Book Reviews

The Voice of Conscience

Ethics, Politics, and Social Research. GIDEON SJOBERG, Ed. Schenkman, Cambridge, Mass., 1967. xviii + 358 pp. $8.95.

There is a story, perhaps apocryphal, of an American professor on sabbatical leave who decided to visit Oxford. One afternoon he fell into conversation with a don who was very distinguished, very old, and very deaf.

"And what do you teach, young man?" asked the Englishman.

"Business ethics."

"I'm sorry, I didn't quite hear you."

"Business ethics!"

"You know, I must be deafer than I thought," said the Oxford professor. "I keep thinking you're saying 'business ethics.' "

It is only recently, I think, that many sociologists have seriously come to grips with the skepticism directed toward the ethical state of their discipline and their claim that sociology is a pure, objective, and detached science. They are just beginning to examine systematically the moral implications of their field and of their research methods; and the close ties that exist in fact between value judgments and social science are only beginning to receive the frank discussion they warrant.

Ethics, Politics, and Social Research ranges over the great variety of situations in which sociologists at work can no longer accept the bland assumption that knowledge for knowledge's sake is the ultimate norm, to be accepted without any question, and that the professional life of the social scientist has neither ideological cause nor social consequence. The university, the business corporation, the Army, the government agency, the community—these are the settings in which the authors of these collected essays explore the moral quality of the social scientist's motives and his impact on the lives of the people he studies.

In the past, questions about professional ethics in the social sciences were largely confined to issues of honesty and competence and a rather rudimentary sense of fair play. The use of the word *subjects* by social scientists for the people they studied—sometimes abbreviated to *Ss*—was not only a convenience but also a symbol of the desired scientific detachment; that it also frequently reflected a manipulative mode of thought went unobserved. The danger from politics in the environment of social science research was assumed to lie largely in the possibility of censorship and of restrictions on free scientific inquiry. Such issues are examined in some of these essays—for example, in the article by Jane Cassels Record concerning research institutes and pressure groups and in the piece by Ted R. Vaughan on the University of Chicago Law School jury study. But in this book these issues are discussed much more profoundly, more searchingly and openly than is usually the case; and, in addition, the emphasis is largely shifted from the harm that society or an individual sociologist might do to the social sciences to the harm that the social sciences might do to society and particular persons. In essays on the LSD experiments at Harvard, on Project Camelot, on the Wiggins-Shock study of the aged, and other research projects, interest is primarily centered on—for example—the exploitation of others, secretive intervention, the misuse of scientific findings in the service of selfish interests, and the invasion of privacy.

What has happened, I believe, is that over the last several decades there has been a great change in the attitude of many people toward their government and formal institutions of power. And along with this—beginning, perhaps, after the second World War and accelerating in the '60's—there has been a far-reaching erosion of the comfortable relationship between science and society. In an earlier and more innocent era, it was possible to assume that the findings of science were likely to be used in the service of a society which, however imperfect it might be, was pushing in the direction of a just and humane social order. Questions of ethics and politics could be more or less ignored—or so it was thought—since science existed in a democratic climate that not only sustained it but provided hope for its wise employment. But now, for many people, that assumption has broken down, and 1984 or some variant of it is no longer a nightmare of what the future might be but a glimpse of a not too distant reality. The scientist has at last come to know tragedy, and a hermetic concern with the state of his "discipline" will no longer suffice.

This shift in mood is particularly marked in the social sciences because they have for so long made a great point of being "free of value judgments," "objective," "rigorous," and so on, all in a desperate attempt to win the laurel crown labeled science. The implications, however, of this new awareness of the place of the social sciences in society are still far from clear; and the ethical and intellectual concepts to handle the problems it generates have not yet been worked out. The inevitable result is a certain fuzziness in Sjoberg's collection of essays, for as the authors explore this new territory they sometimes seem to lose sight of one another. Yet this defect is quite outweighed by the fact that by and large the essays are written with an integrity, a sophistication, and a hammering concern for the truth often lacking in the literature of sociology. Perhaps it is a paradox that the closer sociology comes to the realization that it is not the "value-free" discipline it thought itself, the more sociology moves toward the rigor and the significance it has sought for so long.

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Ice and Landform

Glacial and Periglacial Geomorphology. CLIFFORD EMBLETON and CUCHLAINE A. M. KING. St. Martin's, New York, 1968. xvi + 608 pp., illus. $12.75.

Evidently intended as a textbook, this work is also a useful reference on glaciers and glacial processes insofar as they create land forms. The authors have avoided stratigraphy and environment, two aspects of former glaciation that are currently enjoying wide popularity among scientists. Yet while confining themselves to geomorphology they have produced a good, compact

summary of existing knowledge about motion and regimen in glaciers, glacial erosion, genesis (though not stratigraphy) of glacial deposits, and effects of frost action in the ground.

This list is nonhistorical, and is perhaps better adapted to a geographic than a geologic curriculum. Nevertheless, its material is well selected, and it is primarily analytical rather than descriptive. The presentation is not didactic; it consists in large part of summaries of competing ideas about glacial processes, with a summary at the close of each chapter embodying guidance through the data and opinions discussed. Under some topics are outlined theories no longer accepted, along with more recent, better ones. This procedure has value for students, although its usefulness for reference is slight.

The authors display a good command of the literature—no inconsiderable feat in these days—and the work as a whole is about as up to date as the treatment of so broad a theme could very well be. Each chapter is followed by a generous list of references, by no means confined to publications by geographers.

The book is easy to read; the ideas are clearly and pleasantly expressed. Illustrations, though not abundant, are well selected, and, in this field at least, good text is worth more than the same space devoted to maps, diagrams, and photographs. The book should have appeal not only to students but also to nontechnical readers with curiosity about glaciers and how they act on the land.

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History of Astronomy

Vistas in Astronomy. Vol. 9, New Aspects in the History and Philosophy of Astronomy. First Joint Symposium of the International Astronomical Union and the Union Internationale d'Histoire et de Philosophie des Sciences, Hamburg, Germany, Aug. 1964. ARTHUR BEER, Ed. Pergamon, New York, 1968. xvi + 320 pp., illus. $22.

In August 1964, more than 80 scholars from 18 countries met at the University of Hamburg for the first joint symposium of the International Astronomical Union and the Union Internationale d'Histoire et de Philosophie des Sciences. This newest volume of the *Vistas in Astronomy* series is the (slightly augmented) record of that symposium.

As a first step in conveying the nature of its contents, it will be well to point out that the volume's subtitle, "New Aspects in the History and Philosophy of Astronomy," is somewhat misleading. The discussion is exclusively and explicitly concerned with "promoting progress in the study of the History of Astronomy." The discipline called Philosophy of Science is represented in only the most marginal way. What was apparently intended by the reference to philosophy of astronomy was that there should be some philosophizing about the goals and methods of research in the History of Astronomy; but, as B. Sticker complains in the introduction, the contributors showed little inclination to let down their hair and address themselves to "the tools of the trade rather than the products." While their reluctance will doubtless prove disappointing to some professional historians of astronomy, it has almost certainly resulted in a book that holds more interest for the lay reader.

As much as the symposium members might be accused of failing in the one rather esoteric respect, they responded enthusiastically to the more familiar task of presenting "new aspects in the history of astronomy." Easily the most striking feature of the book is the diversity among its constituent articles. The most exciting of these is O. Gingerich's outline of "Applications of high-speed computers to the history of astronomy." Clearly, the potentialities are enormous. In an interesting turn of the tables, A. Beer illustrates that the history of astronomy can itself be fruitfully applied as a tool in the "Astronomical dating of works of art." Among several good historiographical essays, F. Hammer's summation of the major "Problems and difficulties in editing Kepler's collected works" stands out not only because of the importance of its subject, but for its general relevance to the similar projects that certainly ought to be undertaken in the future. Running along more familiar lines are articles such as those by M. Hoskin and, especially, H. Dingle ("A re-examination of the Michelson-Morley experiment"), which provide excellent examples of sophisticated historico-philosophical analysis. Finally, there are the inevitable chronicles that still constitute much of the effort devoted to every branch of the history of science. Limited in intellectual content and pertinent primarily to the specific histories of various national cultures, they represent, at best, raw material that will eventually be integrated into the general history of astronomy, at worst, new aspects that will prove to be blind alleys for the discipline.

As one ought certainly to be able to expect from such an expensive volume, the production is superb. Among the more than a hundred photographs included are many beautiful reproductions of old astronomical instruments. The volume is even indexed. The one thing that can be said to be lacking is thumbnail sketches of the contributors, who are identified only by their academic titles. American readers will be happy to find that, although over two-thirds of the contributions are from continental scholars, virtually all of the articles are in English.

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A Model of the Mind

The Nature of Human Intelligence. J. P. GUILFORD. McGraw-Hill, New York, 1967. xiv + 538 pp., illus. $14.75.

Nobody really understands the nature of human intelligence, but the impact of factor theory has made it clear that a simple IQ, as manifested in the Stanford-Binet or some other single index, is blatantly inadequate. Guilford's recent book summarizes the available evidence which has accumulated via multiple factor analysis—a method initiated by Spearman in 1904, reformulated as an application of matrix algebra by L. L. Thurstone in the 1930's, and further developed and given psychological substance by Guilford and others for the past 30 years.

Guilford's book is an elaboration of his structure-of-intellect (SI) model, which is an orthogonal, three-dimensional taxonomy of 120 elements or "factors" of intelligence. The three major axes of this periodic table of intellectual processes are Contents, Products, and Operations. Each element of this cube is a hypothesized factor, 82 of which have been empirically confirmed. Such factors occur at the intersections of the 4 by 5 by 6 matrix reproduced on the next page.

Guilford embeds this SI model in the context of information theory by re-