BACTO-LATEX
0.81 MICRON

Bacto-Latex 0.81 micron is characterized by uniform particle size, batch reproducibility and biological inertness.

An inert carrier for use in clinical and investigational tests including

RHEUMATOID ARTHRITIS
INFLAMMATORY DISEASES
TRICHINOSIS
LEPTOSPIROSIS

Recommended for Rheumatoid Arthritis Tests of Singer and Plotz and modifications.

Literature available on request

DIFCO LABORATORIES
DETROIT 1 MICHIGAN USA
LABORATORY PRODUCTS

BIOLOGICS  CULTURE MEDIA  REAGENTS

LAND AND WATER USE
Special Reference to Mountain & Plains Regions
Wynne Thorne, Editor
AAAS Symposium Volume No. 73. May 1963
6" by 9", 364 pages, references, index, $8.00
(AAAS members' cash order price $7.00)
Arranged by the AAAS Section on Agriculture

This symposium volume reports papers by leaders in research, and policy discussions relating to the nation's land and water resources, presented at the AAAS meeting in Denver, Colorado, in December 1961.

The volume centers on problems associated with the increasing competitive demands for use of publicly owned lands. The historic uses by livestock and timber processors are being challenged by groups concerned with recreation, wildlife, and water production. Adjustments in public land use in relation to uses of adjacent or intermingled privately owned lands need further consideration if the total benefits from these resources are to be maximized. These and other problems of land and water are explored by recognized leaders in the field.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
1515 Massachusetts Avenue NW, Washington, D.C. 20005

SHERER-PLANT GROWTH ROOMS
for research
for teaching

Only Sherer matches all your needs in plant growth rooms. Three different sized units, each one providing complete programming of temperature and lights, enable you to meet your experimentation requirements and provide more active instruction—within your budget limits.

SHERER-GILLETT COMPANY • Marshall 3, Michigan 49068
Quality Products for over 112 Years
New Products

Peristaltic pump, model 4912 A, LKB Instruments, Inc., is specially designed for analytical techniques (such as chromatography and electrophoresis) which require a steady and prolonged flow of liquid. It is self-priming, produces minimal pulsation, has no dead volume, and has a closed system for sterility; it pumps a wide range of materials. A wheel with six rollers squeezes two short lengths of tubing, causing a steady flow of liquid through two separate systems. High flow-constancy, with fluctuations < 0.1 percent in 24 hours, is claimed. A synchronous motor runs at 24 rev/min on 60 cy/sec power (20 rev/min on 50 cy/sec); the exit shaft speed is continuously variable from zero to 6 rev/min. Tubing diameters (inside) from 1/16 to 5/32 inch (1.6 to 4.0 mm) can be used, producing flow rates from 0 to 96 ml/hr and from 0 to 468 ml/hr (0 to 80, 0 to 390 ml/hr, 50 cy/sec). Dimensions: 12 by 9.25 by 5.5 inches high (31 by 23 by 13.5 cm). Units available for 115 to 220 volts; 50 or 60 cy/sec. Supplied with 5-feet (1.5-m) Tygon tubing with 1/16-inch bore, and connectors.—D.J.P. (LKB Instruments, Inc., 4840 Rugby Ave., Washington, D.C.)

Circle 1 on Readers' Service card

Hydraulic press for pressing, pelletizing, and compacting KBr for infrared analysis. Dimensions: 20 by 8.7 by 13.7 inches deep (51 by 22 by 35 cm). Weight: 230 lb (104 kg). Delivers total pressure of 67,200 lb over a 1-inch stroke. The open "C" shape around the work area provides 250 deg of access; maximum vertical ac-

The material in this section is prepared by Denis J. Prager (D.J.P.), Laboratory of Technical Development, National Heart Institute, Bethesda 14, Md. (medical electronics and biomedical laboratory equipment).

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Neither Science nor the writer assumes responsibility for the accuracy of the information. A Readers' Service card for use in mailing inquiries concerning the items listed is included on page 1169. Circle the department number of the item in which you are interested on this card.

Circle 2 on Readers' Service card

Table-top hyperbaric chamber, for investigating the effect of high pressure on rats, provides an interior work space 6 inches (15.2 cm) in diameter by 16 inches (41 cm) long; of steel and weighing 54 lb (24.5 kg), it is rated for pressures ≤ 150 lb/in.² (10.5 atm) gage. Although primarily for use with hyperbaric oxygen, the small chamber permits economical studies with rare gases (xenon, krypton). A special regulator, with a gage indicating pounds per square inch, attaches to any standard oxygen cylinder. The 6-inch quick-opening door seals the chamber in 2 seconds without use of wrenches. Up to 15 leads from various transducers can be connected to terminals inside the chamber; leads pass through the chamber wall to an external terminal board by way of low-resistance feed-throughs so that variables (EKG, EEG, temperature, blood pressure, respiration rate) can be monitored. Two ½-inch (3.2-mm) internal diameter copper tubes, passing through pressure fittings, permit collection of gas and blood samples despite pressure. One may look into the chamber through a 5-inch tempered-glass observation port in the top. De-pressurization and ventilation by means of a 4-inch pressure gage and a meter indicating flow in liters per minute.—D.J.P. (Hyperbaric Oxygen Therapy Div., Bethlehem Corporation, 225 W. Second St., Bethlehem, Pa.)

Circle 3 on Readers' Service card

Ultraviolet (UV) interference-filter set, Optics Technology Set No. 8, includes seven Monopass interference filters spaced at every 20 μm from 230 to 350 μm, plus special UV-blocking and UV-transmitting, visible-blocking, glass filters. Each UV Monopass filter transmits only a narrow band of wavelengths, rejecting all others from x-ray to x-band; this permits highly sensitive spectral measurements. Peak wavelengths for the filters are nominally 230, 250, 270, 290, 310, 330, and 350 μm ± 10 μm. Spacing between adjacent filters is 20 ± 5 μm. Passband characteristics include half-widths from 6 to 10 percent of peak wavelengths; peak transmissions of 10 to 22 percent. Sideband transmission is less than 0.1 percent on the short-wavelength side and less than 0.4 percent on the long-wavelength side. A long-wave-pass glass filter transmits the visible spectrum and blocks the UV; valuable in fluorescence studies for blocking UV excitation while transmitting visible fluorescence to the detector. Cut-on wavelength is 400 μm; cut-on slope, 7 percent, nominal. Second glass filter of black glass transmits UV and blocks the visible spectrum within 0.001 percent. It may be used separately as a UV bandpass filter or in series with a Monopass interference filter to optimize visible-spectrum rejection. An accurate transmission curve, which includes a 10:1 scale expansion for both sidesbands, is supplied for each filter. Curves laminated in heavy, durable plastic and bound in a volume. Filters (1 by 1 by 0.080 inch) packed in a leatherette box. List: $495.—D.J.P. (Optics Technology, Inc., Palo Alto, Calif.)

Circle 4 on Readers' Service card

Short path-length, flow-through cuvette permits direct reading of opti-
cally dense samples without dilution. An accessory for the Bausch & Lomb Spectronic 20 colorimeter, this cuvette provides path lengths of 0.1, 0.2, 0.5, and 1.0 mm by means of precision stainless steel shims (accurate to 0.01 mm) placed between the windows of the cuvette. Sample is sucked into the split in the shim by vacuum. An average of four samples per minute can be run, with photometric repeatability of 0.2 percent (95-percent confidence limits). Cuvette alone is interchangeable with the standard flow-through cuvette. List: $125.—D.J.P. (Bausch & Lomb Inc., Rochester 2, N.Y.)

Circle 5 on Readers' Service card
What does Maryann mean to you?

Maryann is your representative at our place. As such, she channels your orders, your requests for information, your problems—and even your complaints, if such there be—to the right people here. And she gets action.

You may wish to remember all this the next time you need biochemicals of the highest quality at competitive (or better) prices. Specifically, remember it if you’re a user of nucleotides, nucleosides and bases, antimitabolites, amino acids, sugars or sugar phosphates, sulfur or sulfhydryl compounds, or other biochemical compounds. Many, many of our products are also available in tagged form. (Do you have our catalog?)

In addition to this service and the wide selection of biochemicals, we’re proud of the quality of our compounds and the steps we take to assure you of this quality. With each and every shipment you get a detailed Product Analysis Report covering the specific material you receive. Also (when appropriate) a radiochromatogram with 0.5% sensitivity. This precise evidence of quality enables you to use all your time doing research. You can leave the quality control to us.

So, we conclude: when you want one of our compounds—or information about them—remember that Maryann means “service” to you. Please feel free to call her collect at 914-359-2700.

Schwarz BioResearch, Inc.  
Orangeburg, New York 10962
MECHANISMS OF HARD TISSUE DESTRUCTION

Editor: Reidar F. Sognnaes, Dean, School of Dentistry, Center for the Health Sciences, University of California at Los Angeles

AAAS Symposium Volume No. 75, 1963. 776 pages, 430 illus., one color plate, references, indexes. $13. AAAS members' cash orders, $11.

Contents

C. M. Yonge: Rock-Boring Organisms
T. F. Goreau and W. D. Hartman: Boring Sponges as Controlling Factors in the Formation and Maintenance of Coral Reefs
M. R. Carriker, D. B. Scott and G. N. Martin, Jr.: De-mineralization Mechanism of Boring Gastropods
R. F. Sognnaes: Dental Hard Tissue Destruction with Special Reference to Idiopathic Erosions
C. R. Barnicoat: Attrition of the Hypsodont Tooth
A. L Darling: Microstructural Changes in Early Dental Caries
E. Johansen: Ultrastructural and Chemical Observations on Dental Caries
J. A. Gray and M. D. Francis: Physical Chemistry of Enamel Dissolution
P. H. Keyes and H. V. Jordan: Factors Influencing the Initiation, Transmission, and Inhibition of Dental Caries
W. V. Mayer and S. Bernick: Effect of Hibernation on Tooth Structure and Dental Caries
I. Reichborn-Kjennerud: Dento-Alveolar Resorption in Periodontal Disorders
S. N. Bhaskar: Bone Remodeling during Dental Eruption and Shedding
R. J. Goss: The Deciduous Nature of Deer Antlers
F. C. McLean and R. E. Rowland: Internal Remodeling of Compact Bone
M. R. Urist, N. S. MacDonald, M. J. Moss and W. A. Skoog: Rarefying Disease of the Skeleton: Observations Dealing with Aged and Dead Bone in Patients with Osteoporosis
J. Jowsey: Microradiography of Bone Resorption
R. W. Young: Histophysical Studies on Bone Cells and Bone Resorption
N. M. Hancock and B. Boothroyd: Structure-Function Relationships in the Osteoclast
J. T. Irving and C. S. Handelman: Bone Destruction by Multinucleated Giant Cells
G. Nichols, Jr.: In vitro Studies of Bone Resorptive Mechanisms
B. K. Forcher and D. V. Cohn: In vitro Carbohydrate Metabolism of Bone: Effect of Treatment of Intact Animal with Parathyroid Extract
C. M. Dowse, M. W. Newman, K. Lane and W. F. Neuman: Metabolic Action of Parathyroid Hormone on Rat Calvaria
P. Goldhaber: Some Chemical Factors Influencing Bone Resorption in Tissue Culture
G. N. Jenkins and C. Dawes: The Possible Role of Chelation in Decalcification of Biological Systems
C. M. Lapierre and J. Gross: Animal Collagenase and Collagen Metabolism

American Association for the Advancement of Science
1515 Massachusetts Avenue, NW
Washington, D.C. 20005
(a) D.V.M., toxicology, pharmacology background; teaching, research experience; publications; desires senior industrial/academic opportunity. (b) Ph.D., Microbiology (biochemistry minor), clinical, research experience; prefers same/teaching. For information please write: Science Service, The Medical Bureau, Inc., 900 North Michigan Avenue, Chicago, Illinois 60611.

Geology Instructor. Desires permanent opportunity to teach geology and related courses. M.S. 2 years of college teaching. Box 80, SCIENCE.

Pharmacologist (Ph.D.) with administrative and laboratory experience seeks administrative position. Box 82, SCIENCE. 3/12

Physiologist, Ph.D. Academic experience, publications. Endocrinology, GI, biological transport. Desires professional school or research appointment, September 1965. Box 83, SCIENCE.

Physiologist, 41, Ph.D. (zoolgy). Teaching and research background: mammalian, endocrine, cellular. Desires position in zoology department, September 1965. Box 84, SCIENCE.

Translator. B.S.Chem. German-English. Prompt service. Box 74, SCIENCE. 3/5

Virologist, M.S. Experience in tissue culture, immunology. Prefers research position, Midwest. Box 79, SCIENCE. 3/12

Virologist, Ph.D., desires teaching and/or research position. Research, teaching, and industrial experience. Publications. Box 85, SCIENCE.

POSITIONS OPEN

(a) Microbiology Ph.D., Senior Virologist with pharmaceutical firm; tissue culture experience; desires administrative commercial appointment. (b) Bacteriology Ph.D., Clinical pathology professor at medical school; prefers academic or research opportunity. Write: Woodward Medical Personnel Bureau, 185 North Wabash Avenue, Chicago 60601.

(b) M.S./Ph.D. Clinical Chemist: head section, research, teaching; academic affiliation available: East; $13,000. (b) Ph.D. Microbiologist/Virologist: immunology training; university appointment possible; New England research institute. (c) Ph.D. Pharmacologist, drug metabolism studies; Central drug firm. (d) Bacteriology Technician, experienced; Midwestern company. Faculty Appointment: (e) Ph.D. Histologist, electron microscopy training; Central university. (f) Biology Instructor: botany, ecology, zoology lab; small midwestern college. (g) Invertebrate Zoologist; ecology/physiology training; southwestern college. (h) Ph.D. Medical Mycologist, teaching, research; southeastern university. Please write Science Service, The Medical Bureau Inc., 900 North Michigan Avenue, Chicago, Illinois 60611.

RESEARCH PHARMACOLOGIST

Hazelton Laboratories, a leading independent company specializing in the life sciences, needs a pharmacologist (B.S. or M.S.), with a minimum of 5 years' experience, preferably in the pharmaceutical industry. Please send résumé to: Hall A. Acuff, Assistant Personnel Manager, Hazelton Laboratories, Inc., P.O. Box 30, Falls Church, Virginia (Suburban Washington, D.C.) An Equal Opportunity Employer.

RESEARCH OPPORTUNITY

Immediate vacancy with medical college located in northwestern Philadelphia for chemist or biochemist to assist with research project in lipid metabolism. Position requires M.S. or B.S. degree with previous research experience. Salary dependent on background and qualifications. Excellent benefit program. Write: Box 58, SCIENCE.
ACADEMIC BIOCHEMIST—young, training and research interests, publications, in field of enzymes or nucleic acid metabolism, for budget line position on staff in medical school—graduate school department. Teaching load moderate; research facilities good. Twelve-month appointment. Salary $11,000-$14,000, depending on experience. Write Chairmen, Biochemistry, L AU Medical School, New Orleans, Louisiana 70112.

BACTERIOLOGIST-Ph.D.
Chemotherapy

New position available in R & D division, major system drug mfr, for Ph.D. level bacteriologist, preferably with several years teaching and research experience. Direct & supervise group engaged in the ev. of new antibiotics and new antimicrobial agents, toxicology and metabolism. Additional experience in physiology is desirable. Inclusion kindly submit vitae & salary requirements to Box 86, SCIENCE.

BIOCHEMIST

Challenging position for Ph.D. biochemist, pharmacologist, or physiologist on staff of young, rapidly growing institute. Primary responsibilities would be to develop research programs in the biomedical sciences. Position allows considerable flexibility in development of research directions. Send resume in confidence, with salary requirements and availability to:

Professional Personnel Manager
North Star Research and Development Institute
3100—38th Avenue South
Minneapolis, Minnesota 55446
An Equal Opportunity Employer

CHIEF, CLINICAL MICROBIOLOGIST
Philadelphia General Hospital

SALARY OPEN

Requires a doctorate in microbiology and five years postdoctoral experience in medical microbiology, including three years in a supervisory capacity.

CHIEF, CLINICAL CHEMIST
Philadelphia General Hospital

SALARY $13,156-$14,374

Requires a doctorate in biochemistry or physiology of the microbiology field, and five years postdoctoral experience in clinical chemistry including clinical chemical analysis, interpretation and research, including three years supervision in such activities.

TOXICOLOGIST
Philadelphia's Medical Examiner's Office

SALARY $9,672-$11,526

Requires a doctorate in the physical, medical, and biological sciences including courses or experience in toxicology or pharmacology and three years experience in chemical and biochemical analysis utilizing advanced techniques, performance of tests and interpretation of results. All applicants must be United States citizens. Excellent fringe benefits. Send detailed resume to: Joseph Goldberger, Director of Recruiting, 506 Municipal Services Building, Philadelphia, Pa. 19107.

RESEARCH ORGANIC CHEMIST

Unusual opportunity for an imaginative scientist with experience in the application of analytical instrumentation to biochemical investigations. Offered by a rapidly growing, medically oriented, commercial organization in Florida. Salary commensurate with qualifications.

BOX 89, SCIENCE

The Market Place

BOOKS • SERVICES • SUPPLIES • EQUIPMENT

PROFESSIONAL SERVICES

INSTITUTE FOR COMPUTER ANALYSES OF SYSTEMS AND PROCESSES, INC.
188 NEEDHAM ST., NEWTON, MASS. 02164
Telephone No. 617 969-9190

Analog computer analysis of systems and processes in biology, medicine, chemistry, engineering, economics, industry.

Mathematical formulation, quantitative synthesis of functional systems and network analysis.

SERVICES
SUB-CONTRACTS
LONG AND SHORT-TERM RESEARCH CONTRACTS

*Scientists are invited to send proposals for cooperative research in applied and basic sciences for application of contracts.

SUPPLIES AND EQUIPMENT

PHOTO-ELECTRIC EYE MOVEMENT MONITOR

Range: ± 15; Resolution: 15 arc sec
Sensitivity: 20mv/°; Bandwidth: Acps
Special Modifications Available

Biosystems, Inc.
545 Technology Sq., Cambridge, Mass.

FOR THOSE ENGAGED IN RESEARCH
HISTOLOGY-SERVICE, INC.
PREPARES ANIMAL TISSUES FOR PATHOLOGIC STUDY
Special Stains and Techniques Available, Rapid Service, etc.
Transportation Arranged
For Quotations
4801 N. Broadway, Pa. 19141
215 D A N G E R 4 5 8 0 0

SPRAGUE-DAWLEY, INC.
Pioneers in the development of the
STANDARD LABORATORY RABIT.
P.O. Box 4220
Madison, Wisconsin
CE 3-5318

OXYGEN DETERMINATION
BY ACTIVATION ANALYSIS

General Atomic offers faster service and lower prices for oxygen determinations. Results can be telephoned within 2 working days of receipt of samples and then immediately confirmed via air mail. Prices are now as low as $7 per sample in quantity and $20 per sample in small lots.

Activation Analysis is rapid, nondestructive, accurate (±2% of the value at higher oxygen levels), and sensitive (down to 1 ppm in large samples). It is also available for many other elemental determinations in a wide range of materials.

FOR DETAILED INFORMATION, AND A FREE BROCHURE, contact: Manager, Activation Analysis Service, Dept. AA-27, General Atomic, P.O. Box 608, San Diego, Calif. 92112. Phone (714) 453-1000, Ext. 618. Visit us at Booth 102, Pittsburgh Conference.

GENERAL DYNAMICS
GENERAL ATOMIC DIVISION

1178

SCIENCE, VOL. 147
Nuclear Counting Flow Gases cost less when supplied by Matheson. And you can be sure of their accuracy because Matheson is the world's most experienced supplier of gas mixtures. Prompt in-stock shipments from 5 plants.*

*Common mixtures are stocked, any unusual requirements promptly custom-mixed. In a complete range of cylinder sizes, including lecture bottles. These gases include:
- 98.7% Helium 1.3% Butane—recommended for Nuclear Chicago instruments.
- 99.05% Helium 0.95% Isobutane—recommended for Tracerlab instruments.
- P-10 gas—90% Argon, 10% Methane
- Methane, C.P.
- 96% Helium, 4% Isobutane
- 8% Helium, 46% Nitrogen, 46% Helium

**MATHESON** P.O. Box 85, East Rutherford, New Jersey; Morrow, Ga.
Joliet, Ill; La Porte, Texas; Newark, California. Matheson of Canada, Ltd. Whitby, Ont.

Switch to Matheson for Nuclear Counter Flow Gases.
WEBER OVENS have enjoyed a worldwide reputation for their rugged construction and consistent dependability over many years of continuous service. New Model 25, with range 60 to 260°C, has a chamber 14 inches wide × 10 inches deep × 12 inches high (approx. 1 cu. ft.). Control housing is located on top of the Oven, with temperature setting scale, two-heat switch and pilot lamp mounted on front.

Stainless Steel Construction. Exterior of Stainless steel throughout; chamber walls also of Stainless steel.

Temperature Scale for Direct Setting. Pointer scale at top of Oven can be set directly at the desired temperature.

Thermoregulator. Of unique dependability, with a sensitivity of ±1°C at 200°C.

Uniformity ±1.5°C at 100°C, i.e. maximum variation throughout working space relative to temperature at location of thermometer bulb.

Safety. Door latches release automatically to relieve accidental overpressure.

Insulation. Of glass wool.

Heaters. Molded refractory units containing nickel-chromium heating coils.

Shelves. With upturned edges to keep load at a distance from the walls. For convenience in loading, they can be partially withdrawn without tipping.

"The heart of the Weber Oven is its sturdy, sensitive, bimetallic thermoregulator . . ."

The bimetallic thermoregulator is of trouble-free construction, and has proved to be one of the most reliable means of temperature control. For more than 40 years, thermoregulators of this type have been used satisfactorily in Weber OVENS shipped all over the world. Electrical contacts are outside the Oven; a mechanical device overcomes objectionable strain, and a condenser of adequate size minimizes sparking.

7802-G. OVEN, Thomas-Weber, Model 25. For operation from 60° to 260°C. Chamber 14 inches wide × 10 inches deep × 12 inches high. Overall dimensions 16-½ inches wide × 18-½ inches deep × 26-½ inches high. Two-heat switch selects 300-watt or 800-watt heater inputs. With 300°C Thermometer in 1° divisions. For 115 volts, a.c. . . . . . 350.00

7802-H. Ditto, for 230 volts, a.c. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . ...