

SCIENCE

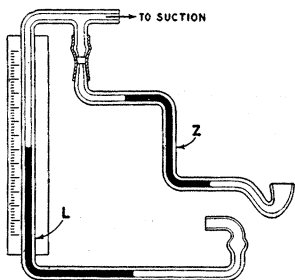
NEW SERIES
VOL. 95, No. 2473

FRIDAY, MAY 22, 1942

SUBSCRIPTION, \$6.00
SINGLE COPIES, .15



Readings Are Made Directly in Specific Gravity Units from the Scale



The Fisher-Davidson Gravitometer enables accurate specific gravity measurements to be made rapidly with samples as small as 0.3 ml. Readings are made directly in the range 0.60 to 2.00 sp. gr. Determinations are conducted with the Fisher-Davidson Gravitometer much more conveniently than the pycnometer method and it can be employed when large volumes are not obtainable.

Two capillary manometers are held on the Gravitometer support and connected so that an integral suction pump causes a reduced air pressure which raises liquid levels in the manometers as shown in the diagram at the left. A liquid of known density is introduced into the L-shape capillary and the liquid of unknown density into the Z-shape tube. The unknown liquid rises to a fixed height, so that it is balanced against the known liquid in tube L. The height to which the L column rises is in keeping with the specific gravity of the unknown; this is read directly in sp. gr. units on the engraved scale.

Fisher-Davidson Gravitometer, complete \$60.00

Manufactured and Distributed by

FISHER SCIENTIFIC CO.

711-723 Forbes Street, Pittsburgh, Penna.



EIMER AND AMEND

633-635 Greenwich St., New York, N. Y.

Headquarters for Laboratory Supplies

Science: published weekly by The Science Press, Lancaster, Pa.

Entered as second-class matter July 18, 1923, at the Post Office at Lancaster, Pa., under the Act of March 3, 1879.

ZOOLOGY . . .

TWO NEW BIRD GENERA FROM THE PLEISTOCENE OF MEXICO

By

Loye Miller

UNIVERSITY OF CALIFORNIA
PUBLICATIONS IN ZOOLOGY

Volume 47, No. 3, Pp. 43-46, 1 figure in text
Paper, 25 cents.

A MIOCENE SEA LION FROM LOMITA, CALIFORNIA

By

Gretchen M. Lyon

UNIVERSITY OF CALIFORNIA
PUBLICATIONS IN ZOOLOGY

Volume 47, No. 2, Pp. 23-42, plates 2-6,
2 figures in text, paper, 25 cents.

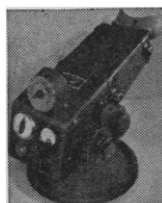
UNIVERSITY OF CALIFORNIA
PRESS

Berkeley and Los Angeles

Address all communications to the Berkeley Office.

SITUATION WANTED

Young man, ineligible for service, is available for teaching or research appointment; M.A. and Ph.D. degrees in Zoology; eight years' teaching experience in embryology, histology, anatomy; has done considerable research in endocrinology; prefers appointment in anatomy or physiology. Medical Bureau (Burneice Larson, Director) Palmolive Building, Chicago.



A Simple CLINICAL TEST for VITAMIN DEFICIENCY

The value of the Bio-photometer test in diagnosing vitamin deficiencies has been emphasized in the medical literature. The test is simple and provides a plotted curve, which may be compared to normal. As the Bio-photometer measures the speed of the visual cycle, it also provides information regarding the patient's vision and ability to see in dim illumination. Write for full information

BIO-MEDICAL INSTRUMENT CO., Chagrin Falls, Ohio

LaMotte Standardized pH Indicator Solutions

LaMotte Indicator Solutions are standard throughout the world for pH control work. Manufactured from purest chemicals, exclusively in the LaMotte Laboratories; standardized and sold in Special Bottles, they are guaranteed to give results of unvarying accuracy at all times. LaMotte Standardized Indicator Solutions are available for the range 0.2 pH to 13.6 pH. Prices sent on request.

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

New

The "Particles" of Physics

By J. D. STRANATHAN, Ph.D.

*Professor of Physics and Chairman of the Department,
University of Kansas*

Designed to give basic preparation for understanding the modern concepts of atomic structure and essential to an appreciation of the modern research in physics, this up-to-date text is appropriate for junior, senior, and beginning graduate courses in the study of the fundamental "particles" of physics.

Based upon fifteen years experience in teaching the subject, the material is presented in a manner equally important to the related fields of chemistry, biology and electrical engineering. The discussion of each concept is presented in a clear, intelligible manner with the experimental foundations upon which they are based.

The many specific references incorporated in the text provide an excellent starting point for the student who wishes to follow out the literature in any given field.

218 Illus., 571 Pages \$4.00 (1942)

THE BLAKISTON COMPANY, Philadelphia



REG. U. S. PAT. OFF.

Special Products
FOR
NUTRITIONAL RESEARCH

LABORATORY DIET MATERIALS SMACO

PACKED IN HERMETICALLY SEALED TINS

Vitamin A Test Diet—U.S.P. XI
Vitamin B Complex Free Diet
Rachitogenic Diet No. 2—U.S.P. XI
Vitamin Free Casein
Salt Mixture No. 2—U.S.P. XI

*Bio-assay protocols available upon request***CRYSTALLINE VITAMINS SMACO**

Carotene—Crystalline (90% beta—10% alpha)

Alpha Carotene
Beta Carotene

Vitamin A

Thiamine Hydrochloride (Vitamin B₁)

Riboflavin

Pyridoxine Hydrochloride

Nicotinic Acid (Pyridine 3-Carboxylic Acid)

Nicotinic Acid Amide (Pyridine 3-Carboxylic Acid Amide)

Ascorbic Acid (Vitamin C)

2-Methyl-1, 4-Naphthoquinone

p-Aminobenzoic Acid

Choline Chloride

Calcium Pantothenate

Alpha Tocopherol

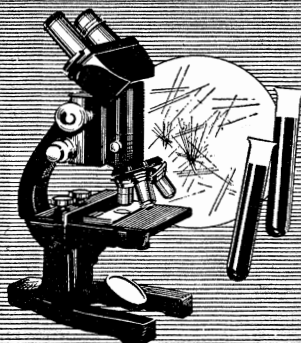
Biotin Concentrate—Crystalline Biotin (Methyl-Ester)

Crystalline Biotin (Free Acid)

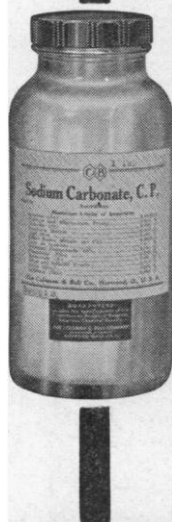
Inositol

These products are prepared according to methods specifically developed
to meet the strict requirements of our own research laboratories.

Complete information on prices, quantities, etc., supplied upon request.

*Research Laboratories***S. M. A. CORPORATION • CHAGRIN FALLS • OHIO**

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.

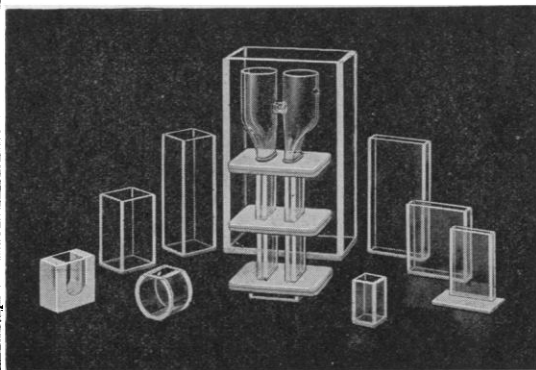
Catalog upon request

THE COLEMAN & BELL CO.



MANUFACTURING CHEMISTS
NORWOOD, OHIO, U. S. A.

Klett made . . . Glass Absorption Cells



Fused under high temperature with acid, alkali and other solvent resisting cement. Optical flat walls. Many stock sizes.

Special requirements made to order.

Sole manufacturer in the United States of fused Electrophoresis cells

Makers of complete Electrophoresis Apparatus

Klett Manufacturing Co.

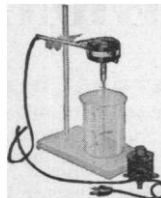
179 East 87th Street, New York, New York

EASTERN

**Laboratory Equipment
FOR ACCURACY . . .**

FOR EFFICIENCY . . .

Eastern equipment is standard in many laboratories because of its dependable accuracy and efficiency . . . yet it is inexpensive.



Laboratory Stirrers

for general purpose work, range from 1/100 HP to 1/20 HP. Standard Eastern Portable Mixers will handle heavier lab work.



Precision Temperature Regulators

made by Eastern are extremely accurate, responding to changes of 1/50th of a degree Centigrade.

Eastern makes other laboratory equipment, including the famous Husky Midget Pumps. Write for complete information.

EASTERN ENGINEERING COMPANY

39 Fox St., New Haven, Conn.



NEW POLAROID* PHOTOELASTICITY KIT

. . . aids teaching of engineering design

This new kit offers, for the first time, convenient means of using the brilliant phenomena of photoelasticity in teaching engineering and machine design. With it students may be given a vivid insight into the internal stress reactions of loaded structural elements. Images of plastic models are conveniently pro-

jected with a common lantern-slide projector, showing strain patterns in brilliant colors as loads are applied.

Price: Polaroid Photoelasticity Kit, complete with Projector Polariscopes, No. 450, \$19.50. Specimens, 48-page text and instruction book included.

For new complete catalog write your laboratory supply house or Division 15

POLAROID CORPORATION

730 Main Street, Cambridge, Mass.

* T. M. REG.



U. S. PAT. OFF.

NOW AVAILABLE FOR IMMEDIATE DELIVERY!

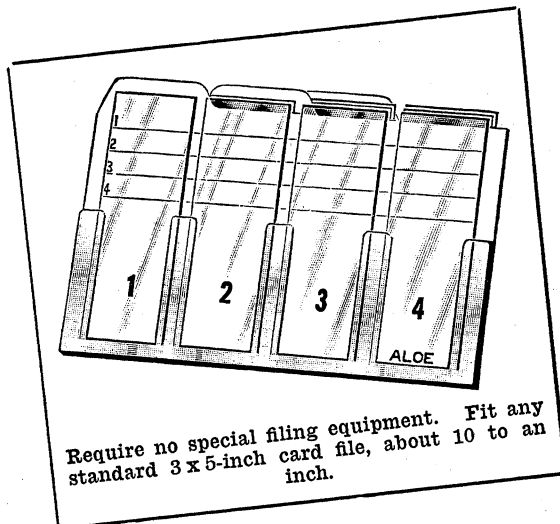
Aloe-Sinclair

SLIDE FILING CARDS

Originally suggested by Dr. John G. Sinclair of the University of Texas School of Medicine, these space saving cards have been in use there for the past several years. The card embodies a solid molded plastic slide spacer or holder with front ledge for protecting the slides, holding four 3 x 1-inch microscope slides, securely cemented to a 3 x 5-inch Bristol board index card. Index tabs are provided at the top. Each slide space is printed with a number which corresponds to one of four numbered lines printed across the upper portion of the card, for recording data. The cards may be filed or stacked about ten to the inch, or forty slides per inch.

JL19-102—Aloe-Sinclair Slide Filing Cards, patent No. 2262058, per dozen (Files 48 slides) \$0.90

(10% discount in gross lots—15% discount in 3-gross lots)



Require no special filing equipment. Fit any standard 3 x 5-inch card file, about 10 to an inch.

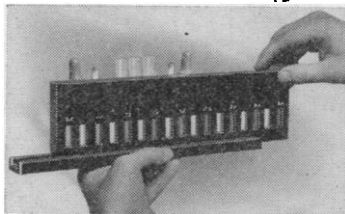
A. S. ALOE COMPANY

1831 OLIVE STREET

ST. LOUIS, MISSOURI

TAYLOR pH Slide Comparators are
Portable!

Ideal for field work, where accurate pH and chlorine testing are imperative, the famous Taylor molded plastic comparator is light, easy-to-operate and extremely durable. Complete Comparator weighs only 1 1/4 pounds. Fast, accurate readings are possible. See your dealer or write direct.



Taylor liquid color standards carry an UNLIMITED GUARANTEE AGAINST FADING.

W. A. TAYLOR & CO.
7304 York Road Baltimore, Md.

**THE SCIENCE PRESS
PRINTING COMPANY**

PRINTERS OF

SCIENTIFIC AND EDUCATIONAL
JOURNALS, MONOGRAPHS
AND BOOKS

Correspondence Invited

LANCASTER, PENNSYLVANIA

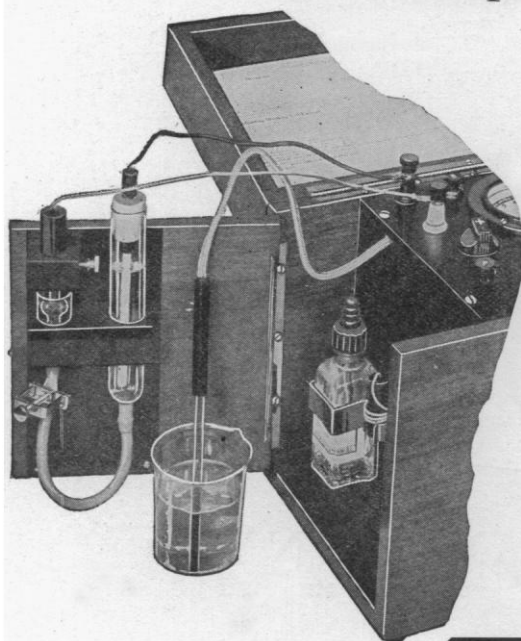
RARE CHEMICALS

» » » » **T**HE EDWAL LABORATORIES is an organization of consulting chemists and engineers. In its founding years it engaged primarily in industrial research, analysis and control work. Succeeding years revealed the necessity for entering into the small scale manufacture of new chemicals which were needed for research problems and which could not be obtained elsewhere. This led in turn, to the production for sale of a number of pure chemicals which at the time were not commercially available.

Although today facilities for large scale manufacture are available, an important part of our work is still devoted to the small lot production of new and rare chemicals. This service is in the hands of competent chemists, and is offered to all firms, individuals or schools engaged in research, development or production. A special "Small Lot Price List, No. 11" will be sent with our catalog when requested.

THE EDWAL LABORATORIES, Inc.
732 Federal Street CHICAGO, ILLINOIS

The Automatic Temperature Compensator in COLEMAN pH ELECTROMETERS has 3 advantages

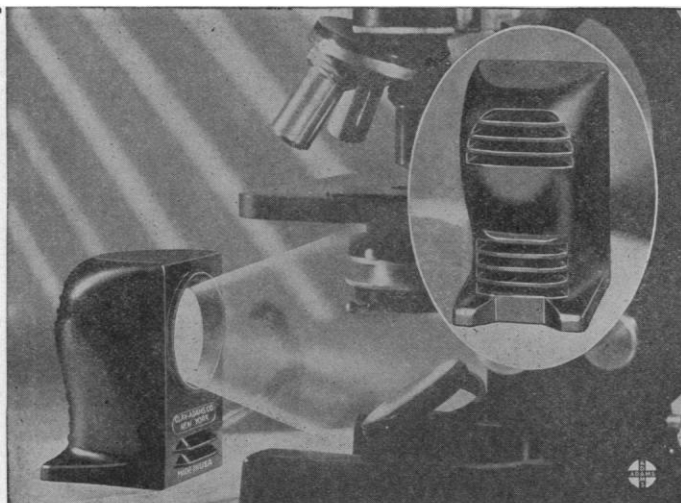


The Coleman Temperature Compensator has 3 outstanding advantages not available with any other equipment. Temperature compensation is *AUTOMATIC*, it is unnecessary to estimate TRUE sample temperature and then adjust the instrument to correspond. Instead the *AUTOMATIC COMPENSATOR* immediately corrects the potentiometric circuit precisely to sample temperature. This procedure insures accurate and rapid operation, because it does not depend on assumed temperatures at electrodes or require prolonged waits for electrodes to reach thermal equilibrium with a rapidly changing sample. Neither does the method depend on the accuracy of calibration or constancy of a voltmeter.

COLEMAN ELECTRIC CO., Inc.

310 Madison St.
Maywood, Ill.

122 E. 42nd St.
New York, N. Y.



BULBS FOR SCOPELITE (and Other Substage Lamps)

| | | | |
|------------|---------------------|-------|---------------------------|
| A-1493A | 10 Watts, 110 Volts | | Each \$.25, Dozen \$2.70 |
| A-1493B | 15 Watts, 110 Volts | | Each .40, Dozen 4.32 |
| A-1493C | 10 Watts, 110 Volts | | Each .60, Dozen 6.60 |
| (daylight) | | | |
| A-1493H | 25 Watts, 110 Volts | | Each .50, Dozen 5.40 |
| A-1493G | 10 Watts, 220 Volts | | Each .55, Dozen 6.00 |

CLAY-ADAMS CO. INC.

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



ADAMS SCOPELITE

Attractively moulded of durable, almost unbreakable Bakelite, it is cool and efficient in operation. Can be used either as a substage lamp (with mirror removed) or in front of the microscope.

Rear curve outlines position of chromium plated concave reflector which serves the dual purpose of intensifying the light and preventing its escape. Louvers, front and rear, cause free circulation of cooling air throughout the lamp without loss of light, so that, even after extended use the lamp can be handled. Frosted daylight filter diffuses the light, giving uniform illumination approximating daylight.

A-1493—ADAMS Scopelite, complete with 6-foot Underwriters cord and plug, and 10 watt, 110 volt bulb.

Each \$2.50, dozen \$25.00

A-1493/F—ADAMS Scopelite, as above, but with Corning daylight filter.

Each \$3.25, dozen \$32.50

EXPANDS



AGAIN!

Rapidly Increasing Demand for Aminco Instruments Necessitates Still Further Plant Extensions

EVERY YEAR sees new Aminco plant facilities. The most recent additions to the main plant have more than doubled the company's facilities, thus enabling Aminco to ACCELERATE DELIVERIES and serve its customers more efficiently than ever before.

It will pay you to investigate NOW the improved service Aminco has to offer by virtue of its new plant designed and built specifically for the efficient production of scientific instruments.

Specialists in Constant Temperature Laboratory Equipment

THE TREND is decidedly to Aminco for all laboratory procedure involving the use of constant temperature equipment, which is attested by the ever-increasing patronage of the world's leading laboratories.

When you use Aminco constant temperature equipment you are not experimenting—you get equipment designed and built by specialists having long and intimate knowledge of the problems involved in constant temperature applications—and you get equipment embodying many features, improvements and refinements that make for extreme precision, dependability, and highly satisfactory performance.

Aminco constant temperature equipment will do for you what it has done for many others—step up the efficiency of your laboratory by making worth-while savings in time and money, and make possible improved laboratory methods.

The Aminco Constant Temperature Line Includes, In Both Standard and Custom Built Designs:

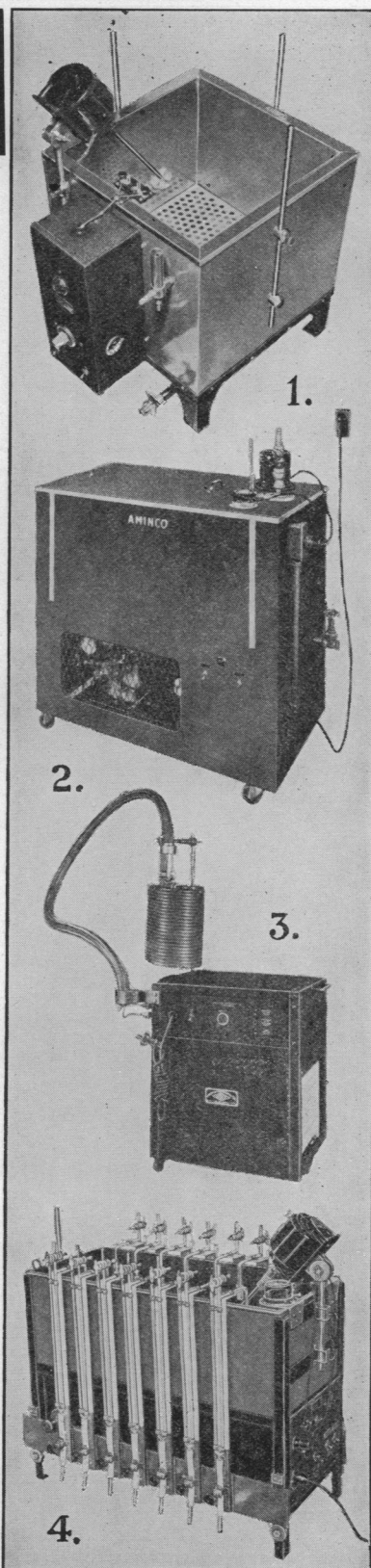
| | | | | | |
|---------|-------|--------|--|----------|-------|
| Heaters | Baths | Relays | Cabinets | Ovens | Pumps |
| | | | Thermoregulators | Stirrers | |
| | | | Manometric Apparatus for Micro-respiration Studies | | |

FULLY DESCRIBED IN CATALOG 41A

Description of Illustrations

- 1. Constant Temperature Bath**—One of numerous types of Aminco baths, with or without refrigeration, for maintaining temperature of the bath liquid constant to as close as $\pm 0.005^\circ \text{C}$. if desired.
- 2. Refrigerated Constant Temperature Bath with Built-in Pump for Circulating Liquids Through Other Laboratory Apparatus**—For maintaining the bath temperature constant to as close as $\pm \frac{1}{4}^\circ \text{F}$.

- 3. Portable Constant Temperature Bath-cooling Unit**—For use in baths or tanks for maintaining the bath liquid at or below room temperature, with a constancy of $\pm 0.1^\circ$ or $\pm 0.75^\circ \text{F}$.
- 4. Manometric Apparatus for Micro-respiration Studies**—For studies according to the methods of Warburg, Barcroft and others. Range: 20 to 50 C. Constancy as close as $\pm 0.005^\circ \text{C}$.



AMERICAN INSTRUMENT CO.

8010 GEORGIA AVENUE • SILVER SPRING, MARYLAND



An Eye Saved is Production Time Saved

JUST a slight accident. A fragment hurtles straight at the operator's eye. Broke the lens of his safety goggle, of course, but there were no flying splinters of glass. Every workman in the room knows that, without impact-resistant safety lenses, Andy would have lost an eye.

Safety goggles, for industrial use, constitute just one of many Bausch & Lomb products making significant contributions to America's war program. Instruments for industrial research and production—metallographic equipment, spectrosopes, tool-makers' microscopes, contour-measuring projectors—are maintaining precision, increasing production and speeding deliveries in factories all across the

nation. Gunfire control equipment—battleship rangefinders, aerial height finders, binoculars, photographic lenses—are of a quality, and on a production schedule, that merited award of the coveted Navy "E."

The skills acquired by Bausch & Lomb scientists and technicians through the company's 89 years are being concentrated in the service of America in her day of need.

BAUSCH & LOMB
OPTICAL COMPANY • ESTABLISHED 1853

AN AMERICAN SCIENTIFIC INSTITUTION PRODUCING OPTICAL GLASS AND INSTRUMENTS FOR MILITARY USE, EDUCATION, RESEARCH, INDUSTRY AND EYESIGHT CORRECTION

SCIENCE

VOL. 95

FRIDAY, MAY 22, 1942

No. 2473

| | |
|---|-----|
| <i>Indications as to Climatic Changes from the Timberline of Mount Washington:</i> PROFESSOR ROBERT F. GRIGGS | 515 |
| <i>"Vegetable Dynamicks" and Plant Tissue Cultures:</i> DR. PHILIP R. WHITE | 520 |
| <i>Obituary:</i> <i>James J. Walsh:</i> DR. ARCHIBALD MALLOCH. <i>Recent Deaths</i> | 522 |
| <i>Scientific Events:</i> <i>The George F. Baker Pavilion of the New York Hospital; Dedication of the Technological Institute of Northwestern University; National Research Council Fellowships in the Natural Sciences; The American Academy of Arts and Sciences; The American Philosophical Society</i> | 523 |
| <i>Scientific Notes and News</i> | 525 |
| <i>Discussion:</i> <i>Gravel Outwash Near Chillicothe, Ohio:</i> DR. FRANK LEVERETT. <i>Average Height of American Men:</i> S. L. CALHOUN. <i>A Case of "Wine-Fed" Termites:</i> DR. JAMES A. MULLEN. <i>Scientific Intuition of a Roman Epicure:</i> PROFESSOR WILLIAM A. PERLZWEIG | 528 |
| <i>Quotations:</i> <i>Disease in Wartime</i> | 530 |
| <i>Scientific Books:</i> <i>The Laplace Transform:</i> DR. R. P. BOAS, JR. <i>Medical Psychology:</i> DR. NOLAN D. C. LEWIS | 531 |
| <i>Societies and Meetings:</i> <i>The Southern Association of Science and Industry:</i> DR. GEORGE D. PALMER | 533 |
| <i>Special Articles:</i> <i>Steroid Hormone Excretion by Normal and Pathological Individuals:</i> DR. C. P. RHOADS, PROFESSOR LOUIS F. FIESER and OTHERS. <i>Control of Flowering with Phytohormones:</i> DR. HAROLD E. CLARK and KENNETH R. KERNS | 534 |
| <i>Scientific Apparatus and Laboratory Methods:</i> <i>Self-Sterilizing Surfaces:</i> PROFESSOR ALEXANDER GOETZ and OTHERS | 537 |
| <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, 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, Washington, D. C.

INDICATIONS AS TO CLIMATIC CHANGES FROM THE TIMBERLINE OF MOUNT WASHINGTON¹

By Dr. ROBERT F. GRIGGS

NATIONAL RESEARCH COUNCIL

WE stand on historic ground. The arctic plants of the Alpine Garden, here isolated on Mount Washington, played a decisive role in establishing Plant Geography as a science; and this science was the crucial point on which turned the acceptance of the doctrine of Evolution. In the years before 1859 progressive naturalists were seeking an answer to the riddle of the Origin of Species. No aspect of this problem was so vexing in those days as the question raised by species with disjunct distribution. Had there been two acts of creation resulting in identical species, one in each of the separate ranges? or was the

present dispersal the result of immigration from a single original center? It was the answer to this question which finally disposed of the doctrine of special creation in the minds of Darwin and his associates. Feeling the need of additional data on this question, Darwin asked his friend, Asa Gray, to discuss the relationships of our eastern flora. Gray did so under the unpretentious title of "Statistics of the Flora of the Northern States."² In a second paper, still antedating the "Origin" he amplified and strengthened the theoretical opinions cautiously expressed in the first.³

¹ Address given at the Symposium on Alpine Ecology, Ecological Society of America, Mount Washington, June 26, 1941.

² *Am. Jour. Sci.*, Ser. 2, 22: 23, 1856-57.

³ "On the Botany of Japan." *Mem. Am. Acad. Arts and Sciences*, 6: 443 *et seq.* (Read December 14, 1858,

but a low water permeability in order to prevent a premature exhaustion of the incorporated silver supply, while surfaces mostly dry require certain hygroscopic properties and an appreciable water permeability. Consequently the performance for which a particular surface material is designed represents by necessity a compromise between the rate of sterilization per unit area, the rate of replacement and the total "life time" required for the surface.

The method used for testing the germicidal activity of these surfaces was the following: Samples of the surface material (about 6 cm²) on various bases were placed in humidified containers (for preventing bacterial destruction by drying). The test microorganisms suspended in the desired medium were pipetted onto the surface in volumes of 0.05–0.1 cc, spreading the liquid into a film. Analogously the controls were obtained on neutral surfaces. At definite time intervals this film or part of it was removed by a sterile cotton swab, and was immediately introduced into 9 cc of lactose-beef or thio-glycollate broth. After incubation at 37° C. for 1 to 5 days the growth was determined. A similar technique was applied for the quantitative determination of cell reduction by titration: the entire film was absorbed by the swab, the latter then soaked for 30 minutes in nutrient broth with frequent shaking before 1 cc was serially diluted and plated in nutrient agar. Colony counts were made after three to five days.

The test microorganisms used so far have been *E. coli*, *Staph. aureus*, *B. proteus*, *B. subtilis* Cl. *pasteurianum*, *Penicillium*, *Rhizopus* and *Sacch. cerevisiae*.

Distilled tap and peptone water, nutrient broth, 5 per cent. sucrose and dextrose solutions, cider and milk have been used as suspending media.

The germicidal action obtainable with various surface materials according to extended tests with the above methods are briefly this:

The rate of sterilization varies with the composition of the surface, the highest rate measured sterilizes *E. coli* at 10⁸ cells/cc in less than one minute. Materials requiring rates of more than 5 minutes for *E. coli* at at least 10⁵ cells/cc were discarded. The bacterial concentration does not influence in general the rate of sterilization.

For a given surface this rate does not vary appreciably with different types of organisms (except for spores). Mold suspensions containing high concentrations of spores were readily sterilized in all suspending media except nutrient broth and milk. This was demonstrated by exposing heavy mold suspensions in cider and sugar-peptone solutions for 1 to 5 minutes to surfaces applied within standard bottle

caps, before applying them to 12-ounce bottles containing sterile cider or broth. After sealing, the nutrient was kept in permanent contact with the cap. Subsequent incubation (30 to 60 days) did not produce growth in any bottle, while control bottles with untreated caps showed heavy growth. For bacterial spores (*B. subtilis*, 10 days old, washed and heated to 100° C. for 5 minutes) reduction up to 97 per cent. has been obtained after 15 to 30 minutes exposure.

In general the rate of disinfection depends upon the concentration of protein-like matter in the suspending medium. In this respect milk is most severe, and a surface which destroys *E. coli* in water in about 2 minutes requires 15 to 30 minutes for the sterilization of non-sporulating bacteria in milk.

Endurance tests for various surface materials were made on a special testing machine, which dipped each sample every fifth minute for about 30 seconds into H₂O. At arbitrary intervals the above test was performed and it was found that the activity remained practically unimpaired for up to 30,000 infections over a period of 2 months. The final failure coincided in general with the destruction of the plastic surface by mechanical wear.

Without such treatment good surfaces have not shown disactivation during storage. *

A. GOETZ
R. TRACY
S. GOETZ

RARE METALS INSTITUTE,
CALIFORNIA INSTITUTE OF TECHNOLOGY

NEW BOOKS

- BERGMANN, PETER GABRIEL. *Introduction to the Theory of Relativity*. Pp. 287. Prentice-Hall, Inc. \$4.50.
- GRIFFITH, JOHN Q. and EDMOND J. FARRIS. *The Rat in Laboratory Investigation*. Illustrated. Pp. 488. J. B. Lippincott Company. \$7.50.
- HOPKINS, B. SMITH. *General Chemistry for Colleges*. Third edition. Illustrated. Pp. 758. D. C. Heath and Company. \$3.80.
- KOLTHOFF, I. M. and V. A. STENGER. *Volumetric Analysis*. Volume One, Second edition. Pp. 309. Interscience Publishers, Inc. \$4.50.
- KRON, GABRIEL. *Tensor Analysis for Electrical Engineers*. Pp. 250. John Wiley and Sons, Inc. \$4.50.
- LANGSTAFF, J. BRETT. *Dr. Bard of Hyde Park*. Illustrated. Pp. 365. E. P. Dutton and Company, Inc.
- LEWIS, JULIAN HERMAN. *The Biology of the Negro*. Pp. 433. University of Chicago Press. \$5.00.
- ROBESON, FRANK L. *Physics*. Illustrated. Pp. 819. The Macmillan Company. \$4.50.
- ROBINSON, CLARK SHOVE. *The Recovery of Vapors*. Illustrated. Pp. 273. Reinhold Publishing Corporation. \$4.75.
- TREADWELL, F. P. and WILLIAM T. HALL. *Analytical Chemistry*. Illustrated. Volume 2. Ninth edition. Pp. 806. John Wiley and Sons, Inc. \$6.00.
- WARNER, W. LLOYD and PAUL S. LUNT. *The Status System of a Modern Community*. Pp. 246. Yale University Press. \$3.00.
- W. K. Kellogg Foundation. W. K. KELLOGG, etc. Illustrated. Pp. 217. The Lakeside Press.

NEW WILEY BOOKS

INTRODUCTORY COLLEGE CHEMISTRY

By H. G. DEMING, *Professor of Chemistry, University of Nebraska*. Second Edition Revised in Collaboration with B. CLIFFORD HENDRICKS, *Professor of Chemistry, University of Nebraska*.

The second revised edition of this well-known book follows the same method of approach as before, but with changes in the order of presentation suggested by teaching experience. General principles continue to be emphasized. Particular attention is directed to the expansion of the material to include the most modern data.

Second Edition: 521 pages; 6 by 9; \$3.00

AN INTRODUCTION TO THE PLANT SCIENCES

By WILLIAM C. DARRAH, *Tutor in the Department of Biology and Research Curator in the Botanical Museum, Harvard University*.

A concise account of the nature of the plant kingdom. It is intended for use by students in a half-year or one-semester course in botany or plant biology. Emphasis is placed on these four recent developments: the organismal concept; the break from traditional classifications; the physiological or biochemical approach; and the utilitarian and humanistic emphasis.

332 pages; 6 by 9; \$2.75

CONSERVATION OF NATIONAL RESOURCES

By GEORGE T. RENNER, *Professor of Geography, Teachers College, Columbia University*.

A textbook for use in teachers colleges, normal schools, and college departments of education, as well as in departments of geography. Its purpose is to present the educational philosophy and aims, social objectives, sources of materials, and curricular considerations of conservation.

228 pages; 6 by 9; \$2.75

INTRODUCTION TO THE MICROTECHNIQUE OF INORGANIC ANALYSIS

By A. A. BENEDETTI-PICHLER, *Assistant Professor of Chemistry, Queens College, Flushing, N. Y.*

New and well-organized material for classes in inorganic microanalysis. Directions are given in great detail to facilitate class use. Starting with the most elementary exercises, the instructions lead up to work of the most advanced type. Expensive special apparatus is not essential.

302 pages; 6 by 9; \$3.50

X-RAY CRYSTALLOGRAPHY

By M. J. BUERGER, *Associate Professor of Mineralogy and Crystallography, Massachusetts Institute of Technology*.

This volume is the first to deal exclusively with modern x-ray crystallography. It presents a detailed account of both theory and practice, and shows the essentials for learning the subject and for performing investigations in this field. Especially designed for student use.

531 pages; 6 by 9; \$6.50

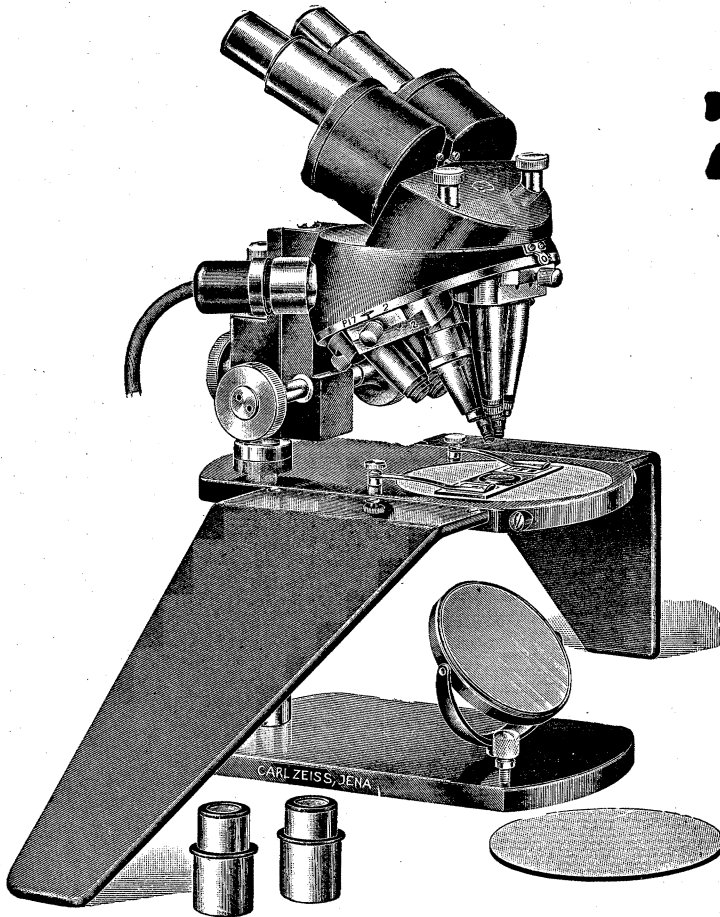
AERIAL BOMBARDMENT PROTECTION

By H. E. WESSMAN, *Chairman, Department of Civil Engineering*, and W. A. ROSE, *Assistant Professor of Structural Engineering; both at New York University*.

This book covers the types of bomb now in use, what sort of damage each does, and how people and buildings can be protected against them; design data for new buildings, and the necessary variations from standard structural practice; how to build shelters; how to camouflage buildings; and other important engineering contributions to civilian defense.

372 pages; 6 by 9; \$4.00

JOHN WILEY & SONS, INC. 440-4th AVE., NEW YORK



ZEISS

Stereoscopic Dissecting Microscope XV

with Inclined Eyepieces and Large Field of View, Revolving Objective Carrier, Built-in Illuminating Device for Incident Light. Magnifications: 16 to 216x

Leaflet Micro 510 upon request

WE BUY, REPAIR, RECONDITION, RESELL
USED
ZEISS INSTRUMENTS

CARL ZEISS INC.

485 Fifth Avenue, New York

728 So. Hill Street, Los Angeles

SCIENCE

A weekly journal, established in 1883, devoted to the advancement of the natural and exact sciences, the official organ of the American Association for the Advancement of Science. For forty years SCIENCE has been conducted by its present editor, and is now generally regarded as the professional journal of American men of science.

Annual Subscription \$6.00; single copies 15 cents.

THE SCIENTIFIC MONTHLY

An illustrated magazine, devoted to the diffusion of science, publishing articles by leading authorities in all departments of pure and applied science, including the applications of science to education and society.

Annual Subscription \$5.00; single copies 50 cents.

THE AMERICAN NATURALIST

A bi-monthly journal established in 1867, devoted to the biological sciences, with special reference to the factors of organic evolution.

Institutional Subscription \$5.00; Individual Subscription \$3.00; Single Copies \$1.00.

SCHOOL AND SOCIETY

A weekly journal covering the field of education in relation to the problems of American democracy. Its objects are the advancement of education as a science and the adjustment of our lower and higher schools to the needs of modern life.

Annual Subscription \$5.00; single copies 15 cents.

AMERICAN MEN OF SCIENCE

Sixth Edition

A biographical directory. This book is essential for all workers in science and is an invaluable work of reference for libraries and for all having relations with scientific men. It contains about 28,000 names. Seventh edition in course of preparation.

Price: Twelve Dollars net, postage paid.

LEADERS IN EDUCATION

Second Edition

A biographical directory of leaders in education along the lines of American Men of Science. This directory contains over 17,000 names.

Price: Twelve Dollars net, postage paid.

BIOGRAPHICAL DIRECTORY OF AMERICAN SCHOLARS

In Preparation—Names of approximately ten thousand scholars of the United States will be included who are engaged in research in the fields of the humanities and of the social sciences.

Price in advance of publication \$9.00.

THE SCIENCE PRESS

LANCASTER, PENNSYLVANIA

SUBSCRIPTION ORDER

TO THE SCIENCE PRESS
LANCASTER, PA.

Please find enclosed in payment of subscription to
..... for the year beginning

Name

Address

.....