

SCIENCE

VOL. 77

FRIDAY, FEBRUARY 17, 1933

No. 1990

Genetics and Embryology: PROFESSOR CHARLES ZELENY 177

Obituary:

Edwin Chapin Starks: PROFESSOR F. M. MAC-FARLAND. *Herman Theodor Holm:* DR. A. F. WOODS. *Recent Deaths* 182

Scientific Events:

International Vitamin Standards; The Morris Arboretum; The Proposed Everglades National Park; In Honor of Dr. Elihu Thomson 184

Scientific Notes and News 186

Discussion:

A New Mathematical Formula for Chemical Analysis in a Two Phase System: PROFESSOR J. F. MCCLENDON. *Growth Retardation by the Partially Oxidized Sulfhydryl of Cysteine:* DR. FREDERICK S. HAMMETT. *Eocene Lagomorpha:* J. J. BURKE. *Blue Eyes for Brown:* DR. VILHJALMUR STEFANSSON 189

Reports:

The Banting Research Foundation: PROFESSOR V. E. HENDERSON and D. T. FRASER 192

Societies and Meetings:

The Tennessee Academy of Science: PROFESSOR JOHN T. MCGILL. *The Northwest Scientific Association:* J. W. HUNGATE 192

Scientific Apparatus and Scientific Methods:

A Simplified Method of Staining Endospores: ALICE B. SCHAEFFER and PROFESSOR MAC DONALD FULTON. *A Demonstration Jar for White Mice:* PROFESSOR C. REYNOLDS 194

Special Articles:

Variability and Individuality: DR. C. C. LITTLE. *The Mechanism of the Ionene Synthesis:* PROFESSOR MARSTON TAYLOR BOGERT. *The Vitamin D Potency of Egg Yolk from Irradiated Hens:* DR. GEORGE H. MAUGHAN and EDNA MAUGHAN 195

Science News 6

SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. McKEEN CATTELL and published every Friday by

THE SCIENCE PRESS

New York City: Grand Central Terminal
Lancaster, Pa. Garrison, N. Y.
Annual Subscription, \$6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary, in the Smithsonian Institution Building, Washington, D. C.

GENETICS AND EMBRYOLOGY¹

By Professor CHARLES ZELENY

UNIVERSITY OF ILLINOIS

THE rapid rise of genetics has led to difficulties in relating its findings to those of embryology. The view has been expressed that progress in genetics is endangered by explorations in border fields. The problem has a general significance and seems to warrant discussion before a group of zoologists.

INBREEDING AND OUTBREEDING

In treating these difficulties it may be allowable to take a theory of one of the necessary conditions of evolution and to apply it to the analogous realm of scientific progress. Among the numerous constructive contributions of genetics to the discussion of the factors of evolution is the support it gives to the view that periods of isolation alternating with periods

of intermingling among groups are necessary for progress. Inbreeding and outbreeding are both essential. New hereditary constitutions are swamped by outbreeding, and their recessive genes are incapable of expression under the condition of free contact within a large population.

With progressive isolation, small, homozygous, closely knit populations are produced. Each establishes its own clear and definite racial qualities. Many of the groups die out because of inherent weakness. Others have innate vigor and continue to flourish under isolation for a considerable period of time.

For the latter, two roads are open. If they continue in isolation their homozygous constitution leads to stagnation and their incapacity for rapid response to changing environments dooms them to extinction. If, on the other hand, after they have established themselves under isolation and are no longer in

¹ Address of the vice-president and chairman of Section F—Zoological Sciences, American Association for the Advancement of Science, presented at the Zoologists' dinner, Atlantic City, December 29, 1932.

NEW MCGRAW-HILL BOOKS

Just Published

MANUAL OF PLANT DISEASES—New 2nd Edition

By **Frederick Deforest Heald**, Head of the Department of Plant Pathology, The State College of Washington, Pullman, Washington. *McGraw-Hill Publications in the Agricultural and Botanical Sciences.* 960 pages, 6 x 9. \$7.50

The revision of this standard text includes much new material covering the marked advances recently made in phytopathology, virus and related diseases, and other departments of the subject.

HEAT TRANSMISSION

By **William H. McAdams**, Professor of Chemical Engineering, Massachusetts Institute of Technology. 383 pages, 6 x 9. \$5.00

This comprehensive treatise on the various fields of heat transmission is sponsored by the Committee on Heat Transmission of the National Research Council. The materials are based on considerable unpublished data. The book contains authoritative correlations for the various important cases of heat transfer, with thirty-three examples of the application of the recommended relations.

THE DEVELOPMENT OF LEARNING IN YOUNG CHILDREN

By **Lovisa C. Wagoner**, Professor of Child Development, Mills College, California. *McGraw-Hill Euthenics Series.* 322 pages, 5½ x 8. \$2.50

Professor Wagoner discusses in this book the progress of the child in (1) mastery of his own body, (2) knowledge of the world of things, and (3) knowledge of the world of people. Throughout, the psychology of childhood is considered as something dynamic, rather than as a matter of various static cross-sections of the individual's life. The book stresses learning as a factor in development and devotes more space than usual to the psychology of nutrition.

Coming in March

EXPERIMENTAL ATOMIC PHYSICS

By **G. P. Harnwell**, Assistant Professor of Physics, Princeton University and **J. J. Livingood**, Research Associate, University of California. *International Series in Physics.* 541 pages, 6 x 9. \$5.00

This book develops in a logical and convincing way the fundamental conceptions of modern atomic physics, and is unique in that it gives descriptions of how the fundamental quantities of atomic physics are actually measured. In discussing the wave concept of matter, and the particle concept, the mathematical treatment has been reduced to a minimum. Special attention has been given to recent developments, making the book up-to-date in every way.

HIGH FREQUENCY MEASUREMENTS

By **August Hund**, Consulting Engineer. *International Series in Physics.* Approx. 484 pages, 6 x 9. \$5.00

A detailed description of the principles and methods used in high frequency work. The subject matter is treated critically, presenting modern practice and theory. The applications are presented in a manner sufficiently elementary to meet the needs of any one interested in carrying on research work.

INTRODUCTORY MATHEMATICS

By **John Wayne Lasley, Jr.**, and **Edward Tankard Browne**, Professors of Mathematics in the University of North Carolina. 434 pages, 6 x 9. \$2.75

Intended for first year college courses, this book develops algebra, trigonometry, transcendental functions and the calculus in a connected way about a central idea—the function. Analytic geometry as a separate doctrine is omitted. The book is neither of the classical compartment type, nor is it written from the fusion point of view, but it incorporates what in the judgment of the authors are the better features of both modes of approach.

Send for copies on approval

MCGRAW-HILL BOOK COMPANY, Inc.

330 West 42nd Street, New York

Aldwych House, London, W. C. 2