

entitled *An Introduction to Automata Theory* consists of chapters on finite automata (including circuits), a chapter on Turing machines, and a chapter on Post systems and context-free languages. The last section of the book has chapters on partial recursive functions, computational complexity, algebraic decomposition theory, stochastic automata, and constructors. Unfortunately, the mathematical side of Arbib's book is the weakest. There are a number of errors in the proofs. Many arguments are sketched vaguely, and nontrivial gaps are left. In some cases, proofs are lifted from the literature (almost word for word). This is unfortunate, since proofs in the open literature often omit steps too difficult for students to supply. To summarize, Arbib's book is an excellent survey of the different sides of automata theory, but I would not recommend it as a textbook.

MICHAEL A. HARRISON

*Department of Computer Science,
University of California, Berkeley*

New Journals Received

Artificial Intelligence. An International Journal. Vol. 1, Nos. 1 and 2 (combined), Spring 1970. Four numbers per volume. Editor-in-chief: Bernard Meltzer (University of Edinburgh). Associate editor: Bertram Raphael (Stanford Research Institute). American Elsevier Publishing Co., 52 Vanderbilt Ave., New York, N.Y. \$20 plus \$1 postage; single numbers \$6.50, double numbers \$13.

Behavioral Research in Highway Safety. An Independent Journal. Vol. 1, No. 1, January 1970. Quarterly. Editor: Theodore Kole. Behavioral Research in Highway Safety, 2852 Broadway, New York, N.Y. \$12.

Comparative and General Pharmacology. Vol. 1, No. 1, March 1970. Quarterly. Editor: G. A. Kerkutt (University of Southampton). Scientifica, 823-825 Bath Road, Bristol, England. \$40; single copy \$11.

Computer Programs in Biomedicine. An International Journal. Vol. 1, No. 1, January 1970. Quarterly. Managing editor: W. Schneider (Uppsala University Data Center). North-Holland Publishing Co., P.O. Box 3489, Amsterdam. \$30.

Environmental Pollution. An International Journal. Vol. 1, No. 1, July 1970. Quarterly. Editor: Kenneth Mellanby (Monks Wood Experimental Station, Huntingdon, England). Elsevier Publishing Co., Ripple Road, Barking, Essex, England. \$15.60.

Ferroelectrics. Vol. 1, No. 1, March 1970. Four issues per volume. Editors: I. Lefkowitz (Philadelphia) and G. W. Taylor (Princeton). Gordon and Breach, 150 Fifth Ave., New York, N.Y. To institutions \$53, to individuals \$14.50.

Indian Journal of Pure and Applied Mathematics. Vol. 1, No. 1, January 1970. Quarterly. Executive Editor: F. C. Auluck (Delhi). Editor of Publications, National Institute of Sciences of India, Bahadur Shah Zafar Marg, New Delhi 1. \$12; single issue \$4.

Inorganic Macromolecules Reviews. The Chemistry, Physics and Technology of Macromolecular Inorganic Compounds and Materials. Vol. 1, No. 1, January 1970. Quarterly. Editors: F. G. R. Gimblett and K. A. Hodde (Brunel University, London). Elsevier Publishing Co., P.O. Box 211, Amsterdam. Dfl. 90 plus 4.50 postage.

The International Journal of Biochemistry. Vol. 1, No. 1, February 1970. Bimonthly. Editor: G. A. Kerkut (University of Southampton). Scientifica, 823-825 Bath Road, Bristol, England. \$40; single copy \$8.

Journal of Behavior Therapy and Experimental Psychiatry. An Interdisciplinary Journal. The journal of the Behavior Therapy Society. Vol. 1, No. 1, March 1970. Quarterly. Editor: Joseph Wolpe (Temple University Medical School). Pergamon Press, Fairview Park, Elmsford, N.Y. To institutions \$35; to individuals \$12; to members of the American Psychological and Psychiatric Associations \$9; to students and residents \$6.

Journal of Molecular and Cellular Cardiology. Vol. 1, No. 1, March 1970. Four issues per volume. Editors: R. J. Bing (Huntington Memorial Hospital, Pasadena) and L. H. Opie (Hammersmith Hospital, London). Academic Press, 111 Fifth Ave., New York, N.Y. \$15 plus 50¢ postage.

Journal for Research in Mathematics Education. Vol. 1, No. 3, May 1970. Quarterly. Editor: David C. Johnson (University of Minnesota). National Council of Teachers of Mathematics, 1201 16th St. NW, Washington, D.C. \$6; to members (concurrently with membership) \$5.

Microstructures. An Official Journal of the International Metallographic Society. Vol. 1, No. 1, August-September 1970. Bimonthly. Editors: Hal Spector and Martin H. Waldman. A. Z. Publishing Corp., 647 North Sepulveda Blvd., Bel Air, Los Angeles. \$15; single issue \$3.

Nouvelle revue d'optique appliquée. Vol. 1, No. 1, January-February 1970. Bimonthly. Editor: R. Dupeyrat (Faculté des Sciences de Paris). Masson et Cie., 120, Boulevard Saint-Germain, Paris 6°. 146 F.

Research Communications in Chemical Pathology and Pharmacology. Vol. 1, No. 1, January 1970. Six numbers per volume. 10 Oakdale Drive, Westbury, N.Y. To institutions \$18, to individuals \$12.

Nordic Hydrology. An International Journal. Vol. 1, No. 1, March 1970. Quarterly. Editor: Arne Forsman (Toppbrinken 16-18, S-163, Spånga, Sweden). Munksgaard, 47 Prags Blvd., Copenhagen. \$17.10.

Studies in History and Philosophy of Science. Vol. 1, No. 1, May 1970. Quarterly. Editors: Gerd Buchdahl (University of Cambridge) and L. L. Laudan (University of Pittsburgh). Macmillan (Journals) Ltd., 4 Little Essex St., London.

\$13.50, Canada \$14.50; single copy 30s.

Theoretical Population Biology. An International Journal. Vol. 1, No. 1, May 1970. Editors: J. F. Crow (University of Wisconsin); S. Karlin (Stanford University); N. Keyfitz (University of California, Berkeley); R. MacArthur (Princeton University). Academic Press, 111 Fifth Ave., New York, N.Y. Per calendar year (3 issues in 1970), \$16 to institutions, \$10 to individuals.

Thermochimica Acta. Vol. 1, No. 1, March 1970. Bimonthly. Editor: W. W. Wendland (University of Houston). Elsevier Publishing Co., P.O. Box 211, Amsterdam. \$22.50 plus \$1.50 postage.

Books Received

Abuse of Central Stimulants. A symposium, Stockholm, November 1968. Folke Sjoqvist and Malcolm Tottie, Eds. Raven, New York, 1969. 536 pp., illus. \$9.75.

Advances in Behavior Therapy, 1968. A symposium, San Francisco, August 1968. Richard D. Rubin and Cyril M. Franks, Eds. Academic Press, New York, 1969. xviii, 246 pp., illus.

Advances in X-Ray Analysis. Vol. 13. Burton L. Henke, John B. Newkirk, and Gavin R. Mallett, Eds. Proceedings of a conference, Denver, Colo., August 1969. Plenum, New York, 1970. xii, 682 pp., illus. \$25.

Aerodynamics for Engineering Students. SI Units. E. L. Houghton and A. E. Brock. St. Martin's, New York, ed. 2, 1970. viii, 458 pp., illus. \$15.

Air Pollution and Its Control. Wayne T. Sproull. Exposition Press, New York, 1970. 110 pp., illus. \$4.

Analyse binaire. R. L. Vallée. Masson, Paris, 1970. Vol. 1, Théorie et applications aux circuits combinatoires (iv, 152 pp., illus. Paper, 60 F); vol. 2, Clef des automates numériques (iv, 188 pp., illus. Paper, 80 F).

Annual Review of Plant Physiology. Vol. 21. Leonard Machlis, Winslow R. Briggs, and Roderic B. Park, Eds. Annual Reviews, Palo Alto, Calif., 1970. x, 654 pp., illus. \$10.

Architectural Acoustics. Anita Lawrence. Elsevier, New York, 1970. xvi, 224 pp., illus. \$11.75.

Automatic Data Processing. Principles and Procedures. Elias M. Awad. Prentice-Hall, Englewood Cliffs, N.J., ed. 2, 1970. xvi, 496 pp., illus. \$13.25; student's edition, \$9.95.

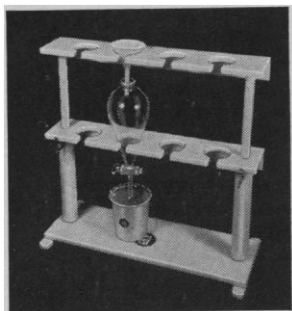
Biologie et physiologie des éléments nerveux. P. Laget. Masson, Paris, 1970. viii, 174 pp., illus. Paper, 29 F. Structures et fonctions du système nerveux, vol. 1.

Biology and Its Relation to Mankind. A. M. Winchester. Van Nostrand Reinhold, New York, ed. 4, 1969. x, 726 pp., illus.

Can the Red Man Help the White Man? A Denver Conference with the Indian Elders. June 1968. Sylvester M. Morey, Ed. Church, New York, 1970. xii, 118 pp. Paper, \$1.95.

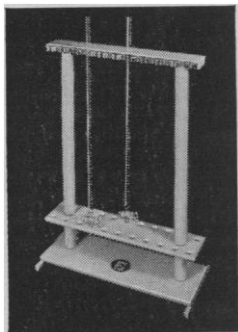
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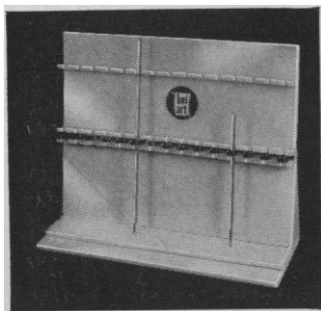
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BOOKS RECEIVED

(Continued from page 56)

Paul von R. Schleyer, Eds. Vol. 2, Methods of Formation and Major Types. Wiley-Interscience, New York, 1970. x, pp. 463-964, illus. \$20. Reactive Intermediates in Organic Chemistry.

Chemistry. T. L. Cottrell. Oxford University Press, New York, ed. 2, 1970. viii, 180 pp., illus. Paper, \$1.95. OPUS 47.

The Chemistry of Plutonium. J. M. Cleveland. Gordon and Breach, New York, 1970. xxiv, 654 pp., illus. Reference edition, \$39.50; professional, \$19.50.

Classical Dynamics of Particles and Systems. Jerry B. Marion. Academic Press, New York, ed. 2, 1970. xviii, 574 pp., illus. \$13.25.

Classroom Television. New Frontiers in ITV. George N. Gordon. Illustrated by Lawrence S. Garfinkel. Hastings House, New York, 1970. 248 pp., illus. \$8.95. Studies in Media Management. Communication Arts Books.

College Algebra. Steven J. Bryant, Jack Karush, Leon Nower, and Daniel Saltz. Goodyear, Pacific Palisades, Calif., 1970. xii, 380 pp., illus. \$9.95.

The Comparative Endocrinology of the Invertebrates. Kenneth C. Highnam and Leonard Hill. Elsevier, New York, 1969. x, 270 pp., illus. + plates. \$12. Contemporary Biology.

Computerized Management Information Systems. Joseph F. Kelly. Macmillan, New York; Collier-Macmillan, London, 1970. x, 534 pp., illus. \$10.95.

Conquest of Deficiency Diseases. Achievements and Prospects. W. R. Aykroyd. World Health Organization, Geneva, 1970. 100 pp., illus. Paper, \$3. FFHC Basic Study, No. 24.

The Control of Growth and Differentiation in Plants. P. F. Wareing and I. D. J. Phillips. Pergamon, New York, 1970. x, 306 pp., illus. Cloth, \$7; paper, \$5.50. Commonwealth and International Library: Botany Division.

Corrosion by Liquid Metals. Joseph E. Drale and John R. Weeks, Eds. Proceedings of a meeting of the Metallurgical Society of AIME, Philadelphia, October 1969. Plenum, New York, 1970. xii, 616 pp., illus. \$29.

Cutting Communications Costs and Increasing Impacts. Diagnosing and Improving the Company's Written Documents. George T. Vardaman, Carroll C. Halterman, and Patricia Black Vardaman. Wiley, New York, 1970. xiv, 290 pp., illus. \$11.50. Wiley Series on Human Communication.

Cytology and Evolution. E. N. Willmer. Academic Press, New York, ed. 2, 1970. x, 650 pp., illus. \$27.50.

Deterioration and Preservation of Library Materials. A conference, Chicago, August 1969. Howard W. Winger and Richard Daniel Smith, Eds. University of Chicago Press, Chicago, 1970. vi, 202 pp., illus. \$7.95. University of Chicago Studies in Library Science. Reprinted from *Library Quarterly*, January 1970.

Developments in Theoretical and Applied Mechanics. Vol. 4. Proceedings of a conference, New Orleans, February-March 1968. Daniel Frederick, Ed. E. H. Harris, Exec. Chairman. Pergamon, New York, 1970. xiv, 638 pp., illus. \$33.

Dimension Theory. Keiô Nagami. With an appendix by Yukihiro Kodama. Academic Press, New York, 1970. xii, 260 pp. \$13.50. Pure and Applied Mechanics, vol. 37.

Dimensional Formula for Change of Scale with Scale Factor Depending on Time. José Luiz de A. N. Junqueira Fo. Applied Mechanics Research Laboratory, University of Texas, Austin, 1969. vi, 60 pp. Paper.

Division of Labor in Cells. Geoffrey H. Bourne. Academic Press, New York, ed. 2, 1970. xii, 300 pp., illus. Paper, \$4.50.

Dynamic Mass Spectrometry. D. Price and J. E. Williams, Eds. Vol. 1, The Second European Symposium on the Time-of-Flight Mass Spectrometer. Salford, England, July 1969. Heyden, London; Sadtler Research Laboratories, Philadelphia, 1970. viii, 248 pp., illus. \$13.50.

Early Diabetes. First international symposium, Marbella, Spain, October 1968. Rafael A. Camerini-Dávalos, Harold S. Cole, and William S. Gailmor, Eds. Academic Press, New York, 1970. xxii, 490 pp., illus. \$23. Advances in Metabolic Disorders, Suppl. 1.

Effects of Abatement of Domestic Sewage Pollution on the Benthos, Volumes of Zooplankton, and the Fouling Organisms of Biscayne Bay, Florida. J. Kneeland McNulty. University of Miami Press, Coral Gables, Fla., 1970. 112 pp., illus. \$6.95.

Electromagnetic Waves in Stratified Media. James R. Wait. Pergamon, New York, ed. 2, 1970. xiv, 608 pp., illus. \$21.50. International Series of Monographs in Electromagnetic Waves, vol. 3.

Electron Paramagnetic Resonance of Transition Ions. A. Abragam and B. Bleaney. Clarendon (Oxford University Press), New York, 1970. xvi, 912 pp., illus. \$41.50. International Series of Monographs on Physics.

The Emergence of the American University. Laurence R. Veysey. University of Chicago Press, Chicago, 1970. xiv, 506 pp. \$10.

Engineering Properties of Thermoplastics. Produced by Imperial Chemical Industries Ltd., Plastics Division. R. M. Ogorkiewicz, Ed. Wiley-Interscience, New York, 1970. xii, 318 pp., illus. \$17.50.

Enrico Fermi, Physicist. Emilio Segrè. University of Chicago Press, Chicago, 1970. xii, 276 pp. + plates. \$6.95.

Ernst Mach. Physicist and Philosopher. Based on a AAAS symposium, Washington, D.C., December 1966. Robert S. Cohen and Raymond J. Seeger, Eds. Reidel, Dordrecht, Holland; Humanities Press, New York, 1970. viii, 298 pp. + plates. \$11.50. Boston Studies in the Philosophy of Science, vol. 6. Synthese Library.

Essays in Chemistry. J. N. Bradley, R. D. Gillard, and R. F. Hudson, Eds. Vol. 1. Academic Press, New York, 1970. x, 118 pp., illus. Paper, \$3.25.

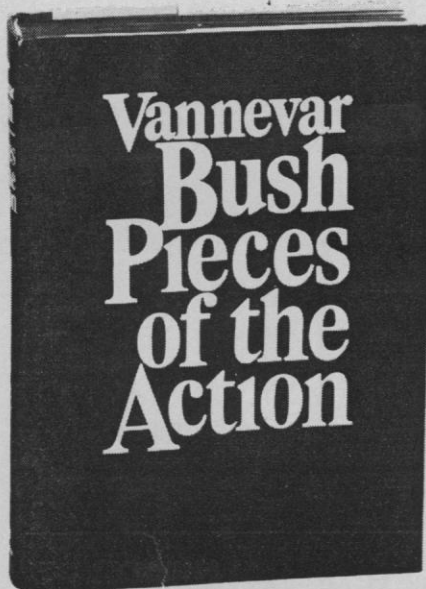
Essays in Comparative Social Stratification. Leonard Plotnicov and Arthur Tuden, Eds. University of Pittsburgh Press, Pittsburgh, 1970. viii, 352 pp. \$12.95.

Excitation Mechanisms of the Nucleus. Electromagnetic and Weak Interactions. Judah M. Eisenberg and Walter Greiner. North-Holland, Amsterdam; Elsevier, New York, 1970. xii, 372 pp., illus. \$19.25. Nuclear Theory, vol. 2.

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Experimental Child Psychology. Hayne W. Reese and Lewis P. Lipsitt. Academic Press, New York, 1970. xvi, 784 pp., illus. \$12.50.

Eyewitness Series in Psychology. Jozef Cohen. Lloyd G. Humphreys, Advisory Ed. Rand McNally, Chicago, 1970. Eight Series Separates (SS) out of 20 Separates. SS 4, Sensation and Perception: Part 1, Vision (76 pp., illus. + plates); SS 5, Sensation and Perception: Part 2, Audition and the Minor Senses (70 pp., illus.); SS 7, Secondary Motivation: Part 1, Personal Motives (72 pp., illus.); SS 8, Secondary Motivation: Part 2, Social Motives (72 pp., illus.); SS 11, Operant Behavior and Operant Conditioning (64 pp., illus.); SS 12A, Complex Learning (56 pp., illus.); SS 17, Personality Dynamics (64 pp., illus.); SS 18, Personality Assessment (76 pp., illus.). Paper, each \$1.25.

Finite State Markovian Decision Processes. Cyrus Derman. Academic Press, New York, 1970. xiv, 162 pp. \$10. Mathematics in Science and Engineering, vol. 67.

Focus on Physics. Atomic Physics. Robert L. Stearns. Barnes and Noble, New York, 1970. x, 118 pp., illus. Paper, \$1.25. Barnes and Noble College Outline Series. No. 131.

Focus on Physics. Optics II—Physical and Quantum Optics. J. Warren Blaker. Barnes and Noble, New York, 1970. x, 94 pp., illus. Paper, \$1.25. Barnes and Noble College Outline Series, No. 130.

Formes primitives vivantes. Musée de l'évolution. Claude Delamare-Deboutteville and Lazare Botosanéanu. Hermann, Paris, 1970. 232 pp., illus. 45 F. Actualités scientifiques et industrielles, No. 1323.

Fundamental Aspects of Inorganic Chemistry. B. Chiswell and D. W. James. Wiley, New York, 1970. xiv, 250 pp., illus. \$6.95.

Furnishing the City. Harold Lewis Malt. McGraw-Hill, New York, 1970. viii, 256 pp., illus. \$16.50.

General Pathology. H. W. Florey, Ed. Saunders, Philadelphia, ed. 4, 1970. xvi, 1264 pp. + plates.

Geology of Michigan. John A. Dorr, Jr., and Donald F. Eschman. Illustrated by Derwin Bell. University of Michigan Press, Ann Arbor, 1970. viii, 478 pp., illus. \$15.

The Golden Jackal. Behaviour Studies. Ilan Golani. Notated by Shmuel Zeidel under the supervision of Noa Eshkol. Movement Notation Society, Tel Aviv, Israel, 1969. iv, 124 pp., illus. Paper, \$6; accompanying film, \$10.

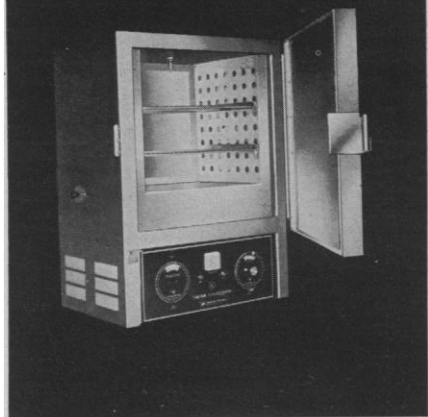
Handbook of the Atomic Elements. R. A. Williams. Philosophical Library, New York, 1970. 126 pp., illus. \$6.

Health Principles and Practice. C. L. Anderson. Mosby, St. Louis, ed. 6, 1970. xii, 436 pp., illus. \$8.50.

Historic Submarines. F. W. Lipscomb. Illustrated by Malcom McGregor. Praeger, New York, 1970. 38 pp. + plates. \$10.

How Crops Grow. A Century Later. A Series of Lectures to Celebrate the Centennial of *How Crops Grow* by Samuel W. Johnson—1868. Delivered 17 September 1968 to 19 May 1969. Peter R. Day, Ed. Connecticut Agricultural Experiment Station, New Haven, 1969. x, 180 pp., illus. Paper. Bulletin 708.

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Human Resources and Higher Education. Staff Report of the Commission on Human Resources and Advanced Education. John K. Folger, Helen S. Austin, and Alan E. Bayer. Russell Sage Foundation, New York, 1970. xxxii, 480 pp., illus. \$17.50.

Hypnosis. A Scientific Approach. Theodore Xenophon Barber. Van Nostrand Reinhold, New York, 1969. vi, 282 pp. Paper, \$2.95. Insight Series.

Impurity Spectra of Solids. Elementary Theory of Vibrational Structure. Karl K. Rebane. Translated and revised from the Russian edition (Moscow, 1968) by John S. Shier. Plenum, New York, 1970. xvi, 254 pp., illus. \$19.50.

Information Transmission, Modulation, and Noise. A Unified Approach to Communication Systems. Mischa Schwartz. McGraw-Hill, New York, ed. 2, 1970. xx, 684 pp., illus. \$14.50. McGraw-Hill Electrical and Electronic Engineering Series; Brooklyn Polytechnic Institute Series.

Insect and Host Plant. Proceedings of the second international symposium, Wageningen, Netherlands, June 1969. J. de Wilde and L. M. Schoonhoven, Eds. North-Holland, Amsterdam, 1969. vi, pp. 471–810, illus. Paper, \$15. Reprinted from *Entomologia experimentalis et applicata*, vol. 12 (1969).

International Review of Forestry Research. Vol. 3. John A. Romberger and Peitsa Mikola, Eds. Academic Press, New York, 1970. xii, 332 pp. \$17.50.

An Introduction to Animal Physiology. W. B. Yapp. Clarendon (Oxford University Press), New York, ed. 3, 1970. xx, 352 pp., illus. \$10.40.

Introduction to Astronomy. Cecilia Payne-Gaposkin and Katherine Harmandanis. Prentice-Hall, Englewood Cliffs, N.J., ed. 2, 1970. xii, 610 pp., illus. \$14.95.

Introductory Chemistry. Robert J. Ouellette. Harper and Row, New York, 1970. xvi, 624 pp., illus. \$4.95.

Introductory Real Analysis. A. N. Kolmogorov and S. V. Fomin. Translated, revised, and edited from the second Russian edition (Moscow, 1968) by Richard A. Silverman. Prentice-Hall, Englewood Cliffs, N.J., 1970. xii, 404 pp., illus. \$13.95. Selected Russian Publications in the Mathematical Sciences.

The Invertebrates: Function and Form. A Laboratory Guide. Irwin W. Sherman and Vilia G. Sherman. Macmillan, New York; Collier-Macmillan, London, 1970. xvi, 306 pp., illus. Paper, \$7.95.

Ion-Molecule Reactions. E. W. McDaniel, V. Cermak, A. Dalgarno, E. E. Ferguson, and L. Friedman. Wiley-Interscience, New York, 1970. xvi, 374 pp., illus. \$19.95. Wiley-Interscience Series in Atomic and Molecular Collisional Processes.

John Dalton and the Atomic Theory. The Biography of a Natural Philosopher. Elizabeth C. Patterson. Doubleday, New York, 1970. xii, 348 pp., illus. + plates. \$6.95.

Kijik: An Historic Tanaina Indian Settlement. James W. Vanstone and Joan B. Townsend. Field Museum of Natural History, Chicago, 1970. vi, 202 pp., illus. Paper, \$8. Fieldiana: Anthropology, vol. 59.

KWIC Index. A Bibliography of Computer Management. Malcolm H. Gotterer.

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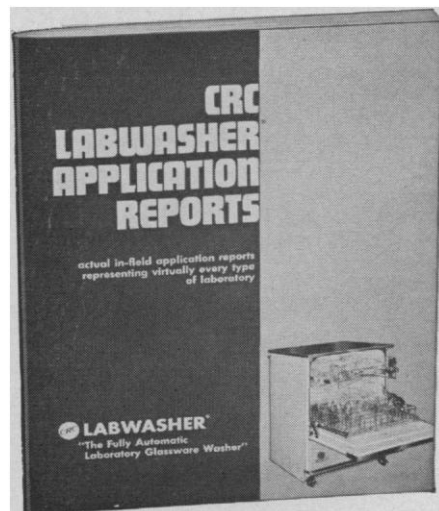
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Brandon/Systems Press, Princeton, N.J., 1970. viii, 152 pp. Paper, \$10.

Laboratory Guide for an Introduction to Modern Biology. Paul C. Bailey, Dan C. Holliman, Thomas S. Quarles, and E. Douglas Waits. International Textbooks, Scranton, Pa., 1970. x, 310 pp., illus. Paper, \$4.25.

Laboratory Manual in General Biology. William C. Beaver and George B. Noland. Mosby, St. Louis, ed. 8, 1970. viii, 184 pp., illus. Paper, \$4.50.

Landscapes. Selected Writings of J. B. Jackson. Ervin H. Zube, Ed. University of Massachusetts Press, Amherst, 1970. viii, 160 pp. Paper, \$6.

Lectures in Chest Medicine. John R. Edge. Elsevier, New York, 1970. 260 pp., illus. \$9.75.

Linear Algebra and Matrix Theory. Evar D. Nering. Wiley, New York, ed. 2, 1970. xii, 356 pp. \$10.95.

L. J. Henderson on the Social System. Selected Writings. Edited and with an Introduction by Bernard Barber. University of Chicago Press, Chicago, 1970. x, 262 pp., illus. \$11.50.

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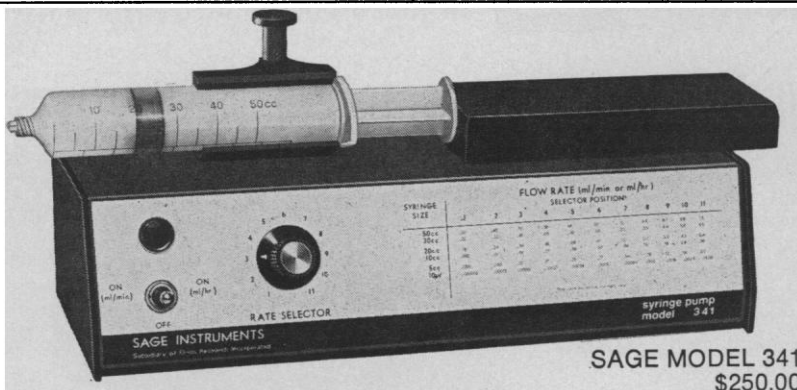
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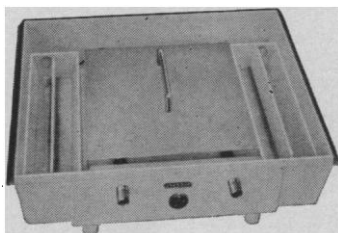
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