IMPORTANT new TEXTS

Driver's Tennis for Teachers

New Book—R. Norris Williams, 2nd, former National Singles Tennis Champion, says that "Miss Driver has worked out a method of teaching and counsel which is eminently sound." Mr. Williams is referring to this new book, written for teachers and professional students. Miss Driver first sketches briefly the background of tennis. She covers scoring, rules and how to teach them, equipment, courts, terminology. Then she goes into the actual mechanics of teaching and playing tennis. There are numerous step-by-step illustrations.

12mo of 391 pages, illustrated. By Helen Irene Driver, B.A., M.S., Instructor in Charge of Women's Tennis at the University of Wisconsin. Cloth, $2.50 net.

Cunningham's Family Behavior

New Book—Here is another new book, just off press. It presents a subject of constantly growing importance. Dr. Cunningham brings out the direct bearing that everyday situations have in promoting or hindering the ideal state of family affairs. She discusses social questions of both adults and children, financial problems, community aspects, the effects of environment and of amusements—everything that enters into the daily routine of the average family. Mental hygiene is particularly stressed.

12mo of 471 pages. By Bess V. Cunningham, Ph.D. Cloth, $2.75 net.

Marshall's Elementary Anatomy

New Book—Dr. Marshall has set down the lectures which he has been using so successfully in his course in Anatomy at Yale. He applies anatomy to bodily function. He includes sufficient of Histology to help the student understand anatomy. Embryology he has placed in a separate chapter to be included or omitted at the discretion of the teacher. There are 252 unusually instructive illustrations, 15 of them in colors. This text makes an excellent companion to Crandall's "Physiology" (opposite).

12mo of 375 pages, with 252 illustrations. By Clyde Marshall, M.D., Department of Anatomy, Yale University. Cloth, $2.50 net.

Crandall's Elementary Physiology

New Book—This textbook sets down those methods of teaching which Dr. Crandall has been using in his own classroom. It is fresh in approach and in the material used. Terms are defined right in the text and students are prepared for each forward step in the study as they progress through the book. The physiologic functions are demonstrated by examples from everyday life. There are 104 diagrammatic pictures of particular value.

12mo of 325 pages, 104 illustrations. By Lathen A. Crandall, Jr., M.D., Ph.D., Associate Professor of Physiology and Pharmacology, Northwestern University. Cloth, $2.00 net.

W. B. SAUNDERS COMPANY, W. Washington Square, Philadelphia

Please send me the books checked (V) and charge to my account:

☐ Driver's Tennis for Teachers ....................... $2.50 net
☐ Cunningham's Family Behavior ................... 2.75 net
☐ Marshall's Human Anatomy ....................... $2.50 net
☐ Crandall's Human Physiology .................... 2.00 net

NAME ..................................................

ADDRESS ...........................................

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


**Length of Life**

*A Study of the Life Table*

By Louis I. Dublin, Ph.D., Third Vice President and Statistician; and Alfred J. Lotka, D.Sc., Assistant Statistician, Metropolitan Life Insurance Company.

This new book is a systematic and full presentation of the essential facts available on the subject of human longevity. It traces from early times to the present day the lengthening of the average human life. The book answers hundreds of questions. It analyzes longevity in relation to geography, to the separate causes of death, to occupation, to heredity and to many other factors. The life table as a scientific measuring rod of longevity is explained and illustrated by examples. It is shown how the life table is applied in studying social and economic phenomena closely related to vital statistics, and to problems of population growth.

Throughout, LENGTH OF LIFE is clear and understandable. Included is a detailed exposition of approved methods for constructing life tables.

**What Length of Life Covers:**

The Life Span, The Life Table, and the Average Length of Life
The Life Table as a Record of Progress—From Antiquity to the End of the Nineteenth Century
The Gain in Expectation of Life in the United States in Recent Times
Geographic Distribution of Longevity in the United States
Biological Aspects of the Life Table
The Inheritance of Longevity
The Contribution of Medical and Sanitary Science to Human Longevity
Longevity in Relation to Physical Conditions, with Special Reference to Impairments
Longevity in Relation to Occupation
Application of the Life Table to Population Problems
Application of the Life Table to Economic Problems
Life Tables Based on the Experience of Life Insurance Companies
Life Table Construction

With 121 Important Tables and Charts

Unequaled in any other single source. Original life tables for U.S., states, urban, rural areas, etc., at last census; life tables for foreign countries; tables based on mortality among insured persons and annuitants. 50 other tables. Over 50 charts illustrate life table characteristics, improvement in mortality, geographic distribution of population increase, etc.

**Recent College Texts from Farrar & Rinehart**

**Physics**

HOBIE: *Introduction to College Physics* $3.50

COLE: *Psychology of Adolescence* $3.00

GRIFFITHS: *Psychology of Human Behavior* $2.50

SKINNER and Others: *Readings in Psychology* (orders of 25 or more, $2.90)

MORGAN: *Child Psychology, Revised edition* $3.00

BUEHLER & HETZER: *Testing Children's Development from Birth to School Age* $3.50

**Psychology**

**Chemistry**

GURNEY: *Elements of Social Psychology To be published in May. Probable price $2.50

**Biology**

BOND: *Fundamentals of General Chemistry* $3.00

BARROWS: *General Biology* $3.50

BARROWS: *Elements of General Biology To be published April 29. Probable price $2.60

MUELLER: *A Manual of Drawing for Science Students* $1.75

CAMERON: *Essentials of Tissue Culture Technique* $3.00

Examine these books as text possibilities

Examination copies have doubtless been sent your department. If they are not easily available to you, we shall be glad to send copies on request, except those titles marked with an asterisk.

FARRAR & RINEHART, Inc.
232 Madison Avenue New York City
For Plus Value in Instruments

Today, the usefulness of many different types of instruments has been increased by employing Bakelite Materials in their construction. Not only appearance and convenience, but durability and mechanical precision as well, usually are improved when cases, housings or working parts are made from these stable products of known standard quality.

The "Red Top" Thermo-Regulator, pictured here, exemplifies the varied benefits obtainable from Bakelite Materials. The cap of lustrous red Bakelite Molded enhances the appearance of the instrument, identifies the product through its color, effectively seals out moisture, provides strong terminal mounting and gives permanent electric insulation.

Characteristics of all Bakelite Materials which adapt them to advantageous use in a wide variety of instruments are: strength, durability, dense impervious structure, electric insulation value and high resistance to wear, abrasion, fumes, heat, moisture, oils and most solvents and chemicals.

In addition to numerous molding materials, Bakelite Products include: laminated stock; heat hardenable varnishes, lacquers, enamels and cements; flexible resinoids; and other materials. Useful information about them is available to technical men in our illustrated booklet 39M, "Bakelite Molded," 39L, "Bakelite Laminated" and 39V, "Bakelite Varnish." Copies sent on request.

"Red Top" Thermo-Regulator manufactured by H-B Instrument Co., Inc. with Bakelite Molded cap for permanent moisture-proofness, electric insulation and fine appearance.

BAKELITE CORPORATION, 247 PARK AVENUE, NEW YORK, N.Y.
BAKELITE CORPORATION OF CANADA, LIMITED, 163 DUFFERIN STREET, TORONTO, ONTARIO, CANADA

BAKELITE

THE MATERIAL OF A THOUSAND USES
Laboratory Furniture MUST BE RIGHT-

There is no compromising with quality, utility or design at the Kewaunee factory. Every piece of Kewaunee Laboratory Furniture must meet the Kewaunee rigid, high quality standards. It must be pedagogically correct in every detail. It must be technically right, built to stand years of hard daily use and to conserve floor space.

When you select Kewaunee Furniture you get furniture that is ‘right’ in every detail; you get value that cannot be covered by specifications nor expressed in price.

Not "shatter-proof" but HARD
Not "Quartz"- but NON-CORROSIVE
Not "mathematically accurate"—but CORRECT IN DIMENSIONS

PerfeKtum MICROSCOPE SLIDES
Offered in three qualities. Non-Corrosive. Packed in \( \frac{1}{2} \) gr. cardboard cartons.

PerfeKtum Products
are available through your own Supply House or write

POPPER & KLEIN
General Distributors 300 Fourth Ave., N. Y.

FLOSDFORF-MUDD
LYOPHILE* APPARATUS

FOR HIGH VACUUM DESICCATION FROM THE FROZEN STATE
Labile Proteins, Serum, Enzymes, Guinea Pig Com-plement, and other biological and organic materials may be stored in Lyophile condition for long periods without deterioration. The dry material may be extracted with lipid solvents, etc., without deterioration, or it may be redis- solved to yield a very concentrated solution. Preservatives are not necessary in order to maintain sterility.

For full information, write to

THE F. J. STOKES MACHINE CO.
3938 Tabor Road Olney P. O. Philadelphia, Pa.

* J. Immunology 29, 389–425 (1935.)
IT'S TIME FOR ACTION—OR ELSE!

Ruthless Depression has had many a school laboratory "down for the count" of six long years . . . sluggish years in which the devitalizing forces of dwindled equipment have been actively at work retarding the rightful progress of students and instructors alike. This irreparable damage is enough to cause serious alarm and prod into action those who are at the helm of this vital branch of learning. Whether or not your laboratory felt the full force of depression's blow, you cannot afford to overlook the reviving and progressive merits of new, up-to-date apparatus and supplies. The depression—unwelcome as it has been—has taught shrewd science instructors that the suppression of laboratory wants and needs is not a virtuous conservation of funds. For, these things represent far greater security to the instructor, to the student and to the school than their equal in cash in the bank. Accordingly, you owe it to yourself to reach for your Milvay Catalog. It gives you compactly and systematically summarized, the complete line of Milvay values and you can depend on it as your sole source of supply.

CHICAGO APPARATUS COMPANY
1735-43 NORTH ASHLAND AVENUE - CHICAGO
ELECTRICALLY HEATED SAND BATH

for

EXTRACTION EVAPORATION DISTILLATION DIGESTION and a score of other uses in the laboratory.

LARGE Area allows the bath to be used for several purposes at once.

DEEP Sand provides all degrees of heat from red to gentle heat for slow evaporation.

STURDY Heating element is easily replaced.

Price $18.00


SARGENT E.H. SARGENT & CO. CHICAGO
LABORATORY SUPPLIES
155 E. SUPERIOR ST.
CHICAGO, ILL.
WEBER ELECTRIC VACUUM OVENS
NEW MODEL WITH DOOR CLAMP

PROVIDING FOR OPERATION AT INTERNAL PRESSURES UP TO 5 LBS. PER SQUARE INCH TO FACILITATE INTERCHANGE OF GASES.

WEBER ELECTRIC VACUUM OVENS. Constructed on the same general principles as the Weber Electric Drying Ovens, Types A and B, described on p. 602 of our catalogue, i.e. with automatic control and pointer scale for approximate setting at any desired temperature between 20° and 150° C, but with a cylindrical vacuum chamber with three removable shelves as shown in illustration. Offered in a new model in which the following improvements are incorporated:

- Door is provided with clamp with hand screw for tightening. This clamp bears centrally on the door and at four points on its frame and makes it possible to use the oven both as a vacuum oven and as a low pressure oven, i.e. for internal pressures not exceeding 5 lbs. per square inch.
- This is necessary for the complete interchange of gases and is the result of suggestions of Dr. Samuel E. Pond, Marine Biological Laboratory, Woods Hole, Mass.
- A combined vacuum and pressure gauge, with red sector above safe working pressure is now mounted on top of the oven, instead of on the door as heretofore, and connects through the tubes to the chamber proper.
- A snap switch on the front of the temperature regulator compartment provides for convenient turning on and off of the current.
- Ovens are now mounted on metal base with cast metal legs, which avoids the occasional breaking of legs heretofore experienced.

The unique feature of the vacuum chamber is the tight joint secured by means of a lead gasket on the door. Final seating is simply and quickly accomplished by slight rotation of the door into position and final adjustment by the new screw clamp.

The construction of the oven and the method of thermo-regulation provide a uniformity in temperature distribution within the vacuum chamber sufficient for all ordinary laboratory procedure. Details of tests, at various working temperatures and under different conditions of use, are sent on request.

7886. Oven, Weber Electric Vacuum, Small Model, as above described, outside dimensions 13 1/2 inches high x 12 1/2 inches wide x 10 1/2 inches deep, with a vacuum chamber with inside dimensions 6 inches deep x 7 1/2 inches diameter. With three removable shelves. For operation to 150° C. With Thermometer, 200° C. For 110 volts, a.c. or d.c. 200.00

7886-A. Ditto, but for 220 volts, a.c. or d.c. 200.00

7888. Oven, Weber Electric Vacuum, Large Model, as above described, outside dimensions 16 1/2 inches high x 15 inches wide x 12 1/2 inches deep, with a vacuum chamber with inside dimensions 9 1/2 inches deep x 9 1/2 inches diameter. With three removable shelves. For operation to 150° C. With Thermometer, 200° C. For 110 volts, a.c. or d.c. 275.00

7888-A. Ditto, but for 220 volts, a.c. or d.c. 275.00

ARTHUR H. THOMAS COMPANY
RETAIL-WHOLESALE-EXPORT LABORATORY APPARATUS AND REAGENTS
WEST WASHINGTON SQUARE Cable Address, BALANCE, Philadelphia
PHILADELPHIA, U. S. A.
designed for a particular purpose

When you need optics for a particular purpose be sure to consult B & L about them. In the complete line of B & L Optics you will find those best suited to your needs.

One example of this is B & L Ultra Violet Optics which give 12% to 19% greater resolution in photomicrography by utilizing the short wavelengths of the Ultra Violet.

The U. V. Optics (16mm .25 N.A., 6mm .65 N.A., and 1.7mm 1.30 N.A.) are corrected to focus both 365 mμ ultra violet and 546 mμ mercury green at the same point. Focusing, therefore, is visible and positive and the exposure is made using the ultra violet.

Information on B & L Optics will gladly be sent on request. Write to Bausch & Lomb Optical Co., 642 St. Paul Street, Rochester, N. Y.

Bausch & Lomb

WE MAKE OUR OWN GLASS TO INSURE STANDARDIZED PRODUCTION

FOR YOUR GLASSES, INSIST ON B & L ORTHOGON LENSES AND B & L FRAMES
tool self-sharpening. This method of applying hard-facing material to but one face is said to have worked very well with other digging parts, such as power shovel teeth and plowshares.

We decided upon simulated rather than actual field experiments in order that we might perform as nearly as possible exactly the same routine with the two picks, since it can readily be appreciated that manual digging might easily have resulted in serious errors in a comparative study of the wearing qualities of a modified and an unmodified Brown pick.

A hole was bored through an extension of each pick handle 36 inches from the pick end and a round iron rod of slightly smaller diameter passed through the holes and securely fastened to supports in such manner that the picks could only move up and down. The picks could then be lifted and allowed to fall freely through equal and controlled distances upon selected objects. The lifting and release of the picks was secured by the revolution of two eccentrics of the same size fastened to an axle which was geared to a one-fourth horsepower motor. The end of the pick handle farthest removed from the head was depressed as the eccentric was revolved by the motor and the pick elevated, then suddenly released as the eccentric continued its revolution, and as soon as one pick was released for its downward stroke the other was quickly elevated. Speed-reducing gears were introduced between the motor and the revolving shaft, thereby regulating the number of strokes delivered by each pick to twenty-six per minute. The length of arc through which the pick points rose and fell was approximately seven inches. A counter was attached to the shaft and each complete revolution of the shaft, and therefore the number of strokes delivered by each pick was automatically recorded.4

A total of eight thousand strokes were delivered by each end of each pick, distributed as follows: Alberene (a soft stone)—1,000 strokes; old brick—1,000; sandstone—1,000; concrete I (interior of a broken block)—1,000; concrete II (surface of U. S. Highway I)—3,000; polished, fine-grained white marble—1,000. The digging operation was interrupted after each five hundred strokes and the specimen turned so that each pick now dug where the other had been digging.

Neither pick showed much sign of wear after impact upon alberene and old brick, but beginning with sandstone a decided difference in the two picks was observed. The pointed end of the original Brown pick quickly became blunted and rounded off so that its effectiveness was materially lost and could only be restored by resharpening. At the same time and under the same working conditions the hard-faced pick became self-sharpening, the alloy showed no evidence of wearing and only the steel undercoat wore away. The results were even more noticeable at the spatula end. Since this is relatively thin for some distance, the alloy applied to the outer face composed a relatively larger cross-section than at the pointed end. Even very slight wearing away of the steel left a wear-resisting knife edge which was effective in digging very hard materials, such as marble and concrete, although a slight loss of alloy by chipping resulted. The unmodified steel spatula was badly bruised and roughened by sandstone, concrete and marble. Practically no effective digging was done on the two latter materials by the original steel pick.

It is the conclusion of the writer that the usefulness and effective life of this valuable tool can be materially increased by the application of Haynes Stellite or some similar hard-facing alloy. These improved picks are not on the market. Perhaps it should be noted that the application of this alloy requires the services of a good welding operator. In addition, the alloy is too hard for machining and must be finished by grinding.

I. A. Updike

RANDOLPH-MACON COLLEGE
ASHLAND, VA.

BOOKS RECEIVED


ANNOUNCING

the first volume in the

McGRAW-HILL SERIES IN GEOGRAPHY

V. C. Finch, Consulting Editor

ELEMENTS OF GEOGRAPHY

By V. C. Finch
Professor of Geography, University of Wisconsin

and Glenn T. Trewharta
Associate Professor of Geography, University of Wisconsin

768 pages, 6 x 9, fully illustrated, with envelope of nine folding work maps. $4.00

The chief merit of this important new book for beginning courses lies in the choice of material, in the structure of its organization, and in the manner of its presentation. The selection of material has been made with a single objective: to describe and depict the major component elements of geographic landscape, and to enable the student to interpret the significance of their areal association. The structure of the book's organization includes (a) three opening chapters which provide a degree of orientation in the field of geography together with certain basic facts and geographical tools, and (b) three principal parts: the elements of natural earth, the elements of material culture, and the geographic realms. An outstanding feature of the book is the wealth of excellent illustrations. The plates which accompany the book have been prepared in blank for student drawing and coloring.

About the Series

The McGraw-Hill Series in Geography is intended to contribute to American college education by providing text and reference volumes that will keep pace with factual and philosophical developments in the field of natural environment, the regional and distributional aspects of human geography and in geographical methods and techniques. It is hoped also that the Series may have an important part in the advancement of the growing science of regions, the evaluation of their contents and the planning of their administration.

Send for a copy on approval

McGRAW-HILL BOOK COMPANY, INC.
330 West 42nd Street, New York
Aldwych House, London, W.C.2
JUST PUBLISHED!

ELEMENTS OF PSYCHOLOGY

BY

KNIGHT DUNLAP

Professor of Psychology in the University of California at Los Angeles; until January, 1936, Professor of Experimental Psychology in the Johns Hopkins University.

This new book offers teachers and students a text that will stimulate and inspire. It is not “an easy path for little feet” but is a text that will challenge both teacher and student to do their very best.

Obviously it is unfair to invest psychology with a bright cellophane wrapping and give the impression that it is a subject that can be approached with an air of flippancy and disregard—a subject that can be mastered with little or no effort. It is equally unfair to both teacher and student to invest psychology with an air of mystery and approach its study with fear and apprehension.

To master psychology is to master life. This new Dunlap book clearly, logically, and understandingly points the way to the successful teaching and understanding of general psychology.

The C. V. Mosby Company----St. Louis, Mo.