MICRODETERMINATION OF
INORGANIC PHOSPHATE

Reference: Soyenko, J. Biol. Chem.
168, 447 (1947)

REAGENT: QUINALDINE RED 1361
1 gram $1.00

METHOD:
Colorimetric, with little drift. Quinaldine Red, stable and almost colorless at pH 0.7, forms a strongly colored dye-phosphomolybdate complex with molybdate-sulfate solution and a solubilizer in presence of phosphates. Determination of extinction coefficient through Wratten Filter No. 61 is highly sensitive.

RANGE: 0.02 to 0.2 mg. per liter of P in sample-reagent mixture.

ACCURACY: Approximately 1%.

*Eastman will be glad to send you without cost an abstract of the procedure.

Quinaldine Red is one of the 3,000 compounds you can order from this standard reference book. For a free copy write to our Organic Chemical Sales Division.

THERE ARE SOME 3000 EASTMAN ORGANIC CHEMICALS

EASTMAN
KODAK COMPANY
ROCHESTER 4, N. Y.
THE NEW
LaMOTTE WATER SOLUBLE
pH INDICATORS
(Sulfon-phthalein) pH 0.2–9.6

These products were originally developed in the LaMotte laboratories and are of the same superior quality as the acid form indicators hitherto available for pH work.

They have the distinct advantage of being instantly soluble in distilled water, hence are easy to convert to solution form. Use of alkali, as required in the older technic is eliminated, and no heating is necessary.

The clean, quick way to prepare indicator solutions for accurate pH work.

Information supplied upon request.

LaMOTTE CHEMICAL PRODUCTS COMPANY
Dept. "H" Towson 4, Md.

FOR LATEST AUTHORITATIVE REVIEWS ON LABORATORY PROCEDURES

Subscribe to

The Laboratory DIGEST

A monthly publication compiled for laboratory directors, technicians and physicians. Full of essential facts and reviews of current literature on laboratory procedure, professionally edited by R. B. H. Gradwohl, M. D., Sc. D. A necessity in the modern laboratory. Published by

GRADWOHL SCHOOL OF LABORATORY TECHNIQUE
3514 Lucas Av.
St. Louis, Mo.

KLETT ELECTROPHORESIS

CUSTOM MADE

TOOL FOR THE ANALYSIS OF COMPLEX COLLOID SYSTEMS, AND FOR THE CONTROL OF PRODUCTION OF PURIFIED PROTEINS, ENZYMES, HORMONES

KLETT MANUFACTURING CO.
179 EAST 87TH STREET
NEW YORK, N. Y.
LABORATORY EXPERIMENTS in PHYSIOLOGY

by W. D. ZOETHOUT, Ph.D.
Professor Emeritus of Physiology
in the Chicago College of Dental Surgery
(Loyola University)

263 Pages
97 Illustrations
PRICE $3.00

Fourth Edition (1948)

This popular text, in its Fourth Edition, has been thoroughly revised and all the material has been carefully gone over. Many changes, even though minor, have been made to improve the text. Some experiments have been deleted and a few new ones added. Some new illustrations are included.

This book is the outcome of years of teaching and presents a guide to the simpler experiments requiring a minimum of laboratory equipment. Directions for procedures are very explicit. The author has kept in mind the fact that time allotted to this subject may be limited. On the strength of suggestions from instructors, the second section of the manual is devoted to the rudiments of physiological chemistry.

Although the laboratory guide is planned to be used with the author's "HUMAN PHYSIOLOGY," no direct references are made and the material is easily adaptable for use with any text.

Order Form

The C. V. Mosby Company
3207 Washington Blvd.
St. Louis 3, Missouri

Please send me a copy of Zoethout's New Fourth Edition of Laboratory Experiments in PHYSIOLOGY.

The price is $3.00

☐ Enclosed is my check. ☐ Charge my account.

Name

Address
RESEARCH
A JOURNAL OF SCIENCE AND ITS APPLICATIONS

Scientific Advisory Board:
SIR JOHN ANDERSON (Chairman)
SIR ALFRED EGERTON
SIR ALEXANDER FLEMING
PROFESSOR R. S. HUTTON
SIR EDWARD SALISBURY

Editor: D. R. REXWORTHY

Monthly Subscription $10.00 yearly Postage free
Subscribers during 1948 will receive 15 issues
(October 1947 to December 1948) for $10.00 instead of $12.50

Published by BUTTERWORTH SCIENTIFIC PUBLICATIONS, London
Sole Agent for U. S. A.: INTERSCIENCE PUBLISHERS, INC., New York

THE SCIENCE OF PLASTICS
A comprehensive source book based on the literature from 1942–1946. VOLUME I
Edited by H. MARK and E. S. PROSKAUER
1948 6 x 9 640 pages $9.00

MECHANICAL BEHAVIOR OF HIGH POLYMERS
By TURNER ALFREY, JR., Associate Professor of Polymer Chemistry, Polytechnic Institute of Brooklyn
1948 6 x 9 595 pages 243 illus. $9.50

CHEMICAL ARCHITECTURE
(Frontiers in Chemistry, Volume V)
Edited by R. E. BURK and OLIVER GRUMMITT
1948 6 x 9 216 pages 60 illus. $4.50

NEWER METHODS OF PREPARATIVE ORGANIC CHEMISTRY
Translated and revised from the German
Published with the consent of the Alien Property Custodian
1948 6 x 9 670 pages $8.50

SYNTHETIC METHODS OF ORGANIC CHEMISTRY
A Thesaurus. Volume I, 1942–1944
By W. THEILHEIMER
Translated from the German by Hans Wynberg
1948 6 x 9 approx. 234 pages $5.00

COTTONSEED AND COTTONSEED PRODUCTS
Their Chemistry and Chemical Technology
Edited by ALTON E. BAILEY, Votator Division, The Girdler Corporation, Louisville, Ky.
1948 6 x 9 960 pages 208 illus. $17.50

COMMUNICATIONS ON APPLIED MATHEMATICS
A Journal issued quarterly by The Institute for Mathematics and Mechanics, New York University
Director: R. COURANT
Vol. I, No. 1, January 1948
Subscription price $8.00 per year

STUDIES AND ESSAYS
presented to R. COURANT on his 60th birthday, January 8, 1948
1948 478 pages Offset 6 x 9 $5.50

INDUSTRIAL ELECTRIC FURNACES AND APPLIANCES
By VICTOR PASCHKIS, Technical Director, Heat and Mass Flow Analyzer Laboratory, Department of Mechanical Engineering, Columbia University, New York
1945 6 x 9 242 pages 158 illus. 21 tables $6.00
Vol. II: Resistance, Induction and Capacitance Heating
1948 6 x 9 335 pages 293 illus. 26 tables $8.00

Send orders or requests for detailed information to Dept. S:

Laboratory Pre-Tested for Microbiological Uses

CASEIN HYDROLYSATES

“Vitamin Free” Casein Hydrolysate GBI—(acid hydrolyzed) for U.S.P. and other standard assays for B-complex vitamins, amino acids and bacterial nutrition studies. 100 cc. serum bottles—$18.00 per dozen.

“Special” Casein Hydrolysate GBI—same as above product but more economical to use for all those procedures where its content of trace quantities of niacin will not interfere. 100 cc. serum bottles—$15.00 per dozen.

Related GBI Products
Special Media, Crystalline Vitamins and Amino Acids. (Enzymatic) Hydrolysates of Lysoalbumin and Casein—powder form.

Write for prices and information

GENERAL BIOCHEMICALS, INC.
60 LABORATORY PARK
CHAGRIN FALLS, OHIO

Complete—Saves Time—Eliminates Waste

RIBOFLAVIN BASAL MEDIUM

Stock Solution for Microbiological Assay
A specially developed, complete medium supplying all the nutrient requirements necessary for microbiological Riboflavin Assay U.S.P. XII. In sterilized liquid form—convenient, ready to use—eliminates expensive and time-consuming laboratory procedure. Each lot is microbiologically pre-tested. Available in 100cc serum bottles. Prove its convenience in your own laboratory.

Write for Descriptive Price List 677 listing other Microbiological Media.

Land
FOR THE
Family

GUSTAFSON, HARDENBURG SMITH and McCAY
CORNELL UNIVERSITY

Newcomers to rural life, just planners, or oldtimers—everyone interested in country living—should own this practical guide to country life. Four experts from Cornell University are its authors, and while they are careful not to mislead the unwary with promise of ease, yet it is plain that they are enthusiastic about the rewards of life on the land.

“There is hardly any phase of farm activity and farm home life that is not discussed and presented in a helpful manner.” —Rural New Yorker

“This book points the way to a good life for those who are willing to devote the effort and intelligence to make it so.” —House Beautiful

Over 200 illustrations, 505 pp., $4.00

Comstock Publishing Company, Inc.

Comstock Publishing Company, Inc.
124 Roberts Place, Ithaca, New York

Please send me a copy of LAND FOR THE FAMILY at $4.00.

☐ Check enclosed. ☐ Send C.O.D.

Name
Address
Wiley books for study, research and reference...

FOUNDATIONS OF PSYCHOLOGY
Edited by EDWIN G. BORING, Professor of Psychology, Harvard University; HERBERT S. LANGFELD, Stuart Professor of Psychology, Emeritus, Princeton University; and HARRY F. WELD, Professor of Psychology Emeritus, Cornell University.

Each of the 25 chapters in this book has been written by a recognized authority on the subject covered. As a result of expert editing, checking and writing, the book offers a unified, concise, smoothly-flowing exposition of fundamentals. Beginning with response as a basic subject, the treatment passes to emotion, learning and thought. It concludes with chapters on individual differences, personality, personal adjustment, vocational selection, attitudes and opinion, and social relations.

Ready in May Approximately 574 pages (double-column) Probable price, $4.00

DAIRY BACTERIOLOGY
by B. W. HAMMER, Formerly Professor of Dairy Bacteriology, Iowa State College

The new Third Edition has a completely new chapter on dairy plant water supplies. Discussions of powdered milk, butter, cheeses and water supplies have been expanded in the light of present-day concepts. A number of sections have been cut and others enlarged. As in previous editions a direct method of instruction is used and clear-cut sources of information are given for both pathogenic and normal developments in each dairy product. Fermentations in milk and its derivatives are again stressed, in order to give the reader a complete understanding of these factors.

Third Edition in April Approximately 595 pages Probable price, $6.00

FATTY ACIDS AND THEIR DERIVATIVES
by A. W. RALSTON, Assistant Director, Chemical Research and Development Department, Armour and Company.

The experience of twenty years as a research chemist has gone into the writing of this book, which offers the first really comprehensive treatment of the subject. Many of the developments in this field were pioneered by Dr. Ralston himself, thus assuring an authoritative discussion. Over 5000 references to the literature on fatty acids and derivatives make this an invaluable source book for teachers, graduate students and industrial research men. In 1946, Dr. Ralston received the Midwest Award of the American Chemical Society for his work on fatty acids and their derivatives.

Ready in April Approximately 986 pages Probable price, $10.00

DETOXICATION MECHANISMS
by R. T. WILLIAMS, Senior Lecturer in Biochemistry, University of Liverpool, England.

Detoxication Mechanisms gathers together in logical order the available information on the metabolic fate of organic compounds foreign to the body. The book aims to make it possible for the worker to advance suitable working hypotheses. It covers the metabolism of: aliphatic compounds; cyclohexane derivatives; aromatic hydrocarbons; halogenated aromatic hydrocarbons; phenols; aromatic alcohols, ethers, aldehydes, ketones, amides; aromatic acids; organic cyanides; aromatic nitriles, amino and azo compounds; sulphones, sulphonic acids, sulphonamides; terpenes; camphors; heterocyclic compounds; organic compounds of arsenic.

February 1948 300 pages $5.50

JOHN WILEY & SONS, Inc., 440 Fourth Ave., New York 16, N. Y.
CHARGES FOR CLASSIFIED ADVERTISING

Regular setting 10¢ a word. Minimum charge $2.50 for each insertion. A box number counts as 8 words of the advertisement (e.g. 25 words plus box number equals 33 words). Make checks payable to the AAAS. All insertions must be accompanied by correct remittance and sent 10 days in advance of publication date to the Advertising Department, AAAS, 1515 Massachusetts Avenue, N. W., Washington 5, D. C.

POSITIONS WANTED

The California Medical Bureau, Agency for scientific and lay personnel in medicine, biology, chemistry, physics and allied sciences, supplies teachers, research workers, laboratory dieners, skilled office help. Prompt service. Registration free. Your patronage respectfully solicited. THE CALIFORNIA MEDICAL BUREAU, Agency, Arcade Medical Center, 696 Colorado Street, Pasadena 1, California.


Bacteriologist: June graduate. B.S., biology, 1 year bacteriology, chemistry minor, going for M.S. in bacteriology, desires position anywhere, night acceptable. 24, married, ambitious, interested, capable. Thomas Gilmore, 14 Norwood Avenue, Brooklyn 8, New York.

Pharmaceutical chemist: Ph.C., eastern university; long varied experience in branches of the drug industry, including manufacture, marketing, promotion and sales of ethical pharmaceuticals; duties have included sales management, field supervision, market studies, development of new products; for further information, please write Burorne Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Teaching: Ph.D. with excellent record in outstanding university in organic research, also good teaching and good industrial experience in organic for background, interested mainly in teaching organic chemistry plus some research, desire academic position. Box 246A, SCIENCE.

Technical Translations from French and German done by American Chemical Society member. Cost estimate sent upon request. Box 244A, SCIENCE.

POSITIONS OPEN

Entomologist: Capable contact man for technical service work with agricultural chemicals. Ability to evaluate new insecticide developments and conduct field tests essential. Some experience required. Headquarters located in New York City. Box 193A, SCIENCE.

Geologist: Well-known eastern women's college Instructor, salary $2800. September 1948. Box 111A, SCIENCE.

Graduate assistantships in bacteriology: Require about twelve hours of laboratory teaching or preparations per week. Candidates must enroll in the Graduate School. Eight credit hours of graduate work leading to master's or doctor's degree a semester permitted. Stipend $1000 for the academic year. Send application for admission to Graduate School to the Dean. Send personal data, transcript, and recommendations to: Chairman, Department of Bacteriology, University of Michigan, Ann Arbor.

Wanted: Young man preferably graduate with background in physical sciences, and training in journalism to write technical descriptions for midwest instrument manufacturer. Box 247A, SCIENCE.

Wanted: Bacteriology teacher. Large southern college wants established man Ph.D., Age 30-40, energy and ambition important. Rank and salary contingent. Correspondence invited. Box 248A, SCIENCE.

These advertisements will be read by more than 25,000 scientists in all fields.

Sell your product or services through an advertisement in these columns.

SCIENCE, 1515 Massachusetts Avenue, N. W. Washington 5, D. C.
**The Market Place**

**BOOKS**

**WANTED TO PURCHASE SCIENTIFIC BOOKS AND PERIODICALS**

Entire libraries, and smaller collections; sets and runs; foreign and domestic.

WALTER J. JOHNSON,
123 East 23rd Street, New York 10.

Journals, Periodicals, Learned and scientific serials bought and sold. Complete or part sets, back volumes. J. S. CANNER & COMPANY, INC., 909 Boylston Street, Boston 15, Massachu-
sets.

Send us your Lists of SCIENTIFIC BOOKS AND PERIODICALS which you have for sale. Complete libraries; sets and runs; and single titles are wanted. Also please send us your want lists.

STECHERT-HAFNER, INC., 31 East 10th Street, New York 3.

For Sale: PLANT PHYSIOLOGY, complete run 1926 through 1946, bound, good condition. Excellent opportunity for individual or library to acquire this important series beginning with Volume 1. Price, $8.00 per volume. Write to Mrs. Earl Johnston, 4409 Beechwood Road, Hyattsville, Maryland.

---

**PROFESSIONAL SERVICES**

Medical and Research Writing for Scientists, libraries, and pharmaceutical industry. Comprehensive excerpts, reviews, translations, searching scientific literature (French, Italian, Spanish, German) by former university professor still connected with medical college, medical and scientific societies and libraries. Box 235A, SCIENCE.

---

**FOOD RESEARCH LABORATORIES, INC.**

Founded 1922

Philip B. Hawk, Ph.D., President

Bernard L. Oser, Ph.D., Director

RESEARCH—ANALYSES—CONSULTATION

Biological, Nutritional, Toxicological Studies for the Food, Drug and Allied Industries

46–14 33rd Street, Long Island City 1, N. Y.

Write for descriptive brochure.

---

**The Market Place**

**SUPPLIES AND EQUIPMENT**

All Amino Acids (natural and synthetic, rare sugars, biochemical products and reagents, new pharmaceuticals in stock. Write for complete price list. BIOS LABORATORIES, 607 West 43rd Street, New York 18.

Amino Acid and protein analysis by microbiologic methods. Research problems on contract basis. SHANKMAN LABORA-
TORIES, 2023 South Santa Fe Ave., Los Angeles 21, California.

**Index of Refraction Liquids for Immersion Meth-
ods of Microscopy. Stable, non-volatile, certified liquids 1.400 to 1.700; high index liquids, above 1.80, in preparation. Write for data 847–ND.**

R. P. CARGILLE,
118 Liberty St., New York 6, N. Y.

Laboratory Animals—Rabbits, Guinea Pigs, Mice, Rats, Pigeons, Hamsters, Cats, Dogs. Reasonably priced.

JOHN C. LANDIS
HAGERSTOWN, MD.

Laboratory white rats. Exact ages and weights.

LOCKE KENNELS, WAYZATA, MINNESOTA

Pre-Mixed Microbiological Assay Media (One complete mixture): assay standards: pure amino acids (analyzed): microbiological assays. H. M. CHEMICAL COMPANY, LTD., 144 North Hayworth Avenue, Los Angeles 36, California.

Wanted: Micro-Tessar lenses in good condition only. W. Olden, 1265 Broadway, New York 1, New York.

**WHITE MICE**

Live delivery. Orders of 50 or more.

Thos. L. Euers, Route 5, Box #289, Austin, Texas

---

**PHOTOVOLT**

**Electronic Transmission Densitometer**

- For accurate measurements of transmission density of photographic, photomicrographic, x-ray, spectrographic, and x-ray diffraction plates and films.
- For radiation monitoring with x-ray films.
- For exposure determination in photomicrography by direct light measurements in the focal plane.

Write for Bulletin #250 to

PHOTOVOLT CORPORATION

95 Madison Ave.
New York 16, N. Y.

Also: Colorimeters, Fluorescence Meters, pH Meters, Photometers
SPECIAL APPARATUS BY CORNING
AGAIN AVAILABLE

UNPRECEDENTED demand for standard Corning Laboratory Glassware in recent years unfortunately made it necessary to decline many requests for specialized apparatus. Now we are pleased to announce that steps have been taken to correct this situation by enlarging our capacity.

Consequently, Corning is now in a position to again fabricate the special apparatus you may require. Whether you need simply a modification of a standard catalog item or an apparatus of intricate design, Corning's skilled craftsmen will build it to your exact specifications.

ThisPYREXtrademark signifies fabrication in Corning shops, your assurance of quality workmanship and maximum serviceability. Inquiries for special apparatus will be handled promptly by writing to Laboratory & Pharmaceutical Sales Department, Corning Glass Works, Corning, New York.

CORNING GLASS WORKS - CORNING, N.Y.
LABORATORY GLASSWARE

TECHNICAL PRODUCTS DIVISION: LABORATORY GLASSWARE - GAUGE GLASSES - GLASS PIPE
LIGHTINGWARE - SIGNALWARE - OPTICAL GLASS - GLASS COMPONENTS
At Bell Telephone Laboratories, more than 2300 scientists, engineers, and their associates are continually exploring and inventing, devising and perfecting for improvements and economies in telephone service.
Between objectives, the 12° angle of convergence enhances the perception of depth... between eyepieces, the 8° angle matches the normal convergence of the eyes when reading. The combination of these two carefully balanced angles gives Spencer Stereoscopic Microscopes their matchless realism and eye comfort.

Add the large field and resolving power of the optics, the convenience of the patented multiple revolving nosepiece, the sturdy and dependable stand, and you can easily see why Spencer Stereoscopic Microscopes are always in constant demand.

For descriptive literature write Dept. C1.

American Optical
Scientific Instrument Division
Buffalo 15, New York

Manufacturers of the SPENCER Scientific Instruments