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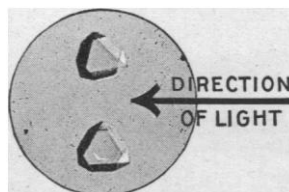
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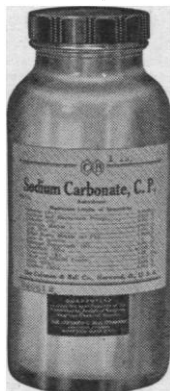
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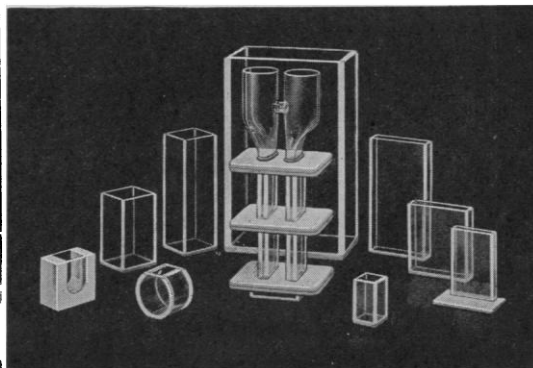
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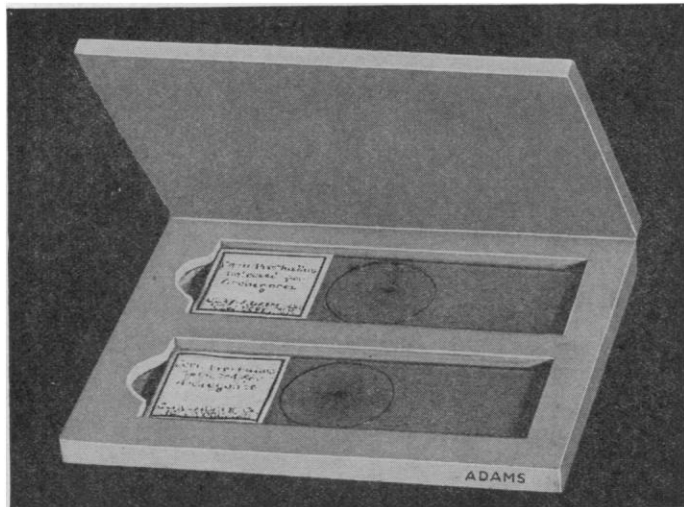
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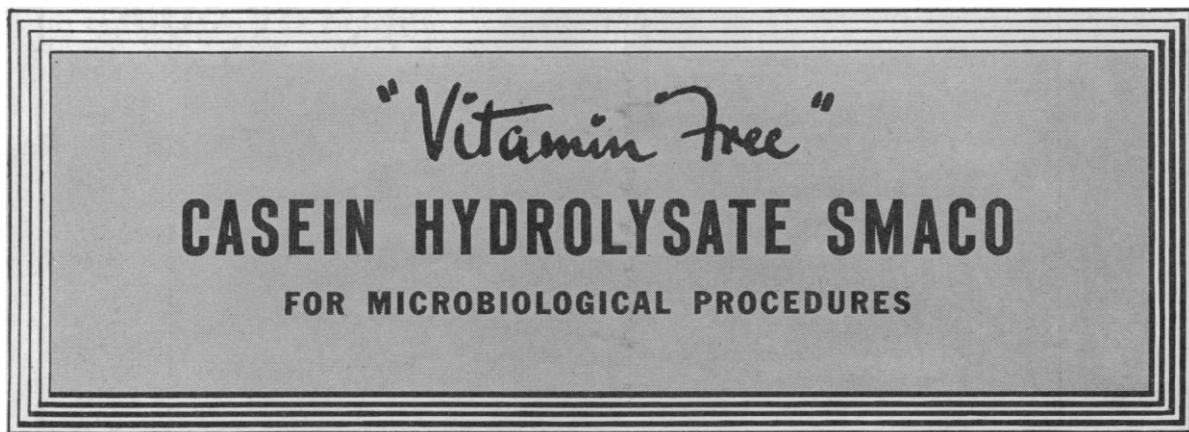
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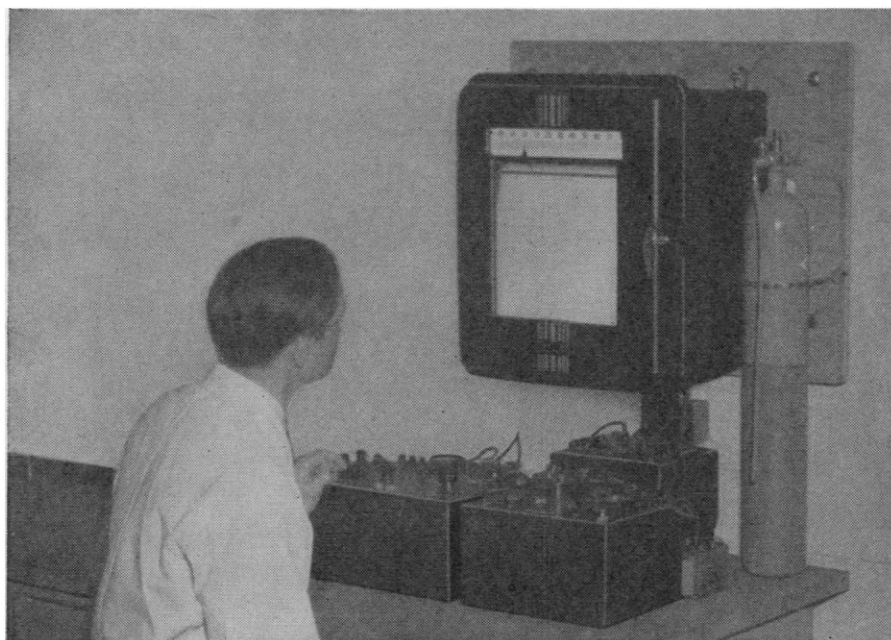
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CONSERVING OUR HARVESTS¹

By F. C. BRADFORD

U. S. DEPARTMENT OF AGRICULTURE, GLENN DALE, MD.

THREE and a half centuries ago Francis Bacon said "I take all knowledge to be my sphere." Though competent scholars state that Bacon was far from having full knowledge of the science of his day, his aspiration was not ridiculous or even particularly remarkable in his time, and had he given to science half the time he devoted to statecraft he might well have mastered all the science that was then known. An Italian contemporary of Bacon, Giambattista della Porta, made studies which are still mentioned in histories of optics, included in his extensive "Magia Naturalis," a chapter on producing new plants—probably the first organized article on plant breeding—wrote a work on plant signatures and in modern

literary histories he is discussed as the leader of the notable group of writers of Italian comedies in a period when Italian comedy was the most notable literary movement in the world. A century later the best-known English writer on gardening, John Evelyn, by whom greenhouse heating was considerably advanced and gardening made respectable, was only a part-time horticulturist; he was also an authority on some of the fine arts and rather constantly engaged with public affairs. Most of the German pomologists of the early nineteenth century made their extensive varietal studies and wrote their monumental works in time spared from their labors as pastors or teachers. When our own agricultural colleges and experiment stations were organized, nearly two centuries after Evelyn, full-time horticulturists were rare in their

¹ Address of the president of the American Society for Horticultural Science, Dallas, Texas, December 30, 1941.

Chlorella this concentration very often gave better results than when Miquel's solution was employed. Concentrations 1:5,000 and even 1:10,000 were also found satisfactory. In preparing a medium a comparatively large quantity of fertilizer should be ground, and from it the needed quantity taken and placed in the water. This will insure relative uniformity of the samples. When very large quantities of fertilizer are used, as is often the case in field experiments, no grinding is necessary. Using these fertilizers, exceedingly rich cultures of *Chlorella*, *Nitzschia closterium* and *Prorocentrum triangulatum* were grown in large outdoor tanks having the capacity of several thousand gallons. In addition to the forms mentioned above many other microorganisms were successfully grown in our media under laboratory conditions and in the outdoor tanks. Chlorophyll-bearing and colorless flagellates grew exceptionally well, while Ciliates such as *Colpidium*, *Glaucoma* and *Paramecium* produced good cultures.

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It is thought that the suggestions offered in this brief article are especially pertinent at this time. Because of the war condition it is becoming more difficult to buy the chemicals usually needed in the preparation of solutions for the cultivation of microorganisms. Some of the ingredients may not be available at all. Therefore, the use of commercial fertilizers, which at present are easily obtainable, may solve the difficulties of many investigators.

VICTOR L. LOOSANOFF
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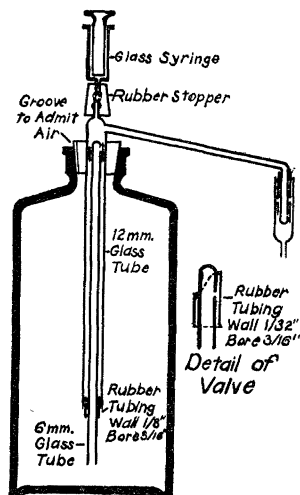


FIG. 1.

the 12 mm tube to allow the device to be used in bottles of various depths. If the 12 mm sheath is made 7 inches long and the 6 mm stem 8 inches, the apparatus can be adjusted to fit ordinary bottles varying from a quart to a gallon in size.

ROGER M. REINECKE

DEPARTMENT OF PHYSIOLOGY,
UNIVERSITY OF MINNESOTA

BOOKS RECEIVED

- ABBOT, C. G., L. B. ALDRICH and W. H. HOOVER. *Annals of the Astrophysical Observatory of the Smithsonian Institution*. Volume 6. Pp. 207. Smithsonian Institution.
- MCPHERSON, WILLIAM, WILLIAM EDWARDS HENDERSON, W. CONARD FERNELIUS and LAURENCE LARKIN QUILL. *Introduction to College Chemistry*. Pp. 608. Ginn and Company. \$3.50.
- MODE, ELMER B. *The Elements of Statistics*. Pp. 378. Prentice-Hall, Inc. \$3.50.
- TRASK, PARKER D. and H. WHITMAN PATNODE. *Source Beds of Petroleum*. Pp. 566. The American Association of Petroleum Geologists.
- WOLFENDEN, HUGH H. *The Fundamental Principles of Mathematical Statistics*. Pp. 379. The Macmillan Company of Canada.

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The key feature of this new text—which is designed for the introductory course—is its emphasis upon aspects of plant life involved in everyday experience and concerned directly with human living. Great importance is given to the economic uses of particular plant groups, the formation and germination of seeds, soil fertilization, erosion control, plant diseases, plant hormones and wood structure. The book is profusely illustrated with drawings, photographs and charts.

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