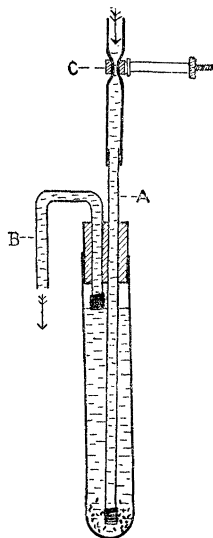


A SIMPLE APPARATUS FOR WASHING SMALL AND DELICATE OBJECTS FOR SECTIONING

THE apparatus here described was devised for washing small and delicate objects fixed in Flemming-fluid. It has been found successful and economical for washing with distilled water also.

The apparatus consists of a *round-bottomed* glass tube, six inches long and one inch in diameter, a double-bored, tightly fitting stop-



per,¹ through which the inlet tube *A* and the U-shaped outlet tube *B* pass.

The inlet tube *A* should be inserted at a slight angle so that its lower end lies in the center of the round-bottomed tube within half an inch of the bottom. This end is covered with a piece of fine bolting-silk fastened with a rubber band. The bolting-silk breaks the force of the inflowing water, but more especially prevents the entrance of any foreign substance which might close the outlet. The upper end of tube *A* is connected by a rubber tube to the distilled water reservoir or faucet. The flow of water is regulated by screw compressor *C*.

The outlet tube *B* has its inner arm a trifle longer than the outer arm, so that the U does

¹ The stopper and small tubes must fit tightly to maintain an air chamber between the stopper and the lower end of tube *B*.

not act as a syphon. The inner arm of this tube is covered with bolting-silk also, to prevent the escape of any material which may float.²

With the water merely dripping, a liter per hour, the material is kept in constant motion and thoroughly washed.

S. I. KORNHAUSER

THE CORRESPONDENCE OF LINNAEUS

TO THE EDITOR OF SCIENCE: Dr. J. M. Hulth, of the University Library of Upsala, who has succeeded to the editorship of Carl von Linné's correspondence, formerly edited by the late Professor Th. M. Fries, desires information as to the whereabouts of letters to and from Linné which might be found in collections in this country. Individuals or institutions having such letters are asked to communicate with the undersigned.

AKSEL G. S. JOSEPHSON

THE JOHN CRERAR LIBRARY,
CHICAGO, ILL.

EXHIBITION OF THE ROYAL PHOTOGRAPHIC SOCIETY

TO THE EDITOR OF SCIENCE: The Royal Photographic Society of Great Britain are holding their fifty-ninth annual exhibition in August and September of this year. This is the most representative exhibition of photographic work in the world, and the society is anxious to make it more international in character. It is very desirable that American scientific photography should be fully represented at the exhibition, and in order to enable this to be done with less work to the exhibitor, I have arranged to collect and forward American work intended for the scientific section.

This work should consist of prints showing the use of photography for scientific purposes and its application to spectroscopy, astronomy, radiography, biology, etc. Photographs should reach me not later than Friday, July 10. They should be mounted but not framed.

² If the objects to be washed tend to float, a disk of perforated celluloid through which the inlet tube passes may be placed about an inch from the bottom of the larger tube.

I should be glad if any worker who is able to send photographs will communicate with me as soon as possible so that I might arrange for the receiving and entry of the exhibit.

C. E. K. MEES

RESEARCH LABORATORY,
KODAK PARK,
ROCHESTER, N. Y.

SCIENTIFIC BOOKS

Definitions in Physics. By KARL EUGEN GUTHE, Ph.D., Professor of Physics in the University of Michigan and Dean of the Graduate Department. New York, The Macmillan Company. 1913. Pp. vii + 107.

A man's convictions are vastly more important than the logical processes by which he reaches them; and his convictions are represented in a large degree by the definitions which he adopts. It follows, therefore, that the appearance of a volume of definitions by a scholar of high standing in any particular field of thought is a matter of some moment. There is danger of taking physics too seriously; and nothing is easier than to employ definitions in such a way as to produce in the student-mind what Professor Franklin calls "a stress of dryness." But when the technical terms of his own science have been collected by a well-known specialist they become a matter of keen interest, and all the more so when that specialist is an experienced and successful teacher as is Professor Guthe.

Definitions grow as our ideas grow. They are not the fixtures of the Medes and Persians. Compare the modern definition of the crab with the classical one given in the French Academy's dictionary. Or consider how the resistance term in Ohm's law developed into impedance upon the introduction of alternating currents. Previous to the renaissance forces were defined only in a statical way; anything that would flatten out the muscles of the hand, bend a beam, disturb the configuration of a steelyard, or bring out any other strain requiring work was classified as a *force*; and conversely the term *force* was used at that

time to include many ideas, such as *speed*, *impulse*, *energy* and *power*, which now lie quite without its limits. Shortly after the renaissance the concept of force was enlarged so as to take in the time-rate of change of momentum; later the generalized forces of Lagrange are included. Again the Peltier effect is defined quite differently from what it was before the Thomson effect was discovered.

A list of definitions is therefore a list of variable quantities and can hardly be regarded as more than a cross-section of the conventions agreed upon by the generation which uses them.

The book under review is one which can not fail to be of the utmost help to any student of general physics. The definitions are arranged under the classical five chapters of physics. Each quantitative concept is, as a rule, first defined in simple English and in terms already explained or assumed; next follows a mathematical expression which may be considered as a repetition of the first definition, and frequently, as an expression of natural law. The definitions are remarkable for their clearness, simplicity and brevity; if at any point indefiniteness suggests itself one feels that additional details have been omitted only to secure brevity. This feature is illustrated by the first paragraph in the book which defines *physics* in a manner which is elegant but so general as to leave doubt in the reader's mind as to whether physics and physical science are one and the same.

At the outset the author enunciates his conviction that "certain concepts used in physics are deductions and generalizations from individual experience and can not be strictly defined. Such are the concepts of *extension* (space, with its subdivisions of volume, area, length and direction), *time*, *force*, *warmth*, *cold*, etc." On the same page, a *physical quantity* is defined as "a definite concept capable of measurement."

Every one who thus finds *force* listed among the indefinables will surely understand that Professor Guthe here means to imply nothing more than that no complete and satisfactory definition has yet been given. For only a few