons that resemble those of modern Japanese more closely than they do the Ainu.

Komatsu concludes with a review of present linguistic views about the origins and continental affiliations of the Japanese language, which structurally and to some extent phonetically comes closest to the Korean language. The book was evidently not designed for scholars interested in checking additional sources for there is no bibliography, but the reader may be assured that the statements in the book can be backed up by an impressive scientific documentation, almost all in Japanese. The author might well have indicated at least one or two publications which would lead an interested reader to this abundant literature.

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Human Physiology

Physiologie. vols. 1, 2, and 3. vol. 1, *Introduction historique; Les fonctions de nutrition* (958 pp., F. 80); vol. 2, *Système nerveux; Muscle* (1101 pp., F. 95); vol. 3, *Les grandes fonctions* (1201 pp., F. 95). Charles Keyser, Ed. Editions Médicales Flammarion, Paris, 1963. Illus.

This treatise is *formidable*, in both the English and the colloquial French senses; its three volumes total over 3200 pages, making it probably the most exhaustive, up-to-date presentation of human physiology available. In several respects, it is intermediate in scope and detail between the standard textbooks used in the United States and the as yet incomplete *Handbook of Physiology* published by the American Physiological Society.

Volume 1 provides a brief historical introduction followed by the section on the functions of nutrition which considers the kidney and body fluids and includes an extensive chapter on endocrinology as well as the discussions of bioenergetics, digestion, nutrients, and intermediary metabolism ordinarily expected in this category. Volume 2 is devoted entirely to nerve and muscle. The long and thorough chapter on the electrochemistry of the neuron (by Marx) and the separate chapters on sleep, phonation, and spoken language are especially noteworthy. Volume 3, includes consideration of respiration, circulation, reproduction, fetal and neonatal life, and growth. This volume con-

cludes with a brief chapter on immunology. Volumes 1 and 2 each have their own indexes, and volume 3 has a most useful cumulative index. The table of contents is at the back of each volume, a quite common procedure in France.

The bibliographies are extensive and international in scope. Some chapters contain references no more recent than 1957, but in general the material is up to date as of 1962, presumably the time at which the volumes went to press. An unfortunate error led to the omission of the bibliographies to the chapters on smell, taste, and vision. The anguish of editors endeavoring to collate manuscripts from collaborators is well known, but in addition to writing his own four distinguished chapters, Charles Kayser, the editor, has displayed remarkable talent for organization (and diplomacy) in assembling a work of this size in virtual synchrony.

The volume of material covered and the obviously great effort brought to bear by the contributors makes it especially difficult (and loftily presumptuous) to present an evaluation in a short review. Only impressions, supported by examples, are possible.

Certainly the best aspect of this work is the great detail with which many topics are discussed. This has resulted in a very long book, but it is clear that each of the 40 contributors must have been able to write his section with very much less than the usual pressure from editor and publisher to "keep it under 10,000 words." For example, the magnificent chapter on respiration (by Dejours) occupies 245 pages, which alone would represent 20 percent of one of our standard texts. There are also good discussions of some topics ordinarily omitted or treated in bare outline—for example, growth, senescence, and fetal and neonatal physiology.

There is no preface, unfortunately, and it is not clear whether the authors intended the volumes to be used in teaching or simply as a reference work; French medical schools have used American physiology texts extensively. One can imagine the mutinous dismay of medical students confronted with a work of this size, but its major defect for use as a textbook would arise from the rather rigid treatment of physiology, organ system by organ system. For example, the plasma buffers are discussed in a section on the physical chemistry of blood, the acidifi-

cation of the urine in a chapter on the kidney, and the role of the hydrogen ion as a stimulus to ventilation is described in the chapter on respiration. There is not, however, any integrated discussion of the acid-base regulation of the body or of the multiple adjustments in response to an acid or base load. But, on the other hand, it must be noted that the chapter on growth, for example, pulls together material ordinarily treated in only a fragmentary way.

Another impression is that, despite the valuable and detailed discussion in some areas, other parts of the book are curiously brief, rather as if they were written as introductory comments to more intensive treatments which the authors expected to be published in later sections but which, for some reason, were not actually written. For example, the formed elements of the blood, the blood groups, and blood coagulation are dealt with in a scant seven pages.

These volumes will be useful as supplementary extended reading material for students of physiology, provided some of the weaknesses referred to are taken into account. The style is simple and lucid throughout so that the French language should present no particular obstacle.

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Modern Chinese History

Twentieth Century China. O. Edmund Clubb. Columbia University Press, New York, 1964. xvi + 470 pp. Illus. \$7.95.

Anyone who has taught a course on the history of modern China will have felt the need for a good general textbook. There are many excellent studies of particular topics or limited periods, but to make the best use of these a student needs some book which gives a general outline of all the main developments and which is also a reliable reference work for the more important facts and dates. The best work of this kind so far available carries the story only up to the Kuomintang victory in 1928.

Twentieth Century China is a disappointing book because it just misses the standards required for such a text