

# SCIENCE

VOL. 97

FRIDAY, APRIL 30, 1943

No. 2522

<i>Some Obstacles in the Path towards an Optimum Diet:</i> DR. A. J. CARLSON .....	385
<i>Research in Wartime:</i> PROFESSOR J. H. SIMONS .....	390
<b>Obituary:</b>	
<i>Edmund Smith Conklin:</i> DRS. ROBERT H. SEASHORE, R. C. DAVIS and J. R. KANTOR. <i>Recent Deaths</i> .....	393
<b>Scientific Events:</b>	
<i>Swedish Forest Products; Industrial Research Laboratory of the University of Rochester; Rare Chemicals; Award of the Nicholas Appert Medal to Dr. Prescott; Conference on Physics; Pacific Division of the American Association for the Advancement of Science</i> .....	394
<i>Scientific Notes and News</i> .....	397
<b>Discussion:</b>	
<i>Destruction of Red Blood Cells After Fat Ingestion:</i> DR. VICTOR JOHNSON, JOAN LONGINI and DR. L. WILLARD FREEMAN. <i>Gonadal Hormones in Snakes:</i> DR. J. R. VALLE and DR. L. A. R. VALLE. <i>Names, Russian and Other:</i> PROFESSOR KNIGHT DUNLAP .....	400
<b>Scientific Books:</b>	
<i>The Science of Words:</i> PAUL H. OEHSER. <i>Autonomic Regulations:</i> PROFESSOR FRANK A. HARTMAN .....	401

## Reports:

<i>General Council on Zoological Nomenclature:</i> DR. WILFRED H. OSGOOD .....	403
--	-----

## Special Articles:

<i>Isolation of the Antianemia Factor (Vitamin B<sub>12</sub>) in Crystalline Form from Liver:</i> DR. J. J. PFIFFNER and OTHERS .....	404
--	-----

## Scientific Apparatus and Laboratory Methods:

<i>Quantitative Micro-Estimation of Antibodies in the Sera of Man and Other Animals:</i> DR. MICHAEL HEIDELBERGER and CATHERINE F. C. MACPHERSON .....	405
--	-----

<i>Science News</i> .....	10
---------------------------	----

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

## THE SCIENCE PRESS

Lancaster, Pennsylvania

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.

## SOME OBSTACLES IN THE PATH TOWARDS AN OPTIMUM DIET<sup>1</sup>

By DR. A. J. CARLSON

UNIVERSITY OF CHICAGO

WAR, by interference with agriculture and commerce, as well as by direct destruction of foods, brings on starvation and the hosts of human ailments that sprout on malnutrition. Hence, in a world-wide violence, like our present war, the ancient problems of individual and national diets requisite for health and efficiency become both a national and an international concern of nutrition experts, physicians, statesmen and captains of industry. These imperative problems compel the biologist to re-examine the known and the unknown in the field of food and fitness, food and life, food and victory, so that the obstacles in the path towards an optimum diet for optimum health may not trip us in the dark. Such re-examination of the nutri-

tional history of man (and other mammals), past and present, reveal as of to-day much new and reliable information, much innocent ignorance, many faulty food habits and unwise individual and commercial food practices of to-day, unwise practices in the light of present knowledge and past experience. There appear to be even questionable building stones in our scientific edifice. Such dilemmas as the recent assertion by Surgeon General Dr. Thomas Parran, of the U. S. Public Health Service, that, in our own country with its abundance of excellent foods, and in times of peace, "one third of our people is getting food inadequate to maintain good health, and less than one fourth of the American people are getting a good diet." This is perplexing, especially in view of the more recent assertion (November, 1942) of Sir John

<sup>1</sup> Lecture before the Physiological Society of Detroit, Michigan, November 19, 1942.

# New Text Received with Wide Acclaim

# GENERAL ZOOLOGY

By TRACY I. STORER

*Professor of Zoology, University of California at Davis*

*McGraw-Hill Publications in the Zoological Sciences*

**798 pages, 6 x 9, 551 figures, 5 colored plates. \$3.75**

This immediately successful text has won enthusiastic response from teachers everywhere, who have acclaimed it as one of the most important contributions to the field of zoology that has appeared in recent years.

***The following comments are representative:***

"I have made a careful examination of this book and sincerely believe that it is the best textbook in general zoology that I have ever seen. I have decided to use it as the text in my course in medical biology, beginning next semester."

Professor H. W. CURRAN  
Queen's University

"I have explored its pages carefully and can say unhesitatingly that no zoology text of recent years has caught my eye to the extent that it has. It is a worthy addition to the McGraw-Hill Publications in the Zoological Sciences and I predict for it a very high place among the outstanding American textbooks in zoology."

Professor HALBERT M. HARRIS  
Iowa State College

"I have very carefully gone over this book and am very much impressed with the contents. . . . The arrangement is splendid and the great number of concise tables for each group of animals is not excelled."

Professor C. R. JONES  
Colorado State College

"Professor Storer should be congratulated on his success in setting forth the principles underlying animal biology, treating clearly modern phases of the subject, and yet including a comprehensive systematic survey of the animal kingdom within the confines of a single volume. Among the specific features that will prove valuable to the student as well as the teacher are: (1) a sane allotment of space to the various fields in which the subject matter of a general course must be divided; (2) the logical sequence in which the subject matter is discussed; (3) the new text figures and clear diagrams included; (4) the ease with which reference can be made to such figures, by chapter; (5) concise tables, summarizing various topics; (6) the printing of important words and anatomical terms in bold face italics; (7) an adequate index, and glossary; and (8) the explicit colored figures."

"I am counting on adopting it for the work of the future."

Professor B. P. YOUNG  
Cornell University

"It was a red-letter event when I received Storer's *General Zoology*. Without hesitation I pronounce it by far the best of all the recent zoology texts. I am amazed at the amount of valuable text material that has been crowded into its pages. What pleases me most of all is not only the evidence of sound scholarship but of the author's ability to write well and in language the student can readily understand. . . . Storer's *General Zoology* is my text of choice the coming year."

Professor EDMUND JAEGER  
Riverside Junior College

"It is a very fine book, in the production of which both the author and publisher may well be proud of their achievement."

Professor HAROLD KIRBY  
University of California

"I like the book and feel it is a real contribution toward bridging the gap between the principles and type course. The figures, the bibliographies, and the occasional change in size of type make it a very attractive text. It will serve the general student as a permanent work of reference long after his interest in it as a text has ceased."

Professor MELVILLE H. HATCH  
University of Washington

"*General Zoology* seems to me to be the finest general zoology text yet. The order of treatment of the various aspects of the subject is very effective, the method of treatment excellent, and the illustrations are superb."

Professor THOMAS H. MORTON  
Niagara University

"I have examined it carefully and have passed it on to the other members of this Department for their opinion. The consensus is that it is without doubt the best text on general zoology that has been published. I hardly see how we can afford not to adopt it, and we plan to do so in the fall term. I predict that this text will become extremely popular."

Professor ROSS E. HUTCHINS  
Mississippi State College

*Send for a copy on approval*

## McGRAW-HILL BOOK COMPANY, INC.

330 West 42nd Street, New York, N. Y.

Aldwych House, London, W.C.2

## SCIENCE NEWS

*Science Service, Washington, D. C.*

## SPIRAL NEBULAE

THE arms of spiral nebulae, those gigantic pinwheels of the universe, have been discovered to be trailing their central region by Dr. Edwin Hubble, of the Mt. Wilson Observatory. His investigation, reported in the *Astrophysical Journal*, is of importance in the study of the origin and development of nebulae, the most familiar of which is the Milky Way.

Spiral nebulae, comparable in size to our stellar system, are millions of light-years away. Billions of stars, luminous gaseous matter, and dark clouds obscuring portions of the brilliant center form this whirlpool of light.

Dr. Hubble slips the missing piece of the puzzle into place by developing a criterion for determining the direction in which these whirling masses are inclined. We see them as images projected against space and whether they are tilted toward us or away would decide, in light of their spiral pattern, if the arms are trailing or leading.

It has been believed for some time that the dark lanes visible only on the slightly tilted nebulae are the key, but dispute arose as to whether they marked the far or near side. Working with the entire collection of Mt. Wilson photographs, including those made with the aid of the famous 100-inch telescope, Dr. Hubble eventually found a spiral nebula which showed both the dark lanes and the spiral pattern. The dark lines were silhouetted against the central or nuclear bulge, showing that the dark bands unmistakably denote the nearer side. Other nebulae studied support his assumption that the arms were trailing.

From the slant of the spectral lines it is known that all spiral nebulae are traveling in the same direction. Having once determined that direction, Dr. Hubble concluded that the arms of the nebulae are trailing in all spirals.

## NEW COSMIC RAY THEORY

COSMIC rays are due to protons which plunge into the earth's atmosphere from outer space, and the proton splits into ten mesotrons. This is the latest theory which Dr. W. F. G. Swann, director of the Bartol Research Foundation of the Franklin Institute, proposes in *The Physical Review*.

Dr. Swann has long contended, in company with many other distinguished physicists, that the incoming particles responsible for the rays are protons. Others have contended that they were high-speed electrons. He now adds a further detail to the theory, that the proton splits into ten mesotrons. This theory, he believes, is the only one that satisfactorily accounts for the variation of cosmic ray intensity with the latitude and altitude.

The proton is the positively charged particle found in the central sun or nucleus of an atom. It has about the weight of the hydrogen atom, the nucleus of which is composed of a single proton, around which revolves a single negatively charged electron. The electron has only 1/1800 the weight of a proton.

The mesotron is the elusive and exceedingly short-lived middleweight particle, with a weight about 1/10 that of

the proton. Its life span is only one to two millionths of a second. Consequently many are found high up in the atmosphere, but much fewer lower down. Not many live to reach the earth's surface. During its brief flight, the mesotron parts with most of its energy and degenerates to an electron.

## COLOR CHANGES IN ANIMALS

WHEN a chameleon flashes from brown to green in a few seconds, or an eel more sluggishly takes several hours to shift from dark to pallid in skin hue, don't seek the cause for this difference in rates in the nerves of the one animal or the gland secretions of the other. Professor G. H. Parker, of Harvard University, spoke on this subject before the Philadelphia meeting of the American Philosophical Society.

Quickness of color change in some animals, slowness in others is determined primarily by the skin's pigment-containing cells themselves. This is contrary to the zoological doctrine most widely held at present, which states that the quick-changing animals do the trick by means of nerve impulses, while the ones that alter their colors slowly depend on hormones or gland secretions.

This opinion, Dr. Parker said, was based on the examination of only a few animals, and falls down when a score or more species, a wide range of color-changing speeds, are examined. As a matter of fact, the quick-changing chameleon depends on hormones, the slow-changing eel on nerves.

Slowness of response by color cells to either hormone or nerve stimulus has an analogy in a similar slowness in muscle cells. A snail's muscles simply can not move otherwise than very deliberately, while a flea's muscles always contract with a lightning-like snap.—FRANK THONE.

## ISLANDS IN THE PACIFIC

TRUK, in the mid-Pacific, is a doomed island. Unless geologic processes now going on in the earth's crust beneath that part of the ocean are stopped or reversed, it will eventually be drowned. The only trouble is that this won't happen in 1943 or 1944—geologic processes are slow.

That Truk is sinking, while other islands that are now enemy strongholds are slowly rising, was pointed out in an address by Professor William Herbert Hobbs, of the University of Michigan, before the meeting of the American Philosophical Society. Professor Hobbs has seen Truk and the other Japanese-mandated islands since they passed under the flag of the Rising Sun. He visited there in 1921, when Japan had just taken over and when our relations with that country were on a much more cordial basis than they have been recently. He was shown many courtesies by the officials in charge, who helped him in the geological studies he was making of the basic geology of the Pacific area.

For geologists interested in the story of mountain-building, most unique opportunities for study are offered by the several curving island chains in the Pacific, from