

SCIENCE

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Science News

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THE NATIONAL ACADEMY OF SCIENCES¹

REMARKS OF THE PRESIDENT AT THE DINNER

Members of the Faculty of Brown University, Members of the National Academy of Sciences and Guests:

THE National Academy of Sciences comes to Brown University with greetings to the scientific spirit that has always prevailed within its walls. The basis for this lies in the fact that since the inception of the Academy there has been a continuous liaison between Brown University and the Academy. One of your presidents, Alexis Caswell, was among the founders of the National Academy of Sciences, and members of your faculty have through the years of its existence been elected to membership in it.

In considering what it might be appropriate to say to you on this occasion, it seems to me that the custom established by my predecessors of saying first a word about the Academy, its origin and its functions is in

order. This is an old story to members of the Academy and to those who have had close contact with its permanent committee, the National Research Council. To most people, however, it may not be clear as to just what the Academy is.

Although composed wholly of scientists, the Academy is *not* a scientific society in the ordinary professional sense as is the Physical Society, Chemical Society, etc. It is an organization of limited membership created by Congressional charter (the only one in the field of science) which has certain definite prerogatives and certain definite obligations to the state. These obligations in effect determine the qualifications of those elected to membership.

Principal among the obligations is the one which imposes on the Academy the necessity of giving to the government on request, and without remuneration, the best advice on scientific and engineering matters of major importance. It is this obligation which imposes the double requirement of a membership which covers

¹ Autumn meeting held at Brown University, Providence, R. I., October 23, 24 and 25.

added 5 cc of 85 per cent. lactic acid per 1,000 grams of salt solution. Phenol red or other indicator may be added if desired. Approximately 150 cc of the acid-saline is required for each analysis. The solution may be dispensed from stock in 500 cc cylinders, for convenient filling of the apparatus.

(2) Solution of NaOH, 16.0 per cent. by weight, having a specific gravity and vapor pressure approximately the same as the salt solution, for absorption

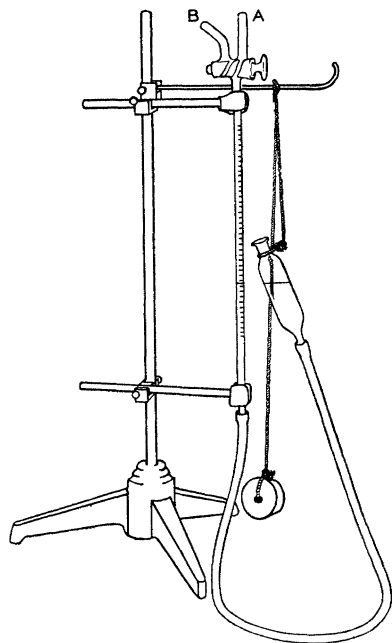


Fig. 1

of CO_2 and rinsing down of oxygen absorber. A single separatory funnel, with pipette-like tip, will allow the reagent to be conveniently accessible to the operators of 3 or 4 sets of apparatus.

(3) Oxygen absorber, consisting of 10 grams sodium hydrosulfite (Baker) and 1 gram sodium anthraquinone β sulfonate (Eastman) dissolved rapidly in 50 cc of 3N KOH, filtered through cotton and stored in a separatory funnel under paraffin oil. A single container should supply 6 to 10 students.

PROCEDURES

Levelling bulb, tubing and burette are filled with salt solution and about 1 cc is run into the reagent cup "A," a gas sample is then introduced through the tube "B" to approximately the 10 cc mark. Most of the saline is run in from the cup, the cock is closed, and the burette tapped to dislodge traces of solution from the upper end. Levels are adjusted and readings recorded at intervals until drainage is complete, which may require 5 to 15 minutes. The room temperature should be noted to the nearest 0.2°C . in vicinity of the

burette. It is essential that the gas sample should be protected from sunlight or other causes of sudden variation of temperature. To this end the operator should remain at least 3 feet distant from the burette except during necessary manipulations, for heat radiated by the body may elevate the temperature of the gas without affecting the thermometer. A water jacket will not assist in maintaining constancy of temperature, for the heat of neutralization and of dilution which is liberated during the analysis must be completely dissipated, a process which occurs most quickly by air conduction.

CO_2 is now absorbed by running in 2 cc of the alkali, during about a minute. Time for complete drainage of the alkali rarely exceeds 8 minutes. Levels should be adjusted for the new reading and the temperature should be recorded. The volume of the gas should be corrected in each instance for temperature changes greater than 0.5°C .

O_2 is absorbed by running in 3 to 4 cc of the hydrosulfite reagent during approximately 2 minutes. To facilitate complete drainage and to avoid errors due to vapor pressure differences, the hydrosulfite should be washed down with 4 to 5 cc of the NaOH solution. Complete drainage may require from 10 to 15 minutes. The temperature, corresponding to the final volume, should be recorded.

After each analysis the fluid is run out by lowering the leveling bulb to a container placed on the floor. The burette is then washed through the reagent cup with 5 to 10 cc of NaOH, followed by water, followed by saline. The leveling bulb is then raised and refilled with saline. If sulfur seum appears in the burette it may be necessary to discard the first filling.

Since incomplete drainage is the chief source of error of the method, scrupulous attention should be paid to this factor.

During changeable weather it is advisable to record the barometric pressure and to make appropriate corrections of the gas volume.

J. MAX LITTLE

HERBERT S. WELLS

PHYSIOLOGY DEPARTMENT,
VANDERBILT UNIVERSITY SCHOOL
OF MEDICINE

BOOKS RECEIVED

- ANDERSON, J. RINGLAND. *Hydrophthalmia of Congenital Glaucoma; Its Causes, Treatment and Cure*. Pp. xv + 377. Cambridge University Press, Macmillan. \$7.00.
- DICKSON, LEONARD E. *Modern Elementary Theory of Numbers*. Pp. vii + 309. University of Chicago Press. \$3.00.
- MORGAN, ALFRED P. *The Pageant of Electricity*. Pp. xxvi + 363. Illustrated. Appleton-Century. \$3.50.
- National Resources Committee. *The Structure of the American Economy; Part I, Basic Characteristics*. Pp. vii + 396. Illustrated. Superintendent of Documents, Washington, D. C. \$1.00.

NEW WILEY BOOKS



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By **HAROLD C. WEBER**, *Associate Professor of Chemical Engineering, Massachusetts Institute of Technology.*

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In this manual laboratory methods are introduced, and a careful study is made of the anatomy of the chick, the frog and the pig. Drawings, sketches and records are expected of the student, and this practical method helps to give him a thorough knowledge of the subject. The book is designed to overcome the difficulty in teaching invertebrate embryology to students who have had little previous experience with laboratory methods.

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38 illustrations

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A GUIDE to the STUDY of the ANATOMY of the SHARK, the NECTURUS, and the CAT.

By **SAMUEL EDDY**, *Associate Professor of Zoology*; **CLARENCE P. OLIVER**, *Assistant Professor of Zoology*; and **JOHN P. TURNER**, *Assistant Professor of Zoology; all at the University of Minnesota.*

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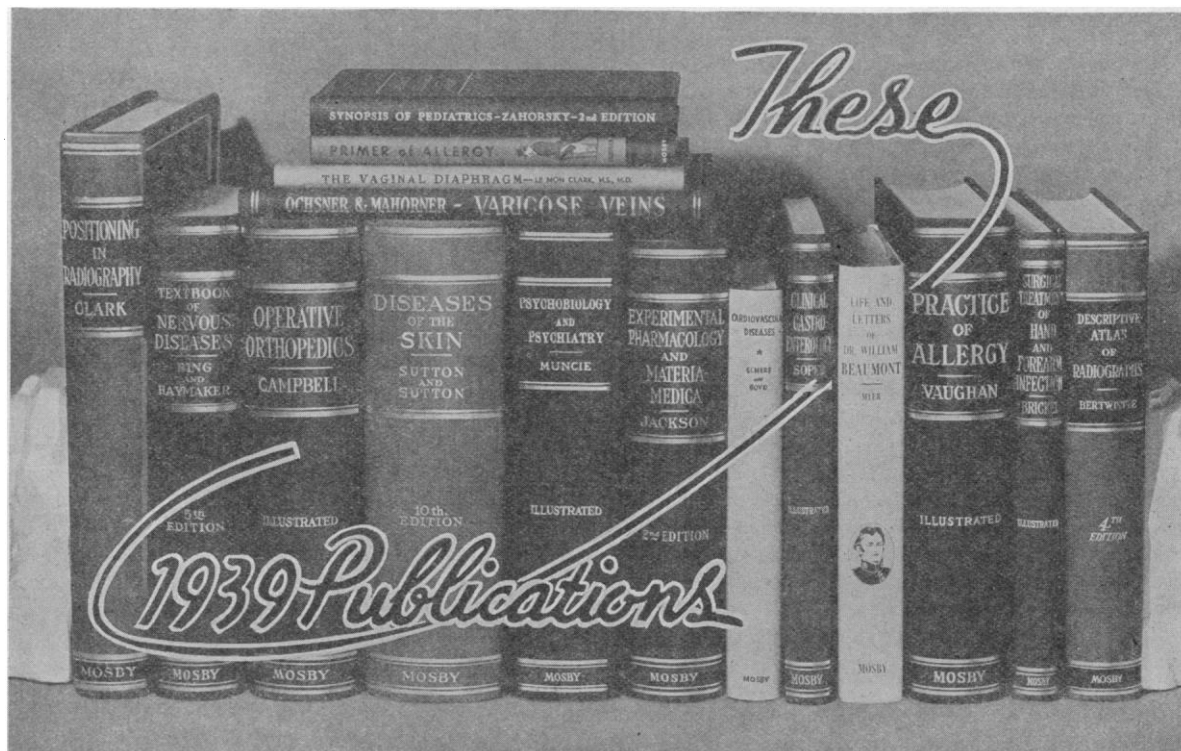
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