

used in this field, will find this book highly rewarding, however. Graduate students in physics and chemistry searching for experimental or theoretical research problems most certainly will not be disappointed after studying in detail the authoritative articles in this book.

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## Ancient Building Material

**Stone. Properties, Durability in Man's Environment.** E. M. WINKLER. Springer-Verlag, New York, 1973. xiv, 230 pp., illus. \$33.70. *Applied Mineralogy*, vol. 4.

Early cave man has been identified as such from that domicile of his which was fabricated from the rocks by nature's processes. Modern man quarries and artificially constructs his stone "caves" on top of the surface of the earth. Geologists are thoroughly familiar with rocks on the outcrop and at depth, but many of us know comparatively little about stone, the primary building material obtained from the earth's crust. Winkler's book fills a long-existing gap between classical petrography of native rocks and documentation on those constituents and properties of rocks which make them useful, durable, and pleasing as building materials. The book is easily readable and will be informative to geologists, stone producers, engineers, architects, ecologists, and stone conservators.

Winkler's viewpoint (and book) is distinctive in another way—he writes of stone in man's environment, rather than solely in the geologic environment. From this enlarged and inter-professional perspective the essential features common to rock and stone are given with reference to igneous rocks, clastic and chemical sedimentaries, and metamorphic rocks. The broad view is maintained as properties of stone arising from their solid phases, interstices, cements, and thermal and optical (light transmissivity) behavior are discussed. Natural deformation of stone by unloading, plastic deformation, pressure release (rock bursts), and shock waves due to blasting during quarrying and in buildings after incendiary and nuclear bombing are surveyed.

Colors of stone are considered with

regard to genesis, nomenclature, and esthetics. For example, warmer tones in sedimentary rocks typically are converted to colder tones in metamorphic rocks. Reflectivity and polish may enhance the beauty and utility of one stone whereas another is most pleasing in fractured, sawn, or native surface.

From an approach unconventional to geology the decay, weathering, and durability of stone are extensively treated. Instead of focusing on the altered daughter product, Winkler treats of what alteration does to the original stone. He includes such agents and processes as dissolution, bacterial activity, chelation, microplants, interstitial expansion by ice and dissolved salts, osmotic pressure, organic physical effects, fire resistance, and urban versus rural versus desert climates. Ecology and humanity are not neglected. Silicosis, its symptoms, physiology, and prevention, is considered much more fully than with the cursory dismissal usual in geologic literature. Stone conservation is the subject of the 13th and final chapter, but some 12 pages of useful information on mineral properties and American Society for Testing Materials specifications and a glossary are appended.

Each chapter is closed with a helpful summary. The book is well illustrated, including several full-color plates and a beautiful full-page picture of the harmonizing stone front of the Notre Dame Memorial Library. A caliper measures the thickness of the printed pages as 13/32 inch—at a list price of \$33.70, the shelf index is approximately \$83 per inch. Winkler has produced an excellent book on stone; the publisher's price impels one to think of gold.

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## Japanese Protein Chemistry

**Proteins. Structure and Function.** M. FUNATSU, K. HIROMI, K. IMAHORI, and K. NARITA, Eds. Kodansha, Tokyo, and Halsted (Wiley), New York, 1973. Two volumes. Vol. 1, x, 382 pp., illus. \$19. Vol. 2, x, 270 pp., illus. \$14.50.

The last decade has seen impressive developments in the analysis of protein structure and function. With the information that has become accessible through x-ray diffraction, high resolu-

tion magnetic resonance spectrometry, rapid kinetics, and genetic analysis and through the continuous refinement and improvement of the more classical physical and chemical methods, it has become possible to construct sophisticated structure-function models of a number of proteins. Although these models are still not yielding any complete answers concerning the dynamic action of proteins in living cells, they have made it possible to formulate the questions at a high level of mechanistic detail.

The scientific community has been kept up to date about the conceptual, theoretical, and experimental achievements in this field through a flood of accounts, first in the journals and then in digested form in textbooks, lectures, and an awesome quantity of treatises and reviews.

The review literature has become rather repetitive and stereotyped, and a new two-volume work entitled *Proteins: Structure and Function* was consequently received by this reviewer with only lukewarm enthusiasm. A glance at the table of contents suggested that this one might be a little different, however. In addition to well-established "stars" such as trypsin (dealt with by T. Inagami) and lysozyme (K. Hamaguchi and K. Hayashi), there are chapters on phage lysozyme and endolysin (A. Tsugita and Y. Ikeya-Ocada), ribonuclease T (K. Takahashi) and its substrate analog complexes (T. Oshima and K. Imahori), all in volume 1, and, in volume 2, on amylases (K. Hiromi), stem bromelain (T. Murachi), ricin (M. Funatsu), threonine deaminase (M. Tokushige), ribulose diphosphate carboxylases (T. Akazawa), and amino-terminal acetyl groups in proteins (K. Narita).

The objectives of the editors in putting together this rather unusual collection of subjects were to present aspects of research on protein structure and function ranging from detailed analysis of the most studied and best understood proteins to physical, chemical, and biological probing of less completely characterized ones; to illustrate, by encouraging each author to deal primarily with his own work, the variety of approaches taken to problems within the field; and to make the contributions of Japanese protein chemists more widely known. Although I don't think that separate books are required to achieve this last objective (especially after noting the well-known accom-

plishments by well-known Japanese scientists that are cited in the truly international reference lists in these volumes), I think the editors have produced a review with a different flavor. The two volumes give an amazingly diversified picture of both facts and experimental techniques, and they do give an excellent survey of the many contributions of Japanese workers in the chemical modification and structural and conformational analysis of proteins and glycoproteins and in the isolation and characterization of new proteins. Each chapter is clearly written and well organized, and each author has done a thorough job, even to the extent of compiling in tables a good deal of background information which to the best of my knowledge is not available in any other single source. The literature has been reviewed through 1971 and some heretofore unpublished data are included. The reviews are therefore as current as one can expect in this rapidly developing field.

The emphasis on the authors' own work gives the reader a sense of the immediacy of ongoing research, at the expense of abbreviating the complete picture only slightly. It also effectively calls his attention to the many fundamental problems that are still unsolved. The discussions of the toxicity of ricin, the role of acetylated amino-terminals in protein, the role of the carbohydrate components and the protein sites in the many different recognition processes in living systems, to mention just a few, make this review more than just a look back at where we have been; it also conveys the excitement of the new directions in which this field is headed.

Some reservations about these volumes still remain. The subjects are probably too specialized, the discussions too detailed, and the price too high for them to be suitable as textbooks. Any person who wishes to observe the progress of research in a given area could learn a good deal from these books, but he would have to be an advanced student in protein chemistry fully to appreciate these particular cases. The specialist's need for this information has been reduced by the large volume of other reviews in the field. It thus appears that these books may have only a limited audience at this time; the solid and attractive work presented deserves better.

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## Books Received

**Abandoning Method.** Derek L. Phillips. Jossey-Bass, San Francisco, 1973. xvi, 202 pp. \$8.75. Jossey-Bass Behavioral Science Series.

**Advances in Biochemical Engineering.** Vol. 2. T. K. Ghose, A. Fiechter, N. Blakebrough, Eds. Springer-Verlag, New York, 1972. iv, 216 pp., illus. \$19.10.

**Analysis of Discretization Methods for Ordinary Differential Equations.** Hans J. Stetter. Springer-Verlag, New York, 1973. xvi, 388 pp. \$44.40. Springer Tracts in Natural Philosophy, vol. 23.

**Annual Review of Medicine.** Vol. 24. William P. Creger, C. H. Coggins, and E. W. Hancock, Eds. Annual Reviews, Palo Alto, Calif., 1973. x, 466 pp., illus. \$12.

**Anthropology beyond the University.** Proceedings of a symposium, Columbia, Mo., Feb. 1972. Alden Redfield, Ed. Southern Anthropological Society, 1973 (distributor, University of Georgia Press, Athens). viii, 134 pp. Paper, \$3.75. Southern Anthropological Society Proceedings, No. 7.

**Biology of Earthworms.** C. A. Edwards and J. R. Lofly. Chapman and Hall, London, 1973 (U.S. distributor, Halsted [Wiley], New York). xvi, 284 pp., illus. \$8.75.

**Brain-Pituitary-Adrenal Interrelationships.** Proceedings of a symposium, Cincinnati, Ohio, June 1972. A. Brodich and E. S. Redgate, Eds. Karger, New York, 1973. xii, 340 pp., illus. \$45.30.

**Calculus. A First Course.** Louis J. DeLuca and James T. Sedlock. Prentice-Hall, Englewood Cliffs, N.J., 1973. xii, 404 pp., illus. \$10.95.

**Carbonium Ions.** Vol. 4, Major Types (Continued). George A. Olah and Paul von R. Schleyer, Eds. Wiley-Interscience, New York, 1973. xvi pp. + pp. 1501-1960, illus. \$29.95. Reactive Intermediates in Organic Chemistry.

**Childhood Psychosis.** Initial Studies and New Insights. Leo Kanner. Winston, Washington, D.C., 1973 (distributor, Halsted [Wiley], New York). xii, 283 pp. \$10.95.

**Circuit Theory.** Vol. 2. J. O. Scanlan and R. Levy. Oliver and Boyd (Longman), Edinburgh, 1973. x pp. + pp. 285-578, illus. 75 p. Electronic and Electrical Engineering Texts.

**Community and Communications.** Seymour J. Mandelbaum. Norton, New York, 1972. 154 pp. \$5.95.

**Contemporary Approaches to Conditioning and Learning.** F. J. McGuigan and D. Barry Lumsden, Eds. Winston, Washington, D.C., 1973 (distributor, Halsted [Wiley], New York). xiv, 322 pp., illus. \$12.95. Experimental Psychology Series.

**Contemporary Issues in Cognitive Psychology.** The Loyola Symposium. Robert L. Solso, Ed. Winston, Washington, D.C., 1973 (distributor, Halsted [Wiley], New York). xii, 348 pp., illus. \$12.95.

**Contracting for Knowledge.** Harold Orlans. Jossey-Bass, San Francisco, 1973. xviii, 286 pp. \$10.75. Jossey-Bass Behavioral Science Series.

**Design of Modern Transistor Circuits.** Maurice Yunik. Prentice-Hall, Englewood Cliffs, N.J., 1973. xvi, 366 pp., illus. \$16. Prentice-Hall Series in Electronic Technology.

**Eclipsing Variable Stars.** V. P. Tsevech, Ed. Translated from the Russian edition (Moscow, 1971) by R. Hardin, Halsted (Wiley), New York, and Israel Program for Scientific Translations, Jerusalem, 1973. x, 310 pp., illus. \$28.50.

**Effects of Elemental Phosphorus on Marine Life.** Collected papers resulting from the 1969 pollution crisis, Placentia Bay, Newfoundland. P. M. Jangaard, Ed. Research and Development Fisheries Research Board of Canada, Halifax, Nova Scotia, 1972. vi, 314 pp., illus.

**Einstein. The Man and His Achievement.** G. J. Whitrow, Ed. Dover, New York, 1973. xvi, 94 pp. Paper, \$1.50. Reprint of the 1967 edition.

**A First Language. The Early Stages.** Roger Brown. Harvard University Press, Cambridge, Mass., 1973. xx, 438 pp., illus. \$15.

**Flora of Guatemala.** Paul C. Standley, Louis O. Williams, and Dorothy N. Gibson. Field Museum of Natural History, Chicago, 1973. vi pp. + pp. 237-418, illus. Paper, \$7.25. Fieldiana: Botany, Vol. 24, Part 9, Nos. 3 and 4.

**Food.** Freeman, San Francisco, 1973. xii, 268 pp., illus. Cloth, \$11; paper, \$5.50. Readings from *Scientific American*.

**Frequency Synthesis.** Theory, Design and Applications. Venceslav F. Kroupa. Halsted (Wiley), New York, 1973. xxii, 296 pp., illus. \$27.50.

**Fundamental Statistical Concepts.** Fred-eric E. Fischer. Canfield (Harper and Row), San Francisco, 1973. xii, 372 pp., illus. \$9.95.

**The Genus Lesquerella (Cruciferae) in North America.** Reed C. Rollins and Elizabeth A. Shaw. Harvard University Press, Cambridge, Mass., 1973. xii, 288 pp., illus. \$18.

**Handbook of Sensory Physiology.** Vol. 7/3, Central Processing of Visual Information. Part B, Visual Centers in the Brain. Richard Jung, Ed. Springer-Verlag, New York, 1973. viii, 738 pp., illus. \$91.80.

**Human Impact Response.** Measurement and Simulation. Proceedings of a symposium, Warren, Mich., Oct. 1972. William F. King and Harold J. Mertz, Eds. Plenum, New York, 1973. viii, 406 pp., illus. \$25.

**Hydrodynamics and Thermodynamics of Aerosols.** V. M. Voloshchuk and Yu. S. Sedunov, Eds. Translated from the Russian edition (Moscow, 1971-72) by A. Baruch. Halsted (Wiley), New York, and Israel Program for Scientific Translations, Jerusalem, 1973. vi, 284 pp., illus. \$21.50.

**Initial Reports of the Deep Sea Drilling Project.** A project by and carried out with the advice of the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES). Vol. 19, covering leg 19 of the cruises of Glomar Challenger, July-Sept. 1971. J. S. Creager and 11 others, participating scientists. Prepared for the National Science Foundation by the Scripps Institution of Oceanography, La Jolla, Calif. 1973 (available from the Superintendent of Documents, Washington, D.C.). xx, 914 pp., illus. \$12.75.

**Intercranial Pressure.** Experimental and Clinical Aspects. Proceedings of a symposium, Hannover, Germany, July 1972. M. Brock and H. Dietz, Eds. Springer-Verlag, New York, 1972. xvi, 384 pp., illus. \$27.60.