

Books of the Week

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W. Washington 6, D. C. Ask for free publications direct from issuing organizations.

ATLANTIC REEF CORALS: A Handbook of the Common Reef and Shallow-Water Corals of Bermuda, Florida, the West Indies and Brazil—F. G. Walton Smith—*University of Miami Press*, 112 p., 41 pl., \$3.75. A book for both collectors and biologists, gorgeously illustrated with photographs by Frederick M. Bayer of the U. S. National Museum.

BIRD DISPLAY AND BEHAVIOUR: An Introduction to the Study of Bird Psychology—Edward A. Armstrong—*Oxford*, 2d ed., 431 p., illus., \$5.50. A thorough index and bibliography makes this book very useful to the field ornithologist, but the style, illustration and interesting content make it appeal as well to any nature lover.

CONDITIONED REFLEXES AND NEURON ORGANIZATION—Jerzy Konorski—*Cambridge (Macmillan)*, 267 p., \$4.00. An attempt to extend Sherrington's concepts to the field of higher nervous activity. Translated from the Polish under the author's supervision by Stephen Garry.

DEVELOPMENT OF THE FETUS IN THE DAIRY COW—W. W. Swett, C. A. Matthews and M. H. Fohrman—*Govt. Printing Office*, 34 p., illus., paper, 15 cents.

EXPERIMENTAL IMMUNOCHEMISTRY—Elvin A. Kabat and Manfred M. Mayer—*Thomas*, 567 p., illus., \$8.75. A book on experimental methods for students, chemists and bacteriologists as well as immunologists.

FACTORS IN BOTANICAL PUBLICATION AND OTHER ESSAYS—Neil E. Stevens—*Chronica Botanica*, 85 p., illus., paper, \$2.00. Charming essays by a distinguished biologist.

THE FIG—Ira J. Condit—*Chronica Botanica*, 219 p., illus., \$5.00. Bringing together a wealth of information on the history, legend, symbolism and practical techniques of fig culture.

GEOLOGY AND MAN—Kenneth K. Landes and Russell C. Hussey—*Prentice-Hall*, 518 p., illus., \$6.45. A text emphasizing the effects that geologic processes, both past and present have had on mankind.

INTRODUCTION TO THE HISTORY OF SCIENCE; VOLUME III, SCIENCE AND LEARNING IN THE

FOURTEENTH CENTURY: In Two Parts—George Sarton—*Carnegie Institution of Washington (Williams and Wilkins)*, 2155 p., illus., paper, \$20.00 "One cannot insist too much," says the author in his preface, "on the supreme value of rational thinking, the field of which must be steadily increased and deepened (that is what the progress of science amounts to), but our rationalism must always be corrected and restrained by the overwhelming feeling of our ignorance of fundamentals." A comprehensive work by an outstanding authority in his field.

AN INTRODUCTION TO MATHEMATICS—A. N. Whitehead—*Oxford*, 1st Am. ed., 191 p., illus., \$2.00. The general concepts divorced from the bewildering detail of the various techniques.

INVESTIGATION IN EROSION CONTROL AND THE RECLAMATION OF ERODED LAND AT THE MISSOURI VALLEY LOESS CONSERVATION EXPERIMENT STATION, CLARINDA, IOWA, 1931-42—G. M. Browning, R. A. Norton, A. G. McCall, and F. G. Bell—*Govt. Printing Office*, 88 p., illus., paper, 30 cents.

LET'S MEASURE THINGS—E. Laurence Palmer—*N. Y. State College of Agriculture*, 63 p., illus., paper, free in New York State; 20 cents outside. Price correction.

PHYSICAL GEOLOGY AND MAN—Kenneth K. Landes—*Prentice-Hall*, 414 p., illus., \$6.00. A short edition of the author's "Geology and Man" intended for students in the first term of a two-term course and lacking four chapters on Historical Geology included in the other book.

POPULAR MECHANICS PHOTO HANDBOOK: Hundreds of Clever, Practical Ideas for Taking and Developing Better Pictures and Making Your Own Equipment—Editors, *Popular Mechanics Magazine*—*Popular Mechanics*, 158 p., illus., \$2.00. Contributed by hundreds of camera fans.

SOYBEANS IN AMERICAN FARMING—Edwin G. Strand, Department of Agriculture—*Govt. Printing Office*, 66 p., illus., paper, 20 cents. A technical bulletin.

Science News Letter, December 18, 1948

ENGINEERING

Telephone Calls Recorded

New automatic message accounting system designed for use in handling telephone billing information records on tape the numbers called and length of call.

See Front Cover

➤ THERE will be no dispute with the telephone bill when a new automatic accounting system which records all essential data for billing comes into general use. It notes down the number of the sending phone, the receiving phone, and the length of the conversation.

This device, already installed in the Philadelphia area, was just revealed by Bell Telephone Laboratories in New York. It

is described as an automatic accounting system which can keep track of thousands of dial calls, and not only record who made them, what numbers were called and how long conversations lasted, but also it adds up and prints detailed charge information.

In the Philadelphia installation, part of the intricate equipment is in the city itself, and the other necessary apparatus in nearby Media, where the new service is being introduced. It is known as AMA, an abbreviation for automatic message accounting.

The equipment in Philadelphia translates coded records made at Media, and performs the mathematical calculations.

As explained by Bell scientists, the information needed for accounting is automatically stored up, as calls are made, on reels of paper tape with equipment located in the Media telephone exchange. Holes are automatically punched in this tape in a coded pattern which can later be read and interpreted by accounting office machines.

These reels are taken daily to an accounting center in Philadelphia where a battery of machines translates, sorts, summarizes and prints the information, thus making it ready for use in preparing subscribers' telephone bills. This Philadelphia center will service many other installations besides Media when installations have been made in them.

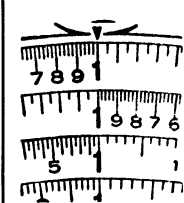
The "electronic brain" of the central office switching system recognizes, on each local call, whether the subscriber making it has flat-rate or message-rate service, and whether the call is to be billed as a toll call. Thus it knows whether any record need be made, and if so, in what detail.

All of the information to be recorded is first translated into numerals, which in turn are represented by tiny holes punched in various patterns on a three-inch-wide paper tape. In this way a record is made of the calling and called numbers, and the month, day, and exact time to tenths of minutes at which conversation begins and ends. The tape-punching equipment, heart of the new system, is shown on the cover of this week's SCIENCE NEWS LETTER.

In the Philadelphia office, the tape is fed into the first of five machines which locates and groups together the various items of information on any single call. This is required because the entry denoting the end of a conversation may be several yards from the starting record on the tape, and between may be records of hundreds of other calls. Other machines in the series go through the basic mathematical calculations and provide the final data for billing. The entire system is as reliable as modern engineering and human ingenuity can make it.

Science News Letter, December 18, 1948

THE BINARY SLIDE RULE



equals a 20 Inch Straight Slide Rule in precision. Has C, CI, A, K, Log, LL1, LL2, LL3, LL4. Binary. Add and Subtract Scales. Gives Trig. Functions from 0 to 90 degrees 1 Minute. The Engine - divided Scales are on white coated aluminum. Permanently accurate. Dia. 8 1/4". Large figures and graduations eliminate eyestrain. Approved at leading Universities. Price, with Case and Instructions, \$7.25. Circulars free. Your money back if you are not entirely satisfied.

EXACT SIZE

Gilson Slide Rule Co., Box 993, Stuart, Fla.
Slide Rule Makers since 1915.