exclusive interchangeable drawer system makes this the "all-purpose" laboratory file

You can have them ALL in the same unit... 1" drawers, and 2" and 4", in any combination your filing needs call for. Only "LAB-AID" files have this versatile tracking system which permits instant interchange as filing demands vary. Drawers slide smoothly under full weight of close-packed slides. Safety stops prevent accidental withdrawal, and all-steel construction assuresses permanent freedom from warping or binding.

Units are small enough (19" square) to fit easily on a desk, yet each will hold up to 6500 slides. Units can be stacked to any height... staunch welded-steel construction includes interlocking angles for stability and weight-supporting strength. The "LAB-AID" file is, in simple truth, the "all-purpose" file for all laboratory needs... however large or small.

All drawers can be converted from spaced filing to compact storage filing (or vice versa) by removing (or inserting) the flexible spring liner.

Please send for Bulletin No. 1600

laboratory filing cabinet

THE TECHNICON COMPANY
215 EAST 149 STREET, NEW YORK 51, N. Y.
A Complete Electrophoresis and Schlieren Laboratory:

Built-in regulated and stabilized power supply . . . no "B" batteries.
Integral refrigeration system . . . no ice cubes.
Internal rapid dialysis facilities . . . no additional refrigerator.
Base for sturdy support . . . no special table or carriage.
All optics in air-conditioned space . . . no drying agents.
Cells available for adsorption, diffusion, and macro-preparative work.

Price of the Aminco Portable Electrophoresis Apparatus, ready to plug in, and complete with cell, holder, and accessories required for immediate operation . . . $2500, F.O.B. Silver Spring, Md.

Apparatus Constants

Physical Dimensions—Base unit, 24 x 18 x 13 inches; over-all height, 46½ inches.
Optical Path Length—90 inches.
Screen Size—3⅜ x 4⅛ inches (standard cut film).
Magnification—2.
Temperature Control—plus-minus 0.02°C.
Current Range—1-30 milliamperes.
A.C. Ripple—less than 0.03% of total current.
The **Welch DENSICHRON**

**Assures Critical Readings of Transmission and Reflection Densities**

**Features**

- Extreme Accuracy
- Unsurpassed Stability
- Exceptional Light Sensitivity
- Patented Magnetic Modulation
- No Zero Adjustment
- Convenient Small Size—5” x 7 1/4” x 13”
- Light in Weight—only 11 1/2 pounds

The Densichron’s extreme accuracy, small size, and light weight qualifies it for use in many of today's light-measuring operations in graphic arts work, scientific research, and industrial processes control. Precise density determinations with the Densichron in photography and printing allow for the establishment of reproducible standards in all light measuring phases of this work.

The Densichron’s ability to measure accurately the light intensity of the smallest details in photomicrography enables the research scientist to resolve the longest exposure times he may encounter.

In industrial processes control (control of thyratons, relay amplifiers, and timing devices) the output of the standard Densichron may be utilized. This is possible because the output is an alternating voltage which is proportional to the amount of light received by the phototube. Control of this nature is practical in operations requiring strict adherence to tolerances, or in any operation which may be so arranged to provide minute changes in the intensity of the light flux received by the Densichron.

Specifications:
- **Density Ranges:** 0-1, 1-2, 2-3, and 3-4
- **Light measuring Ranges:** 5, .5, .05 and .005 foot candles
- **Sensitivity Controls:** 4 decades by the Range Switch with one decade continuous and an overall control of 10,000 to 1.

The instrument comes supplied with blue-sensitive light probe (or red if specified), five measuring apertures, a cone with 1/8 inch aperture, and metal support for the probe unit. The current consumption is 30 watts. For operation on 115v 60 cycle A C only.*

**Price** $225.

* Can be supplied for 50 cycle operation at an additional charge of $10.00.

**W. M. WELCH SCIENTIFIC COMPANY**

1515 SEDGWICK STREET, DEPT. E  
CHICAGO 10, ILLINOIS, U.S.A.

Manufacturers of Scientific Instruments and Laboratory Apparatus

---

*Write today for new descriptive folder!*
Table of Contents

National Academy of Sciences—Abstracts of Papers Presented at the Autumn Meeting, October 9–12, 1950 ................................................. 447

Technical Papers

The Hemolytic and Antihemolytic Activities of Various Centrifugally Separated Fractions of Adult and Fetal Liver Cells:
David B. Tyler ......................................................... 456

Methanol Precipitation of Influenza Virus:
Arden W. Moyer et al. ............................................... 459

A Sex-linked Lethal Gene in the Fowl:
K. Goodwin, F. B. Hutt, and R. K. Cole .... 460

A Precision Method of Counting Radioactive Liquid Samples:
Arthur J. Freedman and David N. Hume .... 461

Effects of Ultrasonic Waves and Nitrous Acid on the Production of Colloidal Sulfur:
Shichiro Akiya, Otokiko Nomoto, and Seichi Okui 463

A Simplified Recording Bubble Flow Meter:
William G. Hammond, Chester Hyman, and Thomas E. Nelson ......................................................... 465

Molecular Configuration and Biological Activity of Substances Resembling Acetylcholine: J. H. Welsh and R. Taub .... 467

The Photochemical Action of Ultraviolet Light on the Absorption Spectra of

Nucleic Acid and Related Substances:
David Rapport and Attilio Canzanelli .......... 469

Contact Potentials of Evaporated Iron Films in Air and in Nitrogen at Low Pressure:
Norman Hackerman and Leland L. Antes .... 471

Improved Technique for Weighing Tissues with the Cartesian Diver:
Jay A. Smith and Melvin Post .................. 471

On the Structure of Morphone and its Derivative Metopon:
Lewis J. Sargent and Lyndon F. Small .......... 473

Streaming Birefringence of Denatured Ovalbumin: J. F. Foster and Edward G. Samsa ..... 473

Comments and Communications

Taste Reactions to Antithyroid Substances; The Big Lie;
Stress and Meaning ............................................... 475

Book Reviews

Stellar Evolution; Electronic Mechanisms of Organic Reactions;
Manual of Standardized Procedures
for Spectrophotometric Chemistry .......... 477

News and Notes

Students, Scientists, and Selective Service .......... 479
METHODS IN MEDICAL RESEARCH

EDITED BY RALPH W. GERARD, M.D.

Professor of Physiology, University of Chicago

Governing Board: IRVINE H. PAGE, M.D. (Chairman); A. C. IVY, M.D.; COLIN M. MacLEOD, M.D.; CARL F. SCHMIDT, M.D.; EUGENE A. STEAD, M.D.; DAVID L. THOMPSON, Ph.D.

The newest volume in this important series is now ready. In the words of one reviewer these unique books are "commended to all who are interested in the recent developments in medical research and especially to those who have chosen the noble way of an investigator."

Sections and Associate Editors of Volume III are as follows: Genetics of Microorganisms (S. E. Luria); Assay of Neurohumors (J. H. Gaddum); Selected Psychomotor Measurement Methods (Walter R. Miles); Methods for Study of Peptide Structure (C. H. Li). 320 pages, illustrated. $7.00.

VOLUMES I AND II ALSO AVAILABLE

Volume I. Edited by VAN R. POTTER, M.D., Professor of Oncology, University of Wisconsin. Sections and Associate Editors are: Assay of Antibiotics (Henry Welch); Circulation: Blood Flow and Measurement (Harold D. Green); Selected Methods in Gastroenterologic Research (A. C. Ivy); Cellular Respiration (Van R. Potter). 370 pages; 83 illustrations. $8.00.

Volume II. Edited by JULIUS H. COMROE, JR., M.D., Professor of Physiology and Pharmacology, Graduate School of Medicine, University of Pennsylvania. Sections and Associate Editors are: Methods of Study of Bacterial Viruses (Mark H. Adams); Pulmonary Function Tests (Julius H. Comroe, Jr.); Assay of Hormonal Secretions (Eleanor H. Venning). 361 pages; 51 illustrations. $6.50.

THE NEW MEDICAL PHYSICS

EDITED BY GLASSER

Scientific Monthly's review of Volume I said: "A necessary text and reference for all . . . either within or on the edge of this field. Will be useful for students and teachers. The reviewers are impressed also with its usefulness to practicing physicians and experimental medical scientists."

Volume II, recently published, maintains the same high level and as a unit the two volumes offer today's complete and up-to-date coverage of medical-physical and biophysical problems. Edited by OTTO GLASSER, Ph.D.; Head, Department of Biophysics, Cleveland Clinic Foundation. Vol. I, 1792 pages, 1382 illustrations, $20.00. Vol. II, 1227 pages, 978 illustrations, $25.00. Special price when both volumes are ordered at one time, $40.00.

ORDER FORM


Please send books checked: □ C.O.D. □ Remittance enclosed.

Methods in Medical Research

□ Vol. I ........................................ $8.00
□ Vol. II ..................................... $6.50
□ Vol. III ................................... $7.00

Medical Physics

□ Vol. I ........................................ $20.00
□ Vol. II ..................................... $25.00
□ Vols. I and II ............................. $40.00

Name ...........................................
City ...........................................
Zone ......................................... State .............................

S 10-20-50
What's your problem? Is it housing a large number of laboratory animals in a limited space or finding that "special answer" to an unusual cage need? There is a Bussey cage and rack to end your search.

We make cages, racks, automatic watering systems or complete equipment for the housing and sanitary care of all laboratory animals. Bussey Products Co. offers complete cage units that assure maximum efficiency, compact sizes and minimum work for the user.

The improved "Perma weld" welded-wire construction is a result of top-notch engineering. Our modern production techniques permit price economy. The results can't be beat. Hundreds of the country's leading laboratories can tell you that.

Need help on a tough "special problem"? Our engineers will gladly assist you with any size and type of cage or rack to meet your special applications. Just write for our catalog or submit your specifications.
An exploration from the observatory

Stellar Evolution

By OTTO STRUVE

One of the world's greatest astronomers discusses the sum of centuries of speculation on the probable course of evolution in stars, and gives a full report of his own conclusions. Sufficient background is included to enable anyone with scientific training to follow the argument. Mr. Struve is Chairman of the Department of Astronomy at the University of California.

$4.00

At your bookstore, PRINCETON UNIVERSITY PRESS

HIGH VACUUM MEASUREMENT
QUICK...CONVENIENT...ACCURATE

SUCCESS in high vacuum work is dependent on accurate vacuum measurement. Stokes McLeod High Vacuum Gages provide a check on the quality of the processed product. They tell whether or not a vacuum system is tight and functioning properly, and measure the efficiency of the vacuum pump and other equipment.

Stokes McLeod Gages are standard equipment on high vacuum installations... a quick, convenient, dependable means for accurately measuring vacuum from .01 microns to 50 millimeters.

F. J. STOKES MACHINE CO.
5568 TABOR ROAD
PHILADELPHIA 20, PA.

RESEARCH BIOCHEMICALS for
Biological & Microbiological
INVESTIGATIONS

WRITE FOR
NEW CATALOGUE
#S-900
October 1950

Listing nearly 500 Important Biochemicals

NUTRITIONAL BIOCHEMICALS CORP.
CLEVELAND 5, OHIO

SCIENCE, Vol. 112
Cold Enough to Freeze... the Resistance Out of Metals

When temperatures drop low enough... say 450 degrees below zero... bouncing molecules come to a virtual standstill, eliminating resistance to the flow of electricity so that current will flow indefinitely—even after the power supply has been cut off.

The illustration shows this phenomenon being demonstrated. A circuit has been submerged in liquid helium at a temperature of 452 degrees below zero. The demonstrator... Dr. Aaron Wexler... has "pulled the plug", disconnecting the circuit. The needle on the upper scale reads zero—no current is entering the circuit.

Yet, the indicator on the recorder below shows that 7,000 amperes are flowing through a cylinder of niobium.

So we have a phenomenon... one of the dividends from pure research that is constantly under way with Westinghouse. This particular result of research may lead, for example, to new and better methods of electric power transmission, to mention only one possible application.

Such research into the behavior of matter, particularly metals, at super-cold temperatures, is typical throughout the history of Westinghouse... it demonstrates one reason for the dynamic force of American industry... it suggests why Westinghouse can live with such a strong statement as...

YOU CAN BE SURE... IF IT'S Westinghouse

October 20, 1950
Extremely Accurate Temperature Control at any Point between 38°C. and 260°C.

THE CASTLE HEAVY-DUTY HOT-AIR STERILIZER is made of lifetime stainless steel with heavy insulation. A circulating fan provides full circulation of air... eliminates “hot” and “cold” spots ... insures uniformity of 4°C.

This Super-Standard Castle Sterilizer is electrically heated ... is designed and built for constant, extra heavy work in the laboratory. Exceptional accuracy of control enables you to use this sterilizer also as a drying oven.

For complete information write: Wilmot Castle Co., 1212 University Ave., Rochester 7, N. Y.

Accurate dial type thermometer provided

CASTLE Bacteriological Apparatus

STATHAM Physiological Pressure Transducers

The Model P23 pressure transducers were specifically designed for the purpose of measuring and recording arterial and venous blood pressures. The system illustrated above demonstrates how simply measurements can be obtained with Statham transducers.

Please write our Engineering Department for more specific data.

Laboratory Pre-Tested for Microbiological Uses CASEIN HYDROLYSATES

"Vitamin Free" Casein Hydrolysate GBI
For U.S.P. and other standard assays for B-Complex vitamins, amino acids and bacterial nutrition studies.

LIQUID—acid hydrolysate (sterilized)
1 doz. 100 ml. bottles — $16.00.

POWDER—enzymic hydrolysate (lyophilized)
Each bottle of dry powder makes 100 ml. of solution. 1 doz. bottles — $17.50.

Related GBI Products
Other special microbiological media, crystalline vitamins, amino acids and miscellaneous biochemicals.

Write for Catalog No. 677

GENERAL BIOCHEMICALS, INC.
60 LABORATORY PARK
C H A G R I N F A L L S, O H I O
ENGINEERING MECHANICS. New 3rd edition
By S. Timoshenko and D. H. Young, Stanford University. Ready in November
Designed to develop in the student a strong foundation in the fundamental principles of mechanics, to acquaint him with as many general methods of attack as possible, and to illustrate the application of these methods to practical engineering situations.

MOISTURE REQUIREMENTS IN AGRICULTURE. Farm Irrigation
By Harry Burgess Roe, University of Minnesota. McGraw-Hill Publications in Agricultural Engineering. 413 pages, $5.50
Presents a detailed and complete treatise on moisture requirements in agriculture from the point of view of irrigation engineering. Material has been drawn largely from the author's experience in teaching professional students the principles and practices of soil-moisture regulation.

BOTANY. A Textbook for Colleges. New 2nd edition
This book has been revised carefully in order to record advances in the field in recent years and to eliminate shortcomings revealed by teaching of the original edition. This revised edition treats recent advances in the science in photosynthesis, respiration, fermentation and enzymes, metabolism, hormones and vitamins, antibiotics, the use of "tagged elements", hydroponics, etc.

ELASTICITY. Proceedings of Symposia in Applied Mathematics. Volume III
Editor-in-Chief, R. V. Churchill, University of Michigan. In press
Includes a selection of recent advances and developments in the mathematical theory and applications of elasticity and plasticity. The book presents contributions to the subject made by specialists in these fields during the past two or three years.

Send for copies on approval
TWO MORE TEACHING ADVANTAGES

... NO CHANGE IN PRICE!

NEW! Instantaneous focusing with CERTAIN accuracy

Save time, eliminate error! Simply insert the specimen slide in the prefocusing gage... a quick turn of the coarse adjustment brings gage and slide in contact... and the slide is placed on the stage... IN FOCUS!

NEW! Improved image quality

New 4mm and 16mm parfocal objectives with improved resolution and image quality—one with yellow knurling, one with green, so you can see at a glance that the correct objective is in position.

See THE DIFFERENCE WITH A DEMONSTRATION

See how you save valuable class time... how much more quickly and easily your students learn proper microscope technique... with the many advantage-features of the "FL" Microscope.

WRITE for a demonstration and literature to Bausch & Lomb Optical Co., 642-DD St. Paul St., Rochester 2, N. Y.

The World's Finest Instruments are made in America

Bausch & Lomb "FL" Microscope
Experiments will be conducted covering the use and calibration of instruments, the purification and separation of radioactive materials from inert and other radioactive materials, measurement and use of carbon 14, pile activations, radioautographs, and the like. Seminars will include such topics as the use of radioisotopes in animal experimentation, use of radioisotopes in human beings, principles and practice of health physics, design of radiochemical laboratories, and effect of radiation on cells.

The Special Training Division can accommodate 32 participants at each of the three courses. A registration fee of $25 is charged, and participants will bear their own living and traveling expenses. Additional information and application blanks may be obtained from Dr. Ralph T. Overman, Chairman, Special Training Division, Oak Ridge Institute of Nuclear Studies, P. O. Box 117, Oak Ridge, Tenn.

The Registry of Rare Chemicals, 35 West 33rd St., Chicago 16, Ill. lists the following wanted chemicals: cuprous acetate, zinc ammonium nitrite, molybdenum silicide, barium ferrocyanide, silver chloride, potassium hexaniobate, tetracosane, alphabromoisocaproyl bromide, hemimelillic anhydride, vinyl fluoride, 2,3-dichlorodiphenylamine, 2-methyl-5-n-butyl pyridine, 4-chloro-1,2-dimercaptobenzene, chloropentafluoroethane, methylene fluoride, norephedrine, 6,7-dichloro-9-ribityl-isoalloxazine, d-epigallocate, vulbocapnine, galactoflavin, and 1,1,1-tribromomethane.

The New York Botanical Garden—H. R. Kunhardt expedition has left for Venezuelan Guiana for studies in the Guayana Highlands. Explorations will be concentrated in the Orinoco headwaters, and studies will be made particularly of Haumacari and Yacapana, two of the sandstone plateaus. Neither has been explored botanically, and, as far as is known, Haumacari has never been scaled. Bassett Maguire, curator of the Botanical Garden, left September 23 and will later join the British Guiana Forest Department in an expedition to the easternmost end of the Pacaraima Range, terminating with the Kaieteur Plateau. Mrs. William Phelps, Jr., of Caracas, has been appointed a New York Botanical Garden collaborator for Venezuelan botany, in recognition of her assistance in studies of the Guayana Highlands.

Nuclear charts showing approximately 325 new kinds of atoms discovered or created during the past two years by American scientists are available from Westinghouse Electric Corporation's School Service Department. The charts, a revision of those published in 1948, are printed in color on heavy stock, and consecutively portray the basic particles in nuclear physics; how atoms are put together; natural and man-made nuclear reactions; methods of detecting and measuring atomic energy; fields of application; and the major engineering and scientific contributions to nuclear science. Further information may be obtained from Louis M. Stark, School Service Department, Westinghouse Electric Corporation, East Pittsburgh, Pa.

Organized science at the worldwide level reaches its apex in the International Council of Scientific Unions, a federation of 10 separate international unions, and of the principal academic or research councils of 42 countries. ICSU, an independent and private organization, has a working agreement with Union whereby the latter makes annual appropriations of some $200,000, thus providing for a permanent staff and for grants to various union projects. President of ICSU is A. Von Muralt, and the general secretary is F. J. M. Stratton, of Gonville and Caius College in Cambridge, England. The union has recently issued a descriptive bulletin outlining the work of the member unions. Copies may be obtained from Professor Stratton.

The international unions comprising ICSU represent astronomy, biology, chemistry, crystallography, geodesy and geophysics, geography, history of science, mechanics, physics, and radio. The Executive Committee, of some 20 members, meets annually, and the General Assembly convenes once every three years.

Beginning with this issue, SCIENCE will adopt the system of abbreviation used in the List of Periodicals Abstracted by Chemical Abstracts. Citations of literature will not necessarily be arranged in alphabetical order, but may be listed, by number, in the order of their mention. In the subsequent issues of the present volume, there will be some discrepancies in style because of the number of articles already in type.

New General Electric Research Laboratory at "The Knolls," near Schenectady, N. Y., was dedicated on October 9 in the presence of members of the National Academy of Sciences, which for the first time in its 58-year history, held its sessions in an industrial laboratory. (Abstracts of all the papers presented at this meeting are being printed by SCIENCE in its October 13 and October 20 issues.)