

Books of the Week

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ARIDITY AND MAN: The Challenge of the Arid Lands in the United States—Carle Hodge, Ed. with Peter C. Duisberg—AAAS, 584 p., illus., maps, \$12. Compiled by the Committee on Desert and Arid Zones Research of the American Association for the Advancement of Science, an interdisciplinary volume of value to researchers as well as to scientific administrators and governmental leaders.

THE ART OF SIMULATION—K. D. Tocher—Van Nostrand, 184 p., diagrams, \$5.95. Text for advanced students in electrical science and applied physics, deals with the application of mathematical statistics and electronic computers to the simulation and optimization of industrial processes.

ASTRONOMY—Robert H. Baker—Van Nostrand, 8th ed., 557 p., illus., \$8.25. This thorough revision of an outstanding textbook for two-semester introductory course includes new data obtained from spacecraft and new developments such as the growing dependence on magnetic fields in interpretations of celestial phenomena.

THE ATOM—Charles Hatcher—Macmillan (St. Martins), 108 p., illus. by author, photographs, \$3.95. Presents the fundamentals of modern atomic theory in the simplest terms.

AUTOMATION AND INDUSTRIAL RELATIONS—Edward B. Shils—Holt, 360 p., \$6.40. This survey of the impact of automation on industrial relations evaluates the economic, political and social implications, including documented case studies of six leading industries.

BACTERIAL PHOTOSYNTHESIS—Howard Gest, Anthony San Pietro and Leo P. Vernon, Eds.—Antioch Press, 523 p., illus., \$6. Symposium papers featuring discussion of components, structure and function of the bacterial photochemical apparatus, metabolism and physiology, electron transport, and photochemical considerations.

BEHAVIOR THEORY AND CONDITIONING—Kenneth W. Spence—Yale Univ. Press, 262 p., diagrams, paper, \$1.75. Reprint (1956) of modern

version of the stimulus-response theory of learning that developed out of Pavlov's studies.

THE BIOSYNTHESIS OF VITAMINS AND RELATED COMPOUNDS—T. W. Goodwin—Academic Press, 366 p., diagrams, \$11. Correlates the information currently available on the biosynthesis of vitamins, surveying and assessing the significance of advances made in the last decade.

BODY COMPOSITION, Parts I and II—Josef Brozek, Ed.—N. Y. Acad. of Sciences, Annals, Vol. 110, 1,018 p., illus., paper, \$12. On methods and the results of research on body composition in animal studies with emphasis on diet, human biology, norms of leanness-fatness, growth and aging, medicine and surgery.

CREATIVE CANADA—Cecil C. Kent—Canadian Manufacturers Assn., 24 p., illus., paper, \$1. Practical ideas on inventing and trademark coining.

CRYSTALLOGRAPHIC DATA ON METAL AND ALLOY STRUCTURES—Compiled by A. Taylor and Brenda J. Kagle—Dover, 263 p., paper, \$2.25. Tables of the latest crystallographic data on some 2,300 alloys and intermetallic compounds, nearly 700 borides, carbides, hydrides, oxides and nitrides, and on the crystal structure of 77 elements.

THE ENJOYMENT OF CHEMISTRY—Louis Vaczek, foreword by Rene J. Dubos—Viking, 243 p., \$6. Written for the general reader to enable him to share in the intellectual enjoyment of those who probe into the structure of matter and machinery of life.

EXPLANATION IN SOCIAL SCIENCE—Robert Brown—Aldine Pub. Co., 198 p., \$5. An analysis of the nature of explanations social scientists give to searching questions about society, and a discussion of the methods of explanation they use.

EXPLORERS OF THE SEA: Famous Oceanographic Expeditions—Muriel L. Guberlet—Ronald, 226 p., illus. by Elizabeth L. Curtis, \$4.50. Biographical sketches of men exploring the oceans in search of scientific data, for young people.

GEOLOGY OF JAPAN—Fuyugi Takai, Tatsuro Matsumoto and Ryuzo Toriyama—Univ. of Calif. Press, 279 p., maps, \$10. A regional geology of the Japanese Islands, describing their history, stratigraphy and sedimentation from the Devonian and Silurian rocks to the pre-Tertiary igneous activity.

A HISTORY OF THE MACHINE, Vol. 11 of The New Illustrated Library of Science and Invention—Robert Soudard—Hawthorn, 112 p., designed by Erik Nitsche, 103 illus., \$5.95. Handsome volume showing man's use of more and more complex mechanisms, chronology included.

A HISTORY OF THE MATHEMATICAL THEORIES OF ATTRACTION AND THE FIGURE OF THE EARTH: From the time of Newton to that of Laplace—J. Todhunter—Dover, 984 p., \$7.50. Unabridged republication of work which originally (1873) appeared in two separate volumes.

HORIZONS OF ANTHROPOLOGY—Sol Tax, Ed.—Aldine Pub. Co., 288 p., \$5. Essays by nineteen leading anthropologists on subjects such as the hominization process, the study of evolution, anthropology and the law, and equality and inequality in human societies.

HUMAN BEHAVIOR: An Inventory of Scientific Findings—Bernard Berelson and Gary A. Steiner—Harcourt, 712 p., diagrams, \$8.95. A summary of the present state of scientific knowledge about human behavior. The authors select, condense, organize and translate into plain English the findings from scientific literature.

IDENTITY AND REALITY—Emile Meyerson, transl. from French by Kate Loewenberg—Dover, 495 p., paper, \$2.25. Reprint (1930) of text first published in French in 1908, concerned with the processes of thought by which theories in the physical sciences have been advanced.

IMPROVING ENGLISH SKILLS OF CULTURALLY DIFFERENT YOUTH IN LARGE CITIES—Arno Jewett, Joseph Mersand and Doris V. Gundersen, Eds.—OE (GPO), 216 p., paper, 75¢. Excerpts of speeches of a three-day conference discussing research and successful classroom practices in various big city schools.

INSIDE THE BLACK ROOM: Studies in Sensory Deprivation—Jack A. Vernon—Potter, 203 p., \$4.50. Describes experiments and the physical and mental effects of isolated confinement of adult males in dark, soundproof chambers.

LATE EOCENE ZOOGEOGRAPHY OF THE EASTERN GULF COAST REGION—Alan H. Cheetham—Geological Soc. of Am., 113 p., illus., maps, \$3.75. Analysis of data on the distribution of marine fossils in upper Eocene sediments in Florida, southern Alabama and southern Georgia.

LECTURES ON GAS THEORY—Ludwig Boltzmann, transl. by Stephen G. Brush—Univ. of Calif. Press, 490 p., photograph, \$10. Originally published

in German in 1896 and 1898, the work is considered a masterpiece of theoretical physics.

THE LOWER METAZOA: Comparative Biology and Phylogeny—Ellsworth C. Dougherty, Ed. with others—Univ. of Calif. Press, 478 p., illus., \$17.50. More than 30 monographs by international authorities focusing on one of the least known areas of research in contemporary animal science—the lower Metazoa.

A MANUAL OF GREEK MATHEMATICS—Sir Thomas L. Heath—Dover, 552 p., diagrams, paper, \$2.25. Unabridged republication of work first published in 1931.

NATIONAL SCIENCE FOUNDATION: Thirteenth Annual Report for the Fiscal Year Ended June 30, 1963—Leland J. Haworth, Dir.—GPO, 734 p., illus., paper, \$1.25. Reports on program activities and support of scientific research in the various fields, with listing of grants.

THE PEREGRINE FALCON—Robert Murphy—Houghton, 157 p., illus. by Teeco Slagboom, \$4. One year in the life of a noble bird of prey, accurate and beautifully told story.

PIERRE CURIE—Marie Curie, with the Autobiographical Notes of the author, transl. by Charlotte and Vernon Kellogg, introd. by Mrs. William Brown Meloney—Dover, 118 p., illus., paper, \$1. Reprint (1923).

PRINCIPLES OF MECHANICS SIMPLY EXPLAINED—Morton Mott-Smith—Dover, rev. ed., 171 p., illus. by Emil Kosa Jr., paper, \$1. Revised version of work first published in 1931 under the title: This Mechanical World.

PROGRESS IN CHEMICAL TOXICOLOGY, Vol. 1—Abraham Stolman, Ed.—Academic Press, 436 p., illus., \$14. Articles written by practicing specialists discuss such subjects as application of gas chromatography to toxicology, aliphatic alcohols, nonbarbiturate sedatives, poisonous mushrooms, seeds and fruits.

PROPAGATION OF RADIO WAVES—B. Chatterjee—Asia Publishing House (Taplinger), 115 p., diagrams, \$5.50. Concise presentation of lectures to post-graduate students in electrical communication engineering in India.

PUBLIC EXPENDITURE DECISIONS IN THE URBAN COMMUNITY—Howard G. Schaller, Ed.—Resources of the Future (Johns Hopkins Press), 198 p., map, paper, \$3.50. Conference papers on special issues arising in the public sector of the urban economy.

RADIATION EFFECTS IN PHYSICS, CHEMISTRY AND BIOLOGY: Proceedings of the Second International Congress of Radiation Research, Great Britain, 1962—Michael Ebert and Alma Howard, Eds.—Year Bk. Medical, 510 p., diagrams, \$15. Contains 25 reports ranging from discussion of linear energy transfer to effect of age on radiosensitivity.

RADIO EXPLORATION OF THE PLANETARY SYSTEM—Alex G. Smith and T. D. Carr—Van Nostrand, 148 p., photographs, diagrams, paper, \$1.50. Largely non-mathematical description of the new science of radio astronomy.

REXFORD TUGWELL AND THE NEW DEAL—Bernard Sternsher—Rutgers Univ. Press, 535 p., \$9. A comprehensive study of the administrative functions in the years 1932-1936 of one of the New Deal's brain trusters, an institutional economist dedicated to a program for combating the Great Depression.

ROCKETS AND SPACECRAFT OF THE WORLD—Michael Chester—Norton, 205 p., 90 photographs, \$3.95. Informative survey of major space programs, for young people.

SCIENCE AND IDEAS: Selected Readings—Arnold B. Arons and Alfred M. Bork, Eds.—Prentice-Hall, 278 p., paper, \$3.95. An anthology for students in introductory science, aims of exposing them to ideas, the meaning of scientific law and theory, and the processes of testing, validation and subsequent modification.

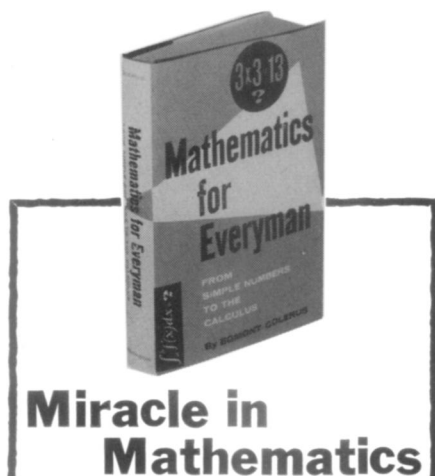
SCIENTISTS AND NATIONAL POLICY-MAKING—Robert Gilpin and Christopher Wright, Eds.—Columbia Univ. Press, 307 p., \$7.50. Ten scholars examine major aspects of the relationship of science and government in the United States, ranging from activities of scientists in relation to national security to discussion of the new type of "scientific strategist" needed to cope with current complex problems.

SECRET OF THE FOREST: On the Track of Maya Temples—Wolfgang Cordan, transl. from German by Basil Creighton—Doubleday, 225 p., photographs, \$4.95. An account by a German archaeologist who lived among the Lacandon Indians while searching for remains of the culture of their ancestors in the rain forests of Guatemala.

SELECTED EXPERIMENTS IN ORGANIC CHEMISTRY—George K. Helmkamp and Harry W. Johnson Jr.—Freeman, 151 p., illus., paper, \$3.75. Provides experiments in chemical and physical equilibria, nucleophilic substitution reactions, elimination reactions, carbonyl, aromatic and heterocyclic compounds.

SLEEP AND WAKEFULNESS—Nathaniel Kleitman—Univ. of Chicago Press, rev. ed., 552 p., diagrams, \$12.50. Substantial revision of pioneering work published in 1939, incorporates significant new findings, includes bibliography and author index of 4,337 items.

SOME BIOCHEMICAL AND IMMUNOLOGICAL ASPECTS OF HOST-PARASITE RELATIONSHIPS—Thomas C. Cheng, Ed.—N. Y. Acad. of Sciences,



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Annals, Vol. 113, Art. 1, 510 p., illus. paper, \$7. Papers and interdisciplinary discussion by a group of international investigators of biochemical and immunological interactions between host and parasite.

SOUTH-EAST ASIA: A Social, Economic and Political Geography—Charles A. Fisher—Dutton, 831 p., 109 maps, \$15.95. Deals with the series of peninsulas and islands which lie to the east of the Indian sub-continent and to the south of China: Indonesia, Burma, Thailand, Indochina, Malaya and the Philippines.

SOUTHERN FORESTS AND SOUTHERN PEOPLE: Thomas Hansbrough, Ed.—La. State Univ. Press, 115 p., \$4. These papers of the 12th Annual Forestry Symposium focus on the problem of managing people who use forest land and buy forest products in the South.

STRETCHING THEIR MINDS: Benjamin Fine, introd. by Cyril W. Woolcock—Dutton, 255 p., photographs, \$4.95. About a new approach to the education of the gifted child pioneered by the Sands Point Country Day School where children have shown that the first six years of elementary education can be completed in three years.

STRUCTURAL LINGUISTICS AND HUMAN COMMUNICATION: Bertil Malmberg—Academic Press, 210 p., illus., \$9.75. An introduction into the mechanism of language and the methodology of linguistics for advanced students of linguistics, phonetics and communication engineering.

SUPPLEMENT NO. 2 TO PHOTOCOPYING FROM BOUND VOLUMES: William R. Hawken—Am. Lib. Assn., 12 p., illus., paper, \$2. Describes and analyzes the new Copease Duplex Book Copier, the SCM Corporation Wedgelite and the APECO Panel-Lite Exposing Unit.

TELEVISION SYSTEMS MAINTENANCE: Harold E. Ennes—Sams, 288 p., illus., paper, \$5.95.

Comprehensive coverage of TV broadcast maintenance and troubleshooting procedures.

TEMPORAL ORGANIZATION IN CELLS: A Dynamic Theory of Cellular Control Processes—B. C. Goodwin—Academic Press, 163 p., diagrams, \$6.50. Concerned with formulating in mathematical terms a new molecular foundation for a thermodynamic-like analysis of cellular properties.

TRANSISTOR SUBSTITUTION HANDBOOK: Howard W. Sams Engineering Staff—Sams, 5th ed., 128 p., paper, \$1.50. Lists both American and foreign transistors, computer-selected substitutes for all types, and diodes and substitutes for most used types.

THE TRUMAN COMMITTEE: A Study in Congressional Responsibility—Donald H. Riddle—Rutgers Univ. Press, 207 p., \$6. A case study of responsible investigation examining the work of the Senate Special Committee to Investigate the National Defense Program during World War II.

WHERE IS HOSPITAL USE HEADED: Proceedings of the Fifth Annual Symposium on Hospital Affairs—George Bugbee, Chmn.—Health Information Foundation, 97 p., paper, \$2. Examines the trend of increasing hospital costs and increasing ratio of use.

WHY DID THEY NAME IT . . .?—Hannah Campbell—Fleet Pub. Co., 207 p., illus., \$4.50. Collection of stories about the origins of brand names that have become familiar household words in America.

YEARBOOK OF ASTRONOMY 1964: J. G. Porter and Patrick Moore, Eds.—Norton, 215 p., illus., paper, \$3.95. Contains star charts, monthly notes on planets, eclipses, occultations and comets, special articles and glossary.

• Science News Letter, 85:124 Feb. 22, 1964

PSYCHOLOGY

African Babies Alert

➤ **AFRICAN BABIES** are more vivacious and show more signs of achievement in the first several weeks after birth than European babies, a study has shown.

But this initial advantage is lost rapidly as the effects of traditional customs and imperfect nutrition begin to show, the investigators said.

The study was made by Reginald Dean, honorary professor of clinical investigation at the University of East Africa, and Dr. Marcelle Geber, director of the Child Guidance Clinics of Aisne, France.

Many children born in Kampala, the chief city in Uganda, were given the Gesell test.

This test, developed by the late Arnold Gesell of Yale University, New Haven, Conn., measures the stages of development in babies after the four-week period following birth.

The investigators found the African newborn is so advanced that the Gesell test can be used on them earlier.

The African child shortly after birth shows extraordinary signs of awareness, control and receptivity to his environment, the team reported in *Discovery*, 25:14, 1964.

While the European mother must constantly remind the child that it is feeding, the ability to suck in African children is well-developed.

This is apparent through the child's increase in weight over a measured period. The sucking ability is encouraged by the close and constant contact the child has with its mother.

Suffocation for African babies is not as prevalent as for European babies. Experiments show a child, only 48 hours old, is able to control his head when he is drawn into a sitting position.

Furthermore, an African child noticeably

takes a lively interest in his surroundings much earlier than European children.

Manual dexterity tests showed African children, totally unacquainted with European toys, responded to them with higher scores in the first 12 to 15 months than a European child of the same age.

• Science News Letter, 85:125 Feb. 22, 1964

PSYCHOLOGY

Never Underestimate The Mind of a Child

➤ **THE MIND** of a young child is quicker than you think it is, and can learn far more than we give it credit for.

During the early years, a child's intelligence can be greatly influenced by a responsive environment conducive to learning and exploring.

This contradicts the traditional idea that human intelligence is fixed in a child at birth, and that its development is predetermined by heredity.

Research in understanding the child's learning processes, and the need for revising the American educational system are set forth in the annual report of the Educational Testing Service, Princeton, N. J.

If a parent, teacher or mentor begins to work with a young child early enough, he can exert considerable influence over the

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child's intelligence, Henry Chauncey, president of the Service, stated in his report.

The mental processes of thinking, reasoning, and reacting become established very early in life, even before school, and become a permanent part of the individual throughout his life.

Under favorable environment, a child in the first four years of his life could increase his IQ by about 2.5 points each year. But after he is eight years old, his IQ can develop only about 0.4 points a year, according to an unpublished survey by Prof. Benjamin Bloom of the University of Chicago.

Many preschool children have been unfortunately ignored, Mr. Chauncey said. Latest experiments prove that three-year-old children, who already are performing the rather difficult mental operations of listening and talking, can learn to read and write, tell a story to a tape recorder and type it out as it is played back.

To tap the potentiality that lies in each child, whether he is "gifted," "average" or "retarded," major changes in education and testing should be made. Other forces making such changes mandatory include population increase, science advances, greater awareness of world affairs, and pressures of modern life.

• Science News Letter, 85:125 Feb. 22, 1964

TECHNOLOGY

Optical Device 'Reads' Letters of Alphabet

➤ **AN OPTICAL DEVICE** that can detect and recognize letters of the alphabet and numbers has been developed at the University of Michigan.

Improved devices of this kind could, in the future, feed information from printed documents directly into a computer system, eliminating the change to machine code that must now be done by hand.

The experimental model is based on the discovery that it is possible to build what is called a "complex spatial filter," which makes use both of the phase and amplitude information carried by light.

The device was developed by engineers in the University's Institute of Science and Technology under a joint contract with the Army Electronics Command and the Air Force Avionics Laboratory. The project was headed by Bud A. Vander Lugt.

• Science News Letter, 85:125 Feb. 22, 1964

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