

PRIMITIVE FOSSIL GASTROPODS AND THEIR BEARING ON GASTROPOD CLASSIFICATION—J. Brookes Knight—*Smithsonian*, 56 p., illus., paper, 60 cents. A classification that attempts to give full weight to paleontological data as well as to knowledge of the living animal.

THE SANITARY LANDFILL METHOD OF REFUSE DISPOSAL IN NORTHERN STATES—Leo Weaver and Donald M. Keagy—*Govt. Printing Office*, Public Health Service Publication No. 226, 31 p., illus., paper, 20 cents. Where suitable land is available, the sanitary landfill is the most economical method of refuse disposal even in northern states where the ground is frozen in winter.

SHOCK SYNDROME—John Scudder, Chairman—*New York Academy of Sciences*, 197 p., illus., paper, \$3.75. Discussing various aspects of the problem of shock, plasma substitutes and expanders.

TABLES OF GENERAL PERTURBATIONS FOR A GROUP OF MINOR PLANETS WHICH INCLUDES THE GROUP ONE-HALF WITH APPLICATIONS TO THIRTY-FOUR CASES—Sophia Levy McDonald and Armin Otto Leuschner—*University of California Press*, 210 p., paper, \$7.50. Modification and simplification of tables published in 1922.

THE TAMING OF THE NATIONS: A Study of the Cultural Bases of International Policy—F. S. C. Northrop—*Macmillan*, 362 p., \$5.00. National self-interest, the author points out, will no longer work in foreign affairs, and international relations must become more than an art; it must also be a science.

TELEVISION IN EDUCATION: A Summary Report, preprinted from the Complete Proceedings of the Educational Television Programs Institute Held at Pennsylvania State College, April 20-24, 1952, Carroll V. Newsom, Director—*American Council on Education*, 35 p., paper, free upon request direct to publisher, 1785 Massachusetts Ave., N. W., Room 110, Washington 6, D. C.

THEORY AND PRACTICE IN STREAM POLLUTION CONTROL—Richard D. Hoak—*Mellon Institute*, 9 p., illus., paper, free upon request direct to publisher, 4400 Fifth Ave., Pittsburgh 13, Pa. Two kinds of measures are recommended: reducing pollution at its source and appropriate treatment of residual wastes.


THE TROPICAL RAIN FOREST: An Ecological Study—P. W. Richards—*Cambridge University Press*, 450 p., illus., \$12.50. Telling with minimum of technical terms of the abundant life in the tropical rain forest.

Science News Letter, November 15, 1952

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ASTRONOMY

25-Foot Radio Telescope

Instrument at Harvard Observatory will explore our galaxy, concentrating on the extremely rarefied hydrogen clouds that radiate at 21 centimeters.

➤ A 25-FOOT radio telescope, to be used particularly in exploring the structure of our Milky Way galaxy, is being constructed for the Agassiz Station of Harvard Observatory.

Weighing about 800 pounds, the dish-shaped antenna will be built in one piece—an aluminum frame covered with aluminum mesh. Because it cannot be covered, the radio telescope will be built to withstand high wind velocities.

Radio astronomy is particularly useful in the study of the great clouds of neutral hydrogen that float in our galaxy and emit no light at all. Extremely rarefied by earth standards, these invisible clouds have only about one atom per cubic centimeter. Yet the city of stars to which the earth belongs is so many million billion miles across and the hydrogen clouds are so numerous that they probably contain as much matter as all the stars in the galaxy combined.

These hydrogen clouds, which radiate at a wavelength of 21 centimeters, were first detected last year by Prof. Edward M. Purcell of the Harvard physics department (see p. 307) and Dr. Harold I. Ewen, now of the Observatory. The new radio astronomy program will be directed by Prof. Bart J.

Bok of Harvard Observatory, who has made the structure of our galaxy one of his specialties, and Dr. Ewen.

The radiation from these hydrogen clouds arises when the single electron of the hydrogen atom, moving around the proton nucleus, reverses its spin. At that instant it emits a quantum, or burst, of energy. This occurs only about once every 400 years in an individual hydrogen atom, but because of the great number of atoms in the vast interstellar clouds, the radiation is effectively continuous.

Astronomers hope that by tracing these hydrogen clouds they may be able to determine the structure of our galaxy. The clouds are generally thought to be much denser in the spiral arms of the galaxy than in the regions that are near the galactic center.

Science News Letter, November 15, 1952

Questions

AERONAUTICS—What are the advantages of flying Arctic routes between North America and Europe or Asia? p. 308.

ANTHROPOLOGY—Where did man's fore-runners live? p. 314.

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