

Fritts's detailed ecological and numerical analyses of tree rings provide an excellent model to be followed by other researchers attempting to calibrate biological and geological data in climatic terms.

This sequence of research is the main topic of *Tree Rings and Climate*; in which Fritts draws his many studies together into a coherent description of the biological, meteorological, technical, and statistical knowledge that has underlain his work. The first chapter provides a thorough summary of the major concepts and the types of studies to be described later in the book. Fritts then shows his roots as a biologist and forester by presenting three chapters describing the morphology and physiological ecology of tree-ring growth from the cellular level up. A vast amount of literature is reviewed in these chapters, including the results of his own physiological studies of tree growth. The fifth chapter synthesizes the details of the earlier chapters by introducing three qualitative models relating temperature and precipitation changes to variations in ring width. Chapters 6 through 9 go on to describe Fritts's major work in statistically analyzing and climatically calibrating dendrochronological data. A non-quantitatively oriented reader will want to consult standard texts for descriptions of the statistical techniques used here, but applied mathematicians will find many good examples of the use of such techniques as analysis of variance, multiple regression analysis, principal components analysis, and canonical correlation analysis.

The book is well organized, and a series of well-designed drawings, graphs, maps, and photographs illustrates it. Its biological chapters will appeal to foresters and botanists, but its main aim is not to be the definitive review of the subject but rather to provide a comprehensive progress report on a rapidly developing field. The research presented is current, but in some cases its newness precludes a high order of synthesis in its presentation. In chapter 9, for instance, Fritts not only discusses the methods for mapping past climates but also describes an initial feasibility study, the lessons learned from it, and a climatological study needed for interpreting the maps derived from the tree rings. Were this work less current, the climatic reconstructions might have been discussed more directly.

*Tree Rings and Climate* illustrates an important application of biological data to climatic studies and presents a challenge to palynologists and micro-paleontologists to produce as fine a de-

scription of their own research in applied paleoclimatology. From Fritts's work, biologists and ecologists can learn how holistic thinking about biological processes can focus attention on the broad-scale variations in tree growth, which are readily interpretable in climatic terms. This approach yields not only valuable results but also a whole new field for research.

THOMPSON WEBB III

Department of Geological Sciences,  
Brown University,  
Providence, Rhode Island 02912

## Books Received and Book Order Service

*Books Received and the Book Order Service will be combined in issues in which there is a Reader's Service Card. To order any of the Book Order Service books, circle the corresponding number on the Reader's Service Card (pages 326A and 398A); the participating publisher(s) will ship the title(s) ordered and send you a bill.*

**Advances in Heat Transfer.** Vol. 13. James P. Hartnett and Thomas F. Irvine, Jr., Eds. Academic Press, New York, 1977. xiv, 280 pp., illus. \$30. *To order this book circle No. 425 on Readers' Service Card.*

**Associative Memory.** A System-Theoretical Approach. Teuvo Kohonen. Springer-Verlag, New York, 1977. x, 178 pp., illus. \$21.20. Communications and Cybernetics, vol. 17. *To order this book circle No. 426 on Readers' Service Card.*

**Astronomy.** Frank N. Bash. Harper and Row, New York, 1977. xii, 468 pp., illus. + plates. Paper, \$11.95.

**Automatic Control Systems.** Richard M. Phelan. Cornell University Press, Ithaca, N.Y., 1977. 284 pp., illus. \$15.

**Basic Chemistry.** William S. Seese and Guido H. Daub. Prentice-Hall, Englewood Cliffs, N.J., ed. 2, 1977. xvi, 576 pp., illus. \$14.50.

**Botulism.** The Organism, Its Toxins, the Disease. Louis D.S. Smith. Thomas, Springfield, Ill., 1977. xiv, 236 pp. \$18.75.

**Catalog of Federal Regulations Affecting the Iron and Steel Industry.** Council on Wage and Price Stability, Washington, D.C., 1976. xx, 236 pp., illus. Paper, \$4.70.

**Chemistry and Biology of the Kallikrein-Kinin System in Health and Disease.** Papers from a conference, Bethesda, Md., Oct. 1974. John J. Pisano and K. Frank Austen, Eds. National Institutes of Health, Bethesda, Md., 1976 (available from the Superintendent of Documents, Washington, D.C.). xxxviii, 612 pp., illus. \$12.

**Coastal Resources Management.** Beyond Bureaucracy and the Market. Robert B. Dutton, John L. Seymour, and Gerald C. Swanson. Lexington (Heath), Lexington, Mass., 1977. xviii, 198 pp. \$16.50. Studies in Marine Affairs.

**Cohesion Hypothesis of the Ultimate and Commonsense Meaning of Existence.** Frank Pilbath. Vantage, New York, 1977. xviii, 168 pp. \$7.50.

**College Physics.** Franklin Miller, Jr. Har-

court Brace Jovanovich, New York, ed. 4, 1977. xx, 836 pp., illus. \$14.95.

**Computer Analysis of Neuronal Structures.** Robert D. Lindsay, Ed. Plenum, New York, 1977. xviii, 210 pp., illus. \$22.50.

**Contemporary Astronomy.** Jay M. Pasachoff. Saunders, Philadelphia, 1977. xvi, 588 pp., illus., + plates + appendices. \$15.95. Saunders Golden Sunburst Series.

**The Crisis in Social Security.** Problems and Prospects. Michael J. Boskin, Ed. Institute for Contemporary Studies, San Francisco, 1977. xiv, 214 pp., illus. Paper, \$5.95.

**Current Trends in the Management of Breast Cancer.** R. Robinson Baker, Ed. Johns Hopkins University Press, Baltimore, 1977. xvi, 160 pp., illus. \$14.

**Currents in Alcoholism.** Papers from a conference, Washington, D.C., May 1976. Frank A. Seixas, Ed. Grune and Stratton, New York, 1977. Two volumes. Vol. 1. xvi, 496 pp., illus. \$19.50. Vol. 2. xx, 548 pp., illus. \$19.50.

**Death, Grief and Bereavement.** A Bibliography, 1845-1975. Compiled by Robert Fulton. Arno Press (New York Times), New York, 1977. viii, 256 pp. \$20.

**Decision Making.** A Psychological Analysis of Conflict, Choice, and Commitment. Irving L. Janis and Leon Mann. Free Press (Macmillan), New York, and Collier Macmillan, London, 1977. xx, 490 pp., illus. \$15.95.

**Deserts of the World.** M. P. Petrov. Translated from the Russian edition (Leningrad, 1973). Halsted (Wiley), New York, and Israel Program for Scientific Translations, Jerusalem, 1977. viii, 448 pp., illus. + loose maps. \$57.50. *To order this book circle No. 397 on Readers' Service Card.*

**The Design and Operation of Small Sewage Works.** D. Barnes and F. Wilson. Spon, London, and Halsted (Wiley), New York, 1976. xvi, 180 pp., illus. \$15. *To order this book circle No. 398 on Readers' Service Card.*

**The Development of Cognitive Processes.** Vernon Hamilton and Magdalen D. Vernon, Eds. Academic Press, New York, 1976. x, 772 pp., illus. \$46. *To order this book circle No. 399 on Readers' Service Card.*

**Digital Electronics.** An Introduction to Theory and Practice. William H. Gothmann. Prentice-Hall, Englewood Cliffs, N.J., 1977. xiv, 386 pp., illus. \$14.95.

**Digital Systems.** Principles and Applications. Ronald J. Tocci. Prentice-Hall, Englewood Cliffs, N.J., 1977. xvi, 480 pp., illus. \$15.95.

**Domestic Animals of Nepal.** H. Epstein. Holmes and Meier, New York, 1977. xii, 132 pp. + plates. \$27.50.

**Geology and Palaeontology of Southeast Asia.** University of Tokyo Press, Tokyo, 1976 (U.S. distributor, International Scholarly Book Services, Forest Grove, Ore.). Vol. 17. Teiichi Kobayashi and Wataru Hashimoto, Eds. viii, 208 pp., illus. + plates. \$39.50. Vol. 18. Teiichi Kobayashi, Ryuzo Toriyama, and Wataru Hashimoto, Eds. viii, 172 pp., illus. + plates \$39.50. *To order this book circle No. 427 on Readers' Service Card.*

**Inhibition and Inactivation of Vegetative Microbes.** Papers from a symposium, Nottingham, England, July 1975. F. A. Skinner and W. B. Hugo, Eds. Academic Press, New York, 1976. xiv, 378 pp., illus. \$26.25. Society for Applied Bacteriology Symposium Series No. 5. *To order this book circle No. 428 on Readers' Service Card.*

**Magnetic Ions in Metals.** A Review of Their  
(Continued on page 407)

# BOOKS RECEIVED AND BOOK ORDER SERVICE

(Continued from page 362)

Study by Electron Spin Resonance. R. H. Taylor. Taylor and Francis, London, and Halsted (Wiley), New York, 1977. viii, 118 pp., illus. \$14. Taylor and Francis Monographs on Physics. To order this book circle No. 429 on Readers' Service Card.

**Neblette's Handbook of Photography and Reprography.** Materials, Processes and Systems. John M. Sturge, Ed. Van Nostrand Reinhold, New York, ed. 7, 1977. x, 642 pp., illus. \$47.50. To order this book circle No. 430 on Readers' Service Card.

**Pain.** From Symptom to Treatment. Manuel M. Villaverde and C. Wright MacMillan. Van Nostrand Reinhold, New York, 1977. vi, 346 pp., illus. \$22.50. To order this book circle No. 431 on Readers' Service Card.

**Progress in Allergy.** Vol. 22. Paul Kallós, Byron H. Waksman, and Alain L. de Weck, Eds. Karger, Basel, 1977. xii, 220 pp. \$39.75.

**Progress in Behavior Modification.** Vol. 4. Michel Hersen, Richard M. Eisler, and Peter M. Miller, Eds. Academic Press, New York, 1977. xvi, 380 pp. \$19.50. To order this book circle No. 432 on Readers' Service Card.

**Progress in Clinical Immunology.** Vol. 3. Grune and Stratton, New York, 1977. x, 208 pp., illus. \$22.50. To order this book circle No. 433 on Readers' Service Card.

**Remote-Sensing Applications for Mineral Exploration.** William L. Smith, Ed. Dowden, Hutchinson and Ross, Stroudsburg, Pa., 1977 (distributor, Halsted [Wiley], New York). xvi, 392 pp., illus. + plates. \$50. To order this book circle No. 434 on Readers' Service Card.

**Social Influence and Social Change.** Serge Moscovici. Translated from the French by Carol Sherrard and Greta Heinz. Published for the European Association of Experimental Social Psychology by Academic Press, New York, 1977. x, 240 pp. \$15.25. European Monographs in Social Psychology, No. 10. To order this book circle No. 435 on Readers' Service Card.

**Stereo-Differentiating Reactions.** The Nature of Asymmetric Reactions. Yoshiharu Izumi and Akira Tai. Kodansha, Tokyo, and Academic Press, New York, 1977. x, 334 pp., illus. \$29.50. To order this book circle No. 436 on Readers' Service Card.

**Stochastic Models in Population Genetics.** Wen-Hsiung Li, Ed. Dowden, Hutchinson and Ross, Stroudsburg, Pa., 1977 (distributor, Halsted [Wiley], New York). xvi, 474 pp., illus. \$30. Benchmark Papers in Genetics, vol. 7. To order this book circle No. 437 on Readers' Service Card.

**The Study of Biology.** Jeffrey J. W. Baker and Garland E. Allen. Addison-Wesley, Reading, Mass., ed. 3, 1977. xviii, 1122 pp., illus. + appendices. \$16.95. Addison-Wesley Series in Life Sciences. To order this book circle No. 438 on Readers' Service Card.

**A Technology of Reading and Writing.** Vol. 3, The Adaptive Classroom. Donald E. P. Smith. Academic Press, New York, 1977. x, 320 pp., illus. \$14.50. Educational Psychology. To order this book circle No. 439 on Readers' Service Card.

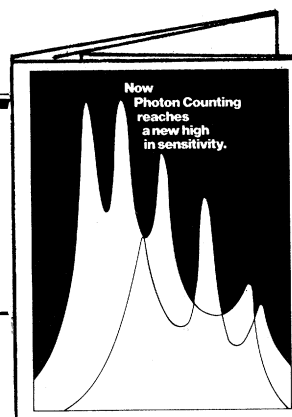
**Topics in Phonological Theory.** Michael Kenstowicz and Charles Kisseberth. Academic Press, New York, 1977. xii, 242 pp. \$17.50. To order this book circle No. 440 on Readers' Service Card.

22 JULY 1977

## NEW SLM 8000 Photon Counting Spectrofluorometer

With Corrected  
Polarization Accessory

New 8-page brochure tells in detail the remarkable efficiency of this innovative lab instrument that performs direct photon counting with ultimate sensitivity in light detection ( $10^{-12}$  Molar Quinine Sulfate) accompanied by the lowest possible "dark count" drift and highest gain stability.



- ☐ Please send SLM 8000 brochure.  
Other SLM High Performance Instruments:  
☐ SLM 4000 Precision Corrected Polarization Fluorometer  
☐ SLM 4800 Subnanosecond Fluorescence Lifetime Instrument

NAME \_\_\_\_\_

AFFILIATION \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

**SLM**

**INSTRUMENTS, INC.**

1101 East University Avenue • Urbana, IL 61801 • Phone (217) 384-7730

Circle No. 120 on Readers' Service Card

**BYTE**

The Small Systems Journal

*Isn't it time you had your  
own personal computer?*

Read BYTE, the leading consumer publication covering the fantastic new field of personal computer applications. Today, large scale integration has made it possible for the individual to enjoy the unique benefits of a general purpose computing system. Now, an entire micro industry markets microcomputer related items, products that range from computer system kits to peripherals, software and literature on the subject. But where should you go for all the details about your personal involvement in computer technology?

Read BYTE, the Small Systems Journal devoted exclusively to microcomputer systems. Every issue a monthly compendium of lively articles by professionals, computer scientists, and serious amateurs.

Fill in subscription coupon today, or phone your request directly — call 617/646-4329 and ask for your subscription. Read your first copy of BYTE, if it's everything you expected, honor our invoice. If it isn't, write 'CANCEL' across invoice and mail it back. You won't be billed and the first issue is yours.

Allow 6 to 8 weeks for processing.

**BYTE**

BYTE Subscriptions Dept. 29A  
P.O. Box 361  
Arlington, Mass. 02174

Please enter my subscription to BYTE...

- ☐ \$12 One Year ☐ \$22 Two Years ☐ \$32 Three Years  
☐ Bill me ☐ Check Enclosed  
☐ Bill BankAmericard ☐ Bill Master Charge

Credit Card Number

Credit Card Expiration Date

Name (Please Print)

Address

City  State  Zip

Circle No. 61 on Readers' Service Card

407