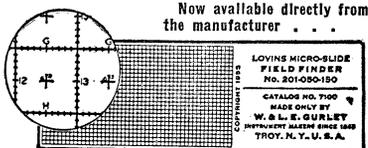


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AMINO ACID CONTENT OF FOODS—M. L. Orr and B. K. Watt—*Govt. Printing Office, U.S.D.A.* Home Economics Research Report No. 4, 82 p., paper, 45¢. The quality of a protein is related to the kinds and quantities of amino acids it contains.

ATOMIC ENERGY IN AGRICULTURE—William E. Dick—*Philosophical Lib.*, 150 p., illus., \$6. Atomic energy can be used to destroy and control pests and diseases, and may be used for wholesale preservation of foods and pharmaceutical compounds.

ATOMIC ENERGY IN MEDICINE—K. E. Halnan—*Philosophical Lib.*, 157 p., illus., \$6. An introduction to a new field of science.

ATOMS, ENERGY AND MACHINES—Jack McCormick—*Creative Educ.* in cooperation with the Am. Mus. of Natural Hist., 224 p., illus., \$4.95. Directed to the general reader, this book gives insight into everyday physics.

BASIC CONCEPTS OF PHYSICS: The Five Great Theories—Chalmers William Sherwin—*Dryden*, Preliminary ed., 281 p., illus., paper, \$4.74. Covering classical mechanics, electricity, quantum mechanics, statistical mechanics and relativity.

BETTER REPORT WRITING—Willis H. Waldo—*Reinhold*, 231 p., illus., \$4.75. A small reference guide on preparation of technical literature for the modern scientist.

CALCULUS—Edward S. Smith, Meyer Salkover and Howard K. Justice—*Wiley*, 2nd ed., 520 p., illus., \$6.50. A revised edition of a first course textbook originally published in 1938.

CAMERA LENSES: A Handbook to Lenses and Accessories for Amateur and Professional Photographers—Arthur Lockett, rev. by H. W. Lee—*Pitman*, 4th ed., 146 p., illus., \$3.25.

CHECK-LIST OF NORTH AMERICAN BIRDS—Prepared by a Committee of the American Ornithologists' Union, Alexander Wetmore, Chairman—*Am. Ornithologists' Union*, 5th ed., 691 p., \$8. Covers the progress of a quarter century in North American ornithology.

THE CHEMICAL DYNAMICS OF BONE MINERAL—William F. Neuman and Margaret W. Neuman—*Univ. of Chicago Press*, 209 p., illus., \$5. The purpose of this monograph, according to the authors, is to stimulate interest and research.

CHRONIC ILLNESS IN A LARGE CITY: The Baltimore Study—Commission on Chronic Illness, Dean W. Roberts, Dir.—*Harvard Univ. Press* for the Commonwealth Fund, 620 p., \$8. Fourth in a series of exhaustive studies of chronic illness in the U. S.

THE DAWN OF LIFE—J. H. Rush—*Hanover House*, 262 p., \$4.50. The physicist-astronomer explains here in readable fashion the theory how life can develop out of non-living material wherever suitable conditions prevail for a sufficient time.

DISCOVERY OF THE POLES—Quintin Riley and Richard Taylor—*Puffin Picture Book (Penguin)*, 30 p., illus., paper, 85¢. For children and grownups, full of interesting facts about Arctic and Antarctic worlds.

THE EARTH'S STORY—Gerald Ames and Rose Wyler—*Creative Educ.* in cooperation with the Am. Mus. of Natural Hist., 222 p., illus., \$4.95. More photographs than text, this book gives the lively story of the ever-changing land and its inhabitants.

ECONOMICS OF ATOMIC ENERGY—Mary Goldring—*Philosophical Lib.*, 179 p., illus., \$6. On the impact of nuclear power as an industrial force in Great Britain.

ELECTRICAL DISCHARGES IN GASES—F. M. Penning, translated from Dutch by A. F. Monypenny—*Macmillan*, 75 p., illus., \$3. Concise synopsis of a field of physics of importance to the engineer.

EMULSIONS: Theory and Practice—Paul Becher—*Reinhold*, 382 p., illus., \$12.50. Gives particular attention to the developments in this field in the last fifteen years.

EXPERIMENTAL LIGHT AIRCRAFT AND MIDGET RACERS—John Underwood and John Caler—*Aero Publishers*, 72 p., illus., paper, \$2.50. Includes foreign airplanes.

FALL FLOWERS—Verne N. Rockcastle—*N. Y. State College of Agric.*, Cornell Rural School Leaflet Vol. 51, No. 2, 32 p., illus., paper, 20¢. Describes for young people the make-up of flowers found in the fall of the year.

FORTY-THIRD ANNUAL REPORT OF THE NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS 1957: Administrative Report Without Technical Reports—James H. Doolittle, Chairman—*Govt. Printing Office*, 80 p., illus., paper, 75¢.

Fossil Men—Marcellin Boule and Henri V. Vallois, translated from the French by Michael Bullock—*Dryden*, 535 p., illus., \$9.50. Summarizes man's knowledge of his origin and the earliest history of his kind.

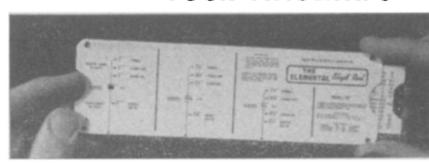
GEOGRAPHY IN THE TWENTIETH CENTURY: A Study of Growth, Fields, Techniques, Aims and Trends—Griffith Taylor, Ed.—*Philosophical Lib.*, 3rd ed., 674 p., illus., \$10. The editor describes geography as "the discussion of the causes of patterns of distribution."

HUMAN ENGINEERING—Ernest J. McCormick—*McGraw-Hill*, 467 p., illus., \$8. An introductory text on the design of equipment and the adaptation of work environments for optimum human use.

AN ILLUSTRATED GUIDE TO COMMON ROCKS AND ROCK FORMING MINERALS—David Allan and Vinson Brown—*Naturegraph*, 32 p., illus., with drawings and color photographs, paper, 35¢. Gives basic ground work for understanding and identifying common rocks.

THE INVERTEBRATA: A Manual for the Use of Students—L. A. Borradaile and F. A. Potts, with chapters by L. E. S. Eastham and J. T. Saunders, rev. by G. A. Kerkut—*Cambridge Univ. Press*, 3rd ed., 795 p., illus., \$8.50. A text book brought up-to-date.

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LABORATORY DIRECTIONS IN GENERAL ZOOLOGY—Mary J. Guthrie and John M. Anderson—*Wiley*, 233 p., illus., paper, \$3.50.

THE LIFE OF MAMMALS—J. Z. Young—*Oxford Univ. Press*, 820 p., illus., \$10. This text-book treats the subject conventionally, yet shows how new approaches can be incorporated.

MARCH'S THESAURUS-DICTIONARY—Francis Andrew March and Francis A. March, Jr., introduction by Clarence L. Barnhart. Norman Cousins, Ed., New Supplement by R. A. Goodwin—*Hanover House*, 1240 p., \$9.75, thumb indexed \$10.75. This new edition replaces March's which went out of print during World War II.

NEURITIS, SENSORY NEURITIS, NEURALGIA: A Clinical Study With Review of the Literature—Robert Wartenberg, foreword by Wilfred Harris—*Oxford Univ. Press*, 444 p., illus., \$8.50. A clinical work by a practicing neurologist.

NUCLEAR MASSES AND THEIR DETERMINATION: Proceedings of the Conference Held in "Max-Planck-Institut für Chemie"—H. Hintenberger, Ed.—*Pergamon*, 267 p., illus., \$14. This conference was held at Mainz in July 1956.

OFFERINGS AND ENROLLMENTS IN SCIENCE AND MATHEMATICS IN PUBLIC HIGH SCHOOLS—Kenneth E. Brown and Ellsworth S. Obourn, assisted by Marguerite Klutz—*Govt. Printing Office*, U. S. Dept. of Health, Education and Welfare, Pamphlet No. 120, 44 p., illus., paper, 25¢.

POLYURETHANES—Bernard A. Dombrow—*Reinhold*, 176 p., illus., \$4.50. A semi-technical treatise of the properties and correct application of this family of plastics.

THE PSYCHOLOGY OF PERSONAL ADJUSTMENT—Roger W. Heyns—*Dryden*, 548 p., \$4.90. An attempt to apply the results of research in psychology, sociology and cultural anthropology to our problems of adjusting in a complex world.

SATELLITES AND SPACEFLIGHT—Eric Burgess—*Macmillan*, 159 p., illus., \$3.95. Shows how the earth satellite program grew out of developments in military rockets and how it can lead to interplanetary probe missiles.

THE SPECTRUM OF ATOMIC HYDROGEN—G. W. Series—*Oxford Univ. Press*, 88 p., illus., paper, \$2. Since hydrogen is the simplest kind of atom, the interpretation of its spectrum has been of the greatest interest to theorists.

TREATISE ON MARINE ECOLOGY AND PALEO-ECOLOGY: Vol. 1, Ecology—Joel W. Hedgpeth, Ed.—*Geological Soc. of Am. Memoir* 67, 1296 p., illus., maps, \$12.50.

THE TREE OF MATHEMATICS—Glenn James, Ed.—*Digest Press*, 403 p., illus., \$5.50. Reference book for anyone working in mathematics or related fields. Contributions by well-known mathematicians.

THE WAY OF THE WEATHER—Jerome Spar—*Creative Educ.* in cooperation with the Am. Mus. of Natural Hist., 224 p., illus., \$4.95. Large format, many photographs and charts in color with clear text.

THE WONDER OF WATER—*Soil Conservation Society of America*, 15 p., illus., paper, 20¢. The story of water conservation in comic-book style.

THE WORLD BENEATH THE WAVES—Gilbert Doukan, translated by A. and R. M. Case—*De Graff*, 356 p., illus., \$6. Reports on the state of the world beneath the surface of the water which covers four-fifths of the world's surface.

THE WORLD IN SPACE: The Story of the International Geophysical Year—Alexander Marshack—*Nelson*, 176 p., illus., \$4.95. A popularly written history of geophysics with reference to the tasks of the IGY.

THE WORLD OF THE INCA—Bertrand Flornoy, translated by Winifred Bradford—*Doubleday*, 231 p., illus., paper, 95¢. Goes deep into the origins of Inca civilization.

Science News Letter, February 15, 1958

GEOPHYSICS

Satellite Recovery Seen

► **RECOVERING** artificial satellites with their valuable records of conditions at the fringes of earth's atmosphere was foreseen as one result of studies in the new science of "magneto-aerodynamics."

Dr. William R. Sears, director of the graduate school of engineering at Cornell University, told a National Academy of Sciences meeting in Washington how research in this science may provide means for the safe return of Explorer and other space vehicles. Further research in this field may also lead to a tremendous increase in the thrust of conventional rocket motors.

Studies in magneto-aerodynamics deal with the partial ionization of air that occurs when objects pass through it at extremely high speeds, particularly the re-entry of rockets and satellites into the earth's atmosphere. As friction and compression heat the air ahead of the object to very high temperatures, the atoms composing air release free electrons, thus making the air electrically conducting.

Research at Cornell, Dr. Sears reported, shows this conductivity can be further increased by "seeding" the air near a high-speed body with small amounts of substances that ionize easily, such as sodium or potassium. At speeds 10 to 12 times that of sound, which is about 1,000 feet per second at sea level, air conductivity several times

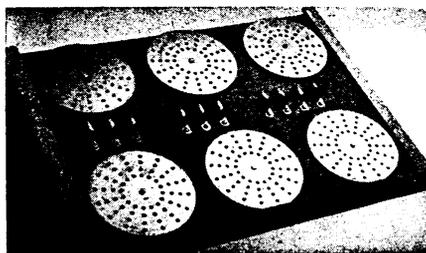
better than salt water can be thus obtained, Richard J. Rosa has calculated.

"If this technique can be worked out, and if magnetic field strengths comparable to those of permanent magnets can be provided in flight," Dr. Sears said, "electric currents will be set up by the motion of the air, and significant forces can be applied directly to the airstream."

For a satellite re-entering the earth's atmosphere at high speed, the electromagnetic relationships will resemble those of an electric generator. The hot, seeded air, being electrically conductive, takes the place of windings of the generator armature, while the magnetic field emanating from the satellite will supplant the generator's fixed field. As the satellite plunges into the atmosphere the moving of this hot-air "armature" across the satellite's magnetic field will generate an electric current, thus slowing down air flowing past it.

Concerning the possibilities of increasing a rocket's thrust, Dr. Sears said, "this will require the use of electric fields as well as magnetic, for now the analogy is not with a generator but an electric motor." He said the combination of a current and a magnetic field would give rise to a force that can be directed to accelerate the airflow rearward from the rocket.

Science News Letter, February 15, 1958



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