

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.

AMERICA FACES THE NUCLEAR AGE: A Cooper Union Forum—Johnson E. Fairchild and David Landman, Eds.—*Sheridan House*, 156 p., \$5. Scientific, business and labor leaders discuss industry's relation to the technological revolution of the atomic age.

A BIOLOGY OF CRUSTACEA—James Green—*Quadrangle Bks*, 180 p., illus., \$5.75. Deals with those aspects of biology that concern the whole animal, such as feeding mechanisms, color change, growth and distribution.

CHEMICAL EVOLUTION: I. From Molecule to Microbe. II. The Origin of Life on Earth and Elsewhere—Melvin Calvin—*Univ. of Ore. Bks*, 52 p., illus., paper, \$1.50. In these Condon Lectures, Nobelist interprets results of research to the nonspecialist.

COLBY'S NATURE ADVENTURE—C. B. Colby—*Dial*, 184 p., illus. by author, \$3.50. Tells about various animals from the aardvark to the zebra.

COMMON SEASHORE LIFE OF SOUTHERN CALIFORNIA—Joel W. Hedgpeth—*Naturegraph*, 65 p., illus. by Sam Hinton, paper, \$1.75. Simple guide to the varied life forms along the beach.

CONCISE HISTORY OF LOGIC—Heinrich Scholz, transl. from German by Kurt F. Leidecker—*Philosophical Lib.*, 140 p., \$3.75. Translation of second edition published in 1959.

COSMOLOGY—H. Bondi—*Cambridge*, 2nd ed., 182 p., paper, \$2.45. Presents cosmology as a branch of physics, giving all the observational evidence and dealing with the major cosmological theories.

CURRENT MEDICAL RESEARCH, 1959-60—HMSO (Brit. Inform. Services), 54 p., illus., paper, 80¢. Brief reviews of important findings from Report to Parliament of the Medical Research Council.

DESERT WILDLIFE—Edmund C. Jaeger—*Stanford Univ. Press*, 308 p., illus., \$5.95. Depicts the lives of native animals of our Southwestern deserts, mammals, birds and reptiles.

THE DOCTOR WHO SAVED BABIES: Ignaz Philipp Semmelweis—Josephine Rich—Messner, 192 p., \$2.95. Juvenile biography.

MATHEMATICS FOR EVERYMAN

From Simple Numbers to the Calculus
by EGMONT COLERUS

Egmont Colerus is one of that all-too-small band of gifted teachers who know how to COMMUNICATE mathematics. Once caught in his "trap" there is no escape—one is compelled to go on at least as far as the calculus, with fascinating glimpses of mathematical history and philosophy along the way.

Little or no previous knowledge of mathematics is assumed. Every point is illustrated with an example. Such is Colerus' talent that long before the reader knows what is happening, he finds, amazingly, that he has acquired a ready grasp of the fundamentals of mathematical operations and mathematical reasoning. More, some of the magic, the greatness, the beauty of the science has somehow rubbed off onto him, to his permanent enrichment.

Illustrations throughout • **ORDER NOW!**

MATHEMATICS FOR EVERYMAN

by Egmont Colerus

\$3.95 Postfree • 10-Day Money-Back Guarantee

EMERSON BOOKS, Inc., Dept. 390-M
251 West 19th Street, New York 11

EARTH AND SPACE GUIDE FOR ELEMENTARY TEACHERS—Genevieve Bowen and Mary M. Blatt—*Nat. Aviation Educ. Council*, 82 p., illus., paper, \$1. Teaching material for primary and intermediate grades, developed by Pennsylvania Bureau of Curriculum Services.

EARTHQUAKE HISTORY OF THE UNITED STATES, Part II: Stronger Earthquakes of California and Western Nevada—H. O. Wood and N. H. Heck, rev. by R. A. Eppley—*GPO*, rev. ed., 55 p., maps, 40¢. Covers earthquakes from 1769 through 1960.

EDUCATORS GUIDE TO FREE SCIENCE MATERIALS—Mary Horkheimer Saterstrom, Ed.—*Educ. Progress Service*, 2nd ed., 315 p., paper, \$6.25. Revised, indexed, annotated listing of free films, filmstrips and other curriculum materials.

ELECTROCHEMISTRY OF MOLTEN AND SOLID ELECTROLYTES—M. V. Smirnov and others, transl. from Russian—*Consultants*, 106 p., illus., paper, \$17.50. Transactions of the first Institute of Electrochemistry of the USSR Academy of Sciences.

EXPERIMENTAL EYE RESEARCH, Vol. I, No. 1—Andre A. Blazs and H. Davson, Eds., in-Chief—*Academic Press*, 97 p., illus., paper, quarterly, annual subscription \$16. New international journal of original research on the anatomy, physiology, biochemistry and biophysics of the eye.

FLORA OF PERU—J. Francis Macbride—*Field Mus. of Nat. Hist.*, Vol. XIII, Part VC, No. 1, 105 p., paper, \$2.25.

FROM BARTER TO GOLD: The Story of Money—Solweig Paulson Russell—*Rand McNally*, 64 p., illus. by Cary, \$2.95. For beginning readers.

THE GIANT GOLDEN BOOK OF BIOLOGY: An Introduction to the Science of Life—Gerald Ames and Rose Wyler—*Golden Press*, 99 p., illus. by Charles Harper, \$3.95. Attractively presented highlights of biology designed to stimulate children's interest in science.

A GLOSSARY OF GEOGRAPHICAL TERMS—L. Dudley Stamp, Ed.—*Wiley*, 539 p., \$10. Prepared by committee of the British Assn. for the Advancement of Science, covers specialized terms of physical, social and economic geography, includes foreign words if used in geographical literature written in English.

GYRODYNAMICS AND ITS ENGINEERING APPLICATIONS—Ronald N. Arnold and Leonard Maunder—*Academic Press*, 484 p., diagrams, \$14. Presents basic theory and analytical study of gyro dynamics in machines and in modern gyroscopic devices.

HANDBOOK OF TEXTILE FIBRES—J. Gordon Cook—*Morrow Pub. Co.*, 2nd ed., 428 p., illus., \$4.50. Up-to-date information on natural and synthetic fibres in use throughout the world today, including the latest polypropylene type.

THE HIGH SCHOOL SENIORS: Two Years Later—Hugh Allen, Jr.—*Teachers College*, 58 p., paper, \$1.50. Follow-up study of science-re-

lated attitudes and career choices of New Jersey high school graduates.

THE INCAS: The Royal Commentaries of the Inca Garcilaso de la Vega, 1539-1616—Alain Gheerbrant, transl. from annotated French edition by Maria Jolas—*Orion Press*, 433 p., illus., \$12.50. The story of the grandeur and tragedy of the most powerful empire of pre-Columbian America.

INTERNATIONAL REVIEW OF NEUROBIOLOGY, Vol. 3—Carl C. Pfeiffer and John R. Smythies, Eds.—*Academic Press*, 402 p., illus., \$12. Includes research on epilepsy, body fluid indoles in mental illness, and microelectrode studies of the cerebral cortex.

INTRODUCTION TO DIFFERENCE EQUATIONS with illustrative examples from Economics, Psychology and Sociology—Samuel Goldberg—*Science Editions (Basic Bks.)*, 260 p., paper, \$1.95. First published in 1958.

MASS, LENGTH AND TIME—Norman Feather—*Penguin Bks*, 358 p., diagrams, paper, \$1.45. Written for the beginning specialist in physics, book covers the fundamentals of mechanics and properties of matter.

MATHEMATICS OF MODERN ENGINEERING, Vols. I and II—Ernest G. Keller and Robert E. Doherty—*Dover*, 314 p., 309 p., illus., paper, \$1.65 each. Unabridged reprint shows how physical and mechanical phenomena are reduced to mathematical descriptions, and demonstrates how mathematical systems are analyzed and manipulated.

MAY MAN PREVAIL: An Inquiry into the Facts and Fictions of Foreign Policy—Erich Fromm—*Doubleday*, 252 p., \$4.50. Psychoanalyst analyzes the elements of the present East-West threat and fear, and suggests peaceful solutions.

MECHANISMS IN BIOLOGICAL COMPETITION—John L. Harper and others—*Academic Press*, 365 p., illus., \$10. Papers read at 15th Symposium of the Society for Experimental Biology, subjects range from plant competition through competition among insect parasitoids to competition for light in crops and pastures.

MEDICAL ABBREVIATIONS: A Cross-Reference Dictionary—Special Studies Committee of the Michigan Occupational Therapy Association—*Occupational Therapy*, 241 p., paper, \$2. Reference aid to abbreviations and symbols pertinent to medicine and allied fields.

THE NEW AMERICAN GUIDE TO SCHOLARSHIPS, FELLOWSHIPS & LOANS—John Bradley, Ed. with Anne Nieuwenhuis—*New Am. Lib.*, 235 p., paper, 75¢. Up-to-date facts and figures on financial assistance available to U. S. college students.

OCCUPATIONAL OUTLOOK HANDBOOK, 1961: Employment Information on Major Occupations for Use in Guidance—Bureau of Labor Statistics—*GPO*, 5th ed., 830 p., illus., paper, \$4.50. To assist young people and counselors, handbook assesses future manpower needs in more than 650 occupations.

THE ORGANIZATION OF BEHAVIOR: A Neuropsychological Theory—D. O. Hebb—*Science Editions (Basic Bks.)*, 335 p., diagrams, paper, \$1.95. Reprint of 1949 edition.

THE ORION BOOK OF THE WRITTEN WORD—Etiemble, transl. from French—*Orion Press*, 114 p., illus., \$6.95. Handsomely illustrated volume on the origins and development of script by French philologist.

THE ORION BOOK OF VOLCANOES—Haroun Tazieff, transl. from French—*Orion Press*, 104 p., illus., \$6.95. Geologist discusses the forces behind volcanic eruptions, for the layman, amply illustrated.

PARTNERS IN SCIENCE: The Story of the International Geophysical Year—Frank Ross, Jr.—*Lothrop*, 192 p., illus., \$3. Describes the cooperative research effort of the IGY, the



GEM CARBIDE SCRIBER \$1.50 p.p.

Tipped by the hardest metal made by man. Stays sharp 50 times longer than other metals. GEM CARBIDE SCRIBER pencils can engrave on hardened steels, metals, glass, gems, ceramics, plastics, etc. USED BY: jewelers, artists, craftsmen, designers, die cutters, glass cutters, machine shops, laboratories, model builders. FREE pocket clip. FREE instructions.

GENUINE DIAMOND SCRIBER \$4.00
HARRY ROSS Scientific & Lab Apparatus
61-L Reade St., N.Y. 7, N.Y.

instruments used, and the wealth of scientific information gained.

PLANT EXPLORER: David Fairchild—Beryl Williams and Samuel Epstein—*Messner*, 192 p., \$2.95. Juvenile biography.

RANDOM VARIABLES AND PROBABILITY DISTRIBUTIONS—Harald Cramer—*Cambridge*, 2nd ed., 119 p., paper, \$4. Reprint of 1937 edition with minor corrections.

THE REVOLUTION IN SCHOOL MATHEMATICS: A Challenge for Administrators and Teachers—*Nat. Council of Teachers of Mathematics*, 90 p., paper, single copies free upon request direct to publisher, 1201-16th St., NW, Washington 6, D. C. Report of Regional Orientation Conferences in Mathematics.

SEEING THE EARTH FROM SPACE: What the Man-Made Moons Tell Us—Irving Adler—*Day*, rev. ed., 160 p., illus. by Ruth Adler, \$3.75. Tells young people about the scientific work accomplished by artificial satellites.

SOCIAL JUDGMENT: Assimilation and Contrast Effects in Communication and Attitude Change—Muzafer Sherif and Carl I. Hovland—*Yale Univ. Press*, 218 p., \$6. Relates findings from the psychophysical laboratory to the process of attitude modification and opinion change.

SOVIET CHEMISTRY TODAY—V. I. Spitsyn—*NAS-NRC*, 302 p., diagrams, paper, \$2.50. Series of six lectures presented in the U.S. in the inter-Academy exchange program.

SPACE, TIME AND CREATION: Philosophical Aspects of Scientific Cosmology—Milton K. Munitz—*Collier Bks*, 156 p., paper, 95¢. Re-examines the nature of man's knowledge about the universe, from myth to science.

THERAPEUTIC COMMUNICATION — Jurgen Ruesch—*Norton*, 480 p., \$6.50. For persons interested in rehabilitation work. Written in non-technical language.

A TREATISE ON HYDRODYNAMICS WITH NUMEROUS EXAMPLES, Vol. I and II—A. B. Basset—*Dover*, 264 p., 328 p., paper, \$1.75 each. Reprint of work on mathematical theory of hydrodynamics, first published in 1888.

VALENCY AND MOLECULAR STRUCTURE—E. Cartmell and G. W. A. Fowles, Eds.—*Academic Press*, 294 p., illus., \$7. Revised and expanded with major changes in chapters on complex compounds and structural chemistry of non-transitional elements.

WATER: Miracle of Nature—Thomson King—*Collier Bks*, 221 p., paper, 95¢. Reprint, story of what water, in all its forms, has done to life on earth, and what man has done with and to water.

WHAT IS SCIENCE?—James R. Newman, Ed.—*Wash. Square Press*, 533 p., diagrams, paper, 90¢. Reprint, 12 essays by scientists and philosophers on the nature of scientific knowledge and on scientific method.

• *Science News Letter*, 80:404 December 16, 1961

narrow metal strips. Each of these extremely thin strips is wrapped over the other in the form of a helix going in three different directions. This form of winding gives the tube its extreme maneuverability.

For a method of keeping an off-shore well drilling ship in position above the well being bored, William R. Postlewaite of Menlo Park, Calif., was awarded patent No. 3,010,214. Rights were assigned to California Research Corporation, San Francisco, Calif.

In drilling wells beneath ocean waters, wind and tidal currents often cause such stresses on the drill string that failure occurs. To reduce the chances of such failures, Mr. Postlewaite devised an instrument, to be lowered along the exterior of the submerged drill string, that tells how much the drill string deviates from the vertical. The floating vessel containing the drilling rig can then be moved so as to eliminate the curvature of the drill string.

• *Science News Letter*, 80:405 December 16, 1961

PUBLIC HEALTH

Every Major Building Has Shelter Possibility

➤ NEARLY EVERY MAJOR building offers some possibility of shelter against the effects of warfare in the nuclear age, a Building Research Institute conference was told in Washington, D.C.

The shelter use can frequently be developed "quite economically" without any adverse effects on the normal use of the building. However, substantial economies and better protection result when plans for a shelter area are incorporated in the architect's original building design.

The requirements for a shelter that can withstand blast effects are much more of a problem for the architect than are the shelter requirements for protecting only from fallout, Lyndon Welch, an architect of Eberle M. Smith Associates, Inc., Detroit, Mich., said.

Even where budget requirements do not permit construction of a blast shelter, he reported, it is good practice to design fallout shelters with the fewest and smallest possible openings in the exterior protective wall. If the lengths of interior spans and other structural details are also set so as to develop maximum resistance to blast forces, the blast closures can then be added later without too much difficulty.

Mr. Welch's conclusions are based on studies of shelters in schools, multi-story office buildings and multi-story apartment buildings performed for the Office of Civil and Defense Mobilization by his Detroit firm. The studies were primarily concerned with radiation protection, although all structures were analyzed for inherent resistance to blast.

For purposes of the studies, it was assumed that normal water supply, power and sanitary systems would be disrupted and not available for use. Mr. Welch urged development of a well on the shelter site where possible.

• *Science News Letter*, 80:405 December 16, 1961

INVENTION

Patents of the Week

➤ A METHOD to date objects 100,000 or more years old and to establish the authenticity of such ancient artifacts has been patented.

The dating method was developed by Drs. Irving Friedman and Robert L. Smith of the U.S. Geological Survey, who assigned rights to patent No. 3,010,208 to the Government. It depends on the discovery that during long periods of time obsidian, or volcanic glass, absorbs water from the atmosphere and forms an ever-increasing but extremely thin outer layer.

The thickness of this very narrow layer can be measured with a powerful microscope. To determine how long the obsidian had taken to absorb the moisture, Drs. Smith and Friedman measured the moisture layer in objects previously dated by radiocarbon or other methods. The results were then used to establish a yardstick for dating obsidian objects by measuring the thickness of their moisture layer.

Obsidian, or volcanic glass, ranges in color from almost clear to jet black. It was widely used by ancient man to make tools, utensils, weapons and ornaments. Obsidian holds a good edge and is excellently suited for knife blades and arrowheads.

In working with man-made obsidian objects that have some of the original surface intact, it is possible to measure both how old the glass is, if conditions under which it was formed are known, and how long ago man worked the surface.

Since the dating method is applied directly to the artifact, it allows detection of fraudulent objects. The difficulty of such detection prior to this invention probably encouraged

the manufacture of fraudulent artifacts, Drs. Smith and Friedman believe.

Dr. Friedman told *SCIENCE SERVICE* that the dating method was now being tested to see if it could be used to determine when glacial moraines and river terraces containing volcanic glass were formed. He said a major problem of the method is that some soils seem to remove the moisture layer, and investigations are now being made to determine what soils do so and under what conditions.

A flexible, light-transmitting tube to be used for examining the human stomach or intestines received patent No. 3,010,357. It was awarded to Dr. Basil I. Hirschowitz of Ann Arbor, Mich., a physician, who assigned one-third rights each to the instrument's co-developers, physicists Dr. C. Wilbur Peters and Lawrence E. Curtiss.

The snake-like tube, which can be three feet or more in length and one-half an inch or less in diameter, contains many thousands of tiny glass fibers. At the base of the device a series of mirror reflectors send the image back up the tube. A thin electric wire runs down the side of the instrument and carries power to a small floodlight that lights up the stomach.

The highly flexible device can be inserted through the open mouth of a patient and through the stomach and into the duodenum, where approximately 75% of peptic ulcers occur. Since the duodenum can actually be seen by the physician, immediate diagnosis can be made, without resorting to X-rays.

The outside of the tube is surrounded with a metallic shell formed of three long,