

# SCIENCE

VOL. 80

FRIDAY, DECEMBER 28, 1934

No. 2087

<i>Some Responsibilities of Science with Relation to Government:</i> DR. JOHN C. MERRIAM .....	597	<i>INGER. Timbers of North America:</i> PROFESSOR R. H. WETMORE .....	617
<i>The Dual Principles of Evolution:</i> DR. HENRY FAIRFIELD OSBORN .....	601	<i>Scientific Apparatus and Laboratory Methods:</i>	
<i>The Measurement of Personality:</i> DR. LEWIS M. TERMAN .....	605	<i>Water-cooled Resistors:</i> DR. EDWARD M. THORNDIKE. <i>Glass Blowers' Holder for Large Flasks:</i> DR. ARTHUR F. SCOTT .....	619
<i>Obituary:</i>		<i>Special Articles:</i>	
<i>Sir Horace Lamb. Recent Deaths</i> .....	608	<i>The Origin of Pigment Cells in Amphibia:</i> DR. GRAHAM P. DUSHANE. <i>Hyperimmune Antipoliomyelitis Horse Serum:</i> B. HOWITT .....	621
<i>Scientific Events:</i>		<i>Science News</i> .....	10
<i>Symposia on Distillation at the Massachusetts Institute of Technology; Dedication of the Washington, North Carolina, Field Museum; The Twenty-fifth Anniversary of the New York Neurological Institute; Award of the William H. Nichols Medal; The Edison Medal Award</i> .....	609		
<i>Scientific Notes and News</i> .....	612		
<i>Discussion:</i>			
<i>A Photochemical Aspect of Nitrate Assimilation in Plants:</i> DR. W. E. TOTTINGHAM and E. J. LEASE. <i>Occurrence of Uniovular Twins in Multiple Births:</i> DR. C. V. GREEN. <i>A Blue Moon:</i> PEREZ SIMMONS .....	615		
<i>Scientific Books:</i>			
<i>A Treatise on Diffraction:</i> DR. L. H. GERMER. <i>Books on Popular Astronomy:</i> DR. FRANK SCHLES-			

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.

## SOME RESPONSIBILITIES OF SCIENCE WITH RELATION TO GOVERNMENT<sup>1</sup>

By Dr. JOHN C. MERRIAM

CARNEGIE INSTITUTION OF WASHINGTON

At this particular moment in history necessity for judgment on emergency questions has brought engineering, science and constructive work in sociology into important relation to government. Whatever views we may hold regarding the significance of scientific contributions in the present situation, this is a time in which questions touching the responsibilities of science to government can be discussed with hope that attention directed to the subject may aid ultimately in advancing understanding of this relation.

### OBJECTIVES OF SCIENCE COMPARED WITH THOSE OF GOVERNMENT

Although science and the scientific method have become almost the controlling factors in certain great

<sup>1</sup> Address at the General Session of the American Association for the Advancement of Science, Berkeley, California, June 20, 1934.

organized activities, as in some aspects of industry, the mode of operation of science has seemed commonly to differ sharply from that of government. Fundamentally, science relates to search for realities and principles and to their interpretation. It is the discoverer and organizer of facts. Science may also be creative, but commonly it is the inventor, engineer and artist who produce that which has not previously existed. Government is a form of organization or administration designed to make it possible for human beings to work together with mutual advantage. Its operations must be based upon realities or the truth, but their basic objective is the furnishing of means for bringing about relations among people which, according to current views of democracy, will give the maximum contribution of power or strength or wisdom for the whole group, and at the same time the

# A NEW BOOK

Never before has any one book so effectively portrayed the development, chemistry and technology of rubber—on both counts it will be welcomed by the rubber scientists and technologists and by that larger public, the librarian and research man and investigator, as well as for those with only a general interest in rubber, and for the specialist in fields of botany, planting, chemistry, physics and the testing of materials.

## THE SCIENCE OF RUBBER

Authorized English Translation of  
MEMMLER'S Handbuch der Kautschukwissenschaft  
and the most complete bibliography of Books and Pamphlets  
on Rubber ever Published

*Edited by*

R. F. DUNBROOK, PH.D. and V. N. MORRIS, PH.D.  
and Ten Collaborators of the Research Staff  
of the Firestone Tire and Rubber Company.

With translators notes on developments and American practice for the years 1930 to 1933 inclusive

ON  
INSPECTION  
AT  
BOOTH 21  
SCIENCE  
EXHIBITION  
PITTSBURGH,  
PA.

Dec. 27-30

1934

788 Pages

Profusely Illustrated

Price \$15.00

**D**URING the past 15 years good books have appeared in English on latex, plantation practice, the chemistry of rubber and on the technology of rubber, but no thorough treatise on the entire science of rubber has been available. The translation of Memmler's "Handbuch der Kautschukwissenschaft" was prompted by the firm belief that American and British rubber scientists and technologists would welcome a really comprehensive work in English covering not only latex, crude rubber, the chemistry of rubber, vulcanization, and the analysis of rubber, but also embracing such diverse fields as the microscopy of rubber and rubber products, pigment dispersion and the reinforcement of rubber, physics of rubber, botany and plant physiology of the rubber-bearing plants, the aging of rubber, and the specialized equipment for physical testing.

Although a complete revision of the German book has not been attempted, an endeavor has been made to cover many of the important developments of the years 1930 to 1933 inclusive by means of translators' notes. Specific mention may be made of notes on recent developments in synthetic rubber, the compounding and direct utilization of latex, Gutta-Percha (which was not discussed in the German version), recent X-ray work, the thermal and elastic properties of rubber, the electrical properties of rubber (work of the Bureau of Standards), recent theories of vulcanization, the effects of pigments in rubber, and the latest physical testing equipment (with emphasis on that of American origin). A comprehensive chart on the reactions of the rubber hydrocarbon has been included in the English version. The accuracy of the references to the literature in the German book has been greatly increased by careful checking on the part of the translators.

By far the greatest single addition to the German book is the comprehensive bibliography of books and pamphlets on rubber, compiled by Miss H. P. Albaugh, Research Librarian of the Firestone Company. As this bibliography, which lists over 1700 titles, is the most complete one ever published, it should be of very great value to librarians and to workers in the field of rubber.

### REINHOLD PUBLISHING CORP.

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

# THE JOURNAL OF NUTRITION

Published monthly by The Wistar Institute

John R. Murlin, Managing Editor, University of Rochester

**Vol. 9 No. 1 to be issued in January will contain the following articles**

- W. T. SALTER, P. D. ROBB and F. H. SCHARLES. Liver glycogen from derivatives of glucose. Four figures.
- JENNIE TILT and CATHERINE F. WALTERS. A study of the basal metabolism and diet of normal young college women in Florida.
- J. M. COLEMAN and R. W. RUPRECHT. The effect of fertilizers and soil types on the mineral composition of vegetables.
- M. A. OHLSON and K. DAUM. A study of the iron metabolism of normal women. One chart.
- AMY L. DANIELS, M. K. HUTTON, ELIZABETH KNOTT, OLIVE E. WRIGHT, GLADYS EVERSON and F. SCOULAR. A study of the protein needs of preschool children. Three charts.
- J. A. KEENAN, O. L. KLINE, C. A. ELVEHJEM and E. B. HART. The stability of vitamins B(B<sub>1</sub>), G(B<sub>2</sub>) and B<sub>6</sub>. One chart.
- HELEN S. MITCHELL and WARREN M. DODGE. Cataract in rats fed on high lactose rations. Two figures.
- C. A. LILLY, C. B. PEIRCE and R. L. GRANT. The effect of phosphates on the bones of rachitic rats. Three plates.
- VAN R. POTTER and KURT W. FRANKE. The effect of diet upon the blood thioneine of the albino rat. Two charts.

Price, \$5.00 per volume, Domestic; \$5.50 per volume, Foreign

Two volumes issued annually

Back volumes from 1 to 8, inclusive, may be had for \$40.00

Address subscriptions to

**The Wistar Institute of Anatomy and Biology**  
Philadelphia, Pa., U. S. A.

## SECOND-SEMESTER TEXTS GENERAL ZOOLOGY

BY

FREDERICK H. KRECKER  
*Ohio University*

An excellently planned and interestingly written text in zoology, regarded by many teachers as the best elementary book in the field. The following two opinions are typical:

"I have examined the work and believe it ranks well up in the scale with other texts of this sort which have appeared during the past several years."—H. D. Reed, *Cornell University*.

"I have looked over this book with considerable interest and find it to be very readable and altogether an excellent text."—John E. Guberlet, *University of Washington*. \$3.50

## ELEMENTS OF MODERN BIOLOGY

BY

CHARLES R. PLUNKETT  
*Author of Outlines of Modern Biology*

"I am very much pleased with the content and treatment of both books, but I find the *Elements* more satisfactory for students who have not had as much chemistry in preparation as is desirable for classes in which the *Outlines* is used."—D. E. Lancefield, *Columbia University*.

\$3.00

**HENRY HOLT AND COMPANY**

One Park Avenue

New York City

# An American-Made Giemsa Stain,

using American dyes  
and American solvents

Continued satisfied patronage encourages us in our efforts in introducing our GIEMSA STAIN made after the original method described by Giemsa in Deutsche med. Wochenschrift, No. 31, p. 1026, 1905.

We are supplying American scientists with an efficient stain marketed at a price that is reasonable by virtue of neither excessive cost of custom duty fees nor high priced unfavorable foreign exchange:

Fifty grams for \$2.00.

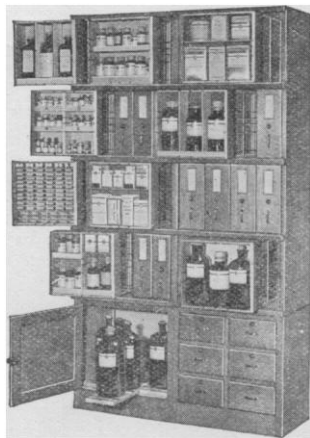
## Gradwohl Laboratories

3514 Lucas Avenue,

St. Louis, Missouri

### FILE

Your Supplies and Apparatus  
**The SCHWARTZ WAY**  
FILES ALL SIZES OF CONTAINERS  
From a Small Vial to a Gallon



You locate  
articles  
instantly

You find them  
in A1 condition

You avoid  
duplicating

Send for complete  
Illustrated  
catalog, also  
Showing entirely  
New Type

Laboratory Benches and Desks, with net prices  
**SCHWARTZ SECTIONAL SYSTEM**  
INDIANAPOLIS, INDIANA

## Manual of the Southeastern Flora

(ILLUSTRATED)

Being Descriptions of the Seed-Plants growing naturally in North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee and Eastern Louisiana

By JOHN KUNKEL SMALL

This Manual replaces the author's Flora of the Southeastern United States, published in 1903 (second edition 1913), for the Southern States east of the Mississippi River. It embodies the results of continued exploration and study, thus bringing up to date our knowledge of this floral region.

There are xxii + 1554 pages and over 1500 illustrations, one illustration of a species of each genus.

Price \$10.50 Postpaid

**THE SCIENCE PRESS  
PRINTING CO.**

LANCASTER, PENNSYLVANIA

### Original Gruebler Stains

Dr. K. Hollborn & Söhne  
formerly Dr. G. Grueblers Chem. Lab.  
(founded 1880)

Original Gruebler, Hollborn & Giemsa  
Stains & Preparations for microscopy. Details from Pfaltz & Bauer, Inc.  
300 Pearl St., N. Y. C.



### Field Equipment for Engineers, Explorers, Hunters, Travelers

Scientific Instruments, Packing Equipment, Skis, Firearms, Clothing, Fiala Pat. Sleeping Bags, Optical Instruments, Astronomic Telescopes; Range Finders; Binoculars. Paulin Altimeters. Write for Catalog "A."

**FIALA OUTFITS**

47 Warren St., New York

### filter membranes

for work in fine- and ultra-filtration (Bacteriology, Serology, chemistry, etc.) . . . of tested porosity—Send for Cat. SU3 describing membranes, apparatus, giving bibliography, etc.

**Pfaltz & Bauer, Inc.**  
300 Pearl St., N. Y. C.

### attention!—plant physiologists

for your researches with liquid culture media use DeHaens Guaranteed Analytical Reagents . . . now used by many. . . Informative Cat. on request.

**Pfaltz & Bauer, Inc.**  
300 Pearl St., N. Y. C.