

tropical forest communities, with emphasis on the diversity of annual cycles of flowering and pollinators in relation to community partitioning. The final article, by Lawrence Gilbert, is a summary of his evidence for coevolutionary interactions between a neotropical butterfly genus and two groups of flowering plants, one of which is used for larval and the other for adult food. His study makes a reasonably convincing case that coevolution has promoted species diversity in all three.

The strength of this book lies in the competence and cogency with which the individual authors present their material. Its weakness lies in a loss of focus on the central theme set out by the editors, namely, coevolution as an important process in community evolution. Thus, only half the articles refer to coevolution in their concluding remarks. Nevertheless, by virtue of the breadth of the information summarized the book presents a challenge, demanding a fuller development of the theoretical aspects of coevolution. For this reason it must be regarded as an important contribution to modern evolutionary ecology.

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## Chemistry of Soils

**Soil Components.** JOHN E. GIESEKING, Ed. Vol. 1, Organic Components. x, 534 pp., illus. \$72.80. Vol. 2, Inorganic Components. xii, 684 pp., illus. \$74.80. Springer-Verlag, New York, 1975.

As the world demand for food inexorably expands, the applied sciences involved in crop production must inevitably undergo a revitalizing resurgence of interest. Soils, lying literally at the root of all agricultural production, have thus become a renewed focus of attention for researchers. Soil science is no single discipline, but a conglomerate of many aspects of chemistry, physics, and several biological sciences such as biochemistry, microbiology, and botany, and the time is ripe for the experts in the various branches of soil science to create order in their own house, to make it possible to communicate their specialty better to others.

It is encouraging to note that in recent years soil chemists have not been dormant, waiting for the specter of world famine and malnutrition to revert attention to their endeavors, but have been steadily collecting and sifting information, searching for understanding of the intricate chemical mix-

tures on whose vegetational outgrowths the human populace essentially plays parasite.

These two books reveal through a detailed treatment of the subject that, paradoxically, much but still only little is known about many of the constituents of soil, even when they are considered in isolation from one another. The coverage is wide, but intentionally not exhaustive with regard either to materials covered or to extent of treatment.

The approach is descriptive rather than interpretative: the chemical constitutions and properties of the main soil minerals and the organic constituents of topsoils are methodically reviewed with only minimal discussion of their implications for soil fertility, agricultural production, pedogenesis, soil classification, soil conservation, the suitability of soils for accepting solid or liquid wastes, the interaction of soils with man-made substances, or any other of the practical or ecological concerns that have provided the justification for much recent soil research and that occupy major portions of conventional soil science texts.

The second volume is perhaps the more basic one, providing an excellently organized presentation of the wealth of detail on the crystal structures and properties of the principal soil silicates, clay minerals, crystalline and amorphous oxides and hydrous oxides, fibrous and heavy minerals, and the like that is now available as a result of modern instrumental analyses. Much attention is devoted to classification of minerals according to structural features. The stage has thus been set for a systematic nomenclature for soil minerals. It becomes apparent that the continued use of trivial names will inhibit systematic learning of soil mineralogy.

The volume is rounded off by chapters on biolith inclusions and water in soils. The latter chapter is not the conventional treatise on the physics of water in soil and soil-moisture relationships but rather a consideration of physicochemical soil-water interactions. In other chapters the use of thermal and infrared analysis to characterize clay mineral constituent is thoroughly and excellently reviewed. The important subject of minor and heavy elements in soils is hardly discussed, however.

With soil organics, the heterogeneity is so great that much less is known about their structures in soil. Description of the bulk of soil organic matter—the intractable humic substances—thus reduces to a recounting of physical properties and gross chemical composition and characteristics and speculation about origin and constituents. Unfortunately the main chapter in volume 1, though performing these tasks very well, contains much outdated organic

nomenclature. More accurate descriptions can be, and are, provided for the sugar, polysaccharide, organophosphorus, organosulfur, lipid, and nitrogenous organic constituents of soils. Accounts of the microscopic appearance of soil organic matter and the relationships between humus and soil types complete the picture, although these topics lend themselves even less well to systematic treatment and are of questionable appropriateness in a work devoted primarily to chemical aspects of soil components.

While one must admire the effort invested here in collecting and collating data on soil constituents, one must recognize that in the field simple, readily analyzable systems are seldom encountered, and the interaction of inorganic and organic constituents inter se and with the soil solution, soil microbiota, and vegetation creates an immensely more complicated situation. Nonetheless, these authoritative volumes help clarify much of the current status of soil chemistry. Such individuals as can pay the price will get their money's worth.

GORDON CHESTERS

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## Books Received

**Aberrant Development in Infancy.** Human and Animal Studies. Papers from a conference, Gatlinburg, Tenn., 1974. Norman R. Ellis, Ed. Erlbaum, Hillsdale, N.J., 1975 (distributor, Halsted [Wiley], New York). viii, 288 pp., illus. \$14.95.

**Adolescence in the Life Cycle.** Psychological Change and Social Context. Papers from a conference, Hunt Valley, Md., Oct. 1973. Sigmund E. Dragastin and Glen H. Elder, Jr., Eds. Hemisphere, Washington, D.C., and Halsted (Wiley), New York, 1975. xii, 324 pp., illus. \$14.95.

**Advances in Environmental Science and Technology.** Vol. 5. James N. Pitts, Jr., Robert L. Metcalf, and Alan C. Lloyd, Eds. Wiley-Interscience, New York, 1975. xii, 372 pp., illus. \$24.

**Advances in Immunology.** Vol. 21. F. J. Dixon and Henry G. Kunkel, Eds. Academic Press, New York, 1975. xii, 248 pp., illus. \$20.

**Air Quality Control.** National Issues, Standards and Goals. National Association of Manufacturers, Washington, D.C., 1975. 96 pp. Paper, \$5.50.

**The Camel and the Wheel.** Richard W. Bulliet. Harvard University Press, Cambridge, Mass., 1975. xvi, 328 pp., illus. \$16.

**Catalysis in Micellar and Macromolecular Systems.** Janos H. Fendler and Eleanor J. Fendler. Academic Press, New York, 1975. xiv, 546 pp., illus. \$44.

**Cell Membrane Transport.** Principles and Techniques. Arnošt Kotyk and Karel Janáček, Eds. Plenum, New York, ed. 2, 1975. xxii, 584 pp., illus. \$42.50.

**Classical and Modern Mechanics.** James H. Bartlett. University of Alabama Press, University, 1975. xx, 472 pp., illus. Cloth, \$15; paper, \$6.50.

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## BOOKS RECEIVED

(Continued from page 456)

**Digital Filters and the Fast Fourier Transform.** Bede Liu, Ed. Dowden, Hutchinson and Ross, Stroudsburg, Pa., 1975 (distributor, Halsted [Wiley], New York), xiv, 424 pp., illus. \$30. Benchmark Papers in Electrical Engineering and Computer Science, vol. 12.

**Disease in a Minor Chord.** Being a Semi-historical and Semibiographical Account of a Period in Science When One Could Be Happily Yet Seriously Concerned with the Diseases of Lowly Animals without Backbones, Especially the Insects. Edward A. Steinhaus. Ohio State University Press, Columbus, 1975. xx, 488 pp. \$20.

**Dopaminergic Mechanisms.** Papers from a symposium, Neuilly, France, May 1974. Donald Calne, Thomas N. Chase, and André Barbeau, Eds. Raven Press, New York, 1975. xviii, 428 pp., illus. \$26.50. Advances in Neurology, vol. 9.

**Effective Use of ANS COBOL Computer Programming Language.** Laurence S. Cohn. Wiley-Interscience, New York, 1975. xiv, 178 pp. Spiral bound, \$10.95. Business Data Processing.

**Encyclopedia of Explosives and Related Items.** PATR 2700. Vol. 6. Basil T. Fedoroff and Oliver E. Sheffield assisted by the Franklin Institute Research Laboratories. Picatinny Arsenal, Dover, N.J., 1974 (available from the National Technical Information Service, Springfield, Va.). Various pages. \$37.50.

**Environment.** A Bibliography of Social Science and Related Literature. Denton E. Morrison, Kenneth E. Hornback, and W. Keith Warner. U.S. Environmental Protection Agency, Washington, D.C., 1974 (available from the Superintendent of Documents, Washington, D.C.). viii, 862 pp. Paper, \$7.45. Socioeconomic Environmental Studies Series. EPA-600/5-74-011.

**Evolutionäre Erkenntnistheorie.** Angeborene Erkenntnisstrukturen im Kontext von Biologie, Psychologie, Linguistik, Philosophie und Wissenschaftstheorie. Gerhard Vollmer. Hirzel, Stuttgart, 1975. xii, 210 pp. Paper, DM 26.

**Fatu-Hiva.** Back to Nature. Thor Heyerdahl. Doubleday, Garden City, N.Y., 1975. x, 276 pp. + plates. \$10.

**First Impressions.** The Psychology of Encountering Others. Chris L. Kleinke. Prentice-Hall, Englewood Cliffs, N.J., 1975. xii, 148 pp. Cloth, \$8.95; paper, \$2.95. A Spectrum Book.

**Group Theory and Its Applications.** Vol. 3. Ernest M. Loeb, Ed. Academic Press, New York, 1975. xvi, 480 pp. \$49.50.

**Handbook of Veterinary Drugs.** A Compendium for Research and Clinical Use. Irving S. Rossoff. Springer, New York, 1975. xxii, 730 pp. \$42.50.

**Intracranial Pressure II.** Proceedings of a symposium, Lund, Sweden, June 1974. N. Lundberg, U. Pontén, and M. Brock, Eds. Springer-Verlag, New York, 1975. xxiv, 530 pp., illus. \$31.

**Introduction au Groupe de Renormalisation et à Ses Applications.** Phénomènes Critiques des Transitions de Phase et Autres. Gérard Toulouse and Pierre Pfeuty. Presses Universitaires de Grenoble, Grenoble, 1975. 278 pp. Paper, \$18.

**Jaundice.** Proceedings of a symposium, Montreal, May 1974. C. A. Goresky and M. M. Fisher, Eds. Plenum, New York, 1975. x, 422 pp., illus. \$29.50. Hepatology, vol. 2.

**Kurzer Grundriss der Evolutionstheorie.** N. V. Timofeeff-Ressovsky, N. N. Voroncov, and A. V. Jablovskoy. Translated from the Russian edition (Moscow, 1969). Fischer, Jena, East Germany, 1975. 360 pp., illus. Paper, 36 M. Genetik, Beitrag 7.

**Lads before the Wind.** Adventures in Porpoise Training. Karen Pryor. Harper and Row, New York, 1975. x, 278 pp., illus. \$8.95.

**Losing Ground.** John G. Mitchell. Sierra Club Books, San Francisco, 1975. xii, 228 pp. \$8.95.

**Lymphoreticular Malignancies.** Epidemiologic and Related Aspects. N. J. Vianna. University Park Press, Baltimore, 1975. viii, 136 pp., illus. \$24.50.

**Macromolecules in Solution.** Herbert Morawetz. Wiley-Interscience, New York, ed. 2, 1975. xx, 550 pp., illus. \$27.50. High Polymers, vol. 21.

**Nonlinear Evolution Equations and Potential Theory.** Papers from a summer school, Podhradí, Czechoslovakia, Sept. 1973. Josef Král, Ed. Plenum, New York, 1975. 146 pp. \$22.90.

**On the Prehistory of Marriage.** Totemism, Group Marriage, Mother Right. Josef Kohler. Translated from the German edition (1897) by R. H. Barnes and Ruth Barnes. R. H. Barnes, Transl. Ed. University of Chicago Press, Chicago, 1975. x, 298 pp., illus. \$13. Classics in Anthropology.

**Preventability of Perinatal Injury.** Proceedings of a symposium, New York, 1974. Karlis Adamsons and Howard A. Fox, Eds. Alan R. Liss, New York, 1975. x, 230 pp., illus. \$17.50. Progress in Clinical and Biological Research, vol. 2.

**Primate Behavior.** Developments in Field and Laboratory Research. Vol. 4. Leonard A. Rosenblum, Ed. Academic Press, New York, 1975. xii, 408 pp., illus. \$29.50.

**Primate Models of Neurological Disorders.** Papers from a symposium, London, Aug. 1974. B. S. Meldrum and C. D. Marsden, Eds. Raven Press, New York, 1975. xvi, 362 pp., illus. \$24.50. Advances in Neurology, vol. 10.

**Principles of Wood Science and Technology.** Vol. 2, Wood Based Materials. Franz F. P. Kollmann, Edward W. Kuenzi, and Alfred J. Stamm. Springer-Verlag, New York, 1975. xii, 704 pp., illus. \$51.60.

**The Problem of Chemical and Biological Warfare.** A Study of the Historical, Technical, Military, Legal and Political Aspects of CBW, and Possible Disarmament Measures. Vol. 6, Technical Aspects of Early Warning and Verification. Stockholm International Peace Research Institute (SIPRI). Almqvist and Wiksell, Stockholm and Humanities Press, New York, 1975. 308 pp., illus. \$22.50.

**A Rational Finite Element Basis.** Eugene L. Wachspress. Academic Press, New York, 1975. xiv, 332 pp., illus. \$15. Mathematics in Science and Engineering, vol. 114.

**Statistical Properties of Scattered Light.** Bruno Crosignani, Paolo Di Porto, and Mario Bertolotti. Academic Press, New York, 1975. x, 226 pp. \$19.50. Quantum Electronics.

**Stochastic Processes and Related Topics.** Proceedings of an institute, Bloomington, Ind., July 1974. Vol. 1. Madan Lal Puri, Ed. Academic Press, New York, 1975. xiv, 316 pp. \$17.50.

**The Stoneflies, or Plecoptera, of Illinois.** Theodore H. Frison. Entomological Reprint Specialists, Los Angeles, 1975. vi + pp. 281-472, illus. \$15. Reprint of the 1935 edition.

**Studies in the Psychological Foundations of Exceptionality.** Jean K. Dissinger and Carole R. Arnold. Eds. Brooks/Cole, Monterey, Calif., 1975. x, 316 pp., illus. Paper, \$9.95.

**The Viscosity of the Earth's Mantle.** Lawrence M. Cathles, III. Princeton University Press, Princeton, N.J., 1975. xxii, 386 pp., illus. \$25.

**World Resource Management.** Key to Civilizations and Social Achievement. J. Edwin Becht and L. D. Belzung. Prentice-Hall, Englewood Cliffs, N.J., 1975. xii, 330 pp., illus. + index. \$11.95.

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**OPPORTUNISTIC FUNGAL INFECTIONS: Proceedings of the Second International Conference** edited by Ernest W. Chick, *Univ. of Kentucky Medical School, Lexington*; Albert Balows, *Center for Disease Control, Atlanta, Georgia*; and Michael L. Furcolow, *Univ. of Kentucky Medical School, Lexington.* (34 Contributors) Fungi which may be considered opportunistic are those once thought to be largely saprophytic but which under certain conditions may become lethal pathogens. Such conditions include certain broad-spectrum antibiotics, corticosteroid administration, immunosuppressive therapy, and irradiation. Included is a discussion of areas within fungal opportunism which are poorly understood and where improved technology is greatly needed. '75, 376 pp., 55 il., 34 tables, \$22.50

**CANCER EPIDEMIOLOGY AND PREVENTION: Current Concepts** edited by David Schottenfeld, *Memoorial Sloan-Kettering Cancer Center, New York.* (23 Contributors) A broad conceptual review of cancer epidemiology and prevention is provided in this book. The introductory section is concerned with historical landmarks in cancer epidemiology, the magnitude of cancer, and principles of the epidemiologic method and the concept of cause. Subsequent sections include chapters on etiologic agents in man, the epidemiology of cancers of specific tissues, screening and early detection, and prevention of disability in the cancer patient. '75, 592 pp. (6 3/4 x 9 3/4), 148 il., 86 tables, \$45.50

**ELEMENTS OF RADIATION PROTECTION** by Ronald V. Scheele and Jack Wakley, *both of Univ. of Virginia School of Medicine, Charlottesville.* Information in this textbook includes atomic structure, ionizing radiation, interaction of radiation with matter, sources of radiation exposure, biological manifestation of radiation exposure, permissible dose limits, principles of radiation protection and monitoring devices. Several chapters of the book deal with federal performance standards and Atomic Energy Commission regulations. '75, 112 pp., 15 il., 10 tables, \$7.95, paper

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