

Books of the Week

For the editorial information of our readers, books received for review are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N.W., Washington 6, D. C.

AFRICA A TO Z: A Guide for Travelers, Armchair and Actual—Doubleday, 408 p., maps, photographs, \$4.95. Background information for the tourist of the new Africa, describing 56 countries, from Alexandria to Zululand, from Accra to Zanzibar.

ALTERNATING CURRENT ELECTRICITY—Alexander Efron—Rider, J. F., 96 p., illus., paper, 2.25. Advanced high-school or junior college level text.

AMERICAN DRUG INDEX 1961—Charles O. Wilson and Tony Everett Jones—Lippincott, 791 p., \$6.75. For identification and correlation of pharmaceuticals available to the medical and allied professions.

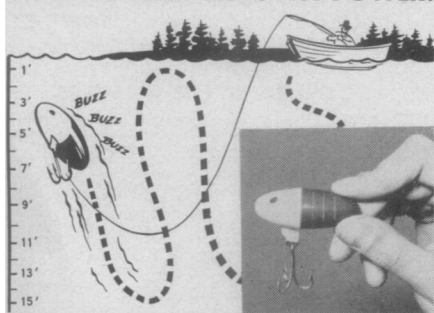
AMERICAN WELFARE—Alfred de Grazia and Ted Gurr—N. Y. Univ. Press, 470 p., \$6.50. National survey of welfare activity in the United States, from neighborhood, community, state, fraternal, labor union, and foundation, to federal government operations.

CASE STUDIES IN WORLD GEOGRAPHY: Occurrence and Economy Types—Richard M. Highsmith, Jr., Ed.—Prentice-Hall, 218 p., illus., paper, \$3.95. Detailed examples demonstrating aspects of geographical methodology.

THE CELL: Biochemistry, Physiology, Morphology. Vols. IV and V: Specialized Cells, Parts 1 and 2—Jean Brachet and Alfred E. Mirsky, Eds.—Academic, 511 p., 597 p., illus., \$18, \$20. Part 1 deals with viruses, visible organization of bacteria, protozoa, neuron, and muscle cells. Part 2, with gland, kidney and blood cells, bone and pigment cells, antibody formation, and cancer cells.

CHARLES DARWIN: The Founder of the Theory of Evolution and Natural Selection—Gerhard Wichler—Pergamon, 228 p., illus., \$6.50. Develops in detail the history of descent and selection, the basis and treatment of these ideas by Darwin, and certain aspects of Darwin's life.

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CHILDBIRTH WITH HYPNOSIS—William S. Kroger, M.D.; Jules Steinberg, Ed.—Doubleday, 216 p., illus., \$3.95. Gynecologist discusses the background, technique and advantages of hypnosis in obstetrics.

CONCEPTS OF MEDICINE: A Collection of Essays on Aspects of Medicine—Brandon Lush, Ed.—Pergamon, 286 p., \$8.50. Essays deal with such subjects as specialization, teachers of medicine, professional collaboration, the meaning of normal, and the selection, care and preservation of research scientists.

ESSENTIALS OF CHEMISTRY IN THE LABORATORY—Harper W. Frantz and Lloyd E. Malm—Freeman, 308 p., illus. by Roger Hayward, paper, \$3.30. Teachers edition with instruction manual.

FARADAY AS A DISCOVERER—John Tyndall, introd. and notes by Keith Gordon Irwin—Crowell, 213 p., illus., \$2.75. Memorial biographical sketch on Faraday's research activities and lectures, by the superintendent of the Royal Institution (1867-1887).

THE FINGER LAKE REGION: Its Origin and Nature—O. D. von Engeln—Cornell Univ. Press, 156 p., illus., \$4.50. Geologist presents the unique topographic and structural elements of the Central New York lakes region, in language understandable to the layman.

FLORA OF THE SANTA CRUZ MOUNTAINS OF CALIFORNIA: A Manual of the Vascular Plants—John Hunter Thomas—Stanford Univ. Press, 434 p., illus., \$8.50. Distributional notes, keys to families, covers about 1,800 species, subspecies and hybrids of ferns, conifers and flowering plants.

FROM DRY PLATES TO EKTACHROME FILM: A Story of Photographic Research—C. E. Kenneth Mees—Ziff-Davis, 312 p., illus., \$5.95. An account of the development of photographic science and of modern photographic technology by the founder of the Kodak Research Laboratories.

GARDEN SHRUBS AND TREES—S. G. Harrison, Key to Genera by R. D. Meikle—St. Martins, 318 p., illus. by Ann V. Webster and Ernest Petts, \$4.95. Handsomely illustrated, authoritative British garden guide.

HANDBOOK OF CALIFORNIA BIRDS—Vinson Brown and Henry G. Weston, Jr.—Naturegraph, 156 p., illus., \$4.50; paper, \$2.95. Describes 368 species, with color plates for quick identification.

THE HEROIC AGE OF AMERICAN INVENTION—

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Scientific & Lab Apparatus
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L. Sprague de Camp—Doubleday, 290 p., \$4.50. Tells of 32 American inventors who, between 1830 and World War I, in their own small laboratories accomplished feats that revolutionized our way of life.

ICELAND SUMMER: Adventures of a Bird Painter—George Miksch Sutton—Univ. of Okla. Press, 253 p., illus. by author, \$5.95. Ornithologists' story of adventures and observations while painting northern birdlife.

INTERIM AEROSPACE TERMINOLOGY REFERENCE—Dept. of the Air Force—OTS, 75 p., paper, \$2. Definitions of terms, from "ablating materials" to "Zuni" rocket.

AN INTERNATIONAL PEACE CORPS: The Promise and Problems—Samuel P. Hayes—Public Affairs Institute, 96 p., paper, \$1. Social scientist's study and recommendations for aims, organization and administration of the Peace Corps.

THE LIGHTNING BOOK—Peter E. Viemeister—Doubleday, 316 p., illus., \$4.50. Provides the general reader with a broad understanding of the more significant aspects of lightning.

THE MAGIC OF RAYS—Johannes Doggeli, transl. from German by Charles Fullman—Knopf, 264 p., photographs, \$5.75. Describes how different rays may be produced and tells non-scientific reader what practical applications are made of each group of rays.

MODERN INDOOR GARDENING: Including Window Boxes—G. F. Gardiner—Macmillan, 150 p., photographs, \$4.50. Gives details on care of plants suitable for indoor cultivation.

NATIONAL SECURITY IN THE NUCLEAR AGE: Basic Facts and Theories—Gordon B. Turner and Richard D. Challener, Eds.—Praeger, 293 p., \$6. Essays, both historical and theoretical, dealing basically with the "limited war" aspects of military preparedness.

THE NATURE OF VIOLENT STORMS—Louis J. Battan—Doubleday, 158 p., illus., paper, 95¢. Explains the physics of weather in terms of thunderstorms, tornadoes, hurricanes and cyclones. PSSC series for young adults.

PHYSICS for Engineers and Scientists—Richard G. Fowler and Donald I. Meyer—Allyn, 2nd ed., 553 p., illus., \$9.25. Introductory course, presenting formal calculus manipulations wherever needed.

PLUTONIA—Vladimir Obruchev, transl. from Russian by Fainna Solasko—Criterion Bks., 253 p., illus. by G. Nikolsky, \$3.95. Russian Academician-geologist's version of Jules Verne's "Journey to the Center of the Earth," science fiction designed to interest young people in the science of geology.

PRINCIPLES OF ELECTRICITY AND MAGNETISM—Emerson M. Pugh and Emerson W. Pugh—Addison-Wesley, 430 p., illus., \$9.50. Designed for two-semester course, using advanced mathematical methods.

ROCKETS, MISSILES AND SPACE TRAVEL—Willy Ley—Viking, rev. ed., 556 p., illus., \$6.75. Appendixes include material up to 1960.

SCIENCE IN SPACE—L. V. Berkner and Hugh Odishaw, Eds.—McGraw, 458 p., illus., \$7. Thorough coverage by outstanding authorities, analyzing the achievements and new scientific opportunities offered by space science. Directed to research workers, but also of interest to the general reader concerned about the national space effort.

SEQUENTIAL DECODING—John M. Wozencraft and Barney Reiffen—M.I.T. Press, 73 p., \$3.75. Monograph considers the electrical communication problem of coding from a probabilistic point of view.

SOURCES OF INFORMATION AND UNUSUAL SERVICES—Raphael Alexander, Ed.—Informational Directory Co., 6th ed., 84 p., paper, \$2.95.

Lists information and pamphlets available, arranged under 524 diverse subject headings.

TV TROUBLE ANALYSIS—Harry Milcaf—*Gernsback*, 224 p., illus., \$4.95; paper, \$3.20. For the technician.

A TAXONOMIC AND BIOLOGICAL STUDY OF THE GENUS *XYELA DALMAN* IN NORTH AMERICA—Donald J. Burdick—*Univ. of Calif. Press*, 71 p., illus., paper, \$1.50.

TEACH YOURSELF ATOMIC PHYSICS—J. M. Valentine—*Macmillan*, 192 p., illus., \$1.95. Tries to cover, with a minimum of mathematics, structure of the atom, and the behavior of electrons and of atomic nuclei.

TERNARY SYSTEMS: Introduction to the Theory of Three Component Systems—G. Masing, transl. from German by B. A. Rogers—*Dover*, 173 p., illus., paper, \$1.45. Unabridged reprint of 1944 edition.

THE THEORY OF EQUATIONS with an Introduction to the Theory of Binary Algebraic Forms, Vol. I—William Snow Burnside and Arthur William Panton—*Dover*, 7th ed., 286 p., paper, \$1.85. Reprint.

TOWARD MODERN SCIENCE, Vol. I: Studies in Ancient and Medieval Science. Vol. II: Studies in Renaissance Science—Robert Palter, Ed.—*Farrar, Straus*, 270 p., 216 p., \$5 each, \$9 per set; paper, \$1.95 each. Essays representing authoritative historical interpretations by leading modern scholars.

TRANSCENDENTAL & ALGEBRAIC NUMBERS—A. O. Gelfond, transl. from the first Russian edition by Leo F. Boron—*Dover*, 190 p., paper, \$1.75. Advanced study of the modern theory of transcendental numbers, with discussion of the fundamental methods of the theory.

TRANSMISSION OF INFORMATION: A Statistical Theory of Communications—Robert M. Fano—*Wiley*, 389 p., \$7.50. Graduate course, provides up-to-date treatment of coding theory, emphasizing formulations and mathematical techniques that have proved of greatest engineering significance.

TRIGONOMETRY: A Practical Course—Norman A. Crigon and Grace C. Martin—*Doubleday*, 250 p., \$3.95. A TutorText for self-instruction in the fundamental ideas of trigonometry.

TURNING POINTS IN PHYSICS—R. J. Blin-Stoyle and others; introd. by A. C. Crombie—*Harper*, 192 p., illus., paper, \$1.45. Reprint of 1959 edition.

THE UNIVERSE—Herbert S. Zim—*Morrow*, 64 p., illus. by G. Schrotter, \$2.75. Simple account of complex subject written for the young reader.

WEIGHT-STRENGTH ANALYSIS OF AIRCRAFT STRUCTURES—F. R. Shanley—*Dover*, 2d ed., 404 p., illus., paper, \$2.45. Includes bibliography on optimum design and on creep buckling.

WILDERNESS: The Discovery of a Continent of Wonder—Rutherford Platt—*Dodd*, 310 p., illus. by Frances Ellis, \$6. Takes the reader back 300 years into the American wilderness as seen by early explorers and naturalists.

WILLIAM CHANDLER BAGLEY: Stalwart Educator—I. L. Kandel—*Teachers College*, 131 p., photo., \$3.50. Account of the aims and work of one of the founders of Kappa Delta Pi.

WILLIAM JAMES/PSYCHOLOGY: The Briefer Course—Gordon Allport, Ed.—*Harper*, 343 p., paper, \$1.85. Reprint of 1892 text omitting dated chapters dealing with sensory processes.

WONDER WORKER: The Story of Electricity—Walter Buehr—*Morrow*, 96 p., illus., \$3. For boys and girls.

THE WONDERFUL WORLD OF ENGINEERING—David Jackson—*Garden City Bks.*, 94 p., illus., \$2.95. Picture-book style presentation of great engineering feats.

• Science News Letter, 79:252 April 22, 1961

INVENTION

Patents of the Week

A method of freezing foods at very low temperatures, safe replanting of trees and an instrument for stunning animals to be slaughtered have been patented.

➤ A METHOD OF PRESERVING foods by freezing them at unusually low temperatures has been patented.

Frozen foods packed by this method have been shipped from New York to such far off lands as Japan and Ceylon, arriving in perfect frigid condition as much as six weeks from the time they were frozen, inventor Willard Langdon Morrison of Lake Forest, Ill., claimed. British soldiers on maneuvers in Asia and Americans vacationing in Bermuda were fed with food preserved by the method awarded patent No. 2,978,336. Patent rights were assigned to Liquefreeze Company, Inc., New York City.

"Within the next 10 years, all frozen foods will be packed in this way," Mr. Morrison predicted.

The relatively simple process uses liquid nitrogen to freeze food. A nozzle, connected to a supply of liquid nitrogen, is poked into the food to be preserved. The liquid nitrogen, which boils at the frigid temperature of minus 320 degrees Fahrenheit, filters through the material, and evaporates when it touches the relatively warm food surfaces. The resulting nitrogen gas drives all the air from the food's airtight container, and the frozen food is then sealed.

It can then be transported by insulated trucks, freight cars or ships to points throughout the world. No compressor units or ice is needed when transporting, the inventor claimed. The prolific inventor

has more than 200 patents issued to him, many in the "cryogenic" or low temperature field.

Fully grown trees can be uprooted and replanted without killing the tree, inventor Lewis C. Pearce of Berea, Ohio, stated in patent No. 2,977,716, assigned to Pearce Development Company of Cleveland, Ohio. A deep trench is dug around the tree and a cable is dropped down, girdling part of the tree. The two ends, attached to a pulley system, are alternately tugged by motors, producing a cutting action that separates the tree core from the surrounding earth.

An electric instrument that stuns an animal before it is slaughtered in the packing houses won patent No. 2,977,627 for Roy E. Morse of New Brunswick, N. J., and Fred A. DiPasquale of Chicago, Ill. Patent rights were assigned to Reliable Packing Company, also in Chicago. The patented device can be applied without the animal being aware of the impending doom.

Charting the depths of ocean waters with an echo sounder parachuted from an airplane is envisioned in patent No. 2,978,668, assigned to the U. S. Navy by winners Franz N. D. Kurie of Alexandria, Va., and Louis A. Cartwright of San Diego, Calif. As soon as the instrument smacks the water's surface, radio signals recording the depth begin operating immediately. The signals are picked up by an observer at a remote station or in an airplane.

• Science News Letter, 79:253 April 22, 1961

MEDICINE

White Blood Cells Change

➤ THE BLOOD OF ADULTS contains white cells that can develop into other cells necessary for healthy tissue, Vitamin C is apparently necessary for this cell change.

White blood cells were placed in dime-sized boxes and planted under the skin of humans by Dr. Nicholas L. Petrakis, University of California Medical Center. The boxes, called diffusion chambers or micro-pore filters, had holes large enough to let the fluid part of the blood and some of its particles flow through it, but so small that the blood cells outside could not enter the box nor white cells inside leave it.

The researchers found that the white cells could change into three different kinds of cells. They formed scavenger cells that eat up foreign substances, fibroblasts that make the cell "backbone" and fat cells.

Malignant white cells of leukemia could not change. When placed in normal people and in leukemic patients, they continued to

produce more leukemic cells. Normal white cells from healthy people, however, could change even under the skin of leukemic patients.

White cells normally contain large amounts of vitamin C, which is essential for nutrition and healing wounds. White cells from guinea pigs that had been deprived of vitamin C were placed in boxes and buried under the skin of healthy guinea pigs. The cells became normal after several days.

White cells removed from healthy guinea pigs and boxed under the skin of animals with scurvy developed almost normally for five to seven days. Then they began to pile up in formless heaps within the box; they divided rapidly and became monstrously large. The guinea pigs were then put on diets rich in vitamin C. The white cells and the guinea pigs regained their health.

• Science News Letter, 79:253 April 22, 1961