### **New Products**

Operational amplifier is a solid-state instrument that will drive-without additional equipment-galvanometers, process-control elements, servo-control equipment, and electro-hydraulic systems. Output of the model 3821 amplifier is  $\pm 100$  volts at 20 ma and  $\pm 50$ volts at 50 ma. Completely interchangeable, the amplifier may be plugged into existing analog computers of the same manufacturer to obtain a 30-fold increase in reliability. The amplifier is normally shipped in open-loop form. It can be connected to integrate, sum, invert, amplify, or differentiate. Drift at constant temperature is stated to be 100  $\mu$ v/8 hr; between  $-10^{\circ}$  and  $+55^{\circ}$ C, less than 1.5 my; between  $-10^{\circ}$  and -55°C, less than 5 mv. Noise, referred to input, is 2 mv (r.m.s.) between 0 and 300 kcy/sec.—J.s. (Donner Scientific Division, Systron-Donner Corp., Dept. S160, Concord, Calif.)

An x-y plotter-recorder (series 1110 Variplotter) has microvolt-per-inch sensitivity, solid-state circuits, and dual mode hydraulic damping. The instrument produces an inked plot of two input voltages on either 11- by 17-inch or 81/2- by 11-inch graph paper. A controlled-flow ink system with a disposable ink cartridge assures flawless traces even at top writing speeds. The recorder will operate in any position (0 through 360 deg.) and is suitable for table-top use or rack mounting. A back-lighted plotting surface can be furnished. Two types of hydraulic damping are included, so the operator can select either viscouscoupled inertia damping for the most accurate, high-speed plotting, or velocity damping for point plotting or extra smooth, lower speed line plotting. Static accuracy is 0.075 percent of full scale; dynamic accuracy is 0.1 percent of full scale at plotting speeds of 10 in./sec; repeatability is better than 0.05 percent for successive plots. A variety of plug-in input modules including general purpose, time base, high sensitivity, and computer types are available to adapt the plotter to particular applications.—R.L.B. (Electronic Associates, Inc., Dept. S179, Long Branch, N.J.)

A multiplate filter holder has been developed to provide precision filtration in applications where large volumes of fluids are processed. This unit has approximately 4 ft<sup>2</sup> of filtration area (576 in.2) and will deliver water free of all particles larger than 0.8  $\mu$  at rates up to 60 gal/min (with type AA Millipore filter disks with a pore size of  $0.8 \pm 0.05 \mu$ ). Any of four types of filters may be used ranging in pore size from 0.22  $\mu$  (type GS) to 1.2  $\mu$  (type RA). Flow rates are directed proportional to differential pressure and are an inverse function of viscosity. Prior filtration or similar treatment is usually indicated before Millipore filtration to provide longer effective operating life. -R.L.B. (Millipore Filter Corp., Dept. S182, Bedford, Mass.)

Multi-channel temperature monitoring system indicates the presence of dangerously high temperature giving both a visual and an audible alarm in the event of trouble. Locking screwdriver adjustments are provided on each unit to set the temperatures of the over-heat lights and remote alarm for operation from 50° to 600°F for each of 148 channels. Resistance temperature detectors are used. Accuracy is said to be better than ±2 percent above 200°F and ±4 percent below 200°F.-J.s. (Packard & Burns, Inc., Dept. S169, 103 Fourth St., Waltham 54, Mass.)

Voltage and current reference features regulation said to be 0.0001 percent and stability  $\pm 0.001$  percent. The instrument features a five-decade voltage and current selector and an electronic chopper-stabilized amplifier. Voltage reference is a temperature-controlled and stabilized Zener diode. Complete short-circuit protection with automatic voltage and current restoration is provided. Voltage and current may be remotely controlled. The unit is completely solid state. In constant voltage mode, output is 0 to 100 volts at 200 ma, with 1-mv resolution and absolute accuracy said to be 10 mv at full scale. In constant current mode, output is 0 to 100 ma, with 1  $\mu$ a resolution, and absolute accuracy of 10  $\mu a$  at full scale. -J.s. (Princeton Applied Research Corp., Dept. S206, P.O. Box 565, Princeton, N.J.)

Microdosimeter reader accurately measures x-ray, gamma, or high-energy electron radiation in less than 30 seconds. The compact design and simplified operation of the instrument promise widespread application not only in the field of medicine, but in radiology research conducted by other laboratories. The range of the unit is 10 to 10,000 rods, with an accuracy of at least  $\pm 4$ percent. The reader records the changes in fluorescence which take place in the 1- by 6-mm microdosimeter rods as the result of high-energy radiation exposure. Within as little as 15 seconds, the technician can insert the cylindrical rod of silver-activated glass, set the controls, take the measurement, and unload the instrument. The reader is part of an integrated system that is designed to hold and measure the microdosimeter rods without chipping them.

Because of the small size of the rod. implants can be made in normally inaccessible areas. For example, these rods have been inserted into a diseased organ of the human body to measure a specifically irradiated area, without discomfort to the patient. This system can measure a wide range of highenergy radiation and consequently is suitable for many types of "hot lab" work. Single as well as cumulative dose readings can be taken over extended periods of time. This is useful in personnel safety or casualty monitoring, since the rods have a much higher dose range than the gamma-ray film now used. Recently, the rods have been enclosed in several spacecraft to provide radiation data.-R.L.B. (Bausch and Lomb, Dept. S180, Rochester 2, N.Y.)

The material in this section is prepared by

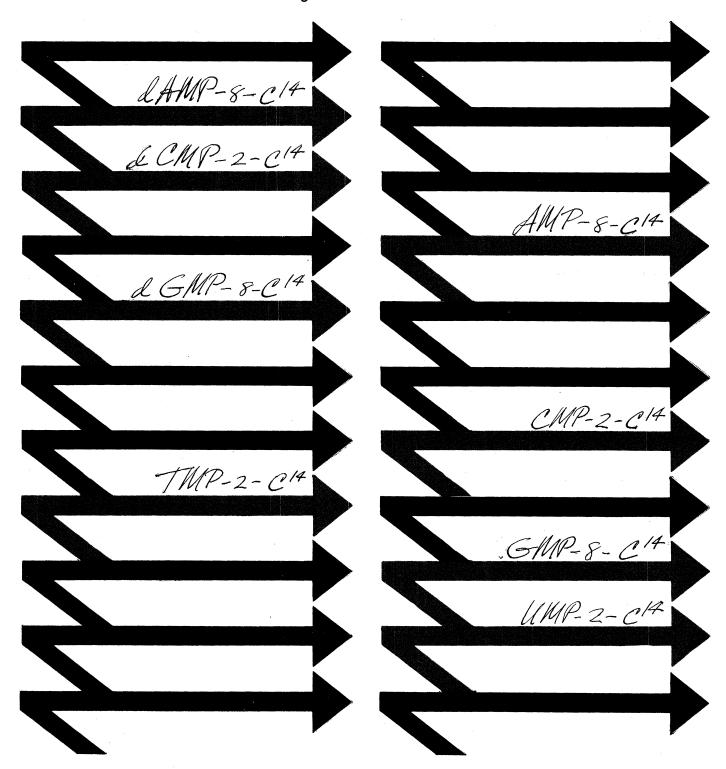
The material in this section is prepared by the following contributing writers:
Robert L. Bowman (R.L.B.), Laboratory of Technical Development, National Heart Institute, Bethesda 14, Md. (medical electronics and

biomedical laboratory equipment).

Joshua Stern (J.S.), Basic Instrumentation Section, National Bureau of Standards, Washington 25, D.C. (physics, computing, electronics, and nuclear equipment).

The information reported is obtained from manufacturers and other sources considered reliable. Neither Science nor any of the writers assumes responsibility for the accuracy of the information

Address inquiries to the manufacturer, mentioning Science and the department number.

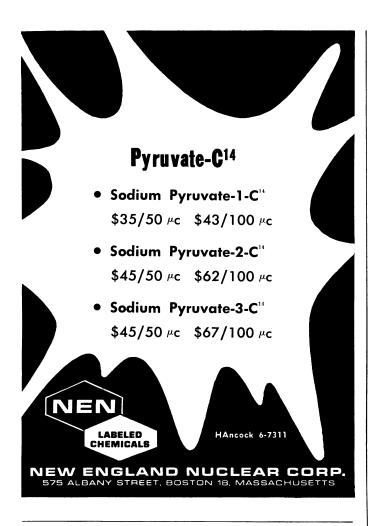


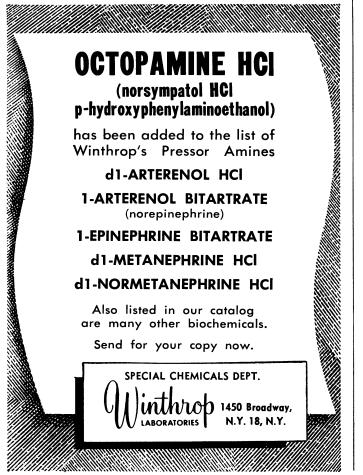
# new specifically labeled 5'-nucleotides-exclusive from Schwarz

Available for the first time, the four major 5'-ribo- and deoxyribonucleotides specifically labeled with  $C^{14}$ . Specific activity: 6-10  $\mu$ c/mg for deoxyribonucleotides; 20-30  $\mu$ c/mg for ribonucleotides. Packed in 10 and 25  $\mu$ c vials in 50% aqueous/ethanol solutions of the ammonium salts. We expect to have some  $C^{14}$ -labeled di-and triphosphates available at any moment—possibly by the time you read this. Write for further information.



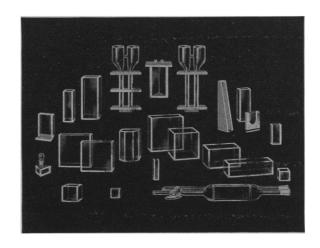
**SCHWARZ BIORESEARCH, INC.** • Mountain View Avenue, Orangeburg, New York BIOCHEMICALS • RADIOCHEMICALS • PHARMACEUTICALS for research, for medicine, for industry







GLASS ABSORPTION CELLS made kleft



Klett-Summerson Photoelectric Colorimeters— Colorimeters— Nephelometers— Fluorimeters— Bio-Colorimeters— Comparators— Glass Standards—Klett Reagents.

Klett Manufacturing Co. 179 East 87 Street, New York, New York

# PERSONNEL PLACEMENT-

CLASSIFIED: Positions Wanted. 25¢ per word, minimum charge S4. Use of Box Number counts as 10 additional words. Payment in advance is required.

COPY for ads must reach SCIENCE 2 weeks before issue date (Friday of every week).

before issue date (Friday of every week).

DISPLAY: Positions Open. Rates listed below—no charge for Box Number. Rates net. No agency commission allowed for ads under 4 inches. No cash discount. Minimum ad: 1 inch. Ads over 1 inch will be billed to the nearest quarter inch. Frequency rate will apply to only repeat of same ad. No copy changes. Payment in advance is required except where satisfactory credit has been established. Send copy for display advertising to SCIENCE, Room 1740, 11 West 42 St., New York 36.

\$50.00 per inch 48.00 per inch Single insertion 4 times in 1 year

For PROOFS on display ads, copy must reach SCIENCE 4 weeks before date of issue (Friday of every week).

Replies to blind ads should be addressed as follows:

Box (give number) SCIENCE 1515 Massachusetts Ave., NW Washington 5, D.C.

### POSITIONS WANTED

Botanist, Ph.D. 20 years' experience botany, biology, zoology. Desires relocation with opportunity for teaching and/or administration. Box 114, SCIENCE.

Director Atherosclerosis Research. Large teaching and experimental background in cardiovascular physiology, arterial metabolism, and atherosclerosis. Box 111, SCIENCE.

6/1

Graduate Student desires acceptance as a medical student or an assistantship in physiology, histology, or embryology. A.B., Rutgers University with a strong foundation in the biological sciences. Box 115, SCIENCE.

Teacher in college or university; appointment September 1962, in entomology, biology, botany, plant pathology, or horticulture; B.S. agriculture, Ph.D. entomology, M.A. library science; experienced in college teaching, college and industrial libraries; could guide students concerning subject-literature problems; \$9000 minimum annually. Box 110, SCIENCE.

(a) Zoologist/Biologist, M.S. 90 hours toward Ph.D., interested and experienced in educational television, newer forms of biological education. (b) Ph.D. Biochemist, experienced, prefers clinical/teaching. (Please write for information regarding these and other scientists, senior and junior, in all fields; nationwide and very active service.) Science Division, The Medical Bureau, Inc., Burneice Larson, Chairman, 900 N. Michigan Avenue, Chicago 11, Illinois.

### POSITIONS OPEN

### PHYSICAL BIOCHEMIST

An opening exists for a recent or prospective Ph.D. to collaborate in physico-chemical studies of heme proteins. Availability no later than July is required. Excellent with appointment renewable for salary several years.

Write: Box 117, SCIENCE

### RESEARCH PHARMACIST

Opening for qualified candidate to perform research and development work on a variety of dosage forms. Ph.D. with some industrial experience desirable, but creativity and sound background in formulation and experimental design are more important. Excellent employee benefits. Adjacent to unsurpassed cultural and academic centers and recreation areas. Please send résumé to Dr. James E. McDavid, Director of Pharmaceutical Research

CUTTER LABORATORIES
Berkeley, California

### POSITIONS OPEN

An opening exists in the Med. Res. Dept. for a

### Biochemist, Ph.D. (or Physiologist, Ph.D. or M.D.)

with post-doctoral training to conduct original research in the field of lipid or carbohydrate metabolism.

Include resume of training and experience. All replies confidential and acknowledged.

Submit handwritten application to Personnel Department, F. Hoffmann-La Roche & Co. Ltd., Basle (Switzerland)

#### **BIOCHEMIST-PHYSIOLOGIST**

An expanding midwestern pharmaceutical company has opportunity for Ph.D. biochemist-physiologist to conduct fundamental research related to atherosclerosis and/or obesity. Post-doctoral experience preferred. An equal-opportunity employer. Please send complete resume to

**Technical Employment Coordinator** The Upjohn Company Kalamazoo, Michigan

#### DIRECTOR OF RESEARCH San Diego Biological Research Institute

Applications are invited for above position in the San Diego Zoological Gardens. Salary: In \$10,000-\$20,000 per year range, depending upon experience. Desired qualifications: a) Ph.D. degree or its equivalent; b) training in some phase of animal biology such as physiology, biochemistry, nutrition, pathology, behavior, etc.; c) active in research; d) experience supervising the work of others; e) ability to speak at scientific and public relations meetings; f) willingness to work closely with researchers, technicians, animal keepers, and curators at the Zoological Gardens as well as with scientists at other research organizations in the San Diego area.

Correspondence concerning the position

Correspondence concerning the position should be addressed to: Dr. Charles R. Schroeder, Director, San Diego Zoological Gardens, P.O. Box #551, San Diego 12, California.

### MEMORIAL UNIVERSITY OF NEWFOUNDLAND St. John's, Newfoundland, Canada

Because of expanded facilities two additional positions at the Assistant Professor rank and with specialization in Marine Biology have been created in the Department of Biology, Memorial University of Newfoundland. (One position will have emphasis on marine invertebrates, the other on marine botany.)

Duties beginning September, 1962 to include teaching and research.

Applications accompanied by complete curriculum vitae and the names of three referees should be addressed to the Head, Department of Biology, Memorial University of Newfoundland.

## OPPORTUNITIES IN LIFE SCIENCES WITH NASA

Studies in the expanding field of bio-space research are currently being pursued at Ames Research Center. Vacancies exist in the fields of Photosynthesis, Plant Biology and Pathology, Bacteriology and Virology, Electronmicroscopy (especially of nervous system), Radiation Biology and Physics, General Physiology, General Pathology, Neuropathology, Immuno-Genetics, and General Neurophysiol-

Members of NASA's professional staff enjoy unexcelled facilities for experimental research in all areas which are part of the NASA program. They have opportunities for advanced edu-cation and training, association with outstanding authorities, and stable careers in a highly professional environment.

For complete information, write:

Personnel Officer NASA, Ames Research Center Moffett Field, California

### NATIONAL AERONAUTICS AND SPACE ADMINISTRATION



All qualified applicants will receive consideration for employment without regard to race, creed, color or national origin.

Positions filled through Aero-Space Technology Announcement 252B.







#### BIOCHEMIST-EXECUTIVE

Experienced person with proven technical and managerial skills familiar with production, procurement and quality control of research quality, non-labeled biochemicals. Top management position in new division.

#### SENIOR BIOCHEMIST

Radiochemical division requires Ph.D. in biochemistry with experience in enzymology, ion exchange, chromatography, paper chromatography and paper electro-phoresis to develop and supervise program for the prep-aration of carbon-14 labeled nucleotides.

#### **BIOCHEMIST**

CHEMICALS

Prepare carbon-14 and tritium labeled nucleosides enzymatically. Eventually will be responsible for the supervision of a junior person. Position requires an M.S. in biochemistry with experience in enzymology, paper chromatography and spectrophotometry.

All replies will be kept confidential. Kindly send complete résumé to Dr. Seymour Rothchild, President.

NEW ENGLAND NUCLEAR CORP.

575 ALBANY STREET. BOSTON 18. MASS.

#### **BIOCHEMIST**

NEN

Male or female with B.S. or M.S. degree for immediate employment with nonprofit government licensed biologics laboratory in the Middle West. No experience necessary. To be trained in research and development programs involving protein chemistry.

Box 107, SCIENCE

#### Biologist, Ph.D.

Zoologist with training in any of the following areas: cytology, genetics, histology, physiology, or vertebrate zoology. Teaching and research opportunity in a rapidly growing college in the southeastern section of the U.S. Salary dependent upon training and experience.

Box 112, SCIENCE

#### Female or Male Help Wanted

Laboratory technician. Tissue Culture work in cancer research; college graduate with B.S. degree; professional work experience not essential; age 22 to 35; salary open; excellent benefits. Apply Personnel Office

#### Indiana University Medical Center

1100 W. Michigan St., Indianapolis, Indiana

#### INTERAGENCY PROJECT RESEARCH DIRECTOR (\$14.000)

Master's degree or doctorate desirable. Documented experience in fields emphasizing seminar leadership, project direction, or research and data analysis. Complete résumé by 8 June 1962 to:

Personnel Director Room 100, City Hall Oakland 12, California

#### LABORATORY TECHNICIANS

\$5832-\$7428 per annum, B.S. and one year experience or \$7080-\$9036 with four years. Vacancies in Biochemistry, Histology, Microbiology, Medical Laboratory Technology and Tissue Culture. Opportunity to take course work, liberal fringe benefits. North American residents preferred. For application and further information contact Leo M. Anderson, Employment Representative, Personnel Office, University of California, Davis.

#### Microbiologist (Ph.D.)

To apply microbiologist (Ph.D.)

To apply microbiological technique and theory to the solution of strategic problems. Should have a good command of underlying biochemical mechanisms and be willing to interpret these in the light of emerging chemistry and physics. For Northeast and Midwest locations.

Industrial equal opportunity employer.

Box 113, SCIENCE

RESEARCH BIOCHEMIST

New Ph.D. wanted for research and development work with leading enzyme firm. Unique position for bright, young man interested in enzyme and protein chemistry. Must have potential to head department. Send complete résumé to Employment Mgr.

WALLERSTEIN COMPANY

Div., Baxter Laboratories, Inc. Staten Island 3, N. Y.

#### RÉSUMÉS by RICHTON

The dynamic, dignified approach to best jobs. Expertly prepared, professionally written, custom printed. Complete analysis and evaluation with or without personal visit. Free bonus features. World-wide service. Free literature.

The Richton Company, Dept. AA,

1020 Broad

Newark, N.J.

The University of Saskatchewan invites enquiries and applications for the position of Instructor (salary range \$5000 to \$6900) or Assistant Professor (salary range \$7000 to \$8500) in the Department of Crop Science. The appointee will teach classes and conduct research in biometrical and population genetics preferably using crop plant material. Duties to commence 1 September 1962 preferably but a later date will be considered. Address enquiries and applications to Dean V. E. Graham, University of Saskatchewan, Saskatoon, Saskatchewan.

(a) Science Instructor, eastern school of nursing; over \$6000. (b) Microbiologist, M.S., Ph.D., clinical, teaching, supervisory duties; southern hospital. (c) Biochemist, Ph.D., research, faculty appointment; enzyme, plasma experience; eastern medical college; to \$9000. (d) Biology/Zoology Faculty Appointment, southern college; to \$7200. (e) Ph.D., M.S. Biochemistry, Pharmacology, Biomedicine, experienced in radioisotopes; research; East; open. Many other opportunities available for both junior and senior scientists. Please write Science Division, The Medical Bureau, Inc., Burneice Larson, Chairman, 900 North Michigan Avenue, Chicago 11, Illinois.

### FELLOWSHIPS FELLOWSHIPS

### POSTDOCTORAL FELLOWSHIPS IN NEUROANATOMY

Candidates holding the Ph.D. or M.D. degree will be considered for fellowships in neuro-anatomy for periods of 1 to 3 years. This post-doctoral program, operated in conjunction with similar programs in other basic neurological sciences is designed to provide an appropriate foundation for an investigative or academic career. Opportunities will be available for pre-liminary course work in all basic neurological sciences and related fields. Stipends begin at \$5000 per year plus dependent allowances. For additional information write:

Dr. Malcolm B. Carpenter, College of Physicians and Surgeons, Columbia University, 630 West 168th Street, New York 32, N. Y.

# The Market Place



1919 - 1962 LaMotte Chemical Chestertown, Maryland, U.S.A. Specialists in Colorimetric Techniques Reagents-Standards-Comparators Send for Illustrated Controls Handbook Dept. H

— PRIMATES —
— Chimpanzees — Nem
Research Grade — T.B. Tested
Stabilized and Guaranteed Nemestrina

ASIATIC ANIMAL IMPORTS, INC.

Research Primate Division

125 International airport YUkon 2-6866 OXford 7-3747



#### ANTIBODIES INCORPORATED

Serving Science Through Immunochemistry

Custom Made Antiserums.

Fluorescent Labelling, Precipitin Analyses. Special Item: Goat antirabbit- $\gamma$ -globulin 4mg Antibody/ml-\$1.00/ml

835 L Street

Davis, Calif.

SK 3-4760

HYPOPHYSECTOMIZED RATS

Shipped to all points via Air Express For further information write HORMONE ASSAY LABORATORIES, Inc. 8169 South Spaulding Ave., Chicago 29, Ill.

#### BOOKS AND MAGAZINES



### Your sets and files of scientific journals

are needed by our library and institutional customers. Please send us lists and description of periodical files you are willing to sell at high market prices. Write Dept. A3S, CANNER'S, Inc.

Boston 20, Massachusetts

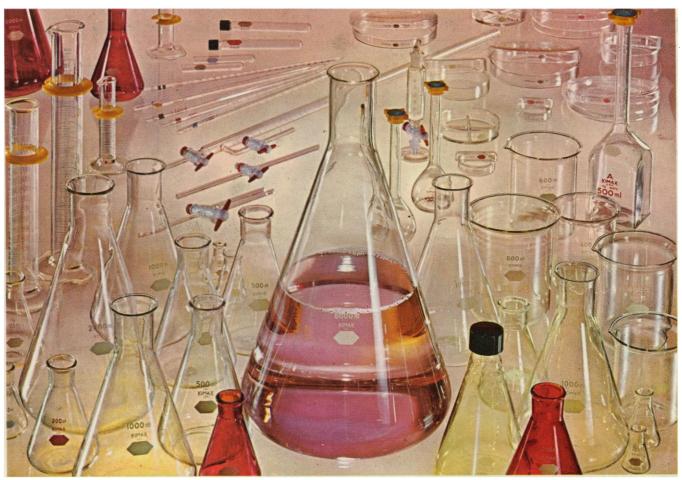
Proceedings of a conference by NAS-NRC Committee on Photobiology

### **PHOTOPERIODISM** AND RELATED PHENOMENA IN PLANTS AND ANIMALS

922 pp., 256 illus., 1959 \$14.75 \$12.50 cash orders from AAAS members

### **AAAS**

1515 Massachusetts Ave., NW Washington 5, D.C.



New Kimax Erlenmeyer flasks feature extra-strong rims, uniform glass wall thickness.

# of KIMAX Erlenmeyer Flasks

Kimble presents new, complete lines of KIMAX Erlenmeyer Flasks in 11 styles, in sizes to 6000 ml

You'll find them in the new Kimble catalog-Kimax® hard glass Erlenmeyer flasks in a variety of styles and sizes.

All KIMAX Erlenmeyer flasks incorporate superior, newly developed design features . . . heavy, beaded rims; uniformly thick sidewalls and bottoms; hard glass construction.

Good reason to specify KIMAX Erlenmeyers-wide or narrow mouth; clear glass or low actinic; stoppered or unstoppered. They can also be color-coded to your specifications at slight extra cost.

Add your Erlenmeyer needs to orders for beakers, Petri dishes and other Kimax glassware. Take advantage of top discounts (28 per cent on orders of 150 cases) offered by lab supply dealers in most states.



This catalog should be on the shelf of every progressive laboratory. If you do not have onemail the coupon today

Kimble	e Glass	Company,	Subsic	liary	of	Owens-Illinois
Dept.	S-525,	Toledo 1,	Ohio			
	-	-				

Please send me the new Kimble catalog which includes the expanded KIMAX glassware line.

Name	
Firm	
Address	
Position	
100:00-	

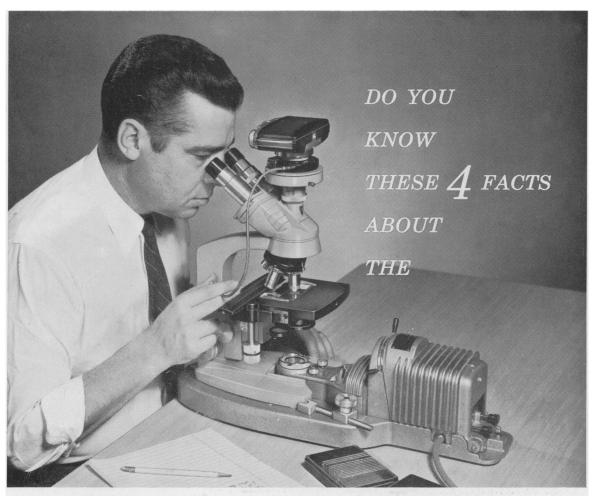


EVERY DAY SEES SOMETHING NEW AT KIMBLE

KIMBLE LABORATORY GLASSWARE AN (I) PRODUCT

Owens-Illinois

GENERAL OFFICES • TOLEDO 1, OHIO





- 1 ASSURES MAXIMUM OPTICAL PERFORMANCE OF YOUR MICROSCOPE—Koehler type illumination—ideal for bright field ... phase ... interference ... polarizing ... and dark field microscopy and photomicrography. Numerical aperture ... and field diaphragm settings regulated accurately and effectively permit full resolving power of your microscope.
- 2 OFFERS WIDE SELECTION OF FILTERS Eight levels of intensity . . . plus daylight, green and red filters . . . quickly selectable by simple finger-tip rotation of turret mounted filters. Optimum intensity and correct contrasting color selection are very important factors to reveal the specimen detail you're investigating.
- 3 PROVIDES PERMANENT ALIGNMENT WITH MICRO-SCOPE — Three point positioning device precisely locates and rigidly retains any make microscope equipped with horseshoe base. Microscope may be removed and easily repositioned against locating device without disturbing absolute alignment. Near parallel beam of light evenly illuminates entire field of view.
- 4 COSTS LESS THAN YOU THINK Model 600 AO-Spencer Ortho-Illuminator complete... \$165.00. Optically and mechanically designed to give you years of trouble-free service... maximum efficiency... and reduced fatigue.

formerly available from Silge & Kuhne, San Francisco

American	<b>A</b> 5°	<b>Optical</b>
CO	MPA	NY

INSTRUMENT DIVISION, BUFFALO 15, NEW YORK

N		
Name		
Address		

IN CANADA write - American Optical Company Canada Ltd., Box 40, Terminal A, Toronto, Ontario.