

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.

ADVANCED EUCLIDEAN GEOMETRY: An Elementary Treatise on the Geometry of the Triangle and the Circle—Roger A. Johnson—*Dover*, 319 p., illus., paper, \$1.65. Formerly titled *Modern Geometry*, published in 1929.

ANIMAL SOUNDS AND COMMUNICATION: W. E. Lanyon and W. N. Tavolga, Eds.—*AIBS*, 443 p., illus., 12 inch long playing record, \$9.50. Proceedings of a symposium which combined studies in general animal behavior and investigations in biological acoustics. Accompanying record, edited by P. P. Kellog, demonstrates sounds of birds, chickens, insects, fishes and frogs.

ANTARCTIC METEOROLOGY: Proceedings of the Symposium Held in Melbourne, February 1959—Australian Bureau of Meteorology—*Pergamon*, 483 p., illus., \$17.50. Collection of facts and ideas available at the conclusion of the IGY.

BIBLICAL ARCHAEOLOGY:—M. Du Buit, transl. from French by Kathleen Pond—*Hawthorn Bks*, 110 p., illus., \$3.50. Deals entirely with Palestinian or Syro-Phoenician material, shows how authenticated results of excavations illustrate the life and customs of the ancient people of Israel.

BIONOMICS, SYSTEMATICS, AND PHYLOGENY OF *Lytta*, A GENUS OF BLISTER BEETLES (COLEOPTERA, MEOLOIDAE):—Richard B. Selander—*Univ. of Ill. Press*, 295 p., illus., \$5.50; paper, \$4.50. Study devoted in its major part to the species of *Lytta* of North America.

BOOLEAN ALGEBRA AND ITS APPLICATIONS:—J. Eldon Whitesitt—*Addison-Wesley*, 182 p., illus., \$6.75. For students of mathematics and engineering concerned with computer design, control systems or electronic circuitry.

CARE AND DISEASES OF THE RESEARCH MONKEY:—Robert M. Sauer, Ed.—*N.Y. Acad. of Sciences, Annals*, Vol. 85, Art. 3, 257 p., illus., paper \$3.50. Discusses such items as comparison of natural environment with observations in captivity, problems of transportation, care of a large colony, and estimating the age of monkeys.

CHALLENGE OF PHYSICAL RESEARCH—A Primer of Parapsychology:—Gardner Murphy with Laura

A. Dale—*Harper*, 297 p., illus., \$6. Purpose of this volume is to give non-specialist a perspective of the nature of the assertions made about paranormal phenomena.

COBALT: Its Chemistry, Metallurgy and Uses:—Roland S. Young, Ed.—*Reinhold*, 424 p., illus., \$15. Leading authorities discuss the occurrence, extractive metallurgy, properties and compounds, and the industrial applications of cobalt.

CONTEMPORARY PROBLEMS OF METALLURGY:—A. M. Samarin, Ed., transl. from Russian by Bruce Chalmers and Gordon McKay—*Consultants Bur.*, 530 p., illus., \$16. New Russian developments in the metallurgy of iron and steel, nonferrous metals, and the science of metals.

A DICTIONARY OF SCIENTIFIC TERMS: Pronunciation, Derivation and Definition of Terms in Biology, Botany, Zoology, Anatomy, Cytology, Genetics, Embryology, Physiology—I. F. Henderson and W. D. Henderson; 7th ed. by J. H. Kenneth—*Van Nostrand*, 7th ed., 595 p., \$12.50. Deals with more than 15,500 terms, from *abactinal* to *zymotic*.

DISCOVERY AND EXPLORATION: An Atlas-History of Man's Wanderings:—Frank Debenham, introd. by Edward Shackleton—*Doubleday*, 272 p., illus., \$9.95. Handsomely illustrated volume, rich in maps, reviews explorations from Stone Age to IGY, features appendices with concise information for reference.

ELEMENTS OF PROJECTIVE GEOMETRY:—Luigi Cremona, transl. from Italian by Charles Leudesdorf—*Dover*, 3d ed., 302 p., illus., paper, \$1.75. Comprehensive coverage of the subject, constructed on the basis of Euclidean geometry, with detailed proofs of its fundamental principles.

THE ETRUSCANS IN THE ANCIENT WORLD:—Otto-Wilhelm von Vacano, transl. by Sheila Ann Ogilvie—*St. Martins*, 195 p., illus., \$6.50. Authoritative story of the culture of the Etruscans which unfolded and flowered in the great plain of Italy between Rome and Florence from the 8th to the 1st century B.C.

FRACTURE SYSTEMS AND TECTONIC ELEMENTS OF THE COLORADO PLATEAU:—Vincent C. Kelley and N. James Clinton—*Univ. of New Mexico Press*, 104 p., maps, 25 plates, \$2.75. An area of 90,000 square miles was mapped from aerial photographs for this study.

HOW TO USE THE ARITHMETIC YOU KNOW:—Geoffrey Mott-Smith—*Sterling*, 128 p., \$2.95. Shows how reader can use arithmetic daily to figure ratio and proportion, profit and loss, keep accounts and calculate chances.

INSTRUMENTATION AND HIGH-SPEED PHOTOGRAPHY, Vol. I, Series II:—Harold E. Edgerton and others—*SMPTE*, 187 p., illus., paper, \$4. Papers reprinted from *SMPTE Journal*, on light sources, cameras, cathode-ray tubes, very high-speed systems, and missile photography.

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INTRODUCTION TO SPACE AGE ASTRONOMY:—John M. Cavanaugh—*Educ. Services*, 166 p., illus. by author, star map, paper, \$2.75. Popularly explains and illustrates essential features of astronomy without mathematics, with workbook supplement.

INTRODUCTION TO THE STATISTICAL DYNAMICS OF AUTOMATIC CONTROL SYSTEMS:—V. V. Solodovnikov, transl. from Russian, John B. Thomas and Lofti A. Zadeh, Eds.—*Dover*, 307 p., paper, \$2.25. Unabridged translation of first comprehensive treatment of the subject published in Russia in 1952.

LINEAR GRAPHS AND ELECTRICAL NETWORKS:—Sundaram Seshu and Myril B. Reed—*Addison-Wesley*, 315 p., illus., \$9.75. Provides mathematical foundation for electric network theory by introducing the electrical engineer to the theory of linear graphs, and demonstrating how these methods solve network problems.

A MANUAL OF COMMON BEETLES OF EASTERN NORTH AMERICA:—Elizabeth S. Dillon and Lawrence S. Dillon—*Row*, 884 p., illus., \$9.25. A reference work for the professional entomologist, student and amateur collector, emphasizing the most widespread forms in the principal families of the nearly 10,000 species occurring within the area.

MEN OF SCIENCE AND INVENTION:—Michael Blow with Robert P. Multhaupt—*American Heritage (Golden Press)*, 153 p., illus., \$3.50. Colorful review of American invention, illustrated with many historical pictures.

THE METRIC SYSTEM OF MEASUREMENT:—National Bureau of Standards—*GPO*, new ed., 46" x 29" wall chart, paper, 50¢. Graphic presentation and comparisons, including Celsius and Fahrenheit temperature scales.

NATIONAL SCIENCE FOUNDATION: Tenth Annual Report for the Fiscal Year Ended June 30, 1960:—Alan T. Waterman, Dir.—*GPO*, 310 p., photographs, paper, \$1. Reports on progress in stimulating the national research effort, promotion of science education, dissemination of scientific information and special international programs.

101 MATHEMATICAL PUZZLES and How to Solve Them:—Don Reinfeld and David Rice—*Sterling*, 123 p., illus., \$2.50. Brainteasers requiring only elementary knowledge of algebra and geometry plus an inquiring mind.

PSYCHOLOGY—An Introduction to the Study of Human Behavior:—Henry Clay Lindgren and Donn Byrne—*Wiley*, 429 p., illus., \$6.50. Textbook primarily designed to aid students to develop a better and more complete understanding of their own behavior as well as that of others.

QUANTUM MECHANICS:—John L. Powell and Bernd Crasemann—*Addison-Wesley*, 495 p., \$9.75. Textbook at senior-graduate level, features detailed explanation of scattering, matrix theory, angular momentum, radiation and perturbation theory.

RUSSIAN FOR SCIENTISTS: A Grammar and Reader:—C. R. Buxton and H. Sheldon Jackson—*Interscience*, 299 p., \$5.25. Designed to enable the scientist to acquire a reading knowledge of the Russian language. Includes passages from various scientific sources.

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for Progress—Maurice U. Ames, Arthur O. Baker and Joseph F. Leahy—*Prentice-Hall*, 2nd ed., 416 p., 433 p., 610 p., illus., \$4.95, \$5.15, \$6.55. High school textbooks.

TRANSISTOR CIRCUIT ANALYSIS—Maurice V. Joyce and Kenneth K. Clarke—*Addison-Wesley*, 461 p., \$10.75. Presents basic methods of analysis involved in the design of junction transistor circuitry. A senior-graduate level text and reference volume.

A TREATISE ON THE DIFFERENTIAL GEOMETRY OF CURVES AND SURFACES—Luther Pfahler Eisen-

hart—*Dover*, 474 p., illus., paper, \$2.75. Introductory text for graduate students first published in 1909.

ZOO-MAN STORIES—T. H. Gillespie—*Taplinger*, 121 p., illus. by Len Fullerton, \$2. Talks about animals broadcast in the Children's Hour of the Scottish B.B.C.

ZOO-MAN TALKS—T. H. Gillespie—*Taplinger*, 120 p., illus. by Len Fullerton, \$2. Stories for children.

• Science News Letter, 79:76 February 4, 1961

INVENTION

Patents of the Week

An exhaust nozzle with curved ridges reduces jet noise. A compact nuclear power plant will produce steam for a turbine producing electricity.

► THE IRRITATING NOISE of a jet engine can be effectively reduced by an invention just patented. This noise, a big problem in the present jet age, is especially irritating when jets take off, releasing a flood of complaints from neighbors living near the airport.

The invention is an exhaust nozzle with a series of curved ridges and grooves along its inner cone. Jet gases passing through the nozzle are broken up into many small air streams that flow along the ridges and grooves. When the streams reach the open air, they mix together, reducing the noise level.

The loss of jet thrust caused by reducing the sound is very small, according to California inventors Kenneth W. Goebel of San Diego, and Lanvin G. Pierce of National City.

The invention also provides a device for slowing down a jet plane just before landing so that it will not need such a long runway.

Two deflectors, attached to the exhaust nozzle, capture the swiftly passing outside air, diverting it into the jet exhaust. This causes a reversal in air flow, producing a braking action.

When the deflectors are used, they form a metal "parachute" that collects the outside air. If they are not needed, they fit snugly over the pod surrounding the engine.

The rights to patent No. 2,968,150 were assigned to Rohr Aircraft Corporation.

A combination jet engine with the advantages of two different types of jet propulsion won patent No. 2,968,146 for Alun Raymond Howell and Charles Ernest Moss, both of Cove, England.

The engine can be converted from a turbo-rocket to a ram-jet propulsion system, depending upon the need of the aircraft. The turbo-rocket system, which is normally used for take-offs, has a bladed compressor that is unnecessary in ram or "pulse" jet engines. When the blades are withdrawn from the path of the incoming air, the engine becomes a pulse jet system capable of very high speeds.

The inventors assigned the patent rights to Power Jets Limited, a British company. Another new patent is a compact nuclear

power plant designed to heat water or heavy water to produce steam for driving a turbine that will produce electricity. The power plant, patent No. 2,968,602, combines advantages of conventional power reactors that require a heat exchanger to produce steam for power and those in which steam is generated in the reactor proper, both of which require extensive shielding of numerous external pipes and auxiliary equipment outside the reactor itself.

The new reactor, invented by Ernest Loeb of Silver Spring, Md., and with patent rights assigned to the Atomic Energy Commission, places the reactor and turbine inside a single housing case, in which the reactor functions as the turbine rotor. The reactor control system requires only one moving part, a valve mechanism which controls the feed water going into the reactor.

Mr. Loeb states that the invention "achieves the nearest approach to the direct conversion of nuclear to mechanical energy presently known."

A push-button method for finding out from a distance whether or not there is mail in the mail box got patent 2,968,804 for Raymond F. Buffington of Manhattan Beach, Calif.

The device essentially is an electric eye that scans the box when a switch is turned on in an apartment or farmhouse. If there is mail, the eye sends back a signal that might be a buzz or a flashing light. No signal means no mail and a fruitless trip to the box is eliminated.

Philip H. Corbett and James Brace of Prairie Village, Kans., have invented a foot-steering apparatus for outboard motor boats. Designed to allow a fisherman to steer the boat by foot while both hands are occupied reeling in the fish, patent No. 2,968,273 consists of a foot pedal that is connected to the lever arm of the motor. The device was assigned to Brace and Corbett, Inc.

For bowling fans, Arno A. Tessman of San Antonio, Texas, has invented a device to help them bowl a better game. The device, awarded patent No. 2,968,101, is a bowling ball with an adjustable grip. By merely adjusting the pressure, the most comfortable holding position is obtained.

• Science News Letter, 79:77 February 4, 1961

Exploring the universe...

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James Stokley

This magnificently illustrated new introduction to modern astronomy takes the reader on a fascinating journey through the vastnesses of inner and outer space.

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