

thermal diffusion plant with a twenty-four-foot cylindrical tube section followed by an eight-foot hot wire section was built to test the efficacy of the method. The characteristics of the plant were studied under various conditions and compared with theory. Excellent agreement with theory was obtained for the cylindrical section but the hot wire column showed discrepancies not as yet understood. In any event, the plant has proved effective in producing small amounts of highly enriched He^3 . For example, with an expenditure of 16.6 kilowatts of power, fourteen standard cubic centimeters of helium can be produced per day in which the isotope has been enriched twenty thousand times, the concentration going from one ten-millionth to one five-hundredth. Little difficulty should be encountered in producing the pure isotope by this method and work is progressing in this direction. It is hoped that, by extending the size of the present pilot plant and using it either alone or in conjunction with one of the low temperature methods of separating He^3 , much larger amounts of this very valuable isotope will become available.

A.O.C.N.

Concentration of He^3 by Thermal Diffusion. By B. B. McInteer, L. T. Aldrich, and Alfred O. Nier. *Phys. Rev.* 74: 946, October 15, 1948.

Seeing Stars by Day

A number of years ago it was realized that daytime celestial navigation of long range airplanes was desirable and would be aided by the use of stars. Therefore the possibilities of seeing stars in the daytime were investigated. One element of the problem was known—the optics of a telescope such as magnification and lens design; at least two elements were unknown—the ability of the eye to see points of light in fields of various brightnesses, and the brightness and polarization of all parts of the sky for all altitudes of the observer for all altitudes of the sun. The two unknown elements were worked out (*J. Opt. Soc. Am.* 36: 480, 1946; 37: 78, 1947), and it was then merely a matter, as described in the present paper, of fitting all the elements into a connected pattern, deriving the answers, and testing some of the answers from the surface and from an airplane. It was found that an observer at ten thousand feet with clear air overhead could see stars brighter than the second magnitude in favorable portions of the daylight sky when using a well-designed fifteen-power telescope. A polarizing attachment was of some aid, but color filters were either of no help or were harmful. The telescope had to be in a relatively vibrationless mounting and the observer, by means of precomputation, had to know approximately where to look. He often had to spend a considerable time in search even though the star was in his field of view, because the threshold sensitivity of the eye for a point source decreases rapidly with the distance from the center of the fovea.

R.T.

The Visibility of Stars in the Daylight Sky. By R. Tousey and E. O. Hulburt. *J. Opt. Soc. Am.* 38: 886, October 1948.

BOOKS *Continued from page 25*

Scientific Magic

AFTER DINNER SCIENCE. By Kenneth M. Swezey. 182 pp. Whittlesey House, McGraw-Hill Book Company, Inc., New York City, 1948. \$3.00.

For boys and girls whose first taste of science is the magic of it, and for their elders who still feel that way about it, this well-illustrated book gives a number of glass-tumbler-and-raised-eyebrow experiments which demonstrate some principles of physics and chemistry. The equipment necessary is not always too hard on mother's crockery and silverware, although occasional experiments demand trips to the local chemist's shop.

Handbook

HANDBOOK OF SCIENTIFIC AND TECHNICAL SOCIETIES AND INSTITUTIONS OF THE UNITED STATES AND CANADA. Fifth Edition. Bulletin of the National Research Council No. 115. 371 pp. National Research Council, National Academy of Sciences, Washington, D. C., 1948. \$5.00.

Anyone who wants to locate a society on bird-banding or numismatics—or who simply wants to know the date the American Institute of Physics was founded—will find the information in this latest edition of a very useful handbook. It lists 1,302 organizations in the United States and 166 in Canada, all carefully indexed by classification of their activities, purposes, research funds, medals, prizes, and publications.

Books Received

POWER SYSTEM STABILITY, Vol. 1, Elements of Stability Calculations. By Edward W. Kimbark. 355 pp. John Wiley & Sons, Inc., New York City, 1948. \$6.00.

WARTIME COLLEGE TRAINING PROGRAMS OF THE ARMED SERVICES. By Henry C. Herge. 214 pp. The American Council on Education, Washington, D. C., 1948. \$3.00.

ELASTICITY AND ANELASTICITY OF METALS. By Clarence M. Zener. 170 pp. The University of Chicago Press, Chicago, Ill., 1948. \$4.00.

DIGEST OF LITERATURE ON DIELECTRICS, Vol. 11, prepared by the Committee on Chemistry and Physics, Conference on Electrical Insulation. 94 pp. National Research Council, Washington, D. C., 1948.

ELECTRICAL MEASUREMENTS IN THEORY AND APPLICATION. Fourth edition. By Arthur Whitmore Smith. 371 pp. McGraw-Hill Book Company, New York City, 1948. \$4.25.

SPHERICAL HARMONICS. Second revised edition. By T. M. MacRobert. 372 pp. Dover Publications, Inc., New York City, 1948. \$4.50.

INTRODUCTION TO APPLIED MATHEMATICS. By Francis D. Murnaghan. 389 pp. John Wiley & Sons, Inc., New York City, 1948. \$5.00.

DESIGN OF CRYSTAL VIBRATING SYSTEMS. Revised second edition. By William J. Fry, John M. Taylor, and Bertha W. Hennis. 182 pp. Dover Publications, Inc., New York City, 1948. \$3.50.

REPORT OF A CONFERENCE ON STRENGTH OF SOLIDS held at the H. H. Wills Physical Laboratory, University of Bristol, on July 7-9, 1947. 162 pp. The Physical Society, London, 1948. 25s., postage 8d.

OUTLINES OF PHYSICAL CHEMISTRY. By Farrington Daniels. 713 pp. John Wiley & Sons, Inc., New York City, 1948. \$5.00.