

SCIENCE

No. 1822

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.

The general program for this meeting, a book of over two hundred pages, will be available at the registration offices in the Shrine Temple, Des Moines, at nine o'clock on Friday, December 27, and thereafter. It will be supplied free to all who register and may be purchased by others. Any person who does not

The Journal of General Physiology

EDITED BY

W. J. CROZIER

JOHN H. NORTHROP

W. J. V. OSTERHOUT

Contents of Volume 13, No. 2, November 20, 1929:

- ANSON, M. L., AND MIRSKY, A. E. Protein coagulation and its reversal. The preparation of completely coagulated hemoglobin.
- MIRSKY, A. E., AND ANSON, M. L. Protein coagulation and its reversal. The reversal of the coagulation of hemoglobin.
- KRUEGER, A. P., AND TAMADA, H. T. The preparation of relatively pure bacteriophage.
- EMERSON, ROBERT. Measurements of the metabolism of two protozoans.
- EMERSON, ROBERT. Some properties of the pigment of *Blepharisma*.
- EMERSON, ROBERT. On the behavior of nickel carbonate in relation to photosynthesis.
- ABRAMSON, HAROLD A. Electrokinetic phenomena. I. The adsorption of serum proteins by quartz and paraffin oil.
- RAHN, OTTO. The size of bacteria as the cause of the logarithmic order of death.
- DAMON, E. B. Dissimilarity of inner and outer protoplasmic surfaces in *Valonia*. II.
- BLINKS, L. R. Protoplasmic potentials in *Hali-cystis*.
- GATES, FREDERICK L. A study of the bactericidal action of ultra violet light. I. The reaction to monochromatic radiations.
- GATES, FREDERICK L. A study of the bactericidal action of ultra violet light. II. The effect of various environmental factors and conditions.
- OSTERHOUT, W. J. V. The kinetics of penetration. I. Equations for the entrance of electrolytes.

THE JOURNAL OF GENERAL PHYSIOLOGY, founded in 1918 by Dr. Jacques Loeb, contains practically all the investigations of Dr. Loeb after that time.

There are, in addition, contributions by many leading physiologists, both in this country and abroad. It has now been decided to offer a complete set of the back volumes at half price to new subscribers. The first twelve volumes complete may therefore be obtained for \$30.00 by new subscribers until December 31, 1929.

SUBSCRIPTION PRICE PER YEAR (ONE VOLUME), \$5.00.

PUBLISHED BIMONTHLY BY

The Rockefeller Institute for Medical Research

YORK AVENUE AND 66TH STREET

NEW YORK, N. Y.

John Dewey says:

"It is an event of the first intellectual order"

PROCESS and REALITY

By **A. N. WHITEHEAD**

Author of *Science and the Modern World* and *Religion in the Making*

"It is not too much to say that Mr. Whitehead's last book . . . is more than a forerunner of the revival of systematic philosophies. It belongs in scope and intent with the great classic systematization of history."—John Dewey in the *N. Y. Sun*.

"It will be considered one of the greatest intellectual achievements of this age."—*Henry N. Wieman*.

At bookstores \$4.50

THE MACMILLAN COMPANY NEW YORK

A New Book

The Fundamentals of RADIO

by

R. R. RAMSEY, *Professor of Physics, Indiana University, Member Inst. Rad. Eng., Fellow Am. Phys. Soc., Author of Experimental Radio.*

(372 pages, 6" x 9", 402 figures.)

A text-book for students of radio giving the fundamental theories and their applications to modern practice. It explains many theoretical and practical points which have not found their way into other books.

A new 1929 edition of

EXPERIMENTAL RADIO.

A laboratory manual of radio experiments.

(255 pages, 128 experiments.)

"Ramsey manages to supply that missing fact which seems to be hidden in other books."

Price postpaid

Fundamentals of Radio \$3.50

Experimental Radio \$2.75

University Book Store,
Bloomington, Indiana.

The Wistar Institute Bibliographical Service

is of invaluable assistance to

Librarians—Investigators—Teachers

It brings to them, in **AUTHORS' ABSTRACT** form, a brief review of all original papers on Biological Subjects which appear in the following journals:

Journal of Morphology and Physiology
The Journal of Comparative Neurology
The American Journal of Anatomy
The Anatomical Record
The Journal of Experimental Zoology
American Journal of Physical Anthropology
The American Anatomical Memoirs
Folia Anatomica Japonica (Tokio, Japan)
Stain Technology (Geneva, N. Y.)
Physiological Zoology (Chicago, Ill.)

Advance Abstract Sheets

issued semi-monthly, bearing Authors' Abstracts without bibliographic references, offer a practical means of making research immediately available in abstract form and of purchasing articles of special interest in reprint form without the necessity of subscribing to all the journals. Subscription, \$3.00 per year.

Bibliographic Service Cards

with complete bibliographic references, printed on Standard Library-catalogue cards, are of value and assistance to Librarians and Investigators. Subscription, \$5.00 per year.

Abstracts in Book Form

referred to above, are brought together periodically, with Authors' and Analytical Subject Indices. Price \$5.00 per volume.

Subscriptions to the Bibliographic Service and orders for reprints should be sent to

The Wistar Institute of Anatomy and Biology

Thirty-sixth St. and Woodland Ave.

Philadelphia, Pa.

ISIS

INTERNATIONAL REVIEW DEVOTED to the HISTORY of SCIENCE and CIVILIZATION

Quarterly Organ of the History of Science Society

Edited by **GEORGE SARTON, D.Sc.**

Harvard Library 185,
Cambridge, Massachusetts, U.S.A.

"**ISIS**" is the most important journal of its kind published anywhere in the world. It contains original papers, chiefly in English, subsidiarily in French, German, Italian, Latin; shorter articles; and an abundant bibliography. Much attention is paid to Oriental science and civilization.

A new feature is the inclusion of addenda and errata to Sarton's "Introduction to the History of Science," Vol. I. From Homer to Omar Khayyám (1927). Thus the readers of "**ISIS**" can easily keep their knowledge on the subject up-to-date.

The price of each volume is \$6.

Members of the History of Science Society receive free of charge every number published within the year, at least one volume. Last year (1927) they received *two* volumes (1110 pages, 28 plates), including 27 papers, 73 shorter items, and 2828 bibliographical notes.

Annual dues, \$5

SECRETARY: F. E. BRASCH

Library of Congress, Washington, D. C.

Specimen numbers may be obtained, as long as the supply lasts, from the Secretary

Research Vacancies

The National Research Council of Canada will shortly appoint to its technical staff two junior researchers whose aptitude and experience are along lines of research in (1) Heat, (2) Aeronautics.

These researchers will be required to give immediate attention to problems dealing with (1) Conduction and Insulation of Heat; (2) Aerodynamics, Hydrodynamics and Aircraft Engines.

Interested applicants should communicate immediately, stating age, education, research experience, references and salary required to **S. P. Eagleson, Secretary, National Research Council of Canada, Ottawa, Canada.**

Journal of the Optical Society of America and Review of Scientific Instruments

Published monthly by the *Optical Society of America* in co-operation with the *Association of Scientific Apparatus Makers of America*

CONTENTS FOR OCTOBER, 1929

The Prism with an Index of Refraction Less than Unity.

Uranium as an Activator II.

INSTRUMENTS

The Value of the Scientific Instrument Industry to the Life of the Country.

The Mercury Meniscus.

The Measurement of Magnetic Quantities.

A Vacuum Tube Voltage Regulator for Large Power Units.


Computing Attachment for Comparators.

Subscription \$5.00 per year

Address orders to

F. K. RICHTMYER, Manager


Rockefeller Hall
Ithaca, N. Y.



Microscope with stand 1/4 size

LOMARA Pocket MICROSCOPE

Illustration one-half size



15x to 50x
Price \$6.75

Extra lens set (30x to 200x) \$4.00.
Extra stand \$4.00

A finely made pocket microscope for field and laboratory use.

Achromatic lenses, fine screw and even adjustment.

Descriptive circular from your dealer or:


ALSO IN DEMOUNTABLE KIT FORM

like draughtsman's instrument kit. Several additional useful attachments, pencil, stand and extra lens set. In leather covered case, 4 3/4" x 10" x 1 1/4". Excellent for field or laboratory use. **\$30.00**

317 E. 34th St.

C. P. GOERZ AMERICAN OPTICAL CO.—Importers

New York City




PHOTOELECTRIC CELLS

Television—Talking Pictures—Research

G.-M. VISITRON cells of the alkali metal hydride type are of highest sensitivity, low dark current, long life, and respond to the smallest changes of light intensity and color. Their high quality and uniform sensitivity make them the choice of leading engineers. Get technical Bulletin P-14 Free.

G.-M. Laboratories, Inc., 1808 Grace St., Chicago, Ill.



PYREX

LABORATORY WARE

Write for literature

CORNING GLASS WORKS, Dept. 75
Industrial and Laboratory Div., Corning, N. Y.

PHONELESCOPE

Teaches Through the Eye

SOUND, ELECTRICITY

CAPITAL APPARATUS WORKS

Box 835 Washington, D. C.


SPLIT SECOND TIMERS

No. 1. "PASTOR." Time piece & Stop-watch, fifth second. Robust. Guaranteed. Price **\$2.95 net.**

No. 3. Fifth second, 30 minute registered. Jeweled lever movement and chromium case. Price **\$12.85 net.**

Write for Circular

The Sterling Stop Watch Co., Inc.
15 East 28th Street, New York City.



Hy-Speed MIXERS

Clamp to any tank, operate from light circuit, mix all kinds of liquids. Also used for even temperature baths. Thousands in use.

Write for circular

ALSO ENGINEERING CO.
47 W. 63rd St. New York

All Sizes from 1-10 H.P. \$37.50 up

THE MICROSCOPE

By SIMON H. GAGE, of Cornell University

Revised, Dark-field Edition (1927) now Available.

The Old and the New in Microscopy, with a special chapter on Dark-Field Methods and their Application.


Postpaid, \$3.50

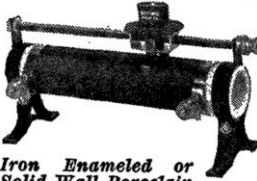
COMSTOCK PUBLISHING CO., ITHACA, N. Y.

OR

Use **Hoke** reducing valves with your hydrogen, oxygen and other gases. Ask for folder S-3.

Hoke Incorporated 22 Albany St., New York City.





"Becbro" Laboratory RHEOSTATS

Becbro Laboratory Rheostats made of both iron enameled and solid wall porcelain tubes.

The above illustration shows one of the numerous types of "BECBRO" tubular, slide contact, rheostats manufactured and carried in stock by us.

The various types are made in several lengths of 8", 16", and 20", respectively, with resistance values of from 0.25 ohm and 25 amperes, to 30,000 ohms and current capacity of 0.1 ampere.

"BECBRO" Stone Rheostats are made in the following types: Single, Double, Universal, and Crossed Sections. These rheostats, with the porcelain tubular types, find their many uses in high frequency and radio work.

Our Catalogue S-80 Sent You Upon Request

BECK BROTHERS, Makers 421 Sedgley Avenue Philadelphia, Pa.

LIVING BULLFROGS

Safe delivery guaranteed

Teach Biology with live specimens where practicable

We have the only complete live materials establishment in America. Live plants and animals representing all types are kept on hand under semi-natural conditions at all seasons.

Also headquarters for preserved specimens of all types, microscopic slides, life histories, demonstrations, osteological preparations, insect collections. We specialize in many important southern species not obtainable elsewhere.

All material guaranteed without reservations.

SOUTHERN BIOLOGICAL SUPPLY CO., INC.,
Natural History Building, New Orleans, La.

The Science Press Printing Company

PRINTERS OF

SCIENTIFIC AND EDUCATIONAL JOURNALS, MONOGRAPHS AND BOOKS

Correspondence Solicited

Lime and Green Sts., Lancaster, Penna.