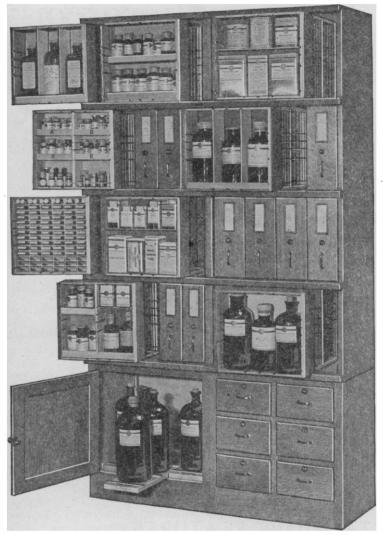
NOW FILES ALL SIZES



Through Improvements made in the

SCHWARTZ ECTIONAL Y S T E M

All laboratory sizes of containers from a 5 gr. vial to a 1 gal. bottle can be conveniently filed.

The number of supplies you can file is amazing. You locate items instantly, and the condition in which they are found makes it a pleasure to handle them.

Standard units also made for apparatus.



TWO STANDARD UNITS (Upper)
TWO STANDARD SECTIONS (Lower)

Send for Booklet "S"

This Booklet gives full details, illustrations of Standard Units, and net prices, as well as list of educational institutions having the systems in use.

SCHWARTZ SECTIONAL SYSTEM INDIANAPOLIS, INDIANA

Destined to Revolutionize

THE NEW

Microscopy!



ULTROPAQUE

MICROSCOPE EQUIPMENT



The Leitz ULTROPAQUE permits observation of specimens under conditions which until now have been thought impossible. It can be used with any ordinary type of microscope, although it is especially convenient to use it with a microscope permitting the raising and lowering of the stage, such as the LEITZ UNIVERSAL MICROSCOPE "UO", illustrated at the left.

OUTSTANDING FEATURES

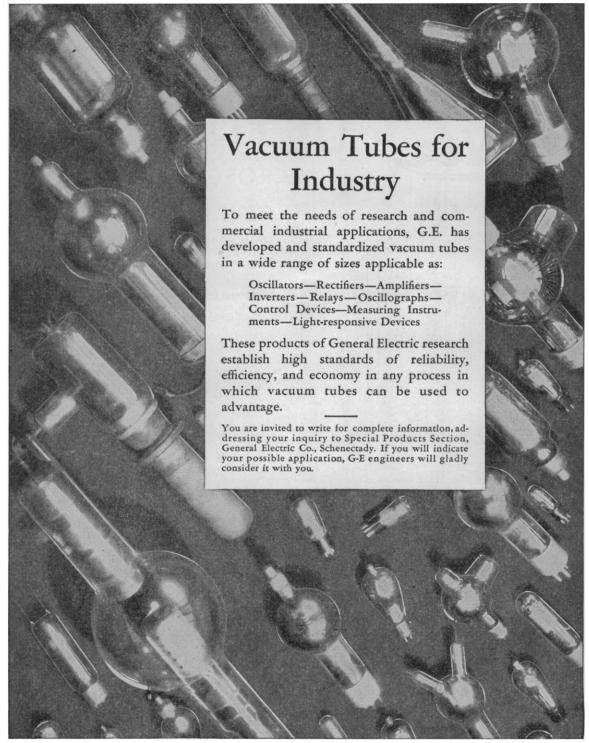
1. Specimens do not require preparation (cutting by microtome, staining, embedding, etc.) and can be examined in their natural state.

Ernst Leitz, Wetzlar

- 2. The ULTROPAQUE image shows characteristics in structural elements due to differences in refractive, reflective or absorbing properties in specimens.
- 3. The ULTROPAQUE can be so adjusted that layers below the surface of the specimen may be observed without disturbing effects being caused by intermediate layers.
- 4. The ULTROPAQUE permits observations from the lowest to the highest magnifications.
- 5. Fifteen especially constructed objectives (including dry objectives, water and oil-immersion objectives) and six special condensers are available.
- 6. The special construction of the optical units permits observations under the highest numerical apertures. Increased definition results over that rendered by the selective stain absorbing power.

Write for Catalog D-7113 (O)

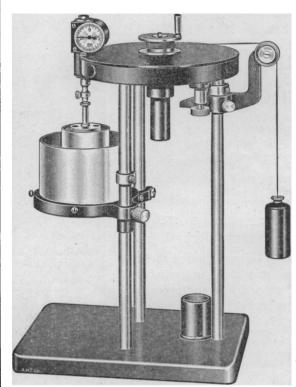
E. LEITZ, Inc. 60 East 10th St., New York, N. Y.



840-19B



1931 MODEL STORMER VISCOSIMETER



7649.

STORMER VISCOSIMETER, 1931 Model. As in former models, the speed of a rotating cylinder, actuated by a weight, is measured by a revolution counter attached to the spindle. The time required for a definite number of revolutions of the cylinder when immersed in the sample maintained at a desired temperature and driven by a definite weight is the measure of viscosity.

In the 1931 model, the gear and pinion are encased for protection from dust, thus insuring longer unimpaired action. The brake and bearings have been improved and the pulley wheel, over which the weight functions, is mounted on ball bearings, thus substituting a rolling friction for a sliding friction and thereby decreasing the friction factor and wear on the machine, particularly where heavy weights are used.

A splash guard on the spindle carrying the rotating cylinder protects the ball bearings on which this spindle is now mounted, so that it is practically impossible for liquid to enter the bearings

The chuck, by which the rotating cylinder is attached to the spindle, is now mounted on the latter, enabling more convenient cleaning of the cylinder. The cylinder is now attached and detached with the aid of a grip collar.

The bath and test cup are mounted on two upright supports, which insures correct centering of the rotating cylinder within the cup, even after the apparatus has been subject to wear by long use. The wooden case has also been redesigned to give maximum protection and convenience.

We are indebted to the laboratory staff of the Philadelphia Quartz Company for valuable suggestions and help in the development of the 1931 model.

7649. Viscosimeter, Stormer, 1931 Model, for general use, as above described. With test cup provided with two side vanes, central baffle and thermometer holder. Complete, in case with thermometer and directions for use _______125.00

Code Word

7649-A. Ditto, Silicate Outfit. Similar to above with the exception that in this execution the test cup is provided with the two side vanes but without the central baffle or thermometer holder, making it suitable for use with liquids of high viscosity such as silicates, etc. As suggested and used by the Philadelphia Quartz Company. See James G. Vail, "Soluble Silicates in Industry," (New York, 1928), pp. 139-154. In case, with directions for use, but without thermometer 122.50

Letre

7649-B. Ditto, Corn Outfit. For use in determining the consistency of canned corn. Without oil bath or test cup, but with a 750 gram weight instead of the usual weight and with an extra plate on the movable shelf for holding a can of corn. See Charles J. Meister, The Canner, Vol. 64, No. 9 (Feb. 19, 1927), p. 23. In case, with directions for use, but without thermometer 120.00

Letuv

ARTHUR H. THOMAS COMPANY

RETAIL-WHOLESALE-EXPORT

LABORATORY APPARATUS AND REAGENTS

WEST WASHINGTON SQUARE

PHILADELPHIA, U. S. A.

Cable Address, BALANCE, Philadelphia

SCIENCE

Vol. 74	Friday, Novel	RIDAY, NOVEMBER 20, 1931	
Pure and Applied Science: Professor Cecil H. Desch Schaudinn: A Biographical Appreciation: Professor John H. Stokes Sor John H. Stokes Scientific Events: The University of Wisconsin Research Patents; The Biological Photographic Association; The Tulsa Meeting of the Geological Society of America; The Seventh Pan-American Scientific Congress; The American Institute of Physics Scientific Notes and News Discussion: Oestrus: Reverend Dr. Stuart L. Tyson. Possible Significance of the Decreased Suspension Stability of the Blood: Hobart A. Reimann. Fossils from the Eastern Flank of the Sierra Nevada, California: Evans B. Mayo. Naming Disorders of Speech: Samuel D. Robbins. A Curious Fish Story: Dr. C. T. Hurst American Association for the Advancement of Science: New Orleans Meeting, December 28, 1931-January 2, 1932: Dr. Charles F. Roos Scientific Apparatus and Laboratory Methods: A Method of Supplying Students with Natural Endamoeba Histolytica from Cultures: J. H. St.	### 495 ### PROFES ### 502 Patents; ion; The of Ameritific Concess ### 506 ### 509 ### 509 ### 100	JOHN. Photographing Animals: Arthur L. Kahn and Geo. H. Hanley	
	a Nevada, Disorders rious Fish	SCIENCE: A Weekly Journal ment of Science, edited by J. Mc lished every Friday by THE SCIENCE New York City: Grand (Lancaster, Pa. Annual Subscription, \$6.00 SCIENCE is the official organ of the Advancement of Science in general membership in the Association of the permanent secret firstitution Building, Washington,	C PRESS Central Terminal Garrison, N. Y. Single Copies, 15 Cts. of the American Associates. Information regarding may be secured from ary, in the Smithsonian

PURE AND APPLIED SCIENCE¹

By Professor CECIL H. DESCH

UNIVERSITY OF SHEFFIELD, NON-RESIDENT LECTURER IN CHEMISTRY AT CORNELL UNIVERSITY UNDER THE GEORGE FISHER BAKER FOUNDATION

In entering on the duties of the George Fisher Baker lectureship in Cornell University, I must first express my high appreciation of the great honor done to me by the university by its invitation, and of the great personal kindness and helpfulness of Professor Dennis in all matters concerning it.

Only a short time ago Mr. Baker, to whom this university owes so much, passed away, full of years and honor. Education in America has been singularly fortunate in attracting the support of many wealthy leaders of commerce and industry, and the results are to be seen in such magnificent buildings as this in which we meet, and in the facilities given for the interchange of students and teachers between different institutions and different countries. The visiting lectureship which George Fisher Baker founded in this university has been the means of bringing a number of European workers in various branches of science related to chemistry to Cornell and has given to them

1 Introductory public lecture.

an unrivaled opportunity of seeing American university conditions at their best and of exchanging ideas with a new and keen group of students and colleagues.

With the possible exception of music, no form of human activity is so independent of national barriers as scientific research, and every step that brings into closer connection the scientific workers of different countries deserves a warm welcome. Judging by the enthusiasm and the affection with which my predecessors in this lectureship have spoken to me of their stay at Cornell, this scheme, which we owe on the one hand to Mr. Baker and on the other to Professor Dennis, must rank high among such efforts at international cooperation.

Previous lecturers have dealt with different branches of pure chemistry and of sciences allied to it, but I believe that I am the first whose teaching duties are definitely concerned with the application of science to industry, and I ask you to allow me to consider in

McGraw-Hill

has just published

ANIMAL ECOLOGY

With Especial Reference to Insects

by ROYAL N. CHAPMAN

Dean of the Graduate School of Tropical Agriculture and Director of the Pineapple Experiment Station, University of Hawaii; Formerly Professor of Zoology and Entomology, University of Minnesota

McGraw-Hill Publications in the Zoological Sciences

464 pages, 6x9, 137 illustrations. \$4.00

THIS BOOK brings together in a formal and logical statement the various and diverse materials embraced by the subject of ecology. The viewpoint is quantitative and experimental; the object is not only to call attention to what has been done in the past, but to point out the field in which there is a reasonable prospect of advance in the future. The important literature in various phases of the subject is critically reviewed.

Some of the topics covered—

- -Light as an Ecological Factor.
- -Temperature as an Ecological Factor.
- -Moisture as an Ecological Factor.
- -Effects of Temperature and Moisture Acting Together in the Ecology of Animals.
- —Physical Conditions of Environmental Media.
- -Nutrition.
- -Biotic Factors in Autecology.
- -Synecology.
- —Chorology, Distribution in Space or Zoogeography.
- -Chronology.

- -Aquatic Synecology.
- —Physical Characteristics of Aquatic Communities.
- -Biotic Characteristics of Aquatic Communities.
- -Lenitic Environments.
- -Lakes.
- -Lotic Environments.
- —Terrestrial Synecology—Communities of the Soil.
- -Communities of the Sand Dune.
- -Communities of the Grass or Herb Stratum.
- -Communities of the Shrub and Tree Strata.

Send for a copy on approval.

McGRAW-HILL BOOK COMPANY, Inc.

370 Seventh Avenue, New York TO BE PUBLISHED IN JANUARY

Foundations of the THEORY & ALGEBRAIC NUMBERS

By HARRIS HANCOCK

PROFESSOR OF MATHEMATICS IN THE UNIVERSITY OF CINCINNATI

A book which makes the whole subject of the theory of algebraic numbers more accessible, more attractive, and less difficult than it has ever been before.

Contents

CHAPTER

- I. PRELIMINARY NOTIONS.
- II. THE GENERAL NOTION OF THE REALMS OF RATIONALITY.
- III. ALGEBRAIC REALMS OF RATIONALITY.
- IV. ALGEBRAIC INTEGERS.
- V. THE MODULS OF DEDE-KIND. DIVISIBILITY. GENERALIZED NOTIONS OF DIVISION.
- VI. FINITE MODULS.
- VII. ALGEBRAIC MODULS. VIII. THE MODULAR SYSTEMS
- VIII. THE MODULAR SYSTEM OF KRONECKER.
 - IX. NOTIONS INTRODUCTORY TO THE THEORY OF IDEALS.
 - X. THE QUADRATIC LAW OF RECIPROCITY AND ITS ANALOGUE IN THE QUAD-RATIC REALMS.
- XI. APPLICATION OF THE THEORY OF IDEALS OF QUADRATIC REALMS TO A DISCUSSION OF FERMAT'S THEOREM.
- XII. CORRELATION BETWEEN
 THE THEORY OF QUADRATIC FORMS AND THE
 IDEALS OF QUADRATIC
 REALMS.
- XIII. GEOMETRIC PRESENTA-TION OF IDEALS. IMAGI-NARY REALMS.
- XIV. THE CUBIC REALMS.

602 pages 12 mo IN this new book Professor Hancock has given us a scholarly and stimulating treatise written from the heuristic point of view. His purpose has been to offer an approach to a higher and more generalized arithmetic through a systematic study of the algebraic numbers, and to show how the field of rational numbers is broadened by their introduction. In particular he has attempted to juxtapose and harmonize Kronecker's and Dedekind's classical theories of ideal numbers and to place the work of later mathematicians—such as Minkowski, Hilbert, Hansel, Hurwitz, and others—in proper relation to these earlier studies.

While the work follows the Dedekind treatment, which is purely arithmetical, rather than that of Kronecker, it sets forth the final fundamental results from both these entirely different standpoints, in that the ideals and moduls of Dedekind are put in juxtaposition with the fundamental form and equations of Kronecker, the discriminant and order-modul being their final vantage ground. While the Dedekind theory is presented in its entirety the Kronecker theory is everywhere emphasized.

The author introduces preliminary notions of realms of rationality, reducibility in such realms, linear forms, bases, discriminants, and so on. The theory of quadratic realms is given in detail, the treatment of the integers in this realm serving as a stepping stone from the usual theory of rational integers to the general theory of algebraic numbers which the author will treat in another volume.

THE MACMILLAN COMPANY
60 Fifth Avenue New York

CARNEGIE INSTITUTION OF WASHINGTON

Publications of the Institution present in monographic form the results of its own research activities, and include a few books on other subjects.

Nearly 600 volumes have been issued, representing studies in the following fields:

Archaeology Anthropology Astronomy Biology Botany Chemistry Ecology Economics

History Literature Mathematics Nutrition Palaeontology Palaeography Philology Physics

Embryology Genetics Geology

Terrestrial Magnetism

Zoology

Descriptive lists and prices may be obtained by addressing:

> CARNEGIE INSTITUTION OF WASHINGTON WASHINGTON, D. C.

THE WISTAR INSTITUTE BIBLIOGRAPHIC SERVICE

A condensed summary of each paper appearing in the journals listed below is issued prior to publication of the article in full. This distribution of abstracts enables a biologist to familiarize himself with contemporary research in a minimum of time, and to select the articles which he wishes to purchase in reprint form. To receive these abstracts he may subscribe to the Advance Abstract Sheets or to the Bibliographic Service Cards.

The Advance Abstract Sheets are issued twice a month, each sheet containing ten or more abstracts, together with the price per reprint. Subscription rate is \$3.00 per year.

The cards also are issued twice a month. In addition to the abstracts, the cards provide subject headings and complete bibliographic reference. The cards are convenient for filing and library records. Price, \$5.00 per vear.

At regular intervals the abstracts are assembled and published in book form with complete authors' analytical subject indices. Price, \$5.00 per volume.

Journal of Morphology and Physiology Journal of Morphology and Physiology
The Journal of Comparative Neurology
The American Journal of Anatomy
The Anatomical Record
The Journal of Experimental Zoology
American Anatomical Memoirs
American Journal of Physical Anthropology
Folia Anatomica Japonica (Tokyo, Japan)
Physiological Zoology (Chicago, Illinois)
Stain Technology (Geneva, New York)
Ecological Monographs (Durham, North Carolina)

The Wistar Institute of Anatomy and Biology

Thirty-sixth Street and Woodland Avenue Philadelphia, Pa., U. S. A.

entury biological series

ROBERT HEGNER, Ph.D., Editor

TAXONOMY OF THE FLOWERING PLANTS

By Arthur M. Johnson, Ph.D. A clear, thorough treatment, by an outstanding authority, of the technical characteristics by which flowering plants are classified. In the main it follows the system of Engler and Prantl, but also incorporates practical features of other leading systems. Nearly five hundred illustrations by the author. Royal 8vo, 745 pages. \$7.50.

PLANT PHYSIOLOGICAL

CHEMISTRY

By Rodney B. Harvey, Ph.D. Here is the first book published in English which deals with the chemical physiology and chemical mechanism of plants. It is written from the physiological rather than the chemical point of view—a unique departure from the usual treatment in plant chemistries. Royal 8vo, 413 pages. \$6.00.

HOST-PARASITE RELATIONS BETWEEN MAN AND HIS INTESTINAL PROTOZOA

By Robert Hegner, Ph.D. This book gathers together from widely scattered and not readily available sources much important data dealing with host-parasite relations of the intestinal protozoa of man, and presents it in a systematic and clearvisioned manner. 8vo, 235 pages. \$4.00.

ANIMAL PARASITOLOGY

By Robert Hegner, Ph.D., Francis M. Root, Ph.D., and Donald M. Augustine, Sc.D. This is the only up-to-date textbook in animal parasitology written in the English language. A section is devoted to protozoology, another to helminthology, and a third to medical entomology. Royal &vo, 731 pages. \$6.50.

IMMUNOLOGY OF THE PARASITIC INFECTIONS

By William H. Taliaferro, Ph.D. This book is an exhaustive record of the work that has been done on the infections with parasites. It provides, in a clear systematic form, information that was formerly scattered and inaccessible. Royal octavo, 414 pages. \$6.50.

Other volumes in preparation:

College Bacteriology, by John F. Norton; General Physiology, by J. H. Bodine; Cellular Phases of Immunity to Infection, by Paul R. Cannon; Histological Diagnosis, by Hovey Jordan; Evolution, by E. C. Jeffrey; and Elements of General and Economic Botany, by E. E. Stanford.

You are invited to write for more details about the volumes in this Series

THE CENTURY CO.

353 Fourth Avenue New York

2126 Prairie Avenue Chicago