

SCIENCE

VOL. 97

FRIDAY, APRIL 16, 1943

No. 2520

Scientific Publications of the Government:

<i>Publications of the U. S. Public Health Service:</i>	
DR. ATHERTON SEIDELL	339
<i>The Publications of the National Bureau of Standards:</i> J. L. MATHUSA and DR. K. S. GIBSON	341
<i>The Publication of Scientific and Technical Material by the United States Department of Agriculture:</i> DR. M. C. MERRILL	343
<i>Discussion of Some Aspects in the Publication of Government Research:</i> RALPH R. SHAW	345
<i>Obituary:</i>	
Albert Lloyd Barrows: DR. ISAIAH BOWMAN. Recent Deaths	346
<i>Scientific Events:</i>	
Tufts College Chapter of the Society of Sigma Xi; Summer Session in Applied Mathematics at Brown University; The Columbus Meeting of the American Physical Society; First Charles L. Mayer Award of the National Science Fund; Election of Fellows of the Royal Society; Medal Day of the Franklin Institute, Philadelphia	347
<i>Scientific Notes and News</i>	350
<i>Discussion:</i>	
The Complex Vitamin B Complex: PROFESSOR A. G. HOGAN and DR. OLIVER KAMM. Phenothiazine for Cattle Lice Control: H. S. TELFORD, J. H. LONGWELL and DR. J. A. MUNRO. Early and Late Easter Dates: DR. ALEXANDER POGO	353

Special Correspondence:

<i>The Work of Soviet Botanists:</i> B. SHISHKIN	354
<i>Scientific Books:</i>	
<i>Organic Chemistry:</i> The late DR. GARFIELD POWELL. <i>Blood Grouping:</i> DR. ALEXANDER S. WIENER	355
<i>Special Articles:</i>	
<i>Enzyme Systems Containing Active Sulphydryl Groups. The Role of Glutathione:</i> PROFESSOR E. S. GUZMAN BARRON and T. P. SINGER. <i>Auxin Action:</i> DR. H. C. EYSTER	356
<i>Scientific Apparatus and Laboratory Methods:</i>	
<i>A Rapid and Accurate Micro Method for the Estimation of the Sulfonamides:</i> DR. S. W. LEE, N. B. HANNAY and W. C. HAND	359
<i>Science News</i>	10

SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. McKEEN CATTELL and published every Friday by

THE SCIENCE PRESS

Lancaster, Pennsylvania

Annual Subscription, \$6.00

Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary in the Smithsonian Institution Building, Washington, D. C.

SCIENTIFIC PUBLICATIONS OF THE GOVERNMENT¹ PUBLICATIONS OF THE U. S. PUBLIC HEALTH SERVICE

By Dr. ATHERTON SEIDELL

U. S. PUBLIC HEALTH SERVICE

A GREAT majority of the members of the Washington Academy and its affiliated societies are engaged in research in governmental laboratories. They are the authors of the papers in which by far the larger part of governmental research is described. Although the preparation of these papers is in itself a certain satisfaction, since they are the evidence of worthwhile accomplishments, the real purpose of their publication is to aid others engaged in the advancement of science. This, however, is possible only if the papers find their way to persons engaged in research of a similar kind. This link in the chain of scientific progress is usually given very little attention. Most of us consider that our duty is done when our papers are accepted for

publication. We assume that it is the concern of others to obtain them and not ours to render this task less difficult.

The channels through which papers describing additions to scientific knowledge are most widely distributed are the well-known, regularly appearing, and internationally circulating journals, especially those devoted to specific fields of research. In general, our governmental publications meet these specifications to an exceedingly limited degree. They are usually published irregularly, are of a heterogeneous character, and but a very small proportion of any of them ever get beyond the borders of our country. Descriptions of experimental investigations published in them can thus rarely reach workers in other countries who would be able to use them to advantage.

¹ Papers presented at the January 21, 1943, meeting of the Washington Academy of Sciences.

solution is a measure of the sulfonamide content of the fluid.

The time for a single determination is exceptionally long, and the color which is formed is stable for no longer than one hour, so that it is impossible to run a large number of samples simultaneously. The nitrogen bubbles which form after the addition of the sulfamate often lead to false readings. The recovery of sulfathiazole from blood is low, and is only about 80 to 85 per cent. when the blood is precipitated in trichloroacetic acid in a volume ratio of 1 : 20.

Changes in the procedure have removed all the causes for these objections. In the micro method, the blood is precipitated with trichloroacetic acid containing a small amount of sulfuric acid. Then sodium nitrite in excess is added to the filtrate, and ethyl alcohol added to the solution of the diazonium salt. The coupling with N-1 naphthyl ethylene diamine is carried out in this solution. It was found unnecessary to add the ammonium sulfamate, the color being more stable in its absence.

It was shown that the blood need not be laked prior to precipitation of the protein in order to obtain complete recovery of the sulfonamides. This is pointed out in Table I, together with comparative results obtained by the Bratton and Marshall procedure.

TABLE I
FREE SULFATHIAZOLE LEVELS—(MG PER CENT.)

Subject and dose	Regular Bratton and Marshall method	Micro method	
		Blood pptd. directly	Blood laked before pptn.
Rabbit— ½ g of STA orally. Blood taken after one hour.	3.0 (trip.)	3.5 (trip.)	..
Man— 2 g of STA taken orally. Blood taken after two hours.	2.9 (dupl.)	3.6 (dupl.)	..
Man— 1 g of STA taken orally. Blood taken after two hours.	2.8	3.3 (dupl.)	3.3 (dupl.)
Rabbit— ½ g of STA taken orally. Sample after one hour.	3.5 (quad.)	4.0 (dupl.)	4.0 (dupl.)
Man— 2 g of STA orally. Sample after one hour.	2.3 (quad.)	2.6 (trip.)	2.6 (quad.)
Man— 2 g STA orally. Sample after 4 hours.	2.7 (trip.)	3.1 (quad.)	3.1 (quad.)

No interference from bubbles was noticed, because the sulfamate-nitrous acid reaction was eliminated. The time for a single analysis is reduced to about eight minutes. This is to be compared with about forty minutes for the Bratton and Marshall procedure, and about

twelve minutes for the Werner procedure.² Recovery of sulfathiazole added to whole blood was 95 to 100 per cent., at a dilution of 1 : 20, and results on blood of patients who have received the drug were about 15 per cent. higher by the micro method than by the Bratton and Marshall method. This was taken to indicate almost complete recovery of the drug. The color which was formed was stable enough to permit accurate analysis for twenty-four hours.

Substantiating experiments and a discussion of the results will be published elsewhere as soon as the method has been tested under clinical conditions.

The experimental procedure is briefly as follows: Whole blood (0.30 ml) is added dropwise with vigorous shaking to 5.70 ml of "acid mixture" which is prepared by adding 56 ml of 4 N sulfuric acid to one liter of 3.33 per cent. trichloroacetic acid. The protein is allowed to coagulate and is filtered through Whatman number 1 or 42 paper. Sodium nitrite solution (0.10 per cent., 0.10 ml) is added to a 2.00 ml aliquot of the filtrate, and three minutes is allowed for diazotization. Ethyl alcohol (1.00 ml) is added, the tube swirled, and 0.10 ml of N-1 naphthyl ethylene diamine (0.10 per cent.) added. The color forms to its maximum intensity in fifteen seconds.

The determinations were carried out in flat-bottomed 10 ml vials, and the color intensities measured in micro cuvettes, using a Coleman Universal spectrophotometer. It was also noted that the values could be found with fair accuracy by visually comparing the developed colors with color standards made from a mixture of fuchsin and methyl violet.

S. W. LEE
N. B. HANNAY
W. C. HAND

WALLACE LABORATORIES,
NEW BRUNSWICK, N. J.

² M. C. Andrews and A. F. Strauss, *Jour. of Lab. and Clinical Medicine*, 26: 888, 1941.

-BOOKS RECEIVED

- Conference on Science, Philosophy and Religion.* Pp. xix + 438. Conference on Science, Philosophy and Religion in Their Relation to the Democratic Way of Life, Inc. \$3.00.
- DETWILER, SAMUEL R. *Vertebrate Photoreceptors.* Illustrated. Pp. x + 184. The Macmillan Company. \$4.00.
- GETMAN, FREDERICK H. *Outlines of Physical Chemistry.* Seventh edition. Revised by FARRINGTON DANIELS. Illustrated. Pp. xii + 691. John Wiley. \$3.75.
- HAMILTON, W. J. *The Mammals of Eastern United States.* Illustrated. Pp. 432. Comstock Publishing Co. \$4.00.
- NORD, F. F. and C. H. WERKMAN. *Advances in Enzymology and Related Subjects of Biochemistry.* Illustrated. Pp. viii + 408. Interscience Publishers, Inc. \$5.50.
- PIPER, C. S. *Soil and Plant Analysis.* Pp. xiv + 368. The Haskell Press, Adelaide, South Australia. 15/.
- RUSK, ROGERS D. *Forward with Science.* Illustrated. Pp. xiv + 307. Alfred A. Knopf, Inc. \$3.50.
- SAUNDERS, FREDERICK A. *A Survey of Physics.* Illustrated. Pp. xii + 724. Henry Holt and Co. \$4.00.

A New Text Establishes Its Leadership

HOWE'S INTRODUCTION TO PHYSICS

By HARLEY HOWE
Professor of Physics, Cornell University

559 pages, 6 x 9, 483 illustrations. \$3.75

Although published less than a year ago, this highly successful text is already in its fourth large printing, and has been widely adopted in specialized Service training courses as well as in regular academic classes. Institutions which have adopted the book include:

University of Akron
Albertus Magnus College
Albany State Teachers College
Armstrong Junior College
Baldwin Wallace College
Bowling Green State University
Bucknell University
California Polytechnic School
Canyon, Texas, State Teachers Col.
Cedar Crest College
*Centenary College
University of Cincinnati
The Citadel
Citrus Junior College
*Clemson College
*Concordia College
Connecticut College
Cornell University

Decatur, Miss., Junior College
De Paul University
Detroit Institute of Technology
Findlay College
Florida State College for Women
Grinnell College
George Washington University
Georgia School of Technology
Goucher College
Green Mountain Junior College
Hamilton College
Harvard University
Hobart College
Illinois Institute of Technology
*Iowa Wesleyan College
James Millikin University
McPherson College
*University of Minnesota

Mississippi State Col. for Women
*University of Nevada
*Norwich University
University of Omaha
Parsons College
Richmond, Ky., State Teachers Col.
University of Richmond
Rochester, Minn., Junior College
University of Rochester
St. Lawrence University
San Bernardino Junior College
Stanford University
*Syracuse University
*Utah State College
Vassar College
University of Virginia
Wheaton College

* Used in the Army Air Force Training Program.

Teachers like *Introduction to Physics* because:

- it states physical laws in rigorous but non-mathematical terms
- it incorporates more “modern physics” in the traditional organization of a first course
- it illustrates physical principles from the student’s daily experience
- it encourages the student to ask questions and to think for himself
- it includes a wealth of tested exercises, questions, examples, problems, and illustrations.

Send for a copy on approval

McGRAW-HILL BOOK COMPANY, INC.

330 West 42nd Street, New York, N. Y.

Aldwych House, London, W.C.2

THE VERTEBRATE EYE AND ITS ADAPTIVE RADIATION

By Gordon Lynn Walls

"It should certainly be read by all biologists including medical men, interested in visual problems."—*Nature*

"It is a 'must' book for every biologist, whatever his specialty."—*Journal of Mammalogy*

"Never before has so much light been shed at one time on an animal organ . . . a tremendously interesting and valuable book."—*American Naturalist*

Published 1942. 785 pages, 197 figures, \$6.50

Orders sent postpaid within the continental United States upon receipt of remittance.

CRANBROOK INSTITUTE OF SCIENCE
Bloomfield Hills, Michigan

LaMOTTE OUTFIT for determining Available Phosphorus

This soil testing outfit represents the most recent development in determining available phosphorus in soil and gives the result in pounds per acre. A test can be accurately made in five minutes. Complete with La-Motte Soil Handbook. Price \$12.50 F.O.B. Baltimore.

LaMotte Chemical Products Co.
Dept. "H" Towson, Baltimore, Md.

For Laboratory and Demonstration:

Hylø #1 Melting Furnace, Crucibles, Assay Scorifiers, Muffles, Tong's, Asbestos Mittens, Annealing Ovens.

Dealer and Manufacturer
ALEXANDER SAUNDERS
95 Bedford Street New York, N. Y.

DIFCO

Bacto-Agar

Bacto-Agar is a purified Agar prepared from domestic material. In the manufacture of Bacto-Agar extraneous matter, pigmented portions, and salts are reduced to a minimum, so that the finished product in the form of fine granules will dissolve rapidly, giving clear solutions.

Bacto-Agar is distributed only for use in bacteriological culture media upon proper certification by the purchaser.

Bacto-Asparagine

Bacto-Asparagine is a purified amino acid widely used in synthetic culture media and in the preparation of tuberculin.

Specify "DIFCO"

THE TRADE NAME OF THE PIONEERS
In the Research and Development of Bacto-Peptone and Dehydrated Culture Media.

DIFCO LABORATORIES

INCORPORATED
DETROIT, MICHIGAN

Professor of Mathematics desired by New England college, to assume duties July 1st, 1943. Address Box OBR, SCIENCE, Lancaster, Pennsylvania.

THE SCIENCE PRESS PRINTING CO.

PRINTERS OF
SCIENTIFIC AND EDUCATIONAL JOURNALS,
MONOGRAPHS AND BOOKS

Correspondence Invited
LANCASTER, PENNSYLVANIA

SPRAGUE - DAWLEY, INC.

Pioneers in development of the standard laboratory rat

Madison, Wisconsin