

Books of the Week

For the editorial information of our readers, books received for review since last week's issue 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. Request free publications direct from publisher, not from Science Service.

THE BOYS' SECOND BOOK OF RADIO AND ELECTRONICS—Alfred Morgan—*Scribner's*, 276 p., illus. with diagrams by the author, \$3.00. Telling the youngster how to build and operate his own equipment.

THE CANADIAN JOURNAL OF CHEMICAL ENGINEERING: Volume 35, Number 1—W. M. Campbell, Ed.—*Chemical Institute of Canada*, 46 p., illus., paper, bi-monthly, 75 cents a copy or \$3.50 per year. First issue of a new journal which was formerly the "Canadian Journal of Technology" and is now intended to provide a Canadian publication medium for the increasing amount of chemical engineering research in Canada.

THE CASTING OF STEEL—W. C. Newell, Ed.—*Philosophical Library*, 599 p., illus., \$27.50. Providing engineers and steel founders with a reliable guide to the technical aspects of their work.

CHEMISTRY OF THE COVALENT BOND—Leallyn B. Clapp—*Freeman*, 684 p., illus., \$7.50. Text for a first-year course with emphasis on the influence of geometry on chemistry.

NUMBER PRINTS or anything in sequence 100
1 TO 5000 SEQUEX LABELS
 SELF STICK-ING. Easier reading. Sheets of 100. Number without error.
R. P. CARGILLE LABORATORIES INC.
 117 Liberty Street • New York 6, N. Y.

BIND and SAVE Your SNL's
 All 52 issues of SNL, for a full year, can be permanently filed in these sturdy, buff-colored, buckram binders.
 Each issue snaps into the cover with a metal strip. Only \$4.00 complete, ppd. Order now, from
SCIENCE NEWS LETTER
 1719 N St., N.W., Washington 6, D. C.

MATH IS FUN

By Joseph Degrazia, Ph.D.

Here is a treasury of brain-teasers. You need not be a mathematical genius to solve these problems and puzzles. What you need is to know how to THINK LOGICALLY—how to REASON. This is practically a "course" in applied logic and reasoning—besides being an immense amount of fun that will keep you absorbed for many hours. You will find not only that MATH IS FUN, but also that learning math can be fun!

CONTENTS: Trifles—On the Borderline of Mathematics—Faded Documents—Cryptograms—How Old Are Mary and Ann?—Wolf, Goat and Cabbage—and Other Odd Coincidences—Clock Puzzles—Trouble Resulting from the Last Will and Testament—Speed Puzzles—Railroad Shunting Problems—Agricultural Problems—Shopping Puzzles—Whimsical Numbers—Playing with Squares—Miscellaneous Problems—Problems of Arrangement—Problems and Games—Solutions.

Many delightful and helpful illustrations

Solutions where needed
 Large Book • 159 Pages • 159 Hours of Fun
 \$2.75 Postfree • 5-Day Money-Back Guarantee
EMERSON BOOKS, INC.
 Dept. 88-L, 251 W. 19th St., N. Y. 11

CLEANER AIR FOR URBAN AREAS: Proceedings of the Symposium—François N. Frenkiel and others—*Franklin Institute*, 69 p., illus., paper, limited number available at \$3.00.

CLOSED RANKS: An Experiment in Mental Health Education—Elaine Cumming and John Cumming—*Harvard University Press for The Commonwealth Fund*, 192 p., \$3.50. Reporting a controlled study of an attempt to change community attitudes toward mental illness—an attempt that failed and in turn a study of why it failed.

DISCOVER THE STARS—Gaylord Johnson and Irving Adler—*Sentinel Books*, rev. ed., 146 p., illus., paper, \$1.00. A beginner's guide to astronomy and the earth satellite project with instructions on how to make an earth satellite model.

FOUR DECADES OF ACTION FOR CHILDREN: A Short History of the Children's Bureau—Dorothy E. Bradbury with a section on the future by Martha M. Eliot—*Govt. Printing Office*, Children's Bureau, Publication Number 358, 1956, 90 p., paper, 35 cents. History of a Bureau founded to investigate and report on "all matters pertaining to the welfare of children and child life among all classes of our people."

FUNDAMENTALS OF MICROBIOLOGY—Martin Frobisher—*Saunders*, 6th ed., 617 p., illus., \$6.50. Elementary college text with special sections on the sanitation of milk, drinking water, air pollution and sewage disposal.

GENERAL AND APPLIED ENTOMOLOGY—V. A. Little—*Harper*, 543 p., illus., \$7.00. A text for beginning students dealing with an ancient race of animals that has persisted for millions of years and extends from the permafrost line of the Arctic to the ice cap of the Antarctic.

GENETICS—Edgar Altenburg—*Holt*, rev. ed., 496 p., illus., \$6.50. Text for a one-year course for students who have already had one year of biology. Emphasis in this revision is on up-to-dateness. A chapter has been added on the Rh blood groups.

HANDBOOK ON LAWNS—H. B. Musser, Guest Ed.—*Brooklyn Botanic Garden*, Special Printing of Plants & Gardens, Vol. 12, No. 2, 92 p., illus., paper, \$1.00. Help for the householder in keeping his lawn in good condition and telling him how to water his lawn when water is scarce, what to do about bare spots, etc.

AN INTRODUCTION TO QUALITATIVE ANALYSIS—T. R. Hogness and Warren C. Johnson—*Holt*, 376 p., illus., \$3.95. A condensation of the authors' text "Qualitative Analysis and Chemical Equilibrium."

A KEY TO THE STARS—R. van der Riet Woolley—*Philosophical Library*, 3d ed., 144 p., illus., \$4.75. Although written 20 years ago, the new edition is very little changed because it is confined to the elementary steps in astronomy which have changed but little over the years.

LIFE: An Introduction to Biology—George Gaylord Simpson, Colin S. Pittendrigh and Lewis H. Tiffany—*Harcourt, Brace*, 845 p., illus., \$7.50. An introductory text for both the nonprofessional student of biology and the student who is beginning a professional career. The authors have kept principles foremost in mind and organized the whole text around them.

MAN-MADE FIBER PROGRESS—J. J. Press, Chairman—*New York Academy of Sciences, Annals*, Volume 67, Part 11, 86 p., illus., paper, \$3.00.

It is now possible to engineer fibers and fabrics to meet specific requirements.

MATTER AND ENERGY: A Survey of the Physical Sciences—Arthur Talbot Bawden—*Holt*, 434 p., illus., \$5.75. Elementary text presenting the fundamentals of physical science and some of its most important applications to modern life.

MOLYBDENUM: A Materials Survey—Wilmer McInnis—*Govt. Printing Office*, Bureau of Mines Information Circular 7784, 77 p., charts, paper, 75 cents. A technical and economic survey on one of the Nation's most important iron alloy metals.

1957 HEAT TRANSFER AND FLUID MECHANICS INSTITUTE: Preprints of Papers—David Fultz, E. R. G. Eckert and others—*Stanford University Press for the Heat Transfer and Fluid Mechanics Institute*, 439 p., illus., paper, \$8.50. This year's program reflects the recent rapid development of high speed research including heat transfer problems at extreme temperatures.

PERFORMANCE OF BITUMINOUS SURFACING—John W. Shupe and Delos C. Taylor and A. Duke Morgan—*Highway Research Board*, Bulletin 154, 30 p., illus., paper, 80 cents. Reporting tests of road sections and the results.

PHOTOGRAPHY FOR TEEN-AGERS—Lucile Robertson Marshall—*Prentice-Hall*, 2d ed., 185 p., illus., \$3.95. For the serious amateur who wants to take technically excellent and artistic photographs.

THE PRINCIPLES OF HEREDITY—Laurence H. Snyder and Paul R. David—*Heath*, 5th ed., 507 p., illus., \$6.25. A text discussing heredity in animals and plants from man to bacteria and viruses.

PRINCIPLES OF MICROBIOLOGY—Charles F. Carter and Alice Lorraine Smith—*Mosby*, 3d ed., 665 p., illus., \$5.00. A text presenting to the student a brief general survey of the principles of microbiology with simple descriptions of the most important disease-producing microbes and the part that microbes play in the processes of nature and in industry.

PRINCIPLES OF MODERN BIOLOGY—Douglas Marsland—*Holt*, 3d ed., 632 p., illus., \$6.50. A text originating from the lectures of the general biology course at Washington Square College, New York University.

QUALITY CONTROL AND STATISTICAL METHODS—Edward M. Schrock—*Reinhold*, 2d ed., 246 p., graphs, \$6.75. Presenting as briefly and clearly as possible useful modern techniques as applied in industry.

SCIENCE IN OUR ENVIRONMENT—Franklin B. Carroll, Sam Adams and Lee Moncrief Harrison—*Winston*, Understanding Science, 328 p., illus., \$3.20. Beautifully illustrated text to introduce the young student to the science involved in the world around him.

SCIENCE IN OUR WORLD—Franklin B. Carroll, Sam Adams and Lee Moncrief Harrison—*Winston*, Understanding Science, 376 p., illus., \$3.40. Helping the young student to see and understand the world around him. Beautifully illustrated with photographs in black and white and color.

SCIENTIFIC FRENCH: A Concise Description of the Structural Elements of Scientific and Technical French—William N. Locke—*Wiley*, 112 p., paper, \$2.25. To help the engineer or scientist to acquire rapidly a reading knowledge of French adequate to master technical articles and books in his field.

SCIENTIFIC GERMAN—George E. Condoyannis—*Wiley*, 164 p., paper, \$2.50. To help beginners with no previous knowledge of German to learn enough of the language to read scientific and technical reports.

TRANSISTOR CIRCUIT ENGINEERING—Richard F.

Shea, Ed.—Wiley, 468 p., diagrams, \$12.00. Covering transistor theory and its proper application in typical circuits.

THE UNITED NATIONS AND ECONOMIC AND SOCIAL CO-OPERATION—Robert E. Asher, Walter M. Kotschnig, William Adams Brown, Jr. and Associates—Brookings Institution, 561 p., paper, \$2.50. One section of the book is devoted to education, science and culture and the activities of UNESCO.

UNSETTLED CHILDREN AND THEIR FAMILIES—D. H. Stott—Philosophical Library, 240 p., \$6.00. Telling of the studies that are being made at the University of Bristol, England, leading to an understanding of the emotionally upset or "unsettled" children and how to help them before they become delinquent.

UNSTABLE CHEMICAL SPECIES: Free Radicals, Ions, and Excited Molecules—Henry C. Thacher, Jr., Ed.—New York Academy of Sciences, Annals Volume 67, Art. 9, 223 p., illus., paper, \$4.00. The behavior of unstable species is of great practical importance in the design of nuclear powered aircraft and satellites.

URBAN ARTERIAL PLANNING—Arthur T. Row and others—Highway Research Board, Bulletin 153, 43 p., illus., paper, 90 cents. Telling how to study the patterns of where people want to go and how to provide for their travel needs.

VETERINARY GUIDE FOR FARMERS—G. W. Stamm, edited by Dallas S. Burch—Windsor Press, 3d ed., 384 p., illus., \$3.95. A practical book for farmers telling such simple things as how to take an animal's temperature and pulse as well as telling how to diagnose and treat ordinary diseases and what to do when the animal has young.

VIRUSES IN SEARCH OF DISEASE—Robert J. Huebner, Chairman—New York Academy of Sciences, Annals Volume 67, Art. 8, 237 p., illus., paper, \$5.00. Papers delivered in a conference in May, 1956.

WHAT IS MARRIAGE COUNSELING?—David R. Mace—Public Affairs Committee, Public Affairs Pamphlet No. 250, 28 p., illus., paper, 25 cents. Telling troubled couples how to get help in making the most of their marriage and what a marriage counselor can do for them, where to find one, and what it will cost.

YOUTH AND CRIME: Proceedings of the Law Enforcement Institute Held at New York University—Frank J. Cohen, Ed.—International Universities Press, 273 p., \$6.00. Papers presented at a conference that struggled with the problem of how to prevent or cure juvenile delinquency.

Science News Letter, June 29, 1957

TECHNOLOGY

Astronomer Invents Textile Wrinkle Measurer

➤ AN ASTRONOMY professor has presented the textile industry with its first wrinkle-measuring instrument.

Developed by Columbia University professor Lloyd Motz, the device can determine comparative wrinkling of fabrics or can compare a fabric with a standard for wrinklelessness.

The "Fabricometer," as it is called, is designed so movements of a probe caused by wrinkles deflect the light beam from the face of a photoelectric cell. Since a voltmeter is connected with the cell, direct readings of the size and number of wrinkles along the test line are recorded.

Science News Letter, June 29, 1957

ASTRONOMY

Comet's Tail Explained

➤ THE STRANGE SUNWARD tail of the brightest naked-eye comet since Halley's, Comet Arend-Roland, consisted of small particles seen edge-on, an American astronomer reports.

Comet Arend-Roland, first sighted last November by two Belgian astronomers, was seen by millions about the end of April when it shown brightly in the northwest sky. It startled many by having two tails, a conventional one pushed away from the comet's core by sunlight, and a surprising one, a long slender jet pointed directly toward the sun. (See SNL, May 11, p. 303.)

Dr. Fred L. Whipple, director of the Smithsonian Astrophysical Observatory, Cambridge, Mass., says "no extraordinary" theory is needed to account for the growth of the sunward tail by more than 10,000,000 miles in a few days and its rapid decline. The tail "almost certainly" resulted from the concentration of debris driven out of the comet by the sun's heat, then strewn over an area in the orbital plane.

When viewed at an angle, Dr. Whipple reports in *Nature* (June 15), the material could not be observed easily. However, when seen edge-on, as it was when the earth crossed the plane of the comet's orbit on April 25, the material showed up clearly as a line of considerable intensity.

The sunward jet of Comet Arend-Roland developed from a diffuse fan-shape on April 22 to a long narrow spike covering many millions of miles on April 25. By April 29, the jet disappeared because the particles were too far apart to be seen after the earth had moved out of the plane of the comet's orbit.

Dr. Whipple reports that the fine debris

spread out in the plane of the orbit and seen as the sunward tail was ejected from the comet's central part or nucleus.

Comets are believed to be a swarm of small and widely separated solid bodies held loosely together by mutual attraction, a flying gravel bank paying a brief visit to the sun's vicinity.

Science News Letter, June 29, 1957

Do You Know?

Minute dosage of several new *insecticides* has been shown seriously to reduce reproductive rates in game birds.

The *nutria*, a South American rodent that has become established in the U.S., is a vegetarian and as such is in direct competition with migratory waterfowl and muskrats for feed.

Today, working *women* take home one-fifth of this country's total wages and salaries.

Asparagus is an herbaceous perennial which means that the tops die down during the winter but the roots remain alive.

MICRO-ADS

Services and supplies of special interest to the professional and amateur scientist!

25¢ per word, payable in advance. Closing date 3 weeks prior to publication (Saturday).

SNL 1719 N St., N.W., Washington 6, D. C.

OPTICAL EQUIPMENT

SPECIALISTS USED MICROSCOPES AND ACCESSORIES. Prepared slides. Microscopy supplies. Biological kits. Scientific oddities. Meteorites, minerals, sea shells. Insects in alcohol. Telescopes. Our fully illustrated catalog free. Research Scientific Supplies, Inc., 126 West 23rd Street, New York 11, N. Y.

BOOKS AND MAGAZINES

NATIONAL GEOGRAPHIC MAGAZINES: 1888-1957, any issue. Send wants. Free price list, literature. Periodical Service, Box 465—NL, Wilmington, Delaware.

BOOKS ON BIRDS, MAMMALS, NATURAL History subjects. New or out-of-print. Catalogs furnished. Pierce Books, Winthrop, Iowa.

PUBLISHERS

BOOK MANUSCRIPTS INVITED—CO-OPERATIVE publishers since 1925; circular free. Meador Publishing Co., 324 Newbury St., Boston, Mass.

MISCELLANEOUS

GEIGER COUNTER. INEXPENSIVE. MAKE your own. Pamphlet tells how to make Five, Easy Circuits. Excellent for prospecting, laboratory, school projects. Send \$1.00 Transspace Laboratory, Box 111, Princeton Junction, New Jersey.

RECORD COLLECTORS. FREE CATALOG wrought iron racks. Leslie Creations. Lafayette Hill 46, Penna.

BINDERS FOR SNL—STURDY BUFF-colored buckram. Individual snap-in metal strips hold full year's 52 copies. Only \$4.00 postpaid. Send order with remittance to Science News Letter, 1719 N Street, N. W., Washington 6, D. C.

THINGS OF SCIENCE—ACTUAL SAMPLES of interesting specimens, or new products, of scientific research. Sent monthly to members at \$5.00 per year. Send order and remittance to SCIENCE SERVICE, 1719 N Street, N. W., Washington 6, D. C.

Questions

AERONAUTICS—How does the new jet engine, the J79, overcome the problem of "stall barrier"? p. 405.

□ □ □

BIOLOGY—Which foods fed to experimental animals did scientists find had the greatest radioactive contamination? p. 409.

□ □ □

CHEMISTRY—What common, every-day food provided the raw material for making diamonds? p. 406.

□ □ □

GEOPHYSICS—How do scientists expect to determine whether the auroras occur simultaneously in the Northern and Southern Hemispheres? p. 407.

□ □ □

PUBLIC HEALTH—What drug is recommended as a substitute for penicillin in mastitis preparations given to cows? p. 403.

□ □ □

PHOTOGRAPHS Cover, U. S. Navy; p. 403, U.S. Air Force; p. 405, F.C. Livingstone; p. 408, Abbott Laboratories; p. 412, Bakelite Company.