"Fredric Wertham, leading critic of comic books. Wertham points to one of the many forms of violent and anti-social images that he believed inspired juvenile crime." [From *A Cycle of Outrage*; collection of Mrs. Fredric Wertham]

ing rate of teen marriage (an authentic trend) was portrayed as a serious social problem, requiring education or punishment, depending upon the commentator's ideology regarding such matters. In still another effort to "discipline the family," parents were held criminally responsible for the transgressions of their children, with some fathers going to jail as a result. Mothers in the work force (whose employment had initially been prompted by wartime labor needs) were portrayed as another cause of delinquency; kids would return to normal if their mothers stayed home.

The moral entrepreneurs were obsessed with mass media. Comic books led not only to juvenile delinquency but also to physiologically fixed learning disabilities. Wertham (a neurologist as well as psychologist) claimed that comics caused "linear dyslexia"—a malfunction induced by repeated vertical eye movement from characters' faces to the bubbles drawn above their heads. Movies also caught their share of the blame. In response to censorship boards, the moviemakers established internal procedures in which even initial conceptions of film projects had first to be cleared with the studio thought police. The results were the hundreds of insipid films in which crime never paid and (recall the Doris Day–Rock Hudson prototype) adultery, homosexuality, and reproductive organs did not even exist. Films that were eventually to help Hollywood break out of the puritanical mold, such as *Blackboard Jungle* and *Rebel Without a Cause*, brought new storms of protest.

Gilbert gives us more than a good laugh at our silly past; he clues us in to why it happened and why it continues to happen. If youth are the messengers, it's always a temptation to kill them and their media. We kill not with the dispassion of the hangman but with the ambivalent intensity that comes from seeing in the other's behavior the desires we know in ourselves. Today's outraging against rock lyrics, video arcades, porn, single black parents, purple hair, and dirty talk repeats, with some fidelity, the patterns of a generation ago. The experts and intellectuals are there, the news media enthuse, politicians know their bandwagon, and the cops (along with many mothers and, this time, some of the feminists) want their retribution and blood. The kids, the kooks, the artists, and the panderers strive to fend them off. As Gilbert wisely concludes about the post-'50's years, "the struggles over American culture, with its divisions of class, age, ethnicity, region and race poured into new channels." Like the beat, the cycle goes on.

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Ecological Interactions

Les Fourmis et les Plantes. Un Exemple de Coévolution. PIERRE JOLIVET. Société Nouvelle des Editions Boubée, Paris, 1986. 254 pp., illus. F230.

The tendency for scientific literature to be partitioned by language as well as by research field is hard to overcome. The author of this work on the interactions between ants and plants is therefore to be congratulated for covering the English, French, and German literature equally. Written in French, his book is lucid and straightforward enough to be comprehensible to an English speaker with only rudimentary knowledge of French, such as myself, and is likely to be the standard reference work on ant-plant interactions for some time.

The main part of the book is a detailed compendium of ant-plant associations catalogued by geographic region and by plant family. This is sandwiched between an introductory section that concentrates on the classification of ant-plant interactions and a concluding section covering evolutionary aspects, miscellaneous research problems, and the agricultural significance of ant-plant interactions. Jolivet's own opinions and observations, incorporated throughout the book, contribute substantially to its value, as do the 33 color plates illustrating relevant features of representative plant species. Two themes that recur throughout the book are the suggestion that the mere presence of distasteful ants on a potential food plant, rather than active aggression, may be sufficient to deter mammals and herbivores, and that ant defense can be valuable to the plant even if limited or only partially successful.

Viewed by some early naturalists as little more than a curiosity, ant-plant interactions and higher-order interactions involving ants and plants are now appreciated as economically as well as academically significant. For the theoretical ecologist, they provide a manipulable tool for the analysis of ecosystem structure and coevolutionary pathways. For the agronomist and horticulturist, particularly in the tropics, they can be a significant help or a major problem.

Leaf-cutting ants in tropical tree crops such as citrus, coffee, and cocoa, seed-harvesting ants in temperate and semiarid pastures and in mine rehabilitation areas, and imported fire ants in the continental United States all cause millions of dollars' damage annually and support a substantial pesticide industry in consequence. Even more serious is the transmission of plant diseases by sap-sucking Homoptera tended and transported by ants. A fungal epidemic that devastated Sri Lankan coffee plantations, for example, was spread by a sap-sucking scale insect tended and transported by ants, and ant-tended Homoptera are also implicated in the transmission of viral diseases of cocoa, bananas, and other tropical crops. On the positive side, the manipulation of competitive ant mosaics and deliberate nest transplants of aggressive ant species can form a useful component in the control of crop herbivores.

After such a painstaking and useful review, the book's conclusions, though unarguable, are rather weak and generalized: basically, that ant-plant interactions seem to provide a good example (or examples) of coevolution and that ants should be incorporated usefully in integrated pest control rather than destroyed indiscriminately with pesticides.

In my own opinion, there are four critical directions for future research: (i) The biochemistry of ant-plant and ant-plant-arthropod interactions, particularly the chemistry of communication; there have been a number of recent studies in this area, but the scope—and the potential economic benefits—are enormous. (ii) Experimental manipulation of plant morphology; excision of nectaries and replacement with droplets containing nectar components (sugars, amino acids, and so on) in various combinations are among the many possibilities. (iii) Ex-

perimental analysis of possible coevolution in ant-plant-homopteran associations, taking advantage of the range of breeding systems in both plants and Homoptera and particularly of the existence of clones and biotypes. (iv) Mite-plant interactions and analogies with ant-plant interactions.

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Phosphorus Deposits

Geology of Sedimentary Phosphates. MAURICE SLANSKY. Elsevier, New York, 1986. 210 pp., illus. $45. Translated, with revisions, from the French edition (Orleans, 1986) by Peter Cooper.

Phosphorus is an essential component of every living cell. Its value as a fertilizer was recognized almost 200 years ago, and its consumption, mainly for that purpose, has been increasing steadily—from 3.5 million tons in 1900, for example, to nearly 140 million tons in 1981. It heads the list of the nonrenewable resources for which there is no known or conceivable substitute. The search for new phosphate deposits has justifiably accelerated during the last 30 years, fortunately with considerable success, thanks to expanding knowledge of their occurrence and origin.

In his *Geology of Sedimentary Phosphates* Maurice Slansky of the French Bureau de Recherches Géologiques et Minières succeeds well in his objective of providing a state-of-the-art review of knowledge of sedimentary phosphate deposits, which are the source of most phosphate production.

The coverage of the subject is comprehensive, extending from the mineralogy, petrography, chemistry, and origin of the deposits to prospecting, mining, beneficiation, and manufacturing methods and production and resource statistics. Considerable attention is given to the role of organic matter in the formation of phosphorite deposits. The book is well illustrated and has a 24-page bibliography.

Slansky devotes several pages to the petrographic classification of sedimentary phosphates. He observes that "phosphates" is not a good term for rocks with a predominant phosphate content because "it belongs strictly to the chemical field" and concludes that "it should not be used," proposing instead the previously little-used term "phosphatite." One is reminded of Brigham Young's confession that "as Latter Day Saints we are opposed to the use of tobacco but as Mormons we use quite a bit," for not only is "phosphate" used as a noun in the title and numerous other places but the index lists 14 uses as an adjective modifying terms ranging from "deposits," "grain," and "particle" to "supply."

Slansky's book is a fine summary of a growing literature, but two others are worth noting also. One is G. N. Baturin's *Phosphorites on the Sea Floor* published in 1983 by Elsevier and the other is the compilation *World Phosphate Rock Resources* being published by the Cambridge University Press under the editorship of A. J. G. Notholt, R. P. Sheldon, and D. F. Davidson.

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Some Other Books of Interest

The Political Economy of Science and Technology. NORMAN CLARK. Blackwell, New York, 1985. xii, 257 pp., illus. $39.95; paper, $14.95.

This volume, stemming from lectures given to students at the Science Policy Research Unit at the University of Sussex, is intended as a broad introduction to economic analysis as an approach to science and technology policy. It was prompted, the author writes, by "a growing feeling that while economic analysis has a lot to offer in this context, the discipline itself has become ever more remote from the public gaze [as it pursues] a narrow goal of mathematical rigour . . . to the exclusion of reality and understanding" and that "some redress was therefore called for." The volume consists of nine "relatively self-contained" chapters, on science and technology policy as a field of study; economic organization and technological change; the macroeconomy (including the "science system" or "science infrastructure"); the microeconomy; economic theory and technological change (describing classical, neoclassical, Keynesian, and Schumpeterian views); modern developments in economic thought about technological innovation; the nature of underdevelopment; the relation of science and technology to development; and contemporary issues of science and technology policy. Each chapter is accompanied by a bibliographic note identifying relevant general works and by a section of references and other notes. In addition the volume as a whole has a select bibliography of some 175 items. An index is also included.—K.L.

"For the Welfare of Mankind." The Commonwealth Fund and American Medicine. A. MCGEHEE HARVEY and SUSAN L. ABRAMS. Johns Hopkins University Press, Baltimore, 1986. xiv, 697 pp., illus. $32.50.

The Commonwealth Fund was established in 1918 by the family of Stephen V. Harkness, one of the founders of the Standard Oil Company. Charged with doing "something for the welfare of mankind," the Fund has focused its efforts on matters relating to health, supporting enterprises in child guidance, child health, psychiatry, and medical education and research and also rural and community health services. This history of the Fund, based on archival material and interviews with participants as well as published sources, describes its activities from its founding up to the present. The account is structured around the tenures of the Fund's chief staff officers and presidents and includes much detail about the inner workings of the Fund and about the enterprises supported, with attention also to other institutions and organizations involved and to the broader milieu. Brief final sections discuss the Fund's programs for the 1980's and relate the history of its book publishing program. The volume concludes with 12 appendixes giving particulars of awards made by the Fund, a section of notes and references, and name and subject indexes.—K.L.

Books Received

American Professors. A National Resource Imperiled. Howard R. Bowen and Jack H. Schuster. Oxford University Press, New York, 1986. xiv, 322 pp., illus. $24.95.

Analysis and Integration of Behavioral Units. Travis Thompson and Michael D. Zeiler, Eds. Erlbaum, Hillsdale, NJ, 1986. xxx, 367 pp., illus. $32.50. From a conference, Minneapolis, MN, 1984.

The Analysis of Extraterrestrial Materials. Isidore Adler. Wiley-Interscience, New York, 1986. xxii, 346 pp., illus. $55. Chemical Analysis, vol. 81.

Anasazi. Ancient People of the Rock. Donald G. Pike. Photographs by David Muench. Harmony (Crown), New York, 1986. 191 pp. Paper, $12.95. Reprint, 1974 ed.

An Annotated Checklist of Marine Invertebrates in the Cold Temperate Northeast Pacific. W. C. Austin. Khoyatan Marine Laboratory, Cowichan Bay, British Columbia, 1985. 3 vols. xiv, 682 pp. Spiral bound, C$42.

Antianxiety Agents. Joel E. Berger, Ed. Wiley-Interscience, New York, 1986. xii, 164 pp., illus. $65. Chemistry and Pharmacology of Drugs, vol. 6.

Aquatic Microbiology. G. Rheinheimer. 3rd ed. Wiley-Interscience, New York, 1986. 257 pp., illus. $32.95. Translated from the German edition (Jena, DDR, 1985).

Arms Control Verification. The Technologies That Make It Possible. Kosta Tsipis, David W. Hafemeister, and Penny Janeway, Eds. Published in cooperation with the Program in Science and Technology for International Security, Massachusetts Institute of Technology by Pergamon-Brassey's, New York, 1986. xvi, 419 pp., illus. $34.95. From a conference, Cambridge, MA, Feb. 1984.

Aromaticity. Peter J. Garrett. Wiley-Interscience,

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