Scientists and National Policy

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For some time there has been wide concern within the scientific community with the need to improve the public's understanding of science, and, gradually, something has been done about it with the help of scientists themselves. The results to date may be far from satisfactory, but there is some cause for modest gratification. Many newspapers now employ specially trained science writers to interpret scientific events for their readers, and the number of books written for the layman, by both scientists and nonscientists and covering a wide range of technical fields, has risen markedly. Even the television networks have displayed some encouraging initiatives of late in going beyond the usual rubrics of space and medicine and in using scientists to discuss molecular biology and masers.

Unfortunately, there has been nothing like the same concern within the scientific community with the need to improve the public's understanding of the various roles played by scientists in the development of national policies. While there has been an increasing, though still slight, volume of scholarship concerned with the interactions of science and public policy, it has been largely the work of political scientists and historians. Much of this work has been exceedingly valuable and stimulating, and we need more of it. But there is still a need for scientists who have participated in government, particularly at the policy level, to speak out for themselves.

This need could not be more fully demonstrated than from reading **America's New Policy Makers: The Scientists' Rise to Power** (Chilton, Philadelphia, Pa., 1964. 298 pp. $6.95), by Donald W. Cox. This latest entry in the field of government and science, by a nonscientist (Cox has an Ed.D. from Columbia), is not only wholly lacking in the scholarship, judgment, and perspective of earlier studies of the subject by other nonscientists such as Don K. Price, A. Hunter Dupree, and Robert Gilpin, but it cries for a rebuttal from some of the scientist policy-makers the author speaks about with such unwarranted authority.

In his preface to the book, Cox notes that nearly a decade has passed "without a comprehensive discussion in print of the expanding role of the American scientist in our political system" and that there never has been an attempt "to present a popular history of the rise of American science in Government from its humble beginnings to the present." For these reasons, he has undertaken with this book to "fill a gulf in the public's need to know until the academic historians, who are still struggling to unravel the mass of valuable scientific material accumulated during World War II years, can catch up." He then proceeds to describe his "analysis," which is divided into two parts: "Part I presents a history of the relationship of science to Government from the origins of our nation to the present attempts at Geneva to achieve a nuclear test ban" (all accomplished, though admittedly in a "selective" fashion, in 134 pages). "Part II is an analysis of the unsolved problems stemming from the invasion of the political arena by the scientists" (treated in 126 pages).

While these are, indeed, lofty purposes and comprehensive tasks, the gulf is, alas, not filled but rather deepened by the author's rambling narrative. For without a more serious recourse to history and a more penetrating analysis of the facts, the reader is left with an all too superficial, often misleading, and frequently inaccurate account of what some scientists said to some other scientists or to some government officials about some very important issues.

The questions asked are important: "Do we need a national science policy?" But the answers are superficial: "If the nuclear, defense, and civil scientists in government, universities, and industry could prepare [science] plans for their respective agencies, and if some central office like Dr. Wiesner's Office of Science and Technology in the White House could put them all together into a codified form—with Congressional approval—then we would have a true *natural* science policy for the first time in our history" (p. 156).

The book also is full of errors that range from misspelling ("Hartshering" for Hartgering, p. 235) to wrong titles (Detlev Bronk is not "head of the Rockefeller Foundation," p. 151) to misstatements of fact (there is no President's Committee on Biology of the FCST," p. 235). But most disconcerting of all is the lack of a single footnote to document the hundreds of quotations which make up much of the author's narrative and which serve as the basis for many of his conclusions.

Unhappily, this book is likely to add to the confusion and uncertainty in the public mind about the role of scientists in government. Let us hope, therefore, that some of the scientists who have served the government in posts that require scientific competence, and political skills as well, will help write the public record.

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Geological Microbiology

Introduction to Geological Microbiology. Sergey Ivanovich Kuznetsov, Mikhail Vladimirovich Ivanov, and Natal'ya Nikolayevna Lyalikova. Translated from the Russian edition (Moscow, 1962) by Paul T. Broneer. Carl H. Oppenheimer, Ed. McGraw-Hill, New York, 1963. xviii + 252 pp. Illus. $8.95.

A peripheral but significant branch of bacteriology, to which the Russians have devoted much effort, is concerned with the geological significance of microbial activity. This book is unique in that it is probably the first to treat exclusively with this branch of science. It does not cover the entire field but is "merely a first attempt to generalize some of the existing information on the role of microorganisms in the formation and alteration of economic mineral deposits." Such topics as the distribution of bacteria in geological formations,

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.