

SCIENCE

NEW SERIES
VOL. 91, No. 2363

FRIDAY, APRIL 12, 1940

SUBSCRIPTION, \$6.00
SINGLE COPIES, .15

Important BIOLOGY BOOKS

Introduction and Guide to the Study of Histology—*Lambert*

185 Illus.
542 Pages
\$5.00
(1938)

A foundation course in histology, this successful text clearly presents the essential knowledge of the various structures, organs and systems and gives comprehensive and intelligible directions for their study in the laboratory.

By A. E. Lambert, Ph.D., *State Univ. of Iowa*

Textbook of Histology, 5th Ed.—*Bremer*

455 Illus.
580 Pages
\$6.50
(1936)

"Students will find this book a valuable possession, for it not only provides an up-to-date guide to the microscopic examination of adult tissues and organs, but also describes their development. Although the volume is packed with information, it is easy to read." From Review in *The Lancet*.

By J. L. Bremer, M.D., *Harvard University*

Comparative Anatomy—*Neal and Rand*

540 Illus.
739 Pages
\$4.75
(1936)

Written for a year course in comparative anatomy, this successful text develops the subject as an approach to an understanding of human structure and function. It is designed to correlate and interpret the information gathered in the laboratory. Written by two experienced teachers, the book is clear, readable and well illustrated.

"This book is destined for considerable longevity in its own right since it is a usable and skillfully prepared text."—*Quarterly Review of Biology*.

By H. V. Neal, Ph.D., *Tufts College*, and H. W. Rand, Ph.D., *Harvard University*

Chordate Anatomy—*Neal and Rand*

378 Illus.
467 Pages
\$3.50
(1939)

In a terse, lucid manner, this text presents the material for a balanced well organized semester course in comparative anatomy. The discussion of each system is divided into three parts—phylogenesis, ontogenesis and anatomy.

The abundance of clear illustrations enhance the teachability of the book.

By H. V. Neal, Ph.D., *Tufts College*, and H. W. Rand, Ph.D., *Harvard University*

Biology of the Cell Surface—*Just*

42 Illus.
392 Pages
\$5.50
(1939)

Presenting the conclusions of a gifted and well-trained mind, evolved from over 25 years of investigation of fundamental biological phenomena, Dr. Just sets forth the premise and related deductions with consistent care.

"It deserves careful study not only by embryologists and cytologists, but by all who seek to understand the meaning of modern biological experimentation." Excerpt from *Bios*.

By Dr. Ernest Everett Just

Basic Methods for Experiments on Eggs of Marine Animals—*Just*

89 Pages
\$1.25
(1939)

Giving general rules for the experimental investigation of eggs and spermatozoa of marine invertebrates, this book serves as a guide for the specialist whose work demands individual extension of methods and a basis for beginners in experimental embryology. A large section is devoted to methods for the preparation of the fixed egg.

By Dr. Ernest Everett Just

THE BLAKISTON COMPANY, Philadelphia

NEWTON'S PRINCIPIA

A modern English revision of
Motte's translation by
Florian Cajori

Published in 1934, there are but a few copies remaining. The recent picture in *Life* of the St. John's College one hundred great books, showing a copy of this edition, has prompted this brief announcement of a six-year old volume which will forever remain one of the foundation books of every scientist's library.

Pp. xxxvi plus 680. Illus.

Half leather \$10.00

UNIVERSITY OF CALIFORNIA PRESS
BERKELEY, CALIFORNIA

Population

A PROBLEM FOR DEMOCRACY

By Gunnar Myrdal

TODAY MORE THAN EVER the problem of population is a burning one not only in Western Europe, where the population is either stationary or declining, but in the United States, where the administration of the old age pension system and the operation of the alien exclusion laws are matters of immediate public interest. Professor Myrdal has much to say regarding the experience of his native Sweden, which has squarely faced the question and has worked out in recent years a practical policy of birth control.

xv + 237 pages. \$2.00

HARVARD UNIVERSITY PRESS
CAMBRIDGE, MASSACHUSETTS



ELECTRIC HEATERS

and Controls

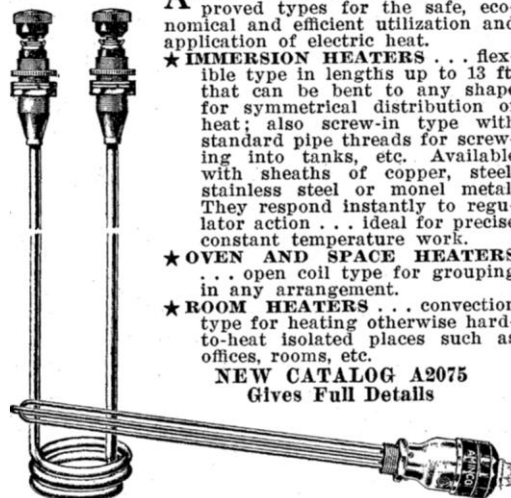
Available in the following improved types for the safe, economical and efficient utilization and application of electric heat.

★ **IMMERSION HEATERS** . . . flexible type in lengths up to 13 ft. that can be bent to any shape for symmetrical distribution of heat; also screw-in type with standard pipe threads for screwing into tanks, etc. Available with sheaths of copper, steel, stainless steel or monel metal. They respond instantly to regulator action . . . ideal for precise constant temperature work.

★ **OVEN AND SPACE HEATERS** . . . open coil type for grouping in any arrangement.

★ **ROOM HEATERS** . . . convection type for heating otherwise hard-to-heat isolated places such as offices, rooms, etc.

NEW CATALOG A2075
Gives Full Details



AMERICAN INSTRUMENT CO.

8010 GEORGIA AVENUE • SILVER SPRING, MARYLAND

ANALYTICAL REAGENTS

Coleman & Bell

Analytical Reagents are manufactured to meet definite standards of purity, including the specifications of the Committee on Analytical Reagents of the American Chemical Society. Our list includes all of the common items and many rare and unusual compounds suitable for special analytical procedures.

Catalog upon request

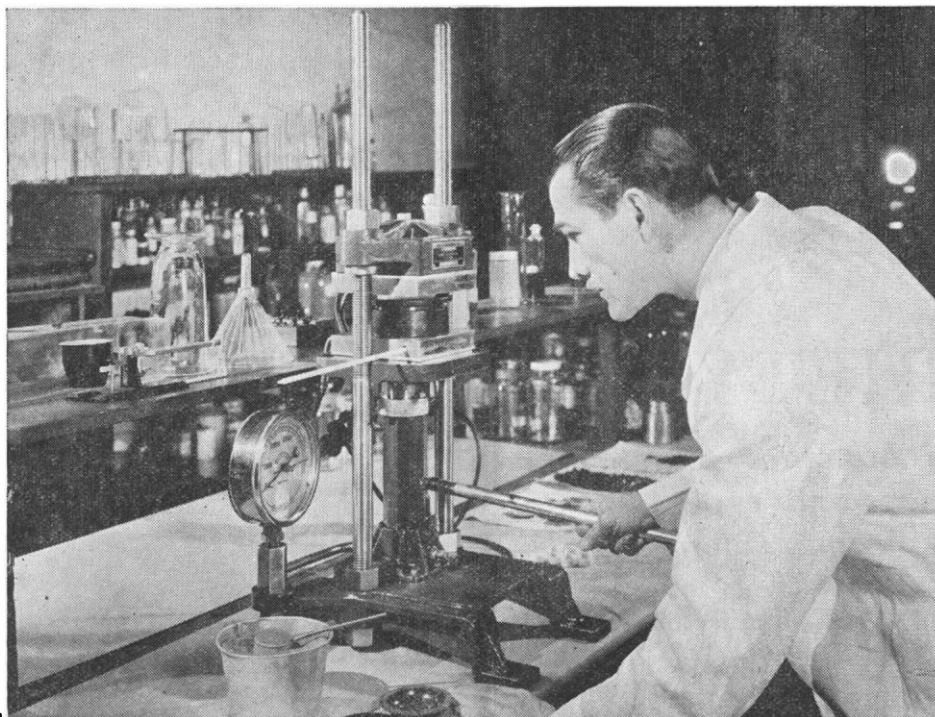


THE COLEMAN & BELL CO.
C&B
MANUFACTURING CHEMISTS
NORWOOD, OHIO, U. S. A.



Research Saves Money

THE CARVER LABORATORY PRESS IS DESIGNED
FOR RESEARCH—IN PLASTICS, FOR INSTANCE



Nearly all the plastics developments in recent years have involved use of the Carver Laboratory Press. Both thermoplastic and thermosetting plastics can be studied on the Carver Laboratory Press. Both electric and steam hot plates are available for research, with thermometer pockets for accurate checking. Temperatures to 400° F.

A compact unit that can be carried by one man, weighing only 125 lbs. and only 36" tall, this little giant of a press gives hydraulic pressures to 10 tons.* So sturdily is it built that 12 years of uninterrupted experimentation have failed even to strip a thread.

Complete equipment for general research, embracing 60 general applications, hundreds of specific uses, is also available in standardized, interchangeable units. In daily use by hundreds of industrial, college and government laboratories throughout the world.

Hand operated, self-contained. Just plug into any light socket and go to work!

Write for Catalog.

* Also available for 20-tons.

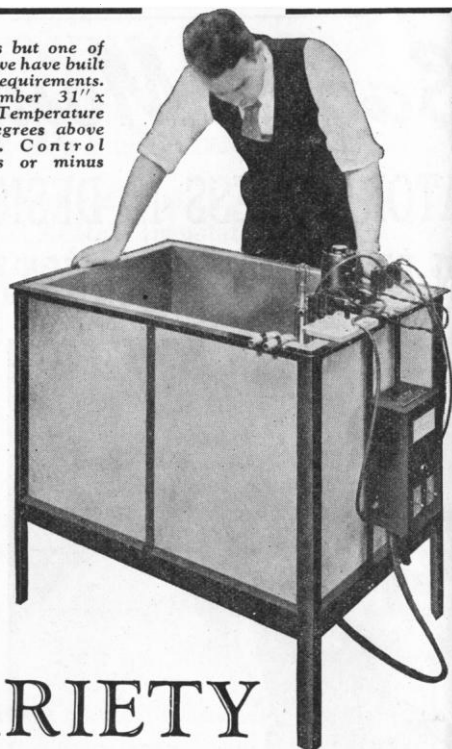
THE CARVER LABORATORY PRESS

FRED S. CARVER HYDRAULIC EQUIPMENT [Est. 1912]

341 Hudson St., New York

In London • Baker Perkins Ltd.

Shown here is but one of many models we have built to customers' requirements. Working chamber 31" x 20" x 20". Temperature range, few degrees above room to 50° C. Control accuracy plus or minus .01° C.



VARIETY

... in constant temperature bath sizes and types to suit your own requirement ...

HAZARD - SAFE

For handling inflammable or explosive material, or operating in a hazardous atmosphere, it is best to specify Hazard-Safe construction, incorporating special protective features. State your problem in writing for further details.

IN addition to a wide range of standard sizes and models of "Precision" constant temperature baths for reduced or elevated temperatures, we specialize in the building of constant temperature equipment for specific purposes.

By investigating what Precision has to offer, you are certain to save money in the long run, but more important, you will procure equipment representing 20 years of constant temperature experience.

If you have a constant temperature problem, it will pay you to consult with our engineering department.

Write for Bulletins

PRECISION SCIENTIFIC CO
1730-54 NORTH SPRINGFIELD AVENUE, CHICAGO, ILLINOIS, U. S. A.

Linde

**RARE GASES
AND MIXTURES**

NEON
ARGON
HELIUM
KRYPTON
XENON
MIXTURES

*... highest purity
... for scientific purposes*

Linde rare gases are of consistently high purity. They are used in the study of electrical discharges, in rectifying and stroboscopic devices, and in inert atmospheres where heat conduction must be reduced.

Linde rare gases are shipped in spherical glass bulbs, designed to facilitate removal without contamination. Special mixtures for experimental purposes can be supplied upon request.



The Linde Air Products Company
Unit of Union Carbide and Carbon Corporation

30 East 42nd Street **NYC**
New York, N. Y.

Offices in
Principal Cities

The word "Linde" is a trade-mark.

Adams CENTRIFUGES

Which of these three?

will answer your requirements. Three series of ADAMS Centrifuges, illustrated above by the "ANGLE" model of each series, are available for MICRO, SEMI-MICRO, and larger tubes. . . . Priced from \$17.25 to \$55. CATALOG C118 WILL BE SENT ON REQUEST.

Send for it!

CLAY-ADAMS CO. 44 EAST 23rd STREET
INC. NEW YORK, N. Y.

THE SCIENCE PRESS PRINTING COMPANY

PRINTERS OF

**SCIENTIFIC AND EDUCATIONAL
JOURNALS, MONOGRAPHS
AND BOOKS**

Correspondence Invited

LANCASTER, PENNSYLVANIA

WINNING THEIR DEGREE IN THE
"UNIVERSITY OF HARD KNOCKS"



PYREX^{BRAND}
TEST TUBES EARN THEIR WAY
THROUGH SCHOOL BY STRICT
ECONOMY

Not only are Pyrex brand Test Tubes, Beakers and Flasks made of *Balanced Glass* for greater mechanical strength, heat resistance and chemical stability, but they are balanced for greater economy, too. Wherever they are used—in secondary schools, university "labs" or in hospitals or industry—longer life, greater convenience and better work are assured.

Daily use gives daily proof of their positive economies. No matter how small your budget, you will find that for year-in and year out savings, it pays to insist on Pyrex brand Laboratory Glassware.



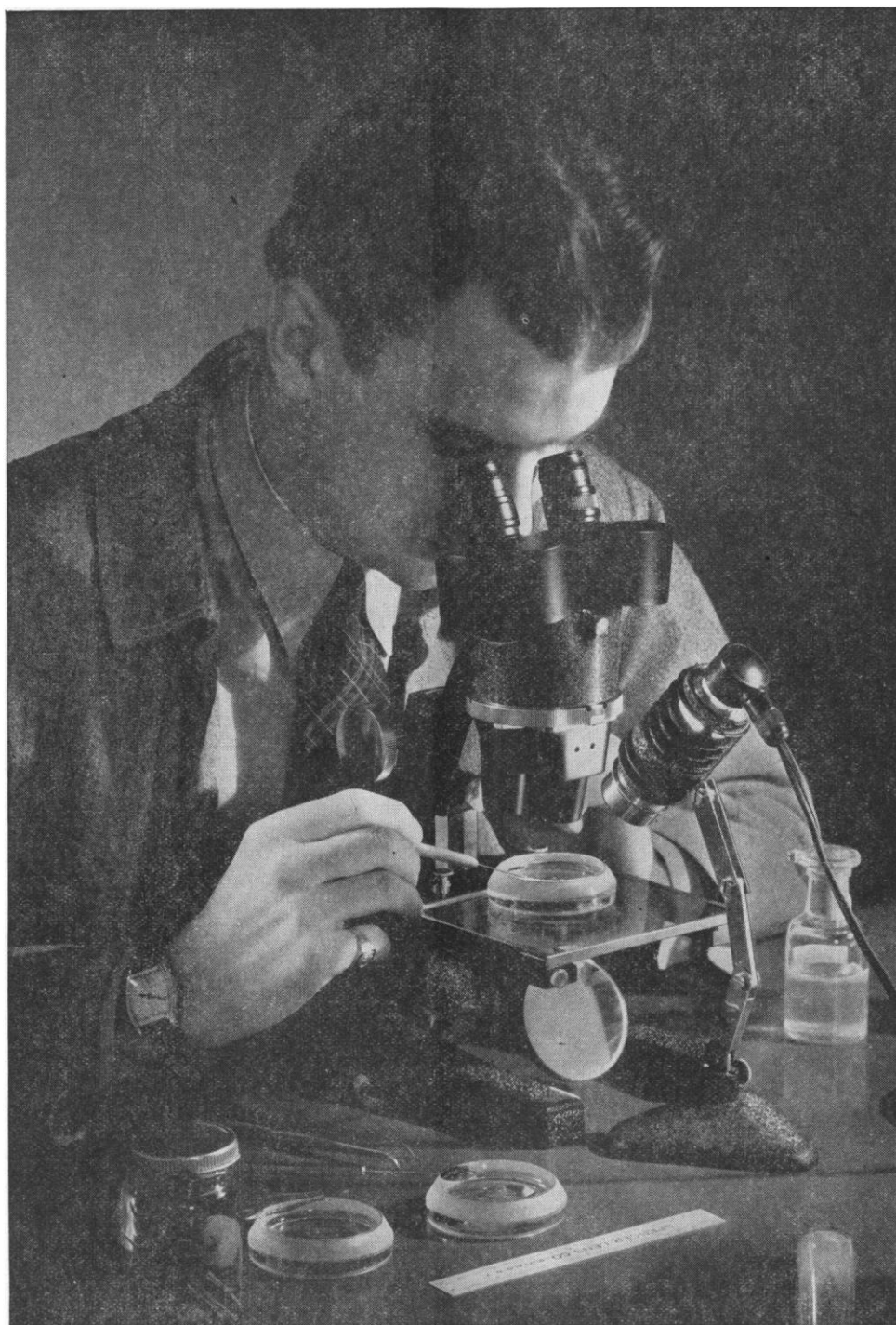
"PYREX" is a registered trade-mark and indicates manufacture by

CORNING GLASS WORKS • CORNING, N. Y.

CORNING
means
Research in Glass

Pyrex Laboratory Ware
BRAND

...We asked: "How can we improve



the STEREOSCOPIC MICROSCOPE?

*. . . and these new instruments
are the answer*

In close co-operation with scientists of long experience Spencer has developed a new group of Stereoscopic Microscopes.

The result is an instrument which represents an important advance, optically and mechanically.

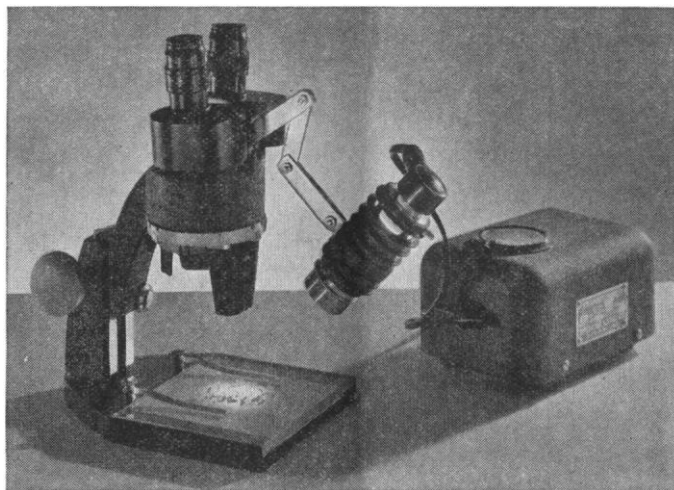
Notable among the superiorities are an improved stereoscopic vision, an uncommonly brilliant resolution and a large object field. Mechanically, betterments have been effected in rigidity and weight, in the dust-proof revolving objective

holder and in the longer range of focusing adjustment.

A wide range of magnifications—from 6.3X to 144X—is available. Seven different powers in paired objectives and four different powers in paired eyepieces provide a total of twenty-eight magnifications.

A new booklet describing the complete Spencer line of Stereoscopic Microscopes has just been published. Address Dept. D1 for a copy.

Advance demand for the new Spencer Stereoscopic Microscopes considerably exceeds production. New orders are now being scheduled for delivery beginning May 1, 1940.



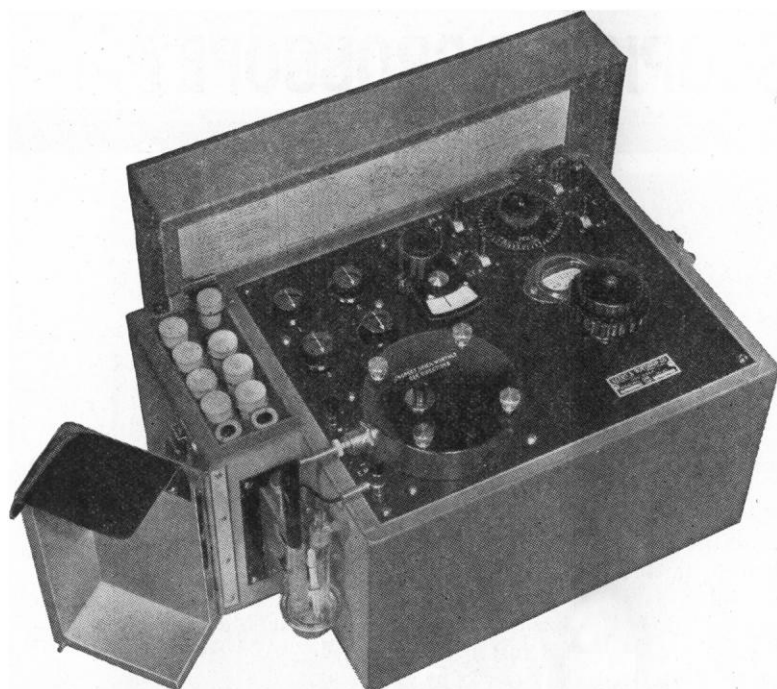
*Spencer Stereoscopic Microscope No. 26 with additional equipment No. 353
Universal Microscope Lamp and Transformer.*

Spencer Lens Company

MICROSCOPES
MICROTOMES
PHOTOMICROGRAPHIC
EQUIPMENT



REFRACTOMETERS
COLORIMETERS
SPECTROMETERS
PROJECTORS



NEW ELECTRODES IMPROVE pH METER

Universal pH Indicator Gets Better Glass & Calomel Units

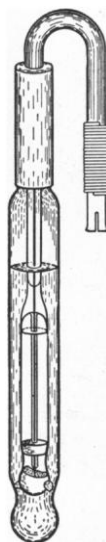
New low-maintenance electrodes, electrically stable and mechanically strong, make the Universal Indicator unique among pH instruments. Having identical temperature coefficients that automatically cancel the effects of electrode tempera-

tures, these electrodes minimize adjustments and improve accuracy. They are a development of real importance to anyone interested in pH measurements.

Glass Electrode

The glass electrode owes its high stability to a low and exceptionally constant asymmetry potential. Adjustments are small and infrequent.

Permanently sealed, and equipped with a rubber-



Highly stable glass electrode is free from leakage currents.

covered leadwire, the new glass electrode is free from leakage currents. The tip is designed to give it mechanical strength and to minimize breakage.

Reference Electrode

Because there are no ground glass joints or clamped rubber tubes to "freeze" or to be flushed, the redesigned calomel electrode needs little attention. Operation is speeded up and consistently high accuracy is easily obtained. KCl seldom requires replacement, and KCl contamination of the solution under test is negligible.

Assembly

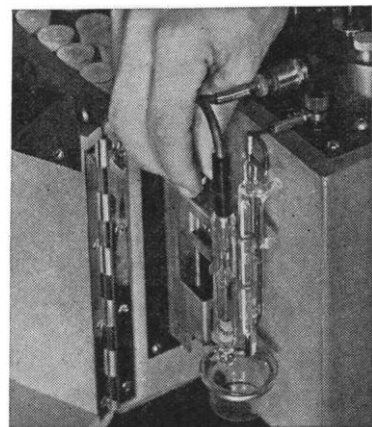
Electrically, the Universal pH Indicator has behind it forty years of experience in making some of the most precise laboratory and testing equipment available. With its new electrodes, the combination is fast, accurate, easy to operate, and so thoroughly stable that accuracy can be relied upon with a minimum of checking.



Low-maintenance calomel electrode doesn't contaminate solution under test.

Catalog E-96(1), "Portable Universal pH Indicator for Laboratory and Plant", will be sent on request.

Jrl Ad E-96(16)



LEEDS & NORTHRUP COMPANY, 4926 STENTON AVE., PHILA., PA.

LEEDS & NORTHRUP

Measuring Instruments • Telemeters • Automatic Controls • Heat Treating Furnace

SCIENCE

VOL. 91

FRIDAY, APRIL 12, 1940

No. 2363

The Present Status and Problems of Bacterial Chemotherapy: DR. E. K. MARSHALL, JR. 345

Scientific Events:

The Engineering Societies Library; The Summer Meetings of the American Society of Plant Physiologists; Westinghouse Research Fellowships; Election of Fellows of the Royal Society; The Eighth American Scientific Congress. Recent Deaths and Memorials 350

Scientific Notes and News 354

Discussion:

A Tiger Shark and a Basking Shark Rammed by Steamers: DR. E. W. GUDGER. *Apparent Splitting of Light from Fluorescent Lamps into Component Parts by Moving Objects*: DR. C. WESLER SCULL, DR. CHARLES G. GROSSCUP and DR. E. G. WITTING. *Biography of Dr. William H. Park*. DR. WADE W. OLIVER 356

Quotations:

The End of "Discovery" 358

Scientific Books:

Recent Botanical Books: PROFESSOR EDWIN B. MATZKE 359

Reports:

Report of the Banting Research Foundation for the Year 1938-1939: DR. V. E. HENDERSON and DR. A. W. HAM 362

Special Articles:

The Effect of Thiol Compounds on Gonadotrophins: DRs. H. L. FRAENKEL-CONRAT, MIRIAM E. SIMPSON and HERBERT M. EVANS. *The Synthesis of Phosphopyruvic Acid on Oxidation of Lactic Acid*: DRs. D. L. FERDMAN and S. F. EPSTEIN. *Chemotherapy in Experimental Infections Caused by Streptobacillus moniliformis*: DR. FORDYCE R. HEILMAN 363

Scientific Apparatus and Laboratory Methods:

Patterns on Maps and Drawings by the Carbon Transfer Process: DR. C. W. THORNTWHAITE and DR. C. F. STEWART SHARPE 367

Science News 10

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.

THE PRESENT STATUS AND PROBLEMS OF BACTERIAL CHEMOTHERAPY¹

By Dr. E. K. MARSHALL, Jr.

DEPARTMENT OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS, THE JOHNS HOPKINS UNIVERSITY

SUCCESSFUL chemotherapy of bacterial diseases is an innovation of the last four years only; in the history of medical progress it is a newborn babe—a lusty infant with powerful lungs and an incredible capacity for growth. Have its shoutings and precocity been justified and have its growth and development been directed along the right paths?

Chemotherapy, in the case of protozoan infections, can be considered to be of comparatively ancient origin. The sixteenth-century use of mercury in syphilis and the seventeenth-century use of cinchona bark in remittent fevers and of ipecac in dysentery are examples of a specific form of therapy which was

later designated "chemotherapy." All three of these drugs are old and popular remedies and were used without a knowledge of the etiology of the disease or of the mode of action of the remedial agent. Although Koch in 1881 reported unsuccessful attempts at bacterial chemotherapy in anthrax infections of guinea pigs, real experimental chemotherapy began with the very significant experiments of Ehrlich and Shiga in 1904. Their report of the cure of an otherwise fatal trypanosome infection in mice by one injection of the dye trypan red marks the beginning of a new epoch, despite the fact that animals other than the mouse were not cured and that the drug was of no practical use. This work led in 1910 to the well-known discovery of the therapeutic effect of organic arsenic com-

¹ This paper was given before the Society of the American Bacteriologists, New Haven, December 28, 1939.

wire screen or cloth. Patterns R and S are both from the same screen, R being produced by vertical, and S by horizontal tooling.

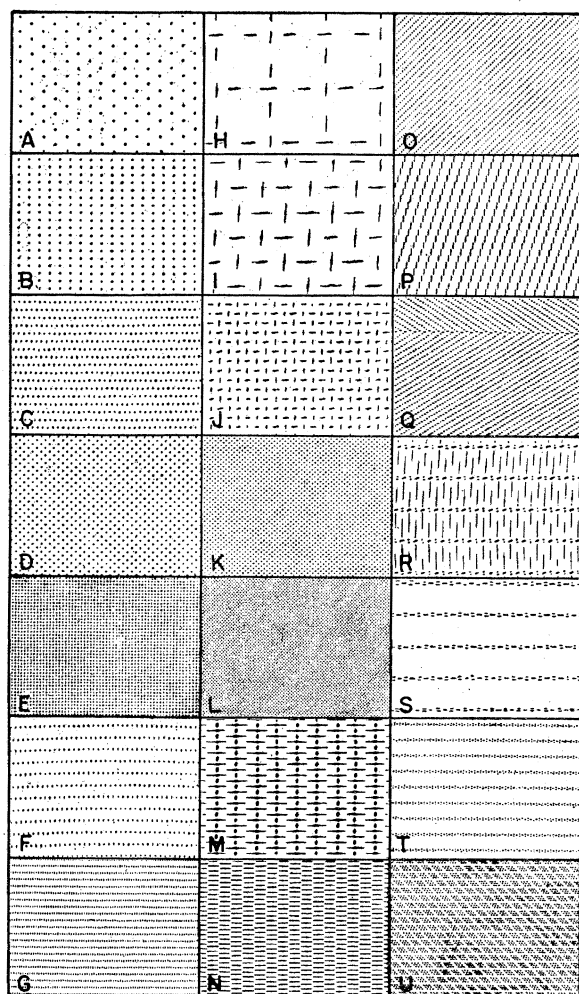


FIG. 1. Patterns from selected stereotype and mimeograph plates and wire cloth and screen. A-C: Stereotype plates cast from periods. A: Coarse, staggered; B: medium, not staggered; C: fine, staggered. D-T: Wire cloth and screen. D: 22×24 "flat warp;" E: 30×30; F: 8×38; G: 14×88; H: $\frac{1}{2}$ " opening, .063 wire, diamond; I: 4×4, .047 wire; J: 10×10, .025 wire; K: No. 40; L: 60×60, .008 wire; M: No. 617 "ton-cap"; N: No. 2475 "ton-cap;" O: 50×50 twilled, .011 wire; P: 14×40 twilled, .023 wire; Q: 60×40 twilled, herringbone; R: 3×14 (tooled vertically); S: 3×14 (tooled horizontally); T: 6×34 (tooled horizontally). U: Mimeograph plate No. 1648.

Five graded patterns (A through E) are used on the maps made at the Climatic Research Center (Fig. 2). These screens and stereotype plates have had almost daily use for more than a year and are still serviceable. Pattern D is from 22×24 mesh flat warp phos-

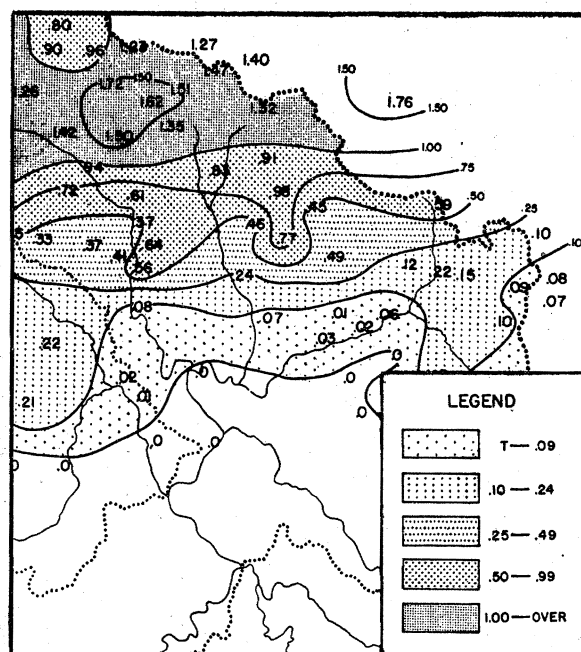


FIG. 2. Portion of precipitation map patterned by carbon transfer process at Muskingum Climatic Research Center (reduced about $2\frac{1}{2}$ times from original).

phor bronze wire cloth and pattern E from 30×30 mesh brass wire cloth. Finer meshes, such as were used for pattern L, tend to block up and will not stand much reduction.

The carbon transfer process can readily be adapted to special needs. It is useful not only for patterning on maps and graphs but for shading sketches such as those widely used in commercial illustration. Patterns made in this way can be reproduced by blue print, ozalid or photographic processes. Considering its simplicity, speed and relatively small cost, the carbon transfer method should be of use to workers in many branches of the physical and social sciences.

C. W. THORNTHWAITE

C. F. STEWART SHARPE

SOIL CONSERVATION SERVICE,
WASHINGTON, D. C.

BOOKS RECEIVED

- DOOB, LEONARD W. *The Plans of Men*. Pp. xiii+411. Yale University Press. \$3.00.
- EMMONS, WILLIAM H. *The Principles of Economic Geology*. Second edition. Pp. xix+529. 329 figures. McGraw-Hill. \$4.00.
- EVANS, WILLIAM L., ALFRED B. GARRETT and LAURENCE L. QUILL. *Semimicro Qualitative Analysis*. Pp. vii+246. Illustrated. Ginn. \$2.00.
- LE BOITEUX, HENRI and ROBERT BOUSSARD. *Elasticité et Photoélasticimétrie*. Pp. 361. Illustrated, Hermann, Paris.
- MURPHY, DOUGLAS P. *Congenital Malformations*. Pp. viii+98. Illustrated. University of Pennsylvania Press. \$2.00.
- QUARLES, GILFORD G. *Elementary Photography*. Pp. 350. Illustrated. McGraw-Hill. \$3.00.

McGRAW-HILL BOOKS

ANIMAL BIOLOGY. *New second edition*

By the late ROBERT H. WOLCOTT, University of Nebraska. Revised by Members of the Department of Zoology, University of Nebraska. *McGraw-Hill Publications in the Zoological Sciences.* 621 pages, 6 x 9. \$3.50

The revision of this widely-used text retains the general plan and arrangement of the first edition and seeks, as before, to give the beginning student a clear, comprehensive understanding of the whole field of zoology. Special attention is given to the organization of material, which is unusually logical, systematic, and well balanced. In the new edition the sections on the parasites have been rewritten and brought up to date; the treatment of Annelid worms has been revised; extensive changes have been made to simplify and clarify the treatment of many topics; and about fifty new illustrations have been added.

PLANT MICROTECHNIQUE

By DONALD A. JOHANSEN, formerly of Stanford University. *McGraw-Hill Publications in the Botanical Sciences.* 511 pages, 6 x 9. \$4.50

In this important new book the author covers in a practical, detailed manner the entire field of botanical microtechnique, with the exception of paleobotany and photomicrography. The first section describes the apparatus, reagents, dyes, etc., and the general methods universally employed by botanical technicians. The second section is a systematic treatment, along phylogenetic lines, of all plant groups occurring in the United States and Canada for which information is available with regard to their manipulation.

FUNDAMENTALS OF BIOLOGY. *New third edition*

By ARTHUR W. HAUPT, University of California at Los Angeles. *McGraw-Hill Publications in the Zoological Sciences.* 443 pages, 6 x 9. \$3.00

Intended to serve as the basis for an orientation course, the present edition of the text, as before, covers the basic principles common to all living things, with emphasis on those aspects of biology which seem to be of greatest value in contributing to a liberal education. In the third edition new material has been added which broadens the scope of the book and makes more thorough the treatment of many topics, particularly those dealing with the animal side of biology.

LABORATORY DIRECTIONS FOR GENERAL BIOLOGY

New third edition

By ARTHUR W. HAUPT. *McGraw-Hill Publications in the Zoological Sciences.* 65 pages, 6 x 9. \$1.00

This laboratory manual, revised to conform to the third edition of the author's text, consists of 100 independent exercises. The directions have been made as simple and concise as possible, and little descriptive matter has been introduced.

Send for copies on approval

McGRAW-HILL BOOK COMPANY, INC.

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

Aldwych House, London, W.C.2

Outstanding Wiley Successes in the Sciences**2** *Zoology*

CURTIS and GUTHRIE'S

**TEXTBOOK OF
GENERAL ZOOLOGY***(Third Edition 1938)*

By WINTERTON C. CURTIS, *Professor of Zoology*
and MARY J. GUTHRIE, *Professor of Zoology*
Both at the University of Missouri

Repeating Its Success

"Curtis and Guthrie" has long been considered one of the foremost textbooks in its field, as is attested by the many adoptions it has enjoyed. The current year is no exception. The popularity of the book has been based on many factors: For one thing, it is well adapted to almost any type of teaching procedure, because of its distinctive method of treatment and approach; for another, it contains a collection of really striking and beautiful illustrations which serve to point up the text matter.

Why Teachers Like It

"It is probably the best of recent texts. I like the organization, discussion and illustrations. It is ideal for the general course in Zoology. I am still of the opinion that this is the type of course that should be given to Zoology students. . . . Such a text as yours should have little competition because it so thoroughly covers the field and because it is so well written. Combined with the fine reputation of Dr. Curtis, the excellent quality of the book itself should insure widespread adoptions."

—SAMUEL H. WILLIAMS, *Professor of Zoology, University of Pittsburgh*

682 pages

503 illustrations

6 by 9

\$3.75

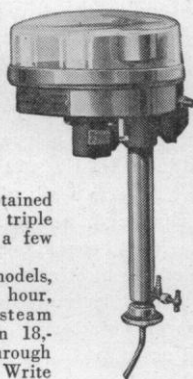
110
Adoptions
in
1939-1940**JOHN WILEY & SONS, INC., 440-4th AVE., NEW YORK**

"Water Supply Failed . . . No Damage to Still"

Stokes Laboratory Stills don't burn out. Electric heating elements are fully protected by a patented dual-purpose safety switch that prevents over-heating . . . even if water supply fails or should scale accumulate. No. 171 1-gal. Still shown has pyrex glass cover, triple vapor baffles, solid tin condenser tube and funnel, gas eliminator, deconcentrator, heavy copper boiling chamber, chromium finish, other features. It produces exceptionally pure water, well above U. S. P. Requirements . . . water

such as usually obtained only by double or triple distilling, for only a few cents per gallon.

Twenty-two stock models, $\frac{1}{2}$ to 100 gal. per hour, electric, gas or steam heated. More than 18,000 in use. Sold through dealers or direct. Write for folder, typical analysis of distillate, prices.

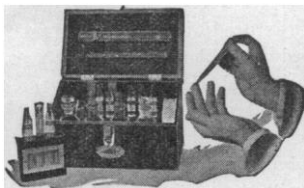


F. J. STOKES MACHINE COMPANY
5958 Tabor Road Philadelphia, Pa.

F.J. Stokes



LaMotte Blood Sugar Outfit



for rapid estimation of blood sugar in determining sugar tolerance. Uses only a few drops of finger blood. Permits tests at close intervals. Invaluable for infant cases. Accurate to 10 mg. of sugar per 100 cc. of blood.

Direct result in 20 minutes without calculations. \$24.00, f.o.b. Baltimore, Md.

Similar outfits for Urea, Icterus Index, Calcium-Phosphorus, etc. Send for information. No obligation.

LaMotte Chemical Products Co.
Dept. "H" Towson, Baltimore, Md.

These inks write on glass and porcelain



GOLD SEAL PERMANENT LABORATORY INKS

*You will use
them often!*

SEND \$2

1. Will give a PERMANENT MARKING on GLASS or PORCELAIN. Writes firmly on flat or curved surfaces.
2. Are ready for use with pen or brush.
3. Resists action of alcohol, xylol, water and usual laboratory solvents.

and we will send it postpaid anywhere in the world . . . Directions are included.



CLAY-ADAMS CO.

44 EAST 23rd STREET
NEW YORK, N. Y.

ELECTROENCEPHALOGRAPHS

Write for descriptive literature.

OFFNER ELECTRONICS

1133 EAST 63RD ST. • CHICAGO

WANTED: University or Industrial Position — by Chemist, Ph.D., age 38, Protestant, with 12 years' experience teaching inorganic and physical chemistry in leading eastern university. Specialist in electrochemistry and catalysis. Original research and publications. Speaks perfect French and German. Now employed, but desires change. Excellent references. Address "R.C." care of SCIENCE, 3941 Grand Central Terminal, New York, N. Y.

PLACEMENT WORK limited to universities and colleges . . . covers all specialized fields of science and every level of responsibility. Careful study given to requirements of administrators, department heads. Superior candidates suggested. If you are an individual scientist, ready for professional advancement, we would be glad to be of service to you.

AMERICAN COLLEGE BUREAU

28 E. Jackson Blvd.

Chicago, Ill.

Bargains in New and Used Glasses! All makes,



Size & powers of nature, sport & hunting glasses, \$6. upward. Telescopes, spotting & riflescopes. Microscopes, magnifiers & compasses \$1. upward. Repair work & goods guaranteed.

J. ALDEN LORING, OWEGO, N.Y.

Catalog free,
Box B.

LANGUAGES

Made *easy* By
LINGUAPHONE

*Get
the Facts!*

Scientists, authors, lecturers, travelers and thousands of men and women in all walks of life have mastered a new language in their own homes by the world famous LINGUAPHONE METHOD. . . . Amazingly simple, thorough, sound, no smattering. 27 languages available.

Send For FREE Book.

LINGUAPHONE INSTITUTE

39 R.C.A. Building

New York City

