

SCIENCE

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IRA REMSEN AND AMERICAN CHEMICAL RESEARCH LITERATURE¹

By Dr. FREDERICK H. GETMAN

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WITH the return of peaceful conditions following America's wars with England, the energies of the people were soon directed intensively toward the development of the natural resources of the country and to the extension of its western frontier. An awakened sense of nationality and destiny, as well as a sense of the immensity of the task of material exploitation, had begun to influence all classes.

As a recent historian has pointed out:

Over the mountains the great valley two thousand miles wide, with its unified river systems four thousand miles long, opened an empire such as man had never seen.

¹ Read at the luncheon of the alumni of the Johns Hopkins University in attendance at the meeting of the American Chemical Society in Cincinnati, Ohio, April 8-13, 1940.

This intensive concentration of the nation's efforts toward the discovery of our natural resources and to the development of economic methods for their utilization in the arts naturally led to the creation of an urgent demand for trustworthy sources of information concerning the latest discoveries in both pure and applied science.

It was to meet this growing need that Benjamin Silliman, professor of chemistry and natural history at Yale College, founded the *American Journal of Science and Arts* in 1819.

This journal may justly be regarded as the forerunner of all American scientific periodicals. In the first number of the journal, Silliman outlined the scope of his projected periodical in these historically significant words:

too readily. The apparatus, after being inverted, is placed in a large split iron ring attached to a ring stand and then has the appearance indicated in the drawing. The cotton in the side arm D of the overflow vessel is removed and a glass tube (not shown) is attached to it by means of a short rubber tube. This glass tube conducts the overflow to a beaker sitting on the table top. The 1 mm constriction in the side arm provides a liquid seal to prevent any chance of contamination through that member. The cotton plug is then removed from the bell-shaped shield and the apparatus is ready for use. The stopcock is turned so that the pipette fills. When a few drops of liquid have run out of the tip at the top, indicating that the pipette is completely filled, the stopcock is turned through 180° and the measured quantity is discharged into a sterile flask which is placed on the table underneath the bell. The interchangeable ground glass joint is provided to facilitate the use of various-sized pipettes from 10 to 100 ml. When different amounts of one solution are to be measured, but with less rapidity and accuracy, a graduated burette E can be inserted, instead of the pipette, by means of the interchangeable joint.

NEIL E. RIGLER

GLENN A. GREATHOUSE

TEXAS AGRICULTURAL EXPERIMENT STATION
AND BUREAU OF PLANT INDUSTRY,
U. S. DEPARTMENT OF AGRICULTURE,
COLLEGE STATION, TEXAS

A DRY-ICE FREEZING UNIT FOR CUTTING FROZEN SECTIONS

THE advantages in time-saving of different freezing methods in cutting microscope sections is well recognized, but available techniques are in many cases difficult or costly to use. Freezing by carbon dioxide gas is both costly and tedious in practice. The use of commercially available dry-ice freezing units has some disadvantages. Ordinarily these units are too small for pieces of tissue larger than 2 square cm, they fail to freeze the tissue uniformly, since the dry-ice container is arranged on an arm extending from the tissue table, and they do not hold enough dry ice to keep the tissue at a uniform temperature for a sufficiently long period of time.

In order to facilitate the cutting of rather large brain sections, a dry-ice freezing unit has been devised to eliminate many of the difficulties described above. The unit is constructed so that it can be used on different kinds of microtomes.

Fig. 1 presents a diagram of the apparatus in cross-section. The device consists of a cylindrical cast-aluminum container, constructed with a center table, to which is fitted a bakelite support. The block of tissue to be sectioned is placed on the center table,

which is grooved in concentric circles, and powdered dry ice is packed around it within the container. The bakelite support is clamped to the block-holder of the microtome.

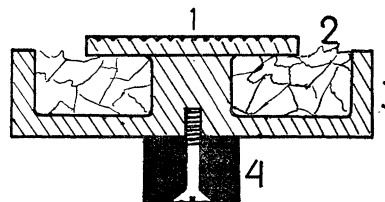


FIG. 1. The Dry-ice Freezing Unit: 1 represents the circular table of the freezing unit, 2, the circular container into which the dry ice is packed, 3, the side wall, and 4, the bakelite support, which is clamped into the block-holder of the microtome.

The dry-ice container measures 8.4 cm in diameter, 2 cm in height, and has a wall and base 0.4 cm thick. The tissue is supported at the center of the container on a base 1.5 cm in diameter. The table itself is 5 cm in diameter and 0.5 cm thick, and is raised 0.2 cm above the wall of the container in order to avoid the possibility of fouling the knife. The hexagonal bakelite support is 1.5 cm high and 2.5 cm in width. Additional economy of space may be secured by constructing the apparatus so that the base support may be clamped directly in the microtome, thus eliminating the block-holder.

Using this device, complete frontal sections of the brains of large dogs, 30, 40 and 50 microns in thickness, have been cut very satisfactorily. The tissue is frozen uniformly since the tissue table is completely surrounded by dry ice. The dry ice keeps well, for it is partly enclosed within the container. Furthermore, the container is insulated from the metal of the microtome by the bakelite support. In these respects the freezing unit described has been found superior to other devices of this sort, both those which utilize dry ice or carbon dioxide gas in order to freeze the tissue.¹

KARL U. SMITH

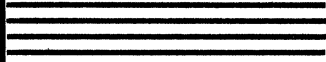
THE UNIVERSITY OF ROCHESTER

¹ The freezing unit described may be obtained from Merle Hanford, Physics Department, University of Rochester, Rochester, N. Y.

BOOKS RECEIVED

- DAHLBERG, GUNNAR. *Statistical Methods for Medical and Biological Students*. Pp. xii + 232. Interscience Publishers, New York. \$2.75.
ECKERT, W. J. *Punched Card Methods in Scientific Computation*. Pp. ix + 136. Thomas J. Watson Astronomical Computing Bureau, Columbia University, New York. \$2.00.
PERRY, LOUISE M. *Marine Shells of the Southwest Coast of Florida*. Pp. 260. Illustrated. Paleontological Research Institution, Ithaca, New York.
SASS, JOHN E. *Elements of Botanical Microtechnique*. Pp. ix + 222. 33 figures. McGraw-Hill. \$2.50.

NEW WILEY BOOKS



FOUNDATIONS OF MODERN PHYSICS

By **T. B. BROWN**, *Professor of Physics, The George Washington University.*

For students in all fields of learning this book makes possible an acquaintance with the fundamental discoveries of modern physics, together with some understanding of the theories whereby these discoveries are developed and interpreted. Technical terms and phraseology have been avoided except where such terms may be fully explained, and only elementary mathematics is used.

Published September, 1940; 333 pages; 6 by 9; 144 illustrations; \$3.25

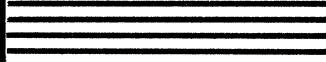


A TREATISE ON ADVANCED CALCULUS

By **PHILIP FRANKLIN**, *Professor of Mathematics, Massachusetts Institute of Technology*

The purpose of this book is to provide a sound foundation for the methods of the calculus. It is addressed to those who have already acquired some proficiency in the technique of the calculus and who desire a more logical treatment of the subject than is feasible in a first course. While it deals primarily with infinitesimal calculus, prerequisite parts of algebra and analysis and concepts needed for applications to geometry and physics have not been excluded.

Published September, 1940; 595 pages; 6 by 9; \$6.00

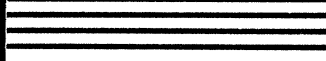


AN INTRODUCTION TO ABSTRACT ALGEBRA

By **C. C. MACDUFFEE**, *Professor of Mathematics, Hunter College*

This is a textbook for beginning graduate students. It presupposes the traditional course in theory of equations. Most of the material is classical, but the selection and method of presentation are such as to orient the student and to lead him most rapidly to an ability to read and understand the more advanced books and the literature of modern algebra.

Published October, 1940; 303 pages; 6 by 9; \$4.00



INTRODUCTION TO PARASITOLOGY

By **ASA C. CHANDLER**, *Professor of Biology, The Rice Institute*

For more than twenty years Chandler's book on parasitology has remained the standard work in the subject. In accuracy of text matter, readability, extensiveness, and up-to-dateness of material this sixth edition is a noteworthy successor to previous issues. The content has been broadened to include reference to, and, in many cases, brief discussion of the more important parasites of domestic animals.

Published October, 1940; 698 pages; 6 by 9; 309 illustrations; \$5.00

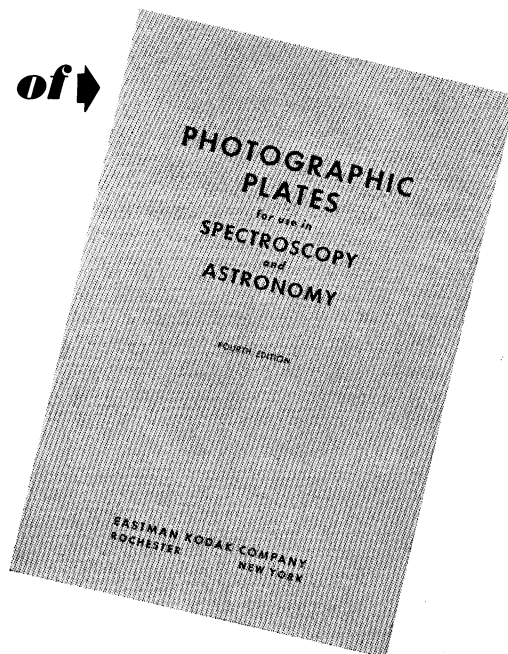
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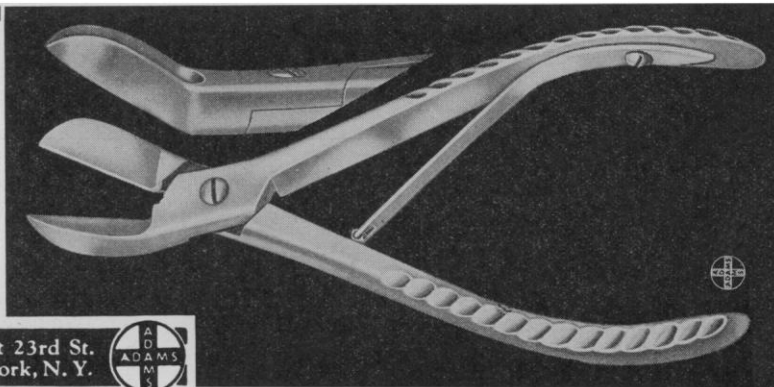
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