

ty feet up, while the biggest barracuda is seldom more than a six-footer. In general appearance the barracuda resembles the muskallunge of freshwater lakes in the North, and his pike-like manners correspond well to his greater size. Curiously enough, though, the barracuda is not very closely related to the fierce freshwater cousins, muskallunge and pike, but has as his next of kin the rather good-natured, mild-mannered mullets, which also abound off the coast of Florida.

Science News Letter, April 28, 1934

SEISMOLOGY

Earthquakes of the Week

NORTHERN VERMONT experienced a local earthquake of 20 seconds duration Saturday night, April 14, 9:58 p. m., E.S.T. Prof. E. C. Jacobs, University of Vermont seismologist, rated it as a feeble shock of intensity four on the Rossi-Forrel scale. It was too near to develop characteristic waves on the seismographic record.

The strong earthquake that was recorded on the seismographs of the world on Sunday the 15th was centered near the island of Mindanao in the Philippine Islands, the U. S. Coast and Geodetic Survey has determined, using seismological reports telegraphed to Science Service. Strong shocks have occurred in this area before. The longitude and latitude of the approximate epicenter was 8 degrees North and 127 degrees East. The time of origin was 5:15½ p. m. E.S.T.

Seismologic stations reporting the Philippine quake were: Meteorological Observatory, Victoria, B. C.; Georgetown University, Washington, D. C.; Fordham University, New York City; U. S. Coast and Geodetic Survey stations at Honolulu, Tucson, Ariz., and Chicago.

Science News Letter, April 28, 1934

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PSYCHOLOGY

Loud Sounds Seem Lower In Pitch Than Softer Tones

THE INTENSITY of a sound and its frequency are quite distinct physical attributes, but the corresponding psychological attributes of loudness and pitch are not so independent; a loud tone sounds lower in pitch than a high one, and a low tone sounds unduly loud, it was indicated by a report to the National Academy of Sciences delivered at the annual meeting by Dr. Harvey Fletcher, of the Bell Telephone Laboratories, New York City.

A group of ordinary listeners who took part in the reported experiment found that a 50-cycle tone with an intensity which is 10,000 times that of a just barely audible sound appears just as loud as a 1,000 cycle tone with an intensity 1,000,000,000 times that of the threshold.

The apparent pitch of a tone also de-

pends upon its intensity, it was found. The pitch of a 200-cycle tone was heard as being as much as a quarter of an octave lower at the very high intensities than at the low intensities. However, when the tones were of very high frequencies, near 2,000 or 3,000 cycles, such changes of apparent pitch with intensity were not observed.

When ten tones are sounded together, is the resulting sound ten times as loud as each one alone? Speaking from the point of view of physics, the answer is yes. But speaking from the point of view of psychology, it all depends upon the pitch of the component tones. The loudness of one such complex tone with frequencies which are harmonics of 500 cycles per second was found to be one thousand times louder than one of the components instead of only ten times.

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• First Glances at New Books

Additional Reviews
On Page 271

Mining—Economics

THE ECONOMICS OF MINING—Theodore Jesse Hoover—*Stanford Univ. Press*, 547 p., \$6. Mining is not a mere matter of geology and metallurgy. It involves dollars and cents as well. This book by Stanford University's engineering dean deals with valuation, organization and management of non-ferrous mines. Addressed primarily to young mining engineers, the book seeks to answer: How may the metal mining industry get the most for its money in the long run?

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Biology

ADAPTATION ECOLOGIE ET BIOCOENOTIQUE—Marcel Prenant—*Hermann et Cie. (Paris)*, 60 p., 15 fr.

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Geology

METAMORPHISM—Alfred Harker—*Dutton*, 360 p., \$5.90. Dr. Harker approaches metamorphism from the dynamic point of view; he considers the process first, the products afterwards. His treatment of the process is two-fold: first thermal, then regional metamorphism. This book will be highly valuable to more advanced students in geol-

ogy, who will also find the very numerous diagrams, drawn from microscope studies, of great assistance in rendering unmistakable the clear descriptions in the text.

Science News Letter, April 28, 1934

Biology

DYSHARMONIES ET DISCONTINUITES DANS LA CROISSANCE—Georges Tessier—*Hermann et Cie. (Paris)*, 39 p., 10 fr.

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Biology

LES PAGURES OU BERNARDS L'ERMITE (UN EXEMPLE D'ADAPTATION)—Charles Pérez—*Hermann et Cie. (Paris)*, 33 p., 9 fr.

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Biology

POLARISATION ET DEPolarISATION CELLULAIRES—M. Dubuisson—*Hermann et Cie. (Paris)*, 47 p., 12 fr.

Science News Letter, April 28, 1934

Biology

REPRODUCTION SEXUALITE HEREDITÉ—Georges Bohn—*Hermann et Cie. (Paris)*, 89 p., 15 fr.

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● First Glances at New Books

Geography

GEOGRAPHY IN RELATION TO THE SOCIAL SCIENCES—Isaiah Bowman—*Scribner's*, xxii+240 p., \$2.25. With the planners of the New Deal giving much thought to the matter of adjusting the American population to the land that must support them, Dr. Bowman's book is most timely—the more so since he himself, through his positions as director of President Roosevelt's Science Advisory Board and as chairman of the National Research Council, can in the ordinary course of events be expected to have considerable influence in making at least the beginnings of that adjustment. The book is a thoughtful and scholarly piece of work, both in its grasp of the great necessary methods and generalities of applied geography and of such specific human details as geography and conservation, and geography in relation to city and regional planning.

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Radio

THE RADIO AMATEUR'S HANDBOOK—*American Radio Relay League*, 238 p., \$1. The eleventh edition of the "bible" of the radio "ham." It is a source of inspiration and information to thousands who practice amateur radio as a hobby.

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Sociology—Economics

THE ABC OF THE NRA—Charles L. Dearing, Paul T. Homan, Lewis L. Lorwin and Leverett S. Lyon—*Brookings Institution*, 185 p., \$1.50. The background and content of the Recovery Act and a picture of the activities of the Recovery Administration are presented by skilled economists.

Science News Letter, April 28, 1934

Biology

THE CLASSIFICATION OF THE FREE-LIVING NEMATODES AND THEIR RELATION TO THE PARASITIC NEMATODES—I. N. Filipjev—*Smithsonian Institution*, 63 p., 8 pl., 25c.

Science News Letter, April 28, 1934

Language

A GERMAN READER FOR BIOLOGY STUDENTS—H. G. Fiedler and G. R. de Beer—*Oxford*, 92 p., \$1.50. No matter how difficult the hopeful student of biology may find his assault on German, there is no blinking the fact that without a decently fluent reading knowledge of that language he will be under a life-

long handicap; hence the need for well-planned and diligently-pursued courses in scientific German for those who cannot spare the time to obtain a really full preparation. For such courses a better reader than the present brief book could hardly be found: it is made up of extracts from significant writings by leading modern German biologists; and the vocabulary, by Herma E. Fiedler, is in itself almost a dictionary of German biological terms.

Science News Letter, April 28, 1934

Chemistry

TABLE INTERNATIONALE DES POIDS ATOMIQUES—*Union Internationale de Chimie, Paris*, 62 p. The fourth report of the Commission on Atomic Weights, given in English, German and French. The English version is also printed in the *Journal of the American Chemical Society* for April, 1934.

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Mathematics

LA FLUORESCENCE DES MOLECULES DIATOMIQUES—P. Swings—*Hermann et Cie, Paris*, 29 p., 12 fr.

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History—Museum Science

HISTORIC HOUSE MUSEUMS—Laurence Vail Coleman—*American Assn. of Museums*, 187 p., 66 illus., \$2.50 (members, \$2). Americans are coming to take an affectionate and intelligent pride in distinguished old houses of various periods of our history. The idea of saving such houses can be traced to 1850 when New York State acquired Washington's headquarters at Newburg. Today more than 400 houses have been salvaged and restored to their old-time personalities. A large part of Mr. Coleman's book is a manual of useful information for those who administer such museums. But those who are attracted to historic houses as students or tourists may find much of interest in the chapter on the history of American dwellings, and the numerous photographs, and perhaps also in some of the problems of museum-making. A directory of historic house museums is included.

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Ethnology-Literature

GILGAMESH—William Ellery Leonard—*Viking Press*, 80 p., \$2. While far less familiar to the reading public than the Greek *Odyssey*, Babylonia's epic of a great adventurous king deserves modern fame. Perhaps wider fame will come with this English translation in free verse splendidly done by a poet-professor. Prof. Leonard has followed, with a few deviations, the German version of Dr. Hermann Ranke. A fortunate circumstance brought Dr. Ranke to the University of Wisconsin as a visiting professor in 1932, and enabled Prof. Leonard to collaborate with him personally in the English translation of the world's "oldest great poem."

Science News Letter, April 28, 1934

Medicine

THE REVIEW OF GASTROENTEROLOGY—*Society for the Advancement of Gastroenterology*, \$2 per annum, foreign, \$3. This new scientific publication, of which the first number has just appeared, will be devoted to that branch of medicine which deals with diseases and disorders of the digestive tract. It is the official organ of the society publishing it and has an impressive list of collaborating editors.

Science News Letter, April 28, 1934

Physics

SOUND—E. Laurence Palmer—*New York State College of Agriculture, Cornell University*, 31 p., 10c. This leaflet was quoted in the SCIENCE NEWS LETTER of March 31 at 20c. The leaflets appear quarterly, the September, or teachers' number, being the only issue priced at 20c.

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Mental Hygiene

HYGIENE OF THE MIND—Ernst von Feuchtersleben, Tr. by F. C. Sumner—*Macmillan*, 150 p., \$1.25. We think of mental hygiene as beginning with the movement originated in recent years by Clifford H. Beers. This small volume contains the writings of a physician who was also a poet, published originally in Austria in 1838.

Science News Letter, April 28, 1934

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