

SYMBOLS, SIGNALS AND NOISE: The Nature and Process of Communication—J. R. Pierce—*Harper*, 305 p., illus., \$6.50. Communications expert writes about Shannon's information theory, mathematical models, encoding and cybernetics, with appendix explaining mathematical notation for the general reader.

TRANSIENT CIRCUIT ANALYSIS—Y. H. Ku—*Van Nostrand*, 441 p., \$13. Graduate course, covering the subject from the combined Fourier-transform and Laplace-transform approach.

TRANSLOCATION OF PLANTS—A. S. Crafts—*Holt*, 182 p., illus., \$5. On the beginning graduate level, summarizes research findings on movement of water, salts, viruses and tracers, uptake of water and salts by roots, solute movement of phloem and movement of assimilates.

THE TRUE BOOK OF MAGNETS AND ELECTRICITY—Illa Podendorf—*Childrens Press*, 47 p., illus. by Robert Borja, \$2. Experiments for the youngest readers.

THE TRUE BOOK OF WEATHER EXPERIMENTS—Illa Podendorf—*Childrens Press*, 47 p., illus. by Felix Palm, \$2; paper, \$1. Primary reading level.

VERTEBRATE SPECIATION: A University of Texas Symposium—W. Frank Blair, Ed.—*Univ. of Texas Press*, 642 p., illus., \$8.50. Papers discussing isolating mechanisms, evolution of behavior, polymorphism, population dynamics, and age and origin of species.

WHAT MAKES DAY AND NIGHT—Franklyn M. Branley—*Crowell*, unpagged, illus. by Helen Borten, \$2.35. Colorful picture book with simple explanations of how we know that the earth is turning.

WHERE THE BROOK BEGINS—Margaret Farrington Bartlett—*Crowell*, unpagged, illus. by Aldren A. Watson, \$2.35. For the youngest readers.

WRITING BETTER TITLES AND ABSTRACTS—John D. Stevens—*Washington State Univ., Technical Extension Service*, 11 p., paper, free upon request direct to publisher, Pullman, Wash. Focuses technical writer's attention on the importance of keeping titles and abstracts short and specific, since they are the only part most readers ever read.

YOUR FUTURE IN CHEMICAL ENGINEERING—Raymond L. Feder—*Rosen, R.*, 158 p., \$2.95. Study for those interested in selecting a career in this particular field.

YOUR FUTURE IN NUCLEAR ENERGY FIELDS—William E. Thompson, Jr.—*Rosen, R.*, 160 p., \$2.95. Reviews career possibilities in the profession of nuclear physics and engineering.

YOUTH PHYSICAL FITNESS: Suggested Elements of a School-Centered Program, Parts I and II—President's Council on Youth Fitness—*GPO*, 111 p., illus., paper, 40¢. See story, SNL August 12, 1961, p. 105.

• Science News Letter, 80:158 September 2, 1961

Questions

METEOROLOGY—What is the purpose of a meteorological workshop to be held Nov. 13-22? p. 146.

GEOPHYSICS—How far below sea level is a deep passage found in the Antarctic? p. 147.

Photographs: Cover, U. S. Department of Agriculture; p. 146, Bendix Corporation; p. 147, Boeing Company; p. 149, Massachusetts Institute of Technology; p. 151, Westinghouse Electric Corporation; p. 160, Mail Signal Co.

PHYSICS

Optical Masers Probe The Secrets of Matter

➤ A NEW "tuning fork" for exploring the inner structure of matter is reported by a British scientist.

Two optical masers giving off light rays that sometimes clash can produce infrared or "invisible light" rays that penetrate matter. The amount of rays absorbed by substances at varying frequencies tell scientists about their structure.

The frequency of the penetrating rays is varied by heating one of the masers, Dr. D. C. Laine of the University College of North Staffordshire reports in *Nature*, 191: 795, 1961. The frequency can then be "tuned" within the entire range of the infrared spectrum.

One optical maser would continuously give off rays of similar wavelength. Wavelengths varied by the heated maser would merge with the similar wavelengths, producing distinct "beat" signals, which are used to probe matter.

This possible research tool "presents a very attractive approach to the long-standing problem of suitable sources" for radiation studies in the infrared region, Dr. Laine states.

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PSYCHOLOGY

Scientists Emotionally Involved in Their Work

➤ THE WIDELY held public image of the scientist as cold, detached, completely objective and impersonal about his work "could hardly be further from the truth," according to a Harvard University psychologist, Dr. Anne Roe.

The creative scientist in any field "is very deeply involved emotionally and personally in his work," and is himself his own most essential tool, she states.

The emotional process of developing new ideas and hypotheses usually commits the scientist to his theories in a very real sense, she reports in the journal, *Science*, 134:456, 1961.

"It (the hypothesis) is his baby. It is as much his creation as a painting is the personal creation of the painter."

Studies relating to the personality patterns of productive scientists, Dr. Roe notes, have shown them to be independent and open-minded, with a "strong liking for turning disorder into order." They also have strong egos and strong control over their impulses. They prefer interpersonal relations of low intensity and dislike interpersonal controversy in any form.

Scientists also show "much stronger preoccupation with things and ideas than with people." They like to take calculated risks, but risks involving nature, not people, and risks not dependent on luck.

The work a scientist chooses and the way he works "are intimately related to what he is and to his deepest needs," she says. "The more deeply engaged he is, the more profoundly is this true."

• Science News Letter, 80:159 September 2, 1961

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