ness breeds other illness, too. Tuberculosis, premature births with excessively high perinatal morbidity and mortality rates, high accident rates, high incidence of venereal disease, violent behavior, impaired capacity to learn in school—to cite only some of the many aspects of a large complex of disorders associated with social and family disorganization—indicate that mental illness is but one troubling outcome of environmental stresses.

"Psychiatric aspects of school desegregation," which first appeared in May 1957 as report No. 37, is, sad to say, still relevant to the acute problems of today. The report provides a valuable theoretical frame of reference for collecting data and for planning programs. It would have been helpful if the annotated reading list which follows the report had been brought up-to-date for the 1966 publication.

In a section entitled "Psychiatry and international relations," the editors trace the historical origins of GAP's interest in this field. They are frank enough to contrast the soaring enthusiasm and optimism of GAP's first report (No. 11, January 1950), which described plans for cooperative efforts with leaders at the highest echelons of government on the international scene, with more realistic and more circumscribed projects, such as those concerning the selection and preparation of civilian workers for overseas duty. Again, updating of the appended reference list would have increased the value of the material.

The section on "Forceful indoctrination" still makes for fascinating reading, even though the findings do not get too far beyond those arrived at speculatively by George Orwell when he wrote *1984* so long ago. Studies of REM-deprived sleep, which are probably relevant to this topic, had not yet come into being at the time of this GAP symposium. It is regrettable that the original contributors to the symposium were not invited to bring their material up-to-date.

"The threat of nuclear war" highlights perhaps more than any other section of the book the staggering complexity of the problems which GAP committees have been courageous enough to tackle. Since their speculations concerning the dangers of nuclear war by accident, a hydrogen bomb has been lost and found off the coast of Spain. The dark Russian shadow which concerned the GAP committee in this report has been replaced by the shadow of Red China in 1966, not even mentioned in this section. Needless to say, neither does Vietnam appear in the text.

This book is a record of serious study. The frustrations which gave birth to GAP have been replaced by more formidable ones. In a symposium dealing with psychological aspects of nuclear war, M. Stanley Livingston remarked: "I believe that we have failed completely in trying to persuade people to act intelligently on the basis of fear of unpleasant consequences. We sense a closing off; a withdrawal from facts. People do not want to hear." And yet it is in the face of precisely such resistance that psychiatrists and other specialists in the behavioral sciences must intensify their resolve and their efforts. We in psychiatry are no strangers to the fact of man's irrationality. Our caseload consists essentially of patients who have lost contact with common sense in the conduct of their daily lives. Man's irrationality is our challenge and our daily work. Are psychiatrists qualified to participate in areas of broad public policy? Can they contribute professionally and objectively to the search for alternatives to war? The members of GAP will be the first to express their doubts. Yet their efforts in the face of these doubts and considerable difficulty must be applauded and encouraged. It is in this sense most of all that this record of their work is outstanding.

LOUIS LINN
55 East 86 Street, New York 10028

Treatise on Diatoms

Diatom taxonomy, particularly that part dealing with bilaterally symmetrical taxa, is one of the most difficult areas of systematic phycology. Ruth Patrick and Charles W. Reimer have treated many of these confusing species in **The Diatoms of the United States Exclusive of Alaska and Hawaii**, vol. 1, *Fragilariaceae, Eunotiaceae, Achnanthaceae, Naviculaceae* (Academy of Natural Sciences, Philadelphia, Monograph No. 13, 1966. 702 pp., illus. $18.50), the first of two volumes on freshwater diatoms in the continental United States. This book has been eagerly awaited by phycologists as an authoritative account of American diatoms; no reference on this flora has been written since Boyer's publication in 1927. Presenting their material in the style of classic works on cryptogamic plant taxonomy, the authors have furnished keys covering most species, descriptions of species (including known distribution in the United States), and well-executed illustrations of all species.

The introductory part of the book, some 100 pages, is devoted to various aspects of diatom biology; it includes sections on morphology, physiology, reproduction, distribution, diatom communities, classification, and techniques for collecting and preparing diatoms for study. The systematic part of the book covers over 500 pages. I have tested the keys in this section and in most cases was able to identify the species according to the authors' interpretations without great difficulty. The keys seem to be relatively free of errors. The inclusion of keys to smaller groups (three taxa and fewer) would have made determinations easier, however. The figures are well drawn and beautifully reproduced in most cases, although insufficiently erased artist's errors appear on some of the plates. A glossary would have been a most useful addition, and one hopes that it is to be included in the second volume. The systematic section makes the book well worth the price.

The introductory part of the book, on the other hand, is disappointing. The morphological section is scantily illustrated; electron micrographs of diatoms would have been very helpful, particularly in interpretations of valve structure. Omissions of important references in the literature, unfortunately, are common in the introductory section of the book. Okuno, Helmke, and Krieger and other publications on electron microscopy of diatom structure are not cited. It hardly seems possible to discuss diatom morphology without reference to some of these. Some omissions have very serious consequences. For example, Patrick and Reimer infer that haploidy is commonly known within the centric diatoms without considering that enough species have been studied to convince most phycologists that diploidy is characteristic. Male gametes in many centric diatoms are small motile cells that are usually referred to as spermatozoid cells in recent literature. Before their role as gametes was convincingly demonstrated, they were called microspores, a term that Patrick and Reimer often use. In other places, however, Patrick and Reimer refer to these structures as sperm, spermia, or spermatozoids.

Diatom spermatozoid cells have been known with certainty to have a single flagellum since von Stosch's research in 1951. Patrick and Reimer, however, state that there are two flagella on microspores, although on another page they state that spermatozoid cells have one flagellum.

Unfortunately, similar errors also extend into other sections of the introduction. In the ecology section, epiphytic diatoms are explained as those living on "rocks and rooted vegetation"; aerial habitats include species that are "in the soil." One wonders what sort of environment *Navicula contenta var. biceps,* described as a "truly atomspheric species, lives in. The extensive and important publications of F. E. Round on freshwater diatom ecology are not cited. Africa is not mentioned in the discussion on geographical distribution of diatoms, a surprising omission because some of the most recent and thorough studies of diatoms have been made in Africa by Cholnoky. Also, the important publications of Cassie, Wood, and Crosby on New Zealand and Australian diatoms are not mentioned in the section on ecology of marine diatoms.

Although this book is to be welcomed as a manual for diatom determination, the errors in the introduction make it unsatisfactory as a general reference.

RICHARD E. NORRIS
Department of Botany,
University of Washington, Seattle

Early Culture in Mexico

The state of Oaxaca, situated on the Isthmus of Tehuantepec in southern Mexico, has long been a focus of interest for anthropologists because of the many colorful Indian tribes who still live there, retaining their native languages and many of their aboriginal customs, and because of the numerous archeological sites scattered over the area. Perhaps the most spectacular of these sites are Monte Albán, the ancient headquarters of the Zapotecs and their ancestors, and Mitla, the chief burial place of the Mixtec rulers.

The first scientific work in the region was done on these two sites around the turn of the century by William Holmes, Leopoldo Batres, and Marshall Saville. These investigations, while excellent for their time, took place before the days of dirt archeology and were primarily studies of architecture and decorative design. It was not until 1930 that Alfonso Caso began his epochal work at Monte Albán. With several prominent Mexican archeologists participating, these investigations continued until 1945. The result was the establishment of a chronology for the region beginning well before the start of the Christian era, and revealing the fact that the Zapotec and the wandering Mixtec were two of the most important factors in the complicated development of Mesoamerican civilization.

For more than 20 years this pioneer work stood as an isolated island of information in the midst of a veritable sea of archeological sites of only slightly lesser importance. During the past decade, however, a great deal has been done to fill out the picture of Oaxacan prehistory and history by such men as Ignacio Bernal, John Paddock, Roberto Gallegos, and Charles Wicke, in the field of historical research, and by archeological excavations at sites such as Yagul, Zaachila, and Cuilapan. Meanwhile Caso has continued his studies of Zapotec inscriptions and Mixtec native documents. As a result of all this work we now have a satisfactory framework for the prehistory of the area.

Olmec influences are evident in the earliest periods at Monte Albán. Writing and the calendar were developed by the Zapotec and possibly diffused by them to the Maya and others. Because of the abundance of early Mixtec documents here, history merges into archeology possibly to a greater degree than in any other part of Mesoamerica.

In **Ancient Oaxaca: Discoveries in Mexican Archeology and History**, edited by John Paddock (Stanford University Press, Stanford, Calif., 1966. 432 pp., illus. $18.50), an attempt has been made to synthesize this complex body of information for the student and lay reader.

In a sense the material is not new. The book is divided into three parts. Part 1, "Mesoamerica before the Toltecs," by Jiménez Moreno, is a translation into English of an article published in 1959 in *Esplendor del México Antiguo*. This serves as a general background for the early development of the civilizations of southern Mexico and gives perspective to the total picture. It is significant that the Aztecs and Maya are scarcely mentioned.

Part 2, "Oaxaca in Ancient Mesoamerica," by Paddock, deals with the complexities and chronology of movements beginning with preceramic people in the Oaxaca area, and serves as an introduction to part 3, which consists of eight papers on specific subjects, such as native documents, genealogies, and interpretations of tomb burials. These eight papers, originally presented at a symposium on Oaxaca, were first published in 1962 in the *Acta* of the 35th Congress of Americanists. Those originally published in Spanish have been translated into English. There have been some modifications, many illustrations have been added, and the bibliography is up-to-date. The book contains 15 maps and plans, five chronological charts, and numerous plates.

Oaxaca is a key area in Mesoamerican archeology. For the first time the student may now find adequate coverage in a single book.

M. W. STIRLING
Smithsonian Institution,
Washington, D.C.

History of Atomic Theory

The World of the Atom (Henry A. Boorse and Lloyd Motz, Eds.; foreword by I. I. Rabi. Basic Books, New York, 1966. Vol. 1, 885 pp.; vol. 2, 1033 pp., illus. $35) is a collection of original papers significant for the development of ideas concerning atoms. The range is fairly wide, for papers on subjects which are not directly concerned with atoms but which are necessary for the understanding of our present ideas on atoms are included—for example, Huygens' "A wave theory of light," Maxwell's "Dynamical theory of electromagnetism," an article by Michelson and Morley on their experiments, and short articles by Einstein on the special and general theory of relativity.

There are 90 sections, starting with Lucretius, including Descartes' theory of vortices, and ending with a good exposition by the editors on the role of symmetry considerations in elementary particle theory. It is very valuable to have these original sources collected in one place and all in English.

Concerning such an extensive work, differences of opinion necessarily arise as to who should be included. In general I find the selection excellent but would have included Gassendi, who reintroduced the atomic theory to science, and Boltzmann.

Each of the reprinted papers is preceded by a lengthy introduction by the editors, giving the scientific background, an overview of the paper, and a bio-