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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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.