

evening sky, and by the end of the year will be prominent soon after it gets dark.

Venus, so conspicuous in the early evening during the first week or so of January, passes between earth and sun Jan. 26. After that, it will shine brilliantly in the morning sky before sunrise. Gradually dimming, it will again disappear, as it passes behind the sun on Nov. 8. By the year's end it will be low in the west after sunset, but it will not become conspicuous until about February 1967.

### Mars Prominent in 1966

Mars, during 1966, will not be very prominent. It will leave the evening sky during the spring, and by summer will be in the east before sunrise.

Saturn will be an evening star until March. After that it will appear in the morning hours. By the end of the year it will be visible in the evening once more.

While Jan. 1 marks the beginning of 1966 for us, people in many parts of the world give the year other numbers. In the Jewish calendar, for example, we are now in the year 5726 and 5727 will begin Sept. 15. In Japan, Jan. 1 begins the year 2626.

According to the Mohammedan calendar, which counts years from the Hegira, Mohammed's flight from Mecca to Medina, New Year's Day will come on April 22, with the beginning of 1386. In the Indian calendar, March 22 is the beginning of 1888.

If we go to ancient calendars, we get still more numbers for the year. Largest is that of the Byzantine calendar: 7475 begins Sept. 14. The ancient Romans counted their years A. U. C. "Ad urbe condita," from the founding of the city of Rome. Jan 14 begins the year 2719 A. U. C. In the reckoning of the 3rd century Roman emperor Diocletian, Sept. 11 will mark the beginning of 1683.

In the Babylonian calendar of Nabonassar, May 2 will be the beginning of 2715, and in the Grecian calendar 2278 will begin Sept. 14 or Oct. 14, depending on which alternative is used.

So if you do not like 1966 for the year, you have a wide choice—if you change to some other calendar!

### Celestial Timetable for January

JAN. EST

5	noon	Moon passes north of Jupiter
		Earth nearest sun, distance 91,400,000 miles
6	11:40 p.m.	Algol at minimum
7	12:17 a.m.	Full moon
	midnight	Venus passes north of Mars
8	5:00 a.m.	Moon nearest, distance 223,100 miles
9	8:30 p.m.	Algol at minimum
13	3:00 p.m.	Moon in last quarter
21	10:47 a.m.	New moon
23	7:00 a.m.	Moon passes south of Mars
	2:00 p.m.	Moon farthest, distance 252,600 miles
24	midnight	Moon passes south of Saturn
26	4:00 a.m.	Venus between earth and sun
27	1:30 a.m.	Algol at minimum
29	2:49 p.m.	Moon in first quarter
	10:30 p.m.	Algol at minimum

Subtract one hour for CST, two hours for MST, and three hours for PST.

• Science News Letter, 88:406 December 25, 1965

# Books of the Week

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**ADOLESCENTS AND THE SCHOOLS**—James S. Coleman—Basic Bks., 121 p., \$4.50. Views the problem of educating adolescents in the context of the modern social, political and economic order.

**AIR CONSERVATION**: The Report of the Air Conservation Commission of AAAS; James P. Dixon, Chmn.—Am. Assn. for the Advancement of Science, 335 p., maps, \$8. Presents background reports, summary of facts and recommendations for public policy on air pollution control.

**THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC** for the Year 1967—Nautical Almanac Office, U.S. Naval Observatory—GPO, 516 p., \$3.75. Basic calculations, data and fundamental tables.

**ANCIENT EUROPE**: From the Beginnings of Agriculture to Classical Antiquity—Stuart Pigott—Aldine Pub. Co., 343 p., illus., \$7.50. Survey interprets the main lines of European prehistory from the earliest agriculturalists in the seventh millennium B.C. to the incorporation of much of barbarian Europe within the Roman Empire.

**ANCIENTS AND MODERNS**: A Study of the Rise of the Scientific Movement in Seventeenth-Century England—Richard Foster Jones—Univ. of Calif. Press, 2nd ed., 354 p., paper, \$1.95. Reprint of 1961 edition of a study of the thought movement to which modern English science traces its sources.

**THE ARCHITECT IN THE NUCLEAR AGE**: Design of Buildings to House Radioactivity—J. F. Munce—Hayden Bk. Co. (N.Y.), 241 p., photographs, drawings, \$22.50. Describes the special aspects of housing an atomic plant or equipment or highly radioactive material.

**THE ASSISTANT MEDICAL OFFICER**: The Training of the Medical Auxiliary in Developing Countries—Edwin F. Rosinski and Frederick J. Spencer—Univ. of N.C. Press, 199 p., \$6. Study based on visits to medical schools, health centers and hospitals in five African and Asian countries.

**ASTRONAUTICS FOR SCIENCE TEACHERS**—John G. Meitner, Ed.—Wiley, 381 p., photographs, diagrams, \$8.95. Prepared by space scientists and engineers in order to bring high school teachers up to date in astronautics, a field currently involving the nation in an engineering effort of the magnitude of seven billion dollars per year.

**THE BATTLE AGAINST BACTERIA**: A History of the Development of Antibacterial Drugs, for the General Reader—P. E. Baldry—Cambridge Univ. Press, 102 p., photographs, \$4.50; paper, \$1.95. Reviews the great change in the pattern of disease wrought by vaccines, antibiotics and penicillin.

**BIENNIAL REVIEW OF ANTHROPOLOGY, 1965**—Bernard J. Siegel, Ed.—Stanford Univ. Press, 305 p., \$8.50. Covers recent research in physical anthropology, African prehistory, linguistics, social organization, peasant life, and cultural change.

**THE BIOSOCIAL BASIS OF MENTAL RETARDATION**—Sonia F. Osler and Robert E. Cooke, Eds.—Johns Hopkins Press, 151 p., illus., \$5.50. A seminar course designed to bring students of medicine recent scientific developments in the field, with emphasis on the possible relationship between biological and social factors in producing mild degrees of retardation.

**BUGS OR PEOPLE?**—Wheeler McMillen—Appleton-Century, 228 p., \$4.95. Facts, interpretations, opinions and predictions, based on pest control literature from official sources and on personal interviews.

**CALCULATOR'S GUNNING**: The Art of Quick Reckoning—Karl Menninger, transl. from 10th German edition by E. J. F. Primrose, foreword by Martin Gardner—Basic Bks., 132 p., \$4.50. Clearly written, practical advice on how to solve arithmetic problems more rapidly.

**THE CHALLENGE OF SCIENCE**—George Boas—Univ. of Wash. Press, 93 p., \$2.95. Philosopher reviews the reciprocal challenge of science to art, philosophy and religion.

**CHEMISTRY**: Opportunities and Needs—Committee for the Survey of Chemistry, Frank H. Westheimer, Chmn.—NAS-NRC, 222 p., illus., paper, \$5. Report assesses the quality and organizational structure of basic research in U.S. chemistry, presents detailed data and recommendations.

**CHEMISTRY AND TECHNOLOGY OF EXPLOSIVES**, Vol. II—Tadeusz Urbanski, transl. from Polish by Wladislaw Ornat and Sylvia Laverton—Pergamon Press, 517 p., illus., \$17.50. Treats in a comprehensive manner the chemical and physicochemical properties of nitric esters, nitroglycerine, glycol esters, alcohol esters and nitrocellulose.

**CHEMISTRY IN THE SPACE AGE**—Marjorie H. Gardner—Holt, 176 p., illus., \$2.95; paper, \$1.60. Helps young people explore the chemistry of the solar system and the possibilities of life on other planets.

**COMMUNICATIONS OF THE LUNAR AND PLANETARY LABORATORY**, Vol. 3, Nos. 41-49—Gerard P. Kuiper, Dir.—Univ. of Ariz. Press, 60 p., photographs, paper, \$5. Contains article on volcanic sublimates on earth and moon, reproducing photographs of Laimana Volcano, Hawaii, for their relevance to lunar studies.

**COMMUNITY AND SCHIZOPHRENIA**: An Epidemiological Analysis—H. Warren Dunham—Wayne State Univ. Press, 312 p., maps, \$12.50. An investigation of the conflicting evidence and methodological difficulties leading to the uncertainties concerning the meaning of epidemiological findings on mental disease, particularly schizophrenia.

**COMPARATIVE GUIDE TO AMERICAN COLLEGES**: For Students, Parents and Counselors—James Cass and Max Birnbaum—Harper, rev. ed., 725 p., \$9.95. Enlarged edition of up-to-date, analytical and comparative data about individual colleges.

**A CONSTITUTION FOR THE WORLD**—Introd. by Elisabeth Mann Borgese—Center for the Study of Democratic Institutions, 110 p., paper, single copies free upon request direct to publisher, Santa Barbara, Calif. 93193. A preliminary draft for a world constitution.

**CONSTRUCTION SCHEDULING AND CONTROL**—George E. Deatherage—McGraw, 316 p., diagrams, \$15. Covers in detail all the aspects of construction management, applying the Critical Path Scheduling technique as a point of reference.

**DATA PROCESSING**: Applications to Political Research—Kenneth Janda—Northwestern Univ. Press, 288 p., illus., \$7.50. paper, \$3.45. Introduces political scientists to some applications and advantages of punched data processing technology, showing ways in which various types of political information can be processed by computers.

**DIAMAGNETISM AND THE CHEMICAL BOND**—Ya. G. Dorfman, transl. from Russian by Scripta Technica—Am. Elsevier Pub. Co., 182 p., diagrams, \$10. Presents modern theory of diamagnetism, magnetochemistry as a method for investigation, the structure of single and multiple covalent bonds, and applications of the magnetochemical methods.

**DIELS-ALDER REACTIONS**: Organic Background and Physico-Chemical Aspects—A. Wassermann—Elsevier Pub. Co. (N.Y.), 114 p., diagrams, \$5.50. Monograph summarizes the reactions in sufficient detail to be useful in the development of transition state theory.

**A DIRECTORY OF INFORMATION RESOURCES IN THE UNITED STATES**: Social Sciences—National Referral Center for Science and Technology—GPO, 218 p., paper, \$1.50. Alphabetical listing by name, gives organizational and operational descriptions of organizations ranging from Aboriginal Research Club to Young Mnemonics Library.

**THE EARTH IN SPACE**: A Source Book for Elementary School Teachers—Jay William Erickson—Teachers College Press, 265 p., illus., \$5.75; paper, \$3.50. A short overview of teaching units on the earth's atmosphere and the solar system, discussing in some detail study projects on the earth in space, for primary and intermediate grades.

**THE ECOLOGICAL THEATER AND THE EVOLUTIONARY PLAY**—G. E. Hutchinson—Yale Univ. Press, 139 p., illus., \$5. Collection of essays dealing with the influence of the environment on the course of evolution.

**ECONOMICS OF RESEARCH AND DEVELOPMENT**—Richard A. Tybout, Ed.—Ohio State Univ. Press, 458 p., \$7.50. Papers and comments based on 1962 conference on socioeconomic research of German and U.S. scholars.

**ELECTROMETALLURGY OF CHLORIDE SOLUTIONS**—V. V. Stender, Ed.—Consultants, 138 p., illus., paper, \$20. Reports of the Fifth All-Union Seminar on Applied Electrochemistry held at Dnepropetrovsk Institute of Chemical Technology, in 1962.

**ELEVEN-DIGIT REGULAR SEXAGESIMALS AND THEIR RECIPROALS**—Owen Gingerich—Am. Philosophical Soc., 38 p., paper, \$1. Transactions, new series, Vol. 55, Part 8.

**EMPLOYER'S INVENTORY OF CRITICAL MANPOWER**—Engineering Manpower Commission and Scientific Manpower Commission—Eng. Manpower Comm. (Engineers Jt. Council), rev. ed., 36 p., charts, paper, \$3. Enables employer to analyze his own manpower situation in regard to military service liability of employees.

**EXCURSIONS INTO CHEMISTRY**—John H. Woodburn—Lippincott, 145 p., illus. by Frank Lamacchia, \$4.50. Designed to arouse the interest of boys and girls to explore the major branches of chemistry.

**FERTILIZATION**—C. R. Austin—Prentice-Hall, 145 p., illus., \$4.95; paper, \$2.95. Deals with the

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**THE FISHERIES: Problems in Resource Management**—James A. Crutchfield, Ed., foreword by Brewster C. Denny—Univ. of Wash. Press, 136 p., illus., \$5. Based on interdisciplinary public policy seminar focusing on such aspects of the fisheries resource as the physical setting, commercial motivations and techniques of conservation.

**FISHES OF THE WORLD IN COLOR**—Hans Iivass, transl. from Danish by Gwynne Yevens—Dutton, 156 p., illus. by Wilhelm Eigener, \$4.95. Gives the more important facts about commercial and sporting fishes, including many aquarium fishes.

**FORMULAS FOR STRESS AND STRAIN**—Raymond J. Ruark—McGraw, 4th ed., 432 p., diagrams, \$12.50. Revision includes new data, tables of formulas and coefficients, and covers new topics on fatigue, plastic analysis, beams, loading and support.

**FROM ATOMS TO INFINITY: Readings in Modern Science**—Harlow Shapley and others; Clifford D. Simak, Ed.—Harper, 330 p., photographs, illus. by Victor Lazzaro, \$4.95. Supplementary reading in science for the secondary school includes some recent research in the various disciplines.

**A FUNDAMENTAL SURVEY OF THE MOON**—Ralph B. Baldwin—McGraw, 149 p., plates, diagrams, \$4.95. An up-to-date summary of knowledge of the moon, illustrated with Ranger VII photographs.

**GALACTIC STRUCTURE**—Adrian Blaauw and Maarten Schmidt, Eds.—Univ. of Chicago Press, 606 p., illus., \$15. Volume V of STARS AND STELLAR SYSTEMS, the nine-volume compendium of astronomy and astrophysics issued under the general editorship of Gerard P. Kuiper and Barbara M. Middlehurst.

**THE GATLING GUN**—Paul Wahl and Donald R. Toppel—Arco, 168 p., illus., \$12.50. A history of the famous gun and its inventor, based on archival material and official reports, copiously illustrated.

**GENERAL EDUCATION BOARD: Review and Final Report, 1902-1964**—John D. Rockefeller 3rd, Chmn. and J. George Harrar, Pres.—General Education Bd., 103 p., photographs, paper, single copies free upon request direct to publisher, 111 W. 50th Street, New York, N.Y. 10020. Founded by John D. Rockefeller Sr., the Board, after spending \$324 million on the promotion of U.S. education "without distinction of race, sex or creed," has brought its active program to a close.

**GENERAL GENETICS**—Adrian M. Srb, Ray D. Owen and Robert S. Edgar—Freeman, 2nd ed., 557 p., illus., \$9. Revised text incorporates changes since 1952, particularly in molecular genetics.

**THE GREAT DOCUMENTS OF WESTERN CIVILIZATION**—Milton Viorst—Chilton Bks., 388 p., \$7.95. A collection of materials illustrating the history of Western man from the rise of Christianity to the present day.

**HOMEOSTASIS**—L. L. Langley—Reinhold, 114 p., diagrams by Frances Langley, paper, \$1.95. Explains the concept of homeostasis to the undergraduate student.

**HOW TO IMPROVE YOUR SPEAKING VOICE**—Georgiana Peacher—Frederick Fell, 135 p., illus., \$4.95. A practical guide showing step-by-step procedures and exercises that will improve pitch, resonance and range of voice.

**HOW TO STUDY AND WHY**—Bernice McCullar, narrated by Jerry Vanderventer—National School Public Relations Assn., two L.P. records, boxed, \$4.85. Records for students, ages 8 to 18, giving sound counsel on the values of learning and the techniques for becoming a successful student.

**IDENTIFICATION AND CHILD REARING**—Robert R. Sears, Lucy Rau and Richard Alpert—Stanford Univ. Press, 363 p., \$8.50. A study of interrelationships and child-rearing antecedents of child behavior in four-year olds, such as dependency, aggression, gender role and guilt.

**INDUSTRIAL MANAGEMENT IN THE ATOMIC AGE: Patterns, Restraints, Opportunities and Trends in Government-Sponsored Technology**—V. Lawrence Paragiani—Addison-Wesley, 374 p., illus., \$10.75. Deals with the problems of management which came into being with large government-sponsored technical projects.

**INSECT SEX ATTRACTANTS**—Martin Jacobson, foreword by Stanley A. Hall—Interscience Pubs., 154 p., illus., \$7.75. A comprehensive reference covering the occurrence, biology, isolation, chemistry, mechanisms of action, present and potential uses in survey and control programs of insect sex attractants in pest control research.

**INSTITUTIONS FOR THE AGED AND CHRONICALLY ILL**, United States, April-June 1963—National Center for Health Statistics—PHS (GPO), 46 p., paper, 35¢. Statistics on number and types of institutions, type of nursing care, admission policies and charges.

**INTERCONNECTIONS IN THE ANCIENT NEAR EAST: A Study of the Relationships between the Arts of Egypt, the Aegean and Western Asia**—William Stevenson Smith—Yale Univ. Press, 202 p., 221 illus.,

\$17.50. Historical survey of interconnections, deals in detail with the composition of Mycenaean wall scenes palace decorations in Western Asia and Egyptian wall decorations.

**INTERCULTURAL EDUCATION: An Informator Service**—Patricia Beyea, Ed.—Education & World Affairs, 75 p., paper, single copies free upon request direct to publisher, 522 Fifth Ave., New York, N.Y. 10036. Lists and describes fellowship opportunities for faculty and for students during academic year and during summer.

**INTERMEDIATE WATERS OF THE PACIFIC OCEAN**—Joseph L. Reid, Jr.—Johns Hopkins Press, 85 p., illus., \$8.50. The study maps various properties, including geostrophic flow, on two surfaces.

**INTRODUCTION TO ANATOMY**—Roger Warwick—Arco Pub. Co., 240 p., illus., \$3.50; paper, \$1.65. A modern, condensed account of human anatomy, with emphasis on structure and function.

**INTRODUCTION TO ARCHAEOLOGY**—Shirley Gorenstein—Basic Bks., 165 p., photographs, diagrams, \$4.50. Explains the painstaking modern techniques for dating and interpretation in the reconstruction of past cultures.

**INTRODUCTION TO BOTANY**—H. J. M. Bowen—Arco Pub. Co., 216 p., illus., \$3.50; paper, \$1.65. An elementary, condensed and up-to-date account of the science of botany with glossary.

**INTRODUCTION TO PHOTOGRAPHIC PRINCIPLES**—Lewis Larmore—Dover, 2nd ed., 229 p., illus., paper, \$1.50. Revision of text suitable for one-semester course in photography.

**IVAN SANDERSON'S BOOK OF GREAT JUNGLES**—Ivan T. Sanderson with David Loth—Messner, 480 p., photographs, illus. by author, \$9.95. Takes the reader with the naturalist into the world's jungles, among exotic peoples, animals and giants of the vegetable world.

**KIPLINGER'S YOU AND YOUR TAXES, 1966**—Milton Christie, Ed.—Kiplinger Wash. Eds. (Hammond), 100 p., paper, \$1.95. Practical advice on how to plan and manage your tax affairs without overpaying.

**LAMOTREK ATOLL AND INTER-ISLAND SOCIOECONOMIC TIES**—William H. Alkire—Univ. of Ill. Press, 180 p., photographs, paper, \$4. Analyzes the pattern of subsistence activities and social and religious life.

**LICENSING OF FAMILY HOMES IN CHILD WELFARE: A Guide for Instructors and Trainees**—Lela B. Costin & Jennette R. Gruener—Wayne State Univ. Press, 158 p., \$4.95. Study explores the tasks in child welfare which non-professional persons can be expected to perform, their proper training and standards.

**MAGNETOHYDRODYNAMICS OF LIQUID METALS**—Igor Mikhailovich Kirko, transl. from Russian—Consultants, 80 p., illus., paper, \$17.50. Deals with the physics and some of the problems of MHD, and the technical applications.

**MAN ADAPTING**—Rene Dubos—Yale Univ. Press, 527 p., illus., \$10. Scientist takes a look at mankind and presents the states of health or disease as expressions of the success or failure experienced by the organism in its effort to adapt to environmental challenges.

**THE MATHEMATICS OF SPACE EXPLORATION**—Myrl H. Ahrendt—Holt, 160 p., illus., \$2.95; paper, \$1.60. Enriches the student's understanding of the applications of mathematics to the problems of the physical universe and spacecraft.

**MATTER & METHOD**—R. Harro—Macmillan (St. Martins), 124 p., \$2.50. Attempts to show the involvement of conceptual change in scientific discovery by analyzing the contributions of scientists and philosophers of the 17th and 18th centuries.

**MEDICAL OPINION AND REVIEW**, Vol. I, No. 1—Richard L. Sigerson, Exec. Ed.—Medical Opinion & Review, 98 p., illus., paper, \$1.25; monthly, \$14 per year. A monthly magazine for physicians, devoted to the changing professional, social, political, economic and moral issues affecting the physician.

**MEDICAL SCHOOLS AND TEACHING HOSPITALS: Curriculum, Programming and Planning**—Lee Powers and Ray E. Trussell, Eds.—N.Y. Acad. of Sciences, Annals, Vol. 128, Art. 2, 263 p., illus., paper, \$5. Conference papers dealing with the improvement of the scope and quality of contemporary medical education, and the facilities dedicated to that task.

**METHODS OF FORENSIC SCIENCE**, Vol. IV—A. S. Curry, Ed.—Interscience Pubs., 369 p., illus., \$15.50. Authoritative description of methods for determining alcohol, examination of glass fragments, and other advanced techniques.

**THE MIND OF THE HORSE**—R. H. Smythe—Stephen Greene Press, 123 p., photographs, drawings, \$4.50. A veterinary surgeon discusses the sensory advantages and handicaps of horses and other indications of horse behavior.

**MODERN SKIING**—Norbert Gensch and August Julen, transl. from German by Peter Lickfold—Barnes & Noble, 117 p., photographs, diagrams, paper, \$1.50. Detailed discussion of old and new techniques, turning and swinging, jumping, short swings and wedging.

**THE MOLECULES OF NATURE: A Survey of the Biosynthesis and Chemistry of Natural Products**—James B. Hendrickson—Benjamin, W. A., 189 p., diagrams, \$7; paper, \$3.95. Text-monograph, deals with acetogenins, terpenes and alkaloids, at the advanced undergraduate level.

**MR. WIZARD'S SCIENCE SECRETS**—Don Herbert, rev. by Alexander Joseph, foreword by Wilbur

Beauchamp—Hawthorn Bks., 303 p., photographs, illus. by R. A. Barker and V. Berger, \$3.05. Describes magical tricks with simple materials and explains why the experiments work.

**NAKED-EYE ASTRONOMY**—Patrick Moore—Norton, 253 p., photographs, diagrams by W. MacCallum, \$6.50. Summarizes month by month what can be seen and studied in the sky without a telescope.

**NORTH AMERICAN LANDSCAPE**—F. J. Monkhouse and A. V. Hardy—Cambridge Univ. Press, 96 p., 95 photographs, \$3.75; paper, \$1.75. A short study of the regional sections of North America based on interpretation of photographs, mostly aerial.

**NUMBERS AND ARITHMETIC**—John H. Fujii—Blaisdell Pub. Co., 559 p., diagrams, \$8.50; Teacher's Manual, 90 p., paper, \$1.50. A pre-algebra review course.

**THE NUNAMITU ESKIMOS**: Hunters of Caribou—Nicholas J. Gubser—Yale Univ. Press, 384 p., map, \$8.50. An intimate and detailed study of a remnant group of inland Eskimos and the environmental factors essential to their survival.

**OPTICAL PUMPING**: An Introduction—Robert Bernheim—Benjamin, W. A., 272 p., diagrams, \$9; paper \$4.95. An introduction to optical pumping techniques and theory, suitable for physicists and chemists.

**THE PHASES OF SILICA**—Robert B. Sosman—Rutgers Univ. Press, 388 p., diagrams, \$10. Monograph treating the interrelations of the phases of silica to serve as an authoritative reference for the ceramist, the inorganic chemist and the mineralogist.

**THE PHILOSOPHY OF EXISTENTIALISM**—Jean Paul Sartre, foreword by Wade Baskin, Ed.—Philosophical Lib., 437 p., \$7.50. Collection of essays with bibliography.

**PHYSICAL CLIMATOLOGY**—William D. Sellers—Univ. of Chicago Press, 272 p., diagrams, \$7.50. Comprehensive text for advanced students with emphasis on the global energy and water balance regimes of the earth and its atmosphere.

**THE PLANET URANUS**: A History of Observation, Theory and Discovery—A. F. O'D. Alexander—Am. Elsevier Pub. Co., 316 p., illus., \$12.75. Compilation from primary texts of what is known about the planet and its five satellites.

**PLANT PHYSIOLOGY**: A Treatise, Vol. IVA: Metabolism: Organic Nutrition and Nitrogen Metabolism—F. C. Steward, Ed.—Academic Press, 731 p., illus., \$24. Thorough treatment of photosynthesis (carbon assimilation), micrometeorology and the physiology of plants.

**POLYESTERS**, Vol. I: Saturated Polymers—I. Goodman and J. A. Rhys—Am. Elsevier Pub. Co., 158 p., diagrams, \$7.75. Deals with linear polyesters, polyester synthesis and manufacture, fiber and film-forming materials, properties in relation to structure, copolyesters and polycarbonates.

**RADIOACTIVE WASTES**—Charles H. Fox—USAEAC, 46 p., illus., paper, single copies free upon request direct to USAEAC, P.O. Box 62, Oak Ridge, Tenn. 37831. Information about the management and processing of atomic waste materials.

**RADIOISOTOPES IN INDUSTRY**—Philip S. Baker and others—U.S. Atomic Energy Commission, 50 p., photographs, paper, single copies free upon request direct to USAEAC, P.O. Box 62, Oak Ridge, Tenn. Nontechnical discussion of radioisotopes, gauging, radiography and tracer uses.

**REACTIVITY OF SOLIDS**: Fifth International Symposium on the Reactivity of Solids, Munich, 1964—G. M. Schwab, Ed.—Elsevier Pub. Co., 694 p., illus., \$28.50. Discussion papers on phase transformations, luminescence oxides, decomposition, ferrites and synthesis.

**RESTORING THE QUALITY OF OUR ENVIRONMENT**: Report of the Environmental Pollution Panel—John W. Tukey, Chmn.—President's Science Advisory Committee (GPO), 317 p., maps, paper, \$1.25. Summaries, findings and recommendations concerning the problems of increased pollution of air, soils and waters.

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**SCIENTIFIC SOCIETIES IN THE UNITED STATES**—Ralph S. Bates—M.I.T. Press, 3rd ed., 326 p., \$8.75. Expanded, well-documented account of the history and influence, the development and function of American scientific societies, with new survey of the societies of the space age, chronology and enlarged bibliography.

**SEX AND THE COLLEGE STUDENT**—Committee on the College Student—Group for the Advancement of Psychiatry, 130 p., paper, \$1.50. A developmental perspective on sexual issues on the campus and some guidelines for administrative policy and understanding.

**THE SHAPE OF THE EARTH**—Jeanne Bendick—Rand McNally, 72 p., illus. by author, \$2.95. Clever diagrams help young readers understand basic concepts of astronomy, geology and climatology as they relate to the earth's shape.

**SOLID SEMICONDUCTORS**—A. K. Jonscher—Dover, 91 p., diagrams, paper, \$1.35. Monograph proceeds from simple concepts to treatment of more advanced topics such as energy bands near the surface, and magneto-optical phenomena.

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**STRUCTURAL TRANSFORMATION IN GLASSES AT HIGH TEMPERATURES**—N. A. Toropov and E. A. Porai-Koshits, Eds., transl. from Russian by E. B. Uvarov—Consultants, 223 p., illus., \$25. Deals with theoretical aspects, chemical differentiation, crystallization processes and the structure and dynamics of silicate and phosphate chains.

**SUCH AGREEABLE FRIENDS**—Bernhard Grzimek, transl. from German by Brian Battershaw—Hill & Wang, 224 p., 30 photographs, \$5. Zoo director relates experiences with animal friends based on thorough understanding of animal behavior.

**THROUGH THE MICROSCOPE**: Science Probes and Unseen World—M. D. Anderson—Natural Hist. Press, 156 p., photographs, drawings, \$4.95. Tells in nontechnical language the story of the growth of microbiology.

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**VACUUM SCIENCE AND ENGINEERING:** Properties of Gases at Low Pressure; Vacuum Measurements; Design and Operating Features of Vacuum Pumps and Systems—C. M. Van Atta—McGraw, 459 p., illus., \$15. Coherent presentation of vacuum technology.

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**WATER, PREY AND GAME BIRDS OF NORTH AMERICA**—Alexander Wetmore and others, foreword by Melville Bell Grosvenor—National Geographic Soc., 464 p., color photographs, paintings, \$11.95 direct to publisher, Dept. 280, Washington, D.C. 20036. Includes Bird Sounds of Marsh, Upland and Shore by Peter Paul Kellogg, on 33 1/3 rpm phonodiscs in pocket. Book describes 329 species.

**WILLING WALKERS:** The Story of Dogs for the Blind—Gordon Carter, introd. by Arthur J. Phillipson—Abelard-Schuman, 96 p., photographs, \$3.25. Tells boys and girls about the training and value of guide dogs.

## INVENTION

# Current U. S. Patents

➤ **THE U.S. INVENTOR** who made instant photographs without negatives has patented a controversial process for projecting colored pictures stereoscopically from two black and white films.

Dr. Edwin H. Land, founder and head of Polaroid Corporation, Cambridge, Mass., was awarded patent 3,221,599 and 3,221,600 for the process by the U.S. Patent Office in Washington, D.C.

Dr. Land uses black and white photographs in combination with various filters or light sources to produce images of scenes that appear to have the same colors as the original. However, only one or two colors as they are normally described are actually present.

Dr. Land's public demonstrations and scientific reports in the late 1950s on the method of two-color reproduction focused interest in color theory. Scientists were quick to note, however, that the possibilities and limitations of two-color photography had been known for some 40 years.

Two-color systems were widely used in the early days of motion pictures and a red-and-white system was patented in 1914.

A British mathematician, Nigel W. Daw, who has worked with Dr. Land, shared patent 3,221,600.

Covered in two other patents, 3,222,168 and 3,222,171, also awarded to Dr. Land, are methods for making positive prints and enlargements. The enlargements are obtained by projecting the image on a compressed material, such as rubber, then stretching the material after the image has been fixed.

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**WOMEN AND THE SCIENTIFIC PROFESSIONS:** The M.I.T. Symposium on American Women in Science and Engineering—Jacquelyn A. Mattfeld and Carol G. Van Aken, Eds.—M.I.T. Press, 250 p., \$6.95. Analyzes the reasons for the decline in the number of women in engineering and the sciences.

**THE WONDERFUL DOLPHINS:** Man's Oldest Underwater Playmates and Newest Scientific Discovery—John Bailey—Hawthorn Bks., 96 p., photographs, \$2.95. A rather anthropomorphic presentation of the smart mammal.

**YEAR 1966:** The Encyclopedia News Annual—Editors of News Front, foreword by Hubert H. Humphrey—Hammond, C. S., 256 p., 700 photographs, \$10. Reviews national and world affairs through mid-1965, includes research & development feature on probing the future.

**YOU AND RELATIVITY**—Mary Lou Clark—Childrens Press, 61 p., illus. by Bill Sanders, \$2.50. Attempts to help the young child visualize the concept of relativity.

**YOU CAN BUILD YOUR OWN SAILBOAT**—Donald Rouse and David Rouse, introd. by George O'Day—Harper, 87 p., photographs, diagrams, \$3.50. Handbook with simple, fully illustrated instructions by a father and his 12-year old son.

**YOUR CHILD IS A PERSON:** A Psychological Approach to Parenthood without Guilt—Stella Chess, Alexander Thomas and Herbert G. Birch—Viking Press, 213 p., \$4.75. Treats the years from birth through first grade, emphasizing the individuality of each child.

• Science News Letter, 88:407 December 25, 1965

## Device for VTOL

A helicopter pioneer, Frank N. Piasecki, head of Piasecki Aircraft Corporation, Philadelphia, earned patent 3,222,012 for a device to deflect the slip stream on vertical takeoff and landing aircraft, or VTOL's.

The device fits on the tail assembly. Its novel vane arrangement makes the transition from forward flight to hovering positions for landing smoother than without the vane device.

Earlier this year the helicopter builder was granted another patent for the flying platform called the "Aerial Jeep" by the U.S. Army.

## Other Interesting Patents

An improved process for analyzing chemicals by chromatography, in which the liquid is recirculated rather than run through only once, has been invented by Marcel J. E. Golay of Rumson, N.J. Rights to patent 3,220,164 were assigned to the Perkins Elmer Corporation, Norwalk, Conn.

The phonograph pickup cartridge now being used on record players marketed by General Electric Company earned patent 3,220,736 for William A. Cavagnaro of Decatur, Ill. Also assigned to General Electric, by Roy Dally of Warrensburg, Ill., were patents 3,220,737 and 3,220,738 covering the stylus used as a replacement.

Joseph T. McNaney of La Mesa, Calif., has devised an image converter that changes infrared radiation into visible light using optical fibers. His invention was awarded patent 3,222,520.

A package containing "chaff" that can be tossed from an airplane, thus dispersing the contents to make radar detection of the aircraft more difficult, earned patent 3,221,875. Elmer G. Paquette of Cambridge, Wis., assigned rights to the Government through the Secretary of the Air Force.

• Science News Letter, 88:410 December 25, 1965