about exciting discoveries relating to transcriptional changes and several other biochemical events that are beginning to define the nature of the events which occur during the onset of sporulation. These studies are almost totally neglected in this book. The book is obviously of great value to applied microbiologists and those specifically interested in bacterial spores, but is not the best source of information for the general microbiologist interested in acquiring a broad understanding of recent advances in research on bacterial spores.

R. S. HANSON
Department of Bacteriology, University of Wisconsin, Madison

Plant Pathogens

Phytotoxins in Plant Diseases. Proceedings of the NATO Advanced Study Institute, Pugnochiuso, Italy, June 1970. R. K. S. WOOD, A. BALLIO, and A. GRANITI, Eds. Academic Press, New York, 1972. xx, 530 pp., illus. $26.50.

While this conference was in progress in Italy, in the United States southern corn leaf blight was spreading north to cause the greatest economic loss to a single crop in a single year ever recorded. In many respects, the 1970 corn blight epiphytotic was a replay of an epiphytotic that occurred two decades earlier, Victoria blight of oats. Each was caused by a new race of a fungus belonging to the genus *Helminthosporium* and in each case a metabolic product of the fungus was found to be selectively toxic to plants susceptible to the disease. Results with victorin, the toxin involved in Victoria blight of oats, reawakened interest in the role of toxins in plant diseases and stimulated much of the work reported in this volume.

The book is made up of 20 major papers and more than 30 brief contributions from approximately 60 participants. Most of these deal with the production, bioassay, chemistry, and mode of action of toxic metabolites produced by fungal and bacterial plant pathogens. A few are concerned with effects of toxins on host metabolism or ultrastructure and the remainder are devoted to a variety of special topics. Although errors occur (two were found in a random check of 40 literature citations) most of the articles are well written and adequately documented.

This volume should be valuable not only to plant pathologists but also to those interested in the chemistry of natural products and in plant growth regulation. A large number of phytotoxins have recently been chemically characterized and some, for example fusicoccin, a diterpenoid glucoside produced by the almond pathogen *Fusicoccum amygdali*, appear to be active growth regulators. A better known example of a phytotoxin with growth regulating properties is, of course, gibberellin.

Readers searching for new concepts or stimulating discussions will be disappointed with this book. Most of the authors merely restate previously published views and positions. In a number of areas of controversy, only a single school was represented at the conference. This may account for the lack of spirited debate during the recorded open discussions. In one instance the editors note that the subject under discussion had already been covered adequately, and the same comment would have been appropriate in many other places. A sharper editorial pencil would have deleted the noninformative material. On balance, the book can be recommended as a useful reference.

HARRY WHEELER
Department of Plant Pathology, University of Kentucky, Lexington

Preservation

Public Archeology. CHARLES R. MCGIMSEY, III. Seminar Press, New York, 1972. xiv, 266 pp. $9.50. Studies in Archeology.

All of us, the public, are the stewards of the past. If we are to learn about the past and save any evidences of it for the future we must act now, for, as McGimsey points out in this book, "Our generation cannot postpone the decision to work toward this preservation, for the forces of destruction are multiplying and gaining momentum. The next generation cannot study or preserve what already has been destroyed." The future of the past is "public archeology."

The book is aimed at archeologists, legislators, and citizens concerned with the archeological heritage of their locality or state. A basic principle is proposed that "no individual may act in a manner such that the public right to knowledge of the past is unduly endangered or destroyed" for "no one owns rights to an archeological object or to archeological data," not even the archeologist. We must aim toward establishing that principle if the past is to become a body of usable information rather than a hodgepodge of antiquities.

The first part of the book is devoted to a short description of archeological practices and to the responsibilities of the archeologist, the amateur archeologist, and the public concerning archeological sites, and ends with a view of the plight of archeology today.

The heart of the text consists of three sections containing very practical advice on designing a state archeological program and a state antiquities act. Here the author uses his firsthand experience in establishing the Arkansas Archeological Survey and obtaining the antiquities legislation in that state, both of which are the best in the nation.

More than two-thirds of the text is a sourcebook of state-by-state information collected for many years on the various archeological programs and local and state legislation. The last section is on federal legislation affecting archeological preservation.

The book should be required reading for all students of archeology, professional and nonprofessional. It is an invaluable source of information for archeologists, legislators, and the public interested in learning what programs in archeology are provided in each state and what legislation is available for the preservation of archeological resources and support of archeological projects.

CARL H. CHAPMAN
Department of Anthropology, University of Missouri, Columbia

Photochemical Change

Photochemistry and Spectroscopy. J. P. SIMONS. Wiley-Interscience, New York, 1971. xiv, 344 pp. + plates. $16.50.

Simons has written an interesting elementary book which will be useful to students who want to enter the field of spectroscopy and photochemistry or want to understand the conversation of peers who have done so. The book will probably find extensive use in introductory courses in the subject area, although I expect that most teachers will add more comprehensive supplementary texts chosen to suit focused interests within the broad field.

The first chapter, which is 25 percent

of the book, is introductory and illustrates a dilemma faced by most writers of elementary texts. To many students, the material will seem like the "same old stuff" that they have encountered before about quantum mechanical atoms and small molecules. Some of the material will not be repetitive, such as the brief introduction to group theory and the basic statement of selection rules. The presentation is clear and traditional, and will be necessary for those who have escaped previous exposure to qualitative chemical quantum mechanics. Students to whom the material is old hat can skip most of it without loss.

The second chapter, entitled Light Absorption and Its Physical Consequences, is rather good and says many things that are ordinarily spread over many more pages in larger books. Many subjects, in addition to absorption and emission, are introduced. For example, the elementary concepts concerning electronic energy transfer are presented about as compactly as I have seen in any work. Interestingly, a considerable amount of chemical change creeps into the discussion despite the intent to emphasize physical processes. This probably only illustrates the fact that physical and chemical nonradiative decay of excited molecules are really not fundamentally separable processes.

The third chapter gives a series of illustrative case histories of photochemical studies. The choice of examples appeals to me and, irrespective of one's taste in examples, the presentation provides a very natural way of introducing many different experimental methods and mechanistic concepts. Even photochemical aficionados may enjoy reading the chapter, an easy evening's task, just to see the interesting, simple way in which the subject is unfolded.

GEORGE S. HAMMOND
University of California, Santa Cruz

Astrophysics

Cosmic Plasma Physics. A conference, Frascati, Italy, Sept. 1971. KARL SCHINDLER, Ed. Plenum, New York, 1972. xii, 370 pp., illus. $22.50.

One of the needs of astronomers and space physicists is to find a way to bring some of the recently developed knowledge of plasma physics to bear on their subjects. It is by now a truism that the bulk of astronomy and space physics is concerned with plasmas in one form or another and that more complex plasma phenomena such as wave turbulence and plasma instabilities are playing a significant role in these fields. Much knowledge of these phenomena has been gained in the past years, but as yet plasma physicists are not aware of their manifold applications to astronomy and space physics. It is just this need which a book such as this meets admirably.

Distinguished scientists from many areas of astronomy and space science were gathered together at the conference which this book reports, and each gave a lecture on his specific area of research. These lectures have been written up concisely so that it is easy and pleasant for the reader to gain a taste of each relevant bit of astronomy. By and large each author does a good job of summarizing the observational situation in his field. The presentations are usually cast in a sufficiently theoretical framework that the observations can readily be grasped and remembered without the reader's having to accept the theory. For me as a theorist, this has always been the easiest way to have observations presented. To most of the articles is appended a fairly representative bibliography which will enable the reader to enter the area more thoroughly if he chooses. The talks are labeled as invited survey papers or as contributed papers, but often the contributed papers are as informative as the survey papers in providing a picture of a particular area. Most important, the book was brought out in a remarkably short time so that the expositions had no chance to become dated before they appeared in print.

The topics covered are ionospheric, magnetospheric, and planetary physics, the solar wind, comets, solar flares, pulsars, x-ray sources, magnetic stars, cosmic rays, and the dynamics of the galaxy. In addition, a number of papers on relevant basic plasma theory such as collisionless shocks are presented. I was particularly fascinated by the article by Biermann on the exciting recent developments in theories of comets which have resulted from ultraviolet measurements. Also, Paul's article on collisionless shocks accomplishes the unbelievably hard task of providing a common framework for the plethora of such shocks. I was quite excited by the paper of Fahr on the interaction of the solar wind with the interstellar medium, from which it appears that people are at least having some success in understanding how the solar wind terminates. The extremely interesting work of Coppi and Treves on x-ray sources indicates how far one can go in making models of these complex phenomena when new plasma ideas such as anomalous resistivity are introduced. The really tough problems associated with stellar magnetic fields are admirably summarized by Mestel in a survey paper. These are only a few of the really first-rate papers which give the book considerable distinction as well as make it an excellent survey book for plasma physicists.

RUSSELL M. KULSRUD
Plasma Physics Laboratory,
Princeton University,
Princeton, New Jersey

Books Received

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Algorithm Specification. A Symposium, New York, Mar. 1971. Randall Rustin, Ed. Prentice-Hall, Englewood Cliffs, N.J., 1972. xiv, 142 pp., illus. $9.95. Prentice-Hall Series in Automatic Computation.

American Physicians in the Nineteenth Century. From Sects to Science. William G. Rothstein. Johns Hopkins University Press, Baltimore, 1972. xvi, 362 pp. $15.

Animals and Man. Past, Present, Future. Richard G. Van Gelder. Illustrated by John R. Lane. Foundation for Environmental Education, New York, 1972. 66 pp. Paper, $1.95.

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Application of Invariant Embedding to Reactor Physics. Akinao Shimizu and Katsutada Aoki. Academic Press, New York, 1972. x, 184 pp., illus. $14.85. Nuclear Science and Technology, 9.

Artificial Cells. Thomas Ming Swi Chang. Thomas, Springfield, Ill., 1972. xiv, 208 pp., illus. $16. American Lecture Series, No. 828.

The Assessment of Population Affinities in Man. J. S. Weiner and J. Huizinga, Eds. Oxford University Press, New York, 1972. xii, 224 pp., illus. $20.50.

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