# SCIENCE

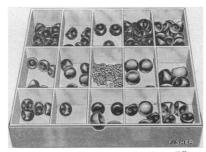
NEW SERIES Vol. 94, No. 2434

FRIDAY, AUGUST 22, 1941

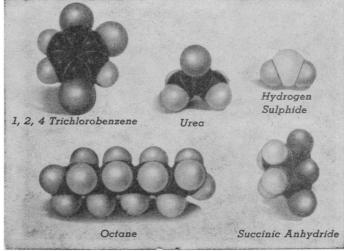
SUBSCRIPTION, \$6.00 SINGLE COPIES, .15

## Fisher-Hirschfelder Atom Models

- · Conform with Modern Theories
- · Show Actual Space Relationships
- · Demonstrate True Structure
- Scale 100,000,000 to One



Each kit contains 110 models (19 different atoms) and sufficient pegs to join them in innumerable combinations.



A few of the molecules that can be "synthesized" with Fisher-Hirschfelder Atom Models.

The Fisher-Hirschfelder Atom Model Kit contains sufficient wooden models and pegs to "synthesize" thousands of different organic molecules. The models have a definite scale size of 100,000,000 to one and conform with the latest scientific information as to size of atoms, space relationships, bond angles and internuclear distances.

The 110 atom models and 100 taper pegs contained in the kit can be put together to show true molecular construction. The models are useful in teaching molecular structure, for research, for demonstration purposes or for studies of chemical composition and structure.

Models of each element are finished in an attractive bright color, distinctive of that element; i.e., hydrogen, orange; carbon, black; chlorine, green; etc. The faces and their valences are readily, identified by the holes drilled in them to accommodate the taper pegs. These pegs fit the models snugly and hold the atoms together quite rigidly, yet they are easily separated.

Contents of Atom Model Kit				
No.	Туре	Atom	Form	Color
12 6 4 18 2 30 6 6 4 2 2 2 2 2 2 2 2 2 2 2 2	C-1 C-2 C-3 C-4 C-5 H-1 O-2 N-3 N-4 S-1 S-2 S-3 Cl-1 I-1	Carbon Carbon Carbon Carbon Carbon Carbon Hydrogen Oxygen Oxygen Nitrogen Nitrogen Nitrogen Nitrogen Sulphur Sulphur Sulphur Chlorine Bromine Iodine	Paraffinic Olefinic Acetylenic Acetylenic Aromatic Heterocyclic Ether Carbonyl Amino Imide Cyanide Nitrate Isonitrile Sulphide No. 1 Sulphide No. 2 Sulphate	Black Black Black Black Black Orange Light Blue Light Blue Dark Blue Dark Blue Dark Blue Dark Blue Vellow Yellow Yellow Green Tan Brown

Fisher-Hirschfelder Atom Model Kit

\$12.00

(Extra Atom Models, \$1.50 per dozen; \$.11 each in lots of 50)

- Manufactured and Distributed by —

## FISHER SCIENTIFIC CO.



## EIMER AND AMEND

711-723 Forbes Street, Pittsburgh, Penna.

205-223 Third Avenue, New York, N. Y.

-Headquarters for Laboratory Supplies.

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

#### University of California **Publications**

Volume IV of the

#### Anthropological Records

is now completed.

The titles include

Contents

PAGES

1. Culture Element Distributions: XII-Apache-Pueblo, by E. W. Gifford ......

1-208 \$2.00

2. Culture Element Distributions: XIII-Nevada Shoshone, by Julian H. Steward ...... 209-360

1.50

3. Culture Element Distributions: XIV-Northern Painte, by Omer C. Stewart .....

.75

Each title may be purchased separately at the indicated prices, or the entire group of papers comprising the volume at \$3.50.

Orders to be sent to the Berkeley office of the

#### UNIVERSITY OF CALIFORNIA PRESS

BERKELEY and LOS ANGELES

MARSHALL

# Laboratory Guide

# Elementary Bacteriology

This laboratory guide, designed for a first course in bacteriology, contains 92 experiments grouped under the headings: Introductory Technique, Morphology, Physiology, Applied Bacteriology, Serology and Infection.

Each experiment is introduced and concluded with paragraphs designed to orient the student to the problem and to stimulate him to thought about its implications. The directions for the performance of the work are clear, precise and sufficiently detailed for the elementary student.

As an aid to instructors, the practical appendix includes: List of Desk Equipment; List of Cultures; List of Equipment for Experiments; General Equipment and Chemicals (List of Equipment, Chemicals, Culture Media and Reagents), and ref-

By M. S. Marshall, Ph.D., Associate Professor of Bacteriology, University of California 244 Pages \$1.75

## THE BLAKISTON COMPANY PHILADELPHIA

Graduate assistantship in biology available in a small eastern college. Opportunity to secure M.A. degree.

Good scholarship record and endorsements required. Interview probable. Attractive stipend. Address "C.C.," care of Science, 3941 Grand Central Terminal, New York, N. Y.

GEOLOGY—Ph.D. with successful teaching, research and field experience desires connection including advanced teaching and research. Employed. Address "S.W.," care of Science, 3941 Grand Central Terminal, New York, N. Y.

### LaMOTTE-HESTER SOIL TESTING OUTFIT

The LaMotte-Hester Soil Testing Outfit was designed by Jackson B. Hester, of the Virginia Truck Experiment Station. By this procedure the LaMotte Duplex Indicator is used to give the approximate pH, and then the more accurate indicator is selected to make the final reading. Price \$15.00, f.o.b. Towson, Baltimore, Maryland.

LaMotte Chemical Products Co.

Dept. "H"

Towson, Baltimore, Md.

### The

## Foundations of Science

By H. POINCARÉ

Pp. xi + 553.

Containing the authorized English translation by George Bruce Halsted of "Science and Hypothesis," "The Value of Science" and "Science and Method," with a special preface by Poincaré, and an introduction by Josiah Royce. Price, postpaid, \$5.00.

#### THE SCIENCE PRESS

Grand Central Terminal

New York, N. Y.

# NEW McGRAW-HILL BOOKS

#### **Physical Chemistry for Colleges**

New fifth edition

By E. B. MILLARD, Massachusetts Institute of Technology. *International Chemical Series*. 600 pages, 6 x 9. \$3.75

All material in this standard textbook has been revised to bring it in line with current progress. The treatment of thermodynamics has been greatly expanded, with much more attention given to the second law. The chapters on free energy and electrochemistry are doubled in length, and the chapter on thermochemistry is wholly new.

#### **Experimental Physical Chemistry**

New third edition

By Farrington Daniels, J. Howard Mathews and John Warren Williams, University of Wisconsin. *International Chemical Series*. 462 pages, 6 x 9. \$3.50

This successful laboratory text illustrates the principles of physical chemistry, trains the student in careful experimentation, develops familiarity with apparatus, gives him confidence in using physical chemical measurements, and encourages ability in research. Much new material has been added. Most of the experiments have been revised, several have been omitted, and a dozen or more new ones have been included.

#### Thermochemical Calculations

By Ralph R. Wenner. 377 pages,  $6 \times 9$ . \$4.00

In this important new book the author meets the need for a volume on applied thermodynamics which presents a comprehensive introduction to the modern principles, methods, and data available for the solution of a wide variety of practical laboratory and technological problems.

#### **Pyrometry**

New second edition

By WILLIAM P. Wood and JAMES M. CORK, University of Michigan. 263 pages, 6 x 9. \$3 00

Thoroughly revised and brought up to date, the new edition of this text presents a comprehensive discussion of the principles and methods of the accurate measurement of temperatures. It also describes fully the construction, operation, uses, and efficiencies of various types of equipment. New problems and experiments have been included and new illustrations have been added.

#### Industrial Instruments for Measurement and Control. Types, Applications, and Maintenance

By Thomas J. Rhodes, Engineer, The Procter & Gamble Company. Chemical Engineering Series. Ready in September.

Here is a new text of unusual interest, designed to cover in a theoretical and practical treatment the measurement and control of the four fundamental physical factors encountered in industrial processing and manufacturing: temperature, pressure, fluid flow, and liquid level. Automatically controlled continuous processes are thoroughly analyzed and practical rules are established for the design and maintenance of controlling instruments.

# Food Analysis. Typical Methods and the Interpretation of Results. New fourth edition

By A. G. Woodman, Massachusetts Institute of Technology. *International Chemical Series*. 603 pages, 6 x 9. \$4.00

As before, this standard text discusses all the processes involved in food analysis and covers comprehensively their suitabilities and limitations. All material has been revised, particularly the chapters on alcoholic beverages, sugar methods, etc.

Send for copies on approval

# McGRAW-HILL BOOK COMPANY, INC.

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

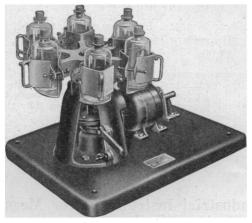
Aldwych House, London, W.C.2

# Bottle Shaking Machines



are well known for the following reasons:

Constructed for large capacities • Adaptable to containers of various sizes and shapes • Variable speed from 100 to 600 R. P. M. • Effective dual motion • Large motor with friction drive • Massive base for greater stability.



Size 2 Shaker with 6-place head adapted for 500-1000 ml. bottles and pint and quart size ordinary fruit jars.

A motion is produced similar to shaking by hand, but much more rapid and effective. It is not only reciprocating up and down, but also elliptical and produces within the container a circulation as well as concussion of the fluid. More compact construction is obtained by employing a satisfactory friction drive in place of the conventional belt drive.

- International Bottle Shaking Machines can also be furnished with an explosion proof motor for hazardous locations or when volatile materials are being used.
- The Size 2 Shaker can be furnished with a variety of heads including the following:
  - 4-place to accommodate bottles of 500-1000 ml. capacity as well as pint and quart size ordinary fruit jars.
  - 6-place (as illustrated)—bottles and jars as above. 24-place for ordinary sputum bottles or one ounce bottles.
  - 10-place for bottles of 500-1000 ml. capacity and pint and quart size ordinary fruit jars.
  - 12-place for Erlenmeyer flasks of 300-500 ml. capacity. 4-place for 50 ml. round bottom tubes or small flasks up to 150 ml. in capacity.

Bulletin S Describes Sizes 1 and 2 Shakers

INTERNATIONAL EQUIPMENT CO. 352 Western Avenue Boston, Mass., U.S.A.

Makers of Fine Centrifuges

# 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.

# NEW BOOK AND INSTRUMENT CATALOGUES

CAXTON PRINTERS, LTD., Caldwell, Idaho. Trade List, 1941; June Issue. Pp. 24.

GOLDSCHMIDT & COMPANY, LTD., E. P., London, England. Catalogue 64; A Collection of Books on the History of Bacteriology and Other New Acquisitions in the History of Science. Pp. 40.

HARVARD UNIVERSITY PRESS, Cambridge.

Announcements of Harvard Books for the
Autumn of 1941. Pp. 36.

MACMILLAN COMPANY, New York. New Books, Fall, 1941; Final Announcement. Pp. 180.

MERCK & COMPANY, INC., Rahway, New Jersey. Merck Laboratory Chemicals, 1941. Pp. 110.

**OXFORD UNIVERSITY PRESS,** New York. *Books for Fall, 1941.* Pp. 88. Illustrated.

SAUNDERS COMPANY, W. B., Philadelphia.
Saunders Books for the Medical, Dental, Nursing
and Allied Professions. Pp. 86.

SPENCER LENS COMPANY, Buffalo. The Use of the Spencer Polarimeter. Pp. 32. Illustrated. Spencer Polarimeter. Pp. 4. Illustrated. Spencer Polarizing Microscopes. Pp. 26. Illustrated.

Readers are requested to mention SCIENCE when they write for catalogues.

# CHOLINE CHLORIDE SMACO

THE IMPORTANCE of choline in nutrition is now more widely recognized as a result of new investigations showing its relationship to liver cirrhosis¹ and renal damage.² Under specific dietary conditions a deficiency of choline results in fatty infiltration of the liver in rats³ and perosis in chicks.⁴ Choline is definitely involved in the metabolism of the sulphur containing amino acids.⁵, ⁶

It has been suggested that choline is a factor in the B-complex<sup>7</sup> and because of this there is increasing use of choline chloride as a routine supplement in nutritional research especially where highly purified diets are employed.

Choline Chloride synthesized in our laboratories, is available conveniently packaged for research purposes and in bulk quantities.

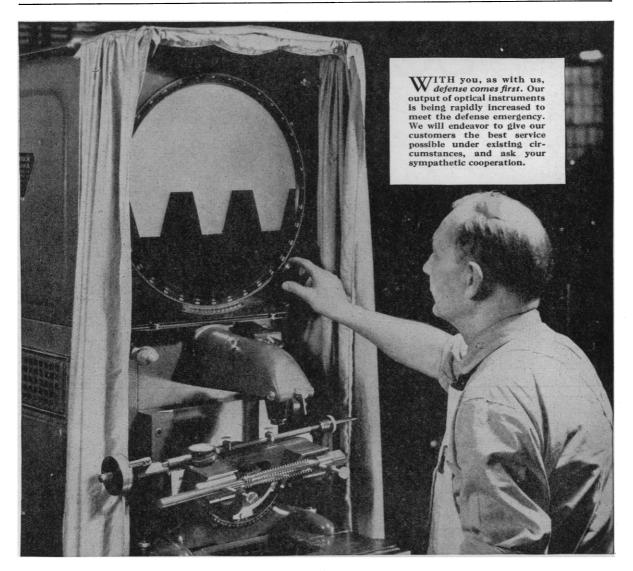
- GYÖRGY, P., and GOLDBLATT, H.: Proc. Soc. Exp. Biol. & Med., 46:492:1941.
- 2. GRIFFITH, W. H.: J. Nutrition, 21:291:1941.
- BEST, C. H., and RIDOUT, J. H.: Ann. Rev. Biochem., 8:349:1939.
- 4. HEGSTED, D. M., MILLS, R. C., ELVEHJEM, C. A., and HART, E. B.; J. Biol. Chem., 138:459:1941.
- DU VIGNEAUD, V., CHANDLER, J. P., MOYER, A. W., KEPPEL, D. M.: J. Biol. Chem., 131:57:1939.
- 6. GRIFFITH, W. H., and WADE, N. J.: J. Biol. Chem., 132:627:1940.
- GYÖRGY, P., and GOLDBLATT, H.: J. Exp. Med., 72:1:1940.



PRICES ON REQUEST

RESEARCH LABORATORIES S. M. A. Corporation CHAGRIN FALLS, OHIO





# The Shadow That Speeds The Assembly Line

ROM the production lines of America's vast industries, flows part after part so identical in size that the last can be interchanged with the first and work equally well in the assembled product.

Interchangeability of parts, the secret of mass production, is attainable only through rigid control of accuracy. This high degree of precision is entirely dependent upon precision instruments such as the Bausch & Lomb Contour Measuring Projector.

By projecting a magnified shadow image of a mechanical part upon a screen, this projector clearly reveals to the naked eye errors of ten-thousandths of an inch. With it, gauging of contours—normally requiring, hours of measurement and computation—can be accomplished in a matter of minutes. It

permits many measurements that would otherwise be impossible except at a great expenditure of time and money. And today, if ever, speed and economy are vital to national defense!

Such instruments as the Contour Measuring Projector, like the many other Bausch & Lomb precision optical instruments used in science, industry and education have freed America from any dependence on European sources of supply.

# **BAUSCH & LOMB**

OPTICAL CO. • ROCHESTER, NEW YORK ESTABLISHED 1853

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

# SCIENCE

Friday, August 22, 1941 No. 2434 Vol. 94 Problems Confronting Medical Investigators: Dr. GLAMERY. The Maryland Academy of Sciences: Dr. J. Wallace Page, Jr. ..... 189 Walter B. Cannon Special Articles: The American Association for the Advancement of The Fall in Blood Pressure Associated with Intravenous Injection of Tissue Extracts: Dr. E. Mylon Special Research Conferences on Chemistry: Dr. F. and Others. Identity of an Iodine-Storing Tissue R. MOULTON ...... 179 in an Ascidian: Dr. Aubrey Gorbman. The Southwestern Division: Dr. Frank E. E. Ger-Polarization of Atmospheric Haze: George M. Byram .. Scientific Events: Scientific Apparatus and Laboratory Methods: Chemical Research Reports; Grants of the Geological Society of America; The Optical Society of The Typing of Hemolytic Streptococci: Dr. Paul L. Boisvert. An Automatic Device for Periodi-America; Recent Deaths ........ cally Determining and Recording both Systolic and Diastolic Blood Pressure in Man: Dr. WARREN E. GILSON and OTHERS ..... Scientific Notes and News ...... .... .... .... Discussion: Science News ... Nutritional Deficiency as a Factor in the Abnormal Behavior of Experimental Animals: Professor C. SCIENCE: A Weekly Journal devoted to the Advance-G. KING, DR. H. W. KARN and R. A. PATTON. A ment of Science, edited by J. McKeen Cattell and pub-Physiological Basis for the Differential Resistance of the Two Races of Red Scale to HCN: N. F. HARDMAN and DR. RODERICK CRAIG. Palm Patlished every Friday by THE SCIENCE PRESS terns and Handedness: Professor David C. Rife. The Early Use of Implanted Electrodes for Stimu-Lancaster, Pa. Garrison, N. Y. lation of the Cortex Cerebri: Dr. Sam L. Clark .... . 186 New York City: Grand Central Terminal Scientific Books: 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. Mathematical Tables: Professor Barkley Rosser 188 Societies and Meetings: The Alabama Academy of Science: Winnie Mc-

#### PROBLEMS CONFRONTING MEDICAL INVESTIGATORS<sup>1</sup>

By Dr. WALTER B. CANNON

GEORGE HIGGINSON PROFESSOR OF PHYSIOLOGY, HARVARD MEDICAL SCHOOL

In relation to their special concerns men of science face problems of two sorts. First, there are the enticing direct questions, presented at the outer boundaries of existing knowledge, as to what may lie just beyond. Many investigators in astronomy and biology, for example, have had their imagination stirred by such questions. To satisfy their curiosity they have striven persistently for more facts. And the facts have led to understanding of the vastness of interstellar space

<sup>1</sup> A contribution to a symposium on "The University and the Future of America" held at the celebration of the fiftieth anniversary of the founding of Stanford University. It will appear in a volume containing all the addresses given at the symposium, to be published by the Stanford University Press.

and the immense duration of evolutionary processes. But these facts have had an impact on society which has led to profound changes in the outlook and judgment of all thoughtful people. The revolutionary social effects of advancing science raise the secondary, more indirect questions regarding the significance of scientific progress for humanity. Such questions, also, challenge scientific workers, as they challenge other intelligent members of the body politic.

In the present essay our attention will be directed in the main to the primary professional questions awaiting medical investigation. Before they are considered, however, it may be well to note that the social effects of progress in medical knowledge appear to typing of hemolytic streptococci cross-reactions can frequently be eliminated by dilution of the serum, and absorption of such sera with organisms of a heterologous type may be unnecessary. This has been our experience.

Lastly, there is the obvious but important point that the amount of available typing serum is considerably increased by dilution.

PAUL L. BOISVERT

DEPARTMENT OF PEDIATRICS,
YALE UNIVERSITY SCHOOL OF MEDICINE

#### AN AUTOMATIC DEVICE FOR PERIODI-CALLY DETERMINING AND RECORD-ING BOTH SYSTOLIC AND DIA-STOLIC BLOOD PRESSURE IN MAN<sup>1</sup>

This device, which has been developed at the University of Wisconsin as a joint project of the anesthesia and physiology departments of the Medical School, determines both systolic and diastolic blood pressures by the auscultatory method, the method in common use by most members of the medical profession. The machine has been designed so that it can make and record a complete determination of both pressures and allow sufficient rest for the arm of the subject all within 30 seconds. Pressures may therefore be determined at any periodic rate up to one every half minute. The record consists of a graph of the pressure changes in an inflatable cuff placed on the upper arm (the ordinary type of cuff and application used by physicians in determining blood pressures) and a simultaneous record of the sounds over the brachial artery in the ante-cubital fossa below the cuff. The systolic pressure is taken as that pressure corresponding to the first Korotkow phase in these sounds and the diastolic as that corresponding to the fourth Korotkow phase.

The device consists essentially of two parts. One part controls the induction and recording of the necessary cyclic pressure changes in the inflatable cuff; the other is concerned with the detection, amplification and recording of the sounds in the brachial artery below the cuff.

Operation of the device is as follows. The pressure in the inflatable cuff is automatically recorded as it passes through the following events: (a) raising the pressure in the cuff to some desired pressure above systolic in a predetermined length of time which may be varied at will; (b) allowing this pressure to fall to some pressure below diastolic at a rate which may be adjusted; (c) completely deflating the cuff for any desired period of time to allow rest for the arm and to restore circulation. This cycle of events may be

<sup>1</sup> Aided in part by a grant from the Wisconsin Alumni Research Foundation.

made to take place periodically or non-periodically as desired. The sounds over the brachial artery in the ante-cubital fossa are picked up by a suitable device, amplified and recorded simultaneously with the pressures in the cuff. The amplification may be varied and a limiting device is supplied to limit the oscillations of the recording pen or stylus.

The machine as constructed at Wisconsin accomplishes the pressure cycle by means of electrically operated valves. A Shure Stethophone picks up the sounds which are amplified and recorded by means of a moving coil type of ink writer. Pressures are recorded with an Esterline Angus pressure recorder. The paper drive is controlled so that the tape moves only during the actual determination and not while the arm is at rest.

A typical time distribution for the pressure cycle for recording pressures every half minute is 3 seconds for inflation, 22 seconds pressure fall and 5 seconds for rest. Pressures may be taken every half minute for hours at a time using this distribution with little discomfort to the patient and little interference with the circulation. The advantages of this machine over others is that both systolic and diastolic pressures are determined and recorded consecutively; no continuously inflated cuff or other pressure device which impedes circulation is needed; and once adjusted to the individual patient, it may be left to run unattended for hours.

WARREN E. GILSON HAROLD GOLDBERG HARVEY C. SLOCUM

University of Wisconsin

#### **BOOKS RECEIVED**

Bruner, Herbert B. and others. What Our Schools Are Teaching. Pp. xii + 225. Teachers College, Columbia University. \$3.00.

COLIEN, FRANCIS E. and ETHEL J. ODEGARD. Principles of Microbiology. Pp. 444. 140 figures. 18 plates. Mosby. \$3.00.

GILBERT, ALBERT J. and SELMA MOODY. Essentials of Pharmacology and Materia Medica for Nurses. Pp. 251 11 former Mosby 42 25

251. 11 figures. Mosby. \$2.25.

JENNY, HANS. Factors of Soil Formation; A System of Quantitative Pedology. Pp. xii+281. 125 figures.

McGraw-Hill. \$3.50.

KOLTHOFF, I. M. and H. A. LAITINEN. pH and Electro Titrations. Second edition, revised. Pp. ix+190. 43 figures. Wiley. \$3.00.

LONGWELL, CHESTER R., ADOLPH KNOPF and RICHARD F. FLINT. Outlines of Physical Geology. Second edition, revised. Pp. ix+381. 281 figures. Wiley. \$2.75. PEATTIE, DONALD CULROSS. The Road of a Naturalist. Pp. viii+315. Illustrated. Houghton Mifflin. \$3.00. PETTIT, H. P. and P. LUTEYN. College Algebra. Second edition. revised. Pp. xiy+247. Wiley. \$1.90.

edition, revised. Pp. xiv+247. Wiley. \$1.90.
Statistical Activities of the American Nations. Pp. xxxi+842. Inter American Statistical Institute, Washington, D.C. \$2.00.

U. S. Department of Agriculture. Report on the Agricultural Experiment Stations, 1940. Pp. 272. Superintendent of Documents, Washington, D. C. \$0.25.

# Announcing

LONGWELL, KNOPF and FLINT'S

# OUTLINES OF PHYSICAL GEOLOGY

#### SECOND EDITION

By CHESTER R. LONGWELL, Henry Barnard Davis Professor of Geology; ADOLPH KNOPF, Sterling Professor of Physical Geology; and RICHARD F. FLINT, Associate Professor of Geology; All at Yale University.

In the second revised edition of this widely used textbook, practical aspects are given particular emphasis. Two new chapters have been added—one on geology in engineering, another summarizing the subject matter of physical geology and explaining its relation to earth history. The chapter on geology in engineering, and those on minerals and mineral deposits, offer especially good material for a general geology course for engineering students. In writing this book technical terms have been omitted wherever possible, and although brevity has been a principal consideration, many explanations have actually been amplified for greater clarity.

A special effort has been made to unify this book and the "Outlines of Historical Geology," by Schuchert and Dunbar, so as to make the two books better fitted for use in a unit course. The illustrations have been greatly improved by the addition of numerous new block diagrams and air views. Such up-to-date problems as those of soil conservation and flood control are considered.

381 pages

281 illustrations

6 by 9

\$2.75

# OUTLINES OF HISTORICAL GEOLOGY

By CHARLES SCHUCHERT, Professor Emeritus of Paleontology, and CARL O. DUNBAR, Professor of Paleontology and Stratigraphy; Both at Yale University.

Fourth Edition Ready in September.

Approximately 285 pages; 184 illus.; 6 by 9; Probable price, \$2.50.

# OUTLINES OF GEOLOGY

By CHESTER R. LONGWELL, ADOLPH KNOPF, RICHARD F. FLINT, CHARLES SCHUCHERT, and CARL O. DUNBAR.

(A combined volume containing in one binding the new editions of Longwell-Knopf-Flint "Outlines of Physical Geology" and Schuchert-Dunbar "Outlines of Historical Geology." To be priced at \$4.00.) Ready in September.

JOHN WILEY & SONS, INC., 440 FOURTH AVENUE, NEW YORK

# ZEISS

MICROSCOPES and MICROSCOPIC ACCESSORIES

PHOTOMICROGRAPHIC and METALLOGRAPHIC APPARATUS

PHOTOMETERS POLARISCOPES

SPECTROSCOPES and SPECTROGRAPHS

REFRACTOMETERS INTERFEROMETERS

TELESCOPES PLANETARIUM INSTRUMENTS BINOCULARS

OPHTHALMOLOGICAL INSTRUMENTS EYE LENSES

CYSTOSCOPES GASTROSCOPES ETC.

SURVEYING INSTRUMENTS PRECISION MEASURING INSTRUMENTS

PHOTOGRAPHIC LENSES ZEISS IKON CAMERAS

# **WE BUY**

repair, recondition, resell

# USED ZEISS INSTRUMENTS

CARL ZEISS, INC.
485 Fifth Avenue
NEW YORK, N. Y.