

readable exposition of the way in which higher and lower plants germinate, grow and multiply.

PLASTICS IN NUCLEAR ENGINEERING—James O. Turner—*Reinhold*, 139 p., illus., \$5.50. Covers practical plastics applications from the viewpoint of the engineer dealing with nuclear research apparatus.

PROGRAMMED LEARNING AND THE EDUCATIONAL PROCESS—Annice L. Mills, Ed.—*Edison Foundation*, 24 p., paper, single copies free upon request direct to publisher, 8 W. 40th St., New York 18, N. Y. Summary of conference appraising potentialities and limitations of learning with the help of teaching machines.

RADIO CONTROL MANUAL—Edward L. Stafford, Jr.—*Gernsback*, 192 p., illus., paper, \$3.20. For the hobbyist.

REVENUE PROGRAMS FOR THE PUBLIC SCHOOLS IN THE UNITED STATES, 1959-60—Albert R. Munse—*Off. of Educ. (GPO)*, 79 p., paper, 55¢. Report on amounts and sources of school support, state fund distributions and state summaries of public school revenue.

SHORT CUTS IN COMPUTING—William H. Glenn and Donovan A. Johnson—*Webster*, 46 p., illus., paper, 75¢. Presents intriguing and useful methods of computing short cuts for the young student.

SHADOWS—Irving and Ruth Adler—*Day*, 48 p., illus., \$2. Tells children all kinds of facts about light and shadow.

SOVIET ELECTROCHEMISTRY. Vol I: Kinetics and Polarography. Vol. II: Oxidation and Reduction. Vol. III: Applied—Academy of Sciences, USSR, transl. from Russian—*Consultants*, 264 p., 264 p., 231 p., illus., \$15 each, \$40 per set. Proceedings of the Fourth Conference on Electrochemistry.

SPACE RESEARCH BY ROCKET AND SATELLITE—R. L. F. Boyd—*Harper*, 128 p., illus., \$2.25. Monograph written by specialist for the general reader, presents extent of our knowledge today and the international scope of space research.

THE STORY OF A NAIL—Irving and Ruth Adler—*Day*, 48 p., illus., \$2. From handmade nails via pig iron and steel wire to big nail-producing machines, for young children.

THE STORY OF THE STARS—Terry Maloney—*Sterling*, 48 p., illus., \$2.50. Astronomer tells boys and girls in simple language some facts about stars.

A SYSTEMATIC LABORATORY COURSE IN GENERAL CHEMISTRY—Harry H. Sisler, Jay J. Stewart and W. T. Lippincott—*Macmillan*, 2nd ed., 358 p., illus., paper, \$4. Revision emphasizes quantitative experiments and importance of the student's own interpretation of experimental results obtained.

30 INSTRUCTION UNITS IN BASIC ELECTRICITY—C. E. Matson—*McKnight*, 127 p., illus., paper, \$1.70. Step-by-step outline for course of study at either junior or senior high school level.

TOXICOLOGY: Mechanisms and Analytical Methods, Vol. II—C. P. Stewart and A. Stolman, Eds.—*Academic*, 921 p., \$25. Reference volume considering the various important groups of poisons, arranged in their order of extraction from biological material, and bringing together the methods available for identifying and determining the members of each group.

A TRAVELER'S GUIDE TO GOOD HEALTH—Colter Rule, M.D.—*Doubleday*, 240 p., paper, 95¢. The do's and don'ts of staying healthy while seeing the world.

U. S. GOVERNMENT GRANTS UNDER THE FULBRIGHT AND SMITH-MUNDT ACTS: Program Announcements, 1962-63, University Lecturing, Advanced Research—*Conference Bd. of Assoc. Research Councils Committee on International Exchange of Persons*, 100 p., paper, free upon request direct to publisher, 2101 Constitution Ave., Washington 25, D. C. General and spe-

cific information on available Fulbright scholarships, closing date for applications: October 1, 1961.

THE U. S. A. ANSWERS: A Guide to Understanding—Kenneth E. Beer, Ed.—*U. S. & World Pubs.*, 248 p., illus., \$5; paper, \$2.50. Answers to 1,800 questions prepared for the IBM RAMAC 305 computer set up in 1959 at the American Exhibition in Moscow. Science Service cooperated on the section of American science and technology.

UNITED STATES GOVERNMENT ORGANIZATION MANUAL, 1961-62; Revised as of June 1, 1961—Office of the General Register—*GPO*, 821 p., paper, \$1.50. Official organization handbook of the Federal Government, describing agencies in the legislative, judicial and executive branches.

UNRESTING CELLS—R. W. Gerard—*Harper*, 434 p., illus., paper, \$2.25. Reprint of book first published in 1940, giving layman a picture of living things and their actions.

VISION RESEARCH REPORTS—E. Porter Horne and Milton A. Whitcomb—*NAS-NRC*, 182 p., illus., paper, \$2.50. Summaries of scientific papers presented at 36th, 37th and 39th Annual Meetings of the Armed Forces-NRC Committee on Vision.

VITAMINS AND HORMONES: Advances in Research and Applications, Vol. 18—Robert S. Harris and Dwight J. Ingle, Eds.—*Academic*, 615 p., illus., \$15. Includes papers delivered at the Symposium on Vitamin A and Metabolism, held in Switzerland in 1960.

WATER PURITY: A Study in Legal Control of Natural Resources—Earl Finbar Murphy—*Univ. of Wis. Press.*, 212 p., \$4.75. A fully documented account of the historical development of the control of water pollution, from early England to the Blatnik Act of 1956.

WILDLIFE IN THE NORTHERN ROCKY MOUNTAINS: Including Common Wild Animals and Plants—William H. Baker and others—*Naturegraph*, 112 p., 400 illus., \$3.50; paper, \$1.95. Pocket guide for trips through the region.

WONDERFUL WORLD OF SCIENCE—Shirley Moore and Judith Viorst; introd. by Watson Davis—*Bantam Bks (Science Service)*, 246 p., illus. by Don Trawin, paper, 50¢. Describes thousands of free and low cost samples, photos, kits, manuals, career guides, plans and models in fields of science, from astronomy to zoology.

THE WONDERS OF ALGAE—Lucy Kavalier—*Day*, 96 p., illus. by Barbara Amlick and Richard Ott, photographs, \$3.50. Describes generally marine and fresh-water algae, and tells young people about their space age uses.

THE YOUNG EXPERIMENTER—N. F. Newbury and H. A. Armstrong—*Sterling*, 96 p., illus., \$2.95. To help the budding scientist become familiar with testing, recording observations and thinking out problems.

• Science News Letter, 80:92 August 5, 1961

It takes 115 gallons of water to grow enough wheat to make a loaf of bread.

Sales of apples averaged 27% more with a promotion program than without.

Ice water is an effective method for treating burns, a recent scientific study showed.

Modern corn has now become completely dependent on man for its survival and probably would soon become extinct without man's ministrations.

One of the earliest standards of measurement was the *cubit*, which was the length of the forearm from the point of the elbow to the tip of the middle finger.

AGRICULTURE

Unusual Feed Suggested For Malayan Cattle

➤ **TAPIOCA ROOTS**, rubber-seeds and coffee bean pulp are just a few of the foods Malayan cattle may be eating soon due to the shortage of fodder in Malaya.

A processing engineer with the Food and Agriculture Organization, Melle Zwankhuizen, said that the population explosion has resulted in "not only the problem of increasing food production, but also of increasing feed production." He has suggested that the Malayan Government exploit local raw materials and manufacturing "wastes."

Mr. Zwankhuizen was mainly concerned with increasing production of rice and coconut, which the natives could eat. The wastes could feed the cattle. He also suggested the use of cacao pods, coffee bean pulp with molasses, and dried pineapple bran from cannery wastes.

Even roots and their by-products can be used for feedstuffs: the trunk of the sago palm, chopped sweet potatoes and their leaves, and tapioca roots and waste.

"The possibilities are endless when such a search gets under way," Mr. Zwankhuizen said. He mentioned the possibility of using palm kernel cake, rubber-seeds, seaweed, and distillery by-products as feed.

• Science News Letter, 80:93 August 5, 1961

PSYCHOLOGY

Bat's System May Enable Blind to "See"

➤ **MAN MAY** soon be able to "see" in the dark using the same system of sound location as bats. Blind persons could also use the method.

Even when blinded, bats can unerringly locate objects because they "see" by means of a complex, echo location system that resembles sonar. An electronic device to duplicate the bat's method for use by humans has been built by L. Kay of the University of Birmingham, England.

Bats probably use a frequency modulated system of location, Mr. Kay reported in *British Communications and Electronics* (Aug.).

• Science News Letter, 80:93 August 5, 1961

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