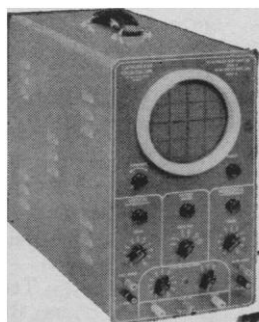


## New Welch Cathode-Ray Oscilloscope

Possesses All the Features Essential for Tests and Demonstrations  
Extensively Field Proven in Classroom and Laboratory



5-inch screen

### CONDENSED SPECIFICATIONS

Sensitivity, Vertical and Horizontal Axes:  
Direct -----15 rms volts/inch  
Full Gain -----0.5 rms volts/inch  
Input Impedance, Vertical and Horizontal Axes:  
Direct -----3 meg  
Amplifier -----0.5 meg., 20 mmf  
Sweep Frequency Range ---10 cps to 60 kc  
Operating Voltage,  
105-120 volts, 50/60 cycle A.C.  
Dimensions -----8½x14½x18½ inches  
Shipping Weight-----42 pounds

**2167. CATHODE-RAY OSCILLOSCOPE.** This is a general-purpose instrument intended for routine laboratory tests and class room demonstrations. Extensive field testing has proved it to be well suited to the requirements of colleges, technical schools, and high schools. Students will quickly understand the function of all the controls, and the high-grade components and careful workmanship assure long reliable service.

The 5-inch cathode-ray tube employs electrostatic deflection and focus, and is operated at an accelerating potential of about 1200 volts. Post-deflection acceleration increases its brilliance and sensitivity.

Instructions are included.

Each \$158.50

## THE WELCH SCIENTIFIC COMPANY

ESTABLISHED 1880

1515 Sedgwick Street, Dept. E, Chicago 10, Illinois, U.S.A.  
Manufacturers of Scientific Instruments and Laboratory Apparatus

**new  
england  
nuclear**

## Cholic-carboxyl-C<sup>14</sup>-Acid

\$180 per 100 uc

\$100 per 50 uc

CATALOG ON REQUEST

**new england nuclear corp.**

575 ALBANY STREET, BOSTON 18, MASS. Liberty 2-5964

# PERSONNEL PLACEMENT

**CLASSIFIED:** Positions Wanted 25¢ per word, minimum charge \$4. Use of Box Number counts as 10 additional words. Payment in advance is required.

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

**DISPLAY: Positions Open.** Rates listed below—no charge for Box Number. Rates net. No agency commission. 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.

Single insertion \$40.00 per inch  
4 times in 1 year 38.00 per inch

**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

**Biochemist.** Academic appointment. Research and teaching. Graduate faculty. Publications. Dr. J. H. Schneider, American University, Beirut, Lebanon. 4/28; 5/12, 26; 6/9

**Chemist.** M.S. Physical-Biochemical, 5 years' experience teaching; protein analysis, separation and structure; immunochemistry. Box 111, **SCIENCE**. 6/2

**Gastroenterologist.** Certified in both internal medicine and in gastroenterology. Mayo Clinic and university training. Desires change of location. Box 108, **SCIENCE**. 5/19; 26

### POSITIONS WANTED

**Organic Chemist.** Ph.D. Age 43. Fourteen years' experience in the pharmaceutical industry. Now group leader. Desires challenging position—industrial or academic. Box 112, **SCIENCE**. X

### POSITIONS OPEN

#### BIOCHEMIST

Ph.D., with experience in enzyme work, to be jointly appointed by the University of Buffalo and Roswell Park Memorial Institute. Write to Dr. T. J. Bardos, School of Pharmacy  
University of Buffalo  
Buffalo 14, N.Y.

#### RESEARCH ASSISTANTS

An expanding midwestern pharmaceutical company has opportunities for research assistants in pharmacology research unit. Medical technology or bachelor of science level preferred. Positions involve application of enzymology, physiology, analytical chemistry, and isotope techniques to a study of drug action. Previous association, either academic or practical, with methodology in some or all of these areas is desired. Please send complete résumé to:

**Technical Employment Coordinator**  
**UPJOHN COMPANY**  
Kalamazoo, Michigan

### POSITIONS OPEN

#### ZOOLOGIST

Vertebrate zoology; physiology. Northeast. Man or woman Ph.D. Private college of 900 affiliated with large university. Desire to continue own research interests important.

BOX 114, **SCIENCE**

## BIOLOGICAL SCIENTIST—Ph.D.

Outstanding opportunity in research division of major Philadelphia pharmaceutical firm for Ph.D. in physiology or biochemistry. Important role in research and development of new therapeutic agents including design of laboratory and clinical studies; interpretation of data and evaluation of clinical utility. Candidate should have good academic qualifications; ability and interest in working with both scientists and management; facility in oral and written communication. Opportunity to attend appropriate scientific meetings and to make outside contacts with other scientists and clinicians. Send complete résumé including salary requirements to:

W. R. HALL

**Smith Kline & French  
Laboratories**

1598 Spring Garden Street, Philadelphia 1, Pa.

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

## POSITIONS OPEN

### ORGANIC BIOCHEMIST

For electrophoretic and chromatographic study of gastrointestinal mucoproteins and polysaccharides in basic science research laboratory. Ph.D. Send professional record, references, salary requirements to:

BOX 116, SCIENCE

### PHYSIOLOGIST—Ph.D. or M.D.

Research on ion transport processes in digestive secretions. Research Laboratory for Gastrointestinal Physiology. Metropolitan N.Y. Send professional record, references, salary requirements to:

BOX 115, SCIENCE

### WANTED: CO-EDS AND GRADUATES INTERESTED IN THE MEDICAL FIELD

Women college graduates with science backgrounds (single 21-29) are eligible to apply for an excellent 12-month course in Physical Therapy. Selected candidates will earn full salary while learning—with all school and travel expenses paid. This course—sponsored by the Army Medical Service—is approved by the Council on Medical Education and Hospitals, American Medical Association.

Upon acceptance, students are commissioned 2nd Lieutenants in the Army Medical Specialist Corps (AMSC) Reserve, and are required to serve one year on active duty after completion of the 12-month course. (Monthly salary begins at \$270.00 plus substantial fringe benefits.) AMSC officers receive 30 days of paid vacation every year—and enjoy career opportunities for advanced professional training and world travel.

For complete information, write:

THE SURGEON GENERAL  
Department of the Army  
Washington 25, D. C.

## OPTICAL & INFRARED PHYSICISTS & ENGINEERS

Melpar's Expanding Research Activities Offer Exciting Opportunities For The Research Scientists With New and Novel Approaches To Problems Involving

### OPTICAL & INFRARED SYSTEM DESIGN

Present Areas of Investigation Are In:

- BIOPHYSICAL INVESTIGATIONS RELATED TO INFRARED SENSING
- PROPERTIES OF THE ATMOSPHERE, INCLUDING VERY LONG WAVELENGTH INVESTIGATIONS, SCINTILLATION AND ABSORPTION STUDIES
- OPTICAL HETERODYNE STUDIES AND TUNABLE LASERS
- APPLICATIONS OF EXTREMELY HIGH ELECTROMAGNETIC FIELDS

The experienced investigator will find at Melpar a research oriented environment with all the necessary experimental facilities. And he will be associated with a research group of nationally recognized stature.

Send Resume  
In Complete Confidence To

MELPAR, INC.

300 Arlington Boulevard,  
Falls Church, Virginia  
Attention Mr. F. J. Drummond

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

## POSITIONS OPEN

### CLINICAL BIOCHEMIST

Master's or Ph.D. degree preferred. Responsible directly to M.D., Director of Clinical Laboratories. Salary range \$7000-\$10,000 annually, experience given additional consideration; 500-bed, short-term general hospital in northeastern Ohio. Contact Director of Clinical Laboratories

Aultman Hospital  
Canton 10, Ohio

### SCIENCE TEACHERS

Long Island School District, Western Suffolk area, seeks two senior high science teachers; one with strength in physics and chemistry; one with strength in biology and chemistry. Should be willing to work with youth while maintaining a lively interest in science. Must have M.A. in science and have or be willing to take basic requirements for N.Y.S. teaching certificate. Entering salary range \$5600-\$8900. Prefer teaching experience. Résumé.

BOX 113, SCIENCE

### VIROLOGIST

To plan and conduct investigational, diagnostic, base-line, and surveillance studies of viruses and related organisms in the Hawaii state public health laboratory. Requires 2 years' experience in propagating, detecting, and identifying viruses and completion of graduate work leading to a Ph.D. in virology, bacteriology, or a related field. Salary \$8256-\$10,536 per annum. Write to Department of Personnel Services, 825 Mililani Street, Honolulu 13, Hawaii.

## The Market Place

BOOKS • SERVICES • SUPPLIES • EQUIPMENT


**DISPLAY:** Insertions must be at least 1 inch in depth. Weekly invoices will be sent on a charge account basis—provided that satisfactory credit is established.

Single insertion	\$48.00 per inch
4 times in 1 year	44.00 per inch
13 times in 1 year	42.00 per inch
26 times in 1 year	40.00 per inch

**PROOFS:** If copy is to be set, and proofs submitted for approval, complete copy and cuts must be received 4 weeks in advance of publication date (Friday of each week); complete plates no later than 3 weeks in advance of publication date.

## SUPPLIES AND EQUIPMENT

"From the hand of the veterinarian to research"®



**albino rats**

CHARLES RIVER \*CD  
(Caesarean derived)  
CHARLES RIVER SD  
(Sprague-Dawley descendants)  
CHARLES RIVER W  
(Wistar descendants)

### HYPOPHYSECTOMIZED RATS

- Only Charles River CD animals used
- Rigidly controlled environment (same bldg.) birth to surgery.
- High speed surgery by graduate biologists.
- 10 years experience animal surgery.
- Overnight air service from Boston

THE CHARLES RIVER BREEDING LABS  
1018 Beacon St., Brookline 46, Mass. RE. 4-2000  
Henry L. Foster, D.V.M., President

## SUPPLIES AND EQUIPMENT

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Serums, antisera and bloods of all kinds for technicians and tissue culture laboratories. No salesman will call.

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(Caesarean-derived)



**Mice**  
ALBINO  
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Hypophysectomies available  
THE CHARLES RIVER  
MOUSE FARMS  
1018 Beacon St., Brookline 46, Mass., RE 4-2000

## PROFESSIONAL SERVICES

CONSULTATION AND RESEARCH SINCE 1922

**Food and Drug Research Laboratories**  
Toxicology • Pharmacology  
Nutrition • Biochemistry • Bacteriology  
BERNARD I. OSER, Ph.D., Director  
Maurice Avenue at 58th Street  
Maspeth 78, New York City  
TWining 4-0800  
WHERE EXPERIENCE COUNTS

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### SCIENTIFIC JOURNALS WANTED

Sets, Runs and Volumes bought at top prices. Your wants supplied from our Back Files of over 3,000,000 periodicals. Abrahams Magazine Service N. Y. 3, N. Y.

### 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

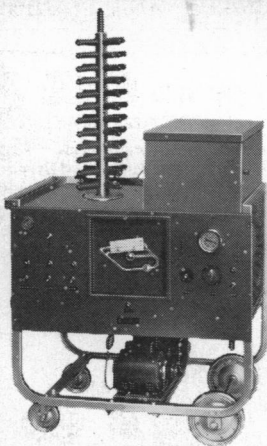
Proceedings of a conference by  
NAS-NRC Committee on Photobiology

### 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.



### MULTI-CENTRIFUGAL MOBILE

Fully-equipped mobile unit automatically forms perfect shells in glass containers by centrifugal action. Eliminates slow and tedious old-fashioned shell freezing methods; drying time is cut by at least 20%. Stainless-steel condensor has a 10-liter capacity; works off a Cenco vacuum Hyvac pump. Belt-driven, adjustable-speed centrifuge has 14 revolving platforms in stainless-steel housing that incorporates a 1" lucite top with gasket for top loading operation. Stainless-steel manifold has 50 ports. Includes glass McLeod gauge, control panel, timer. *Model CFD-1* (Cenco Hyvac 2-pump, 20 liters/min., 0.1 micron); *Model CFD-2* (Same as above but with two multi-centrifuge boxes for alternate or simultaneous operation).

### TABLE MODELS & ACCESSORIES

All equipment is so designed that it can be associated with refrigerating and vacuum apparatus to perform a number of functions. The following accessories may be combined with the *VacTrap* or *Circu-Freeze*.

**FREEZE DRYERS:** Stainless-steel freeze dryers with 6-18 ports and two for connections to vacuum gauge and pump. Ports available in either 1/2" or 3/4" OD. Capacity, center well, 225cc to 7 liters of dry ice and acetone. Arc welded construction.



**MANIFOLD:** Stainless steel unit with 50 ports in 1/2" or 3/4" OD. Available for vertical or horizontal mounting.



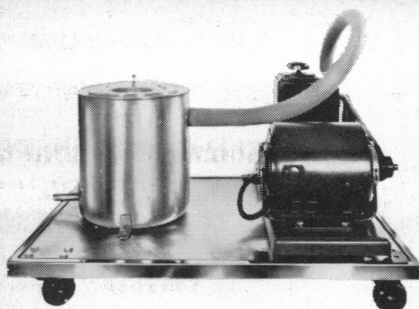
**TRAPS:** Stainless-steel traps available with 1/2" or 3/4" OD ports. Dry ice and acetone volume from 1.5 to 3.0 liters.



## FREEZE DRYERS

&

## ASSOCIATED EQUIPMENT



### VACTRAP

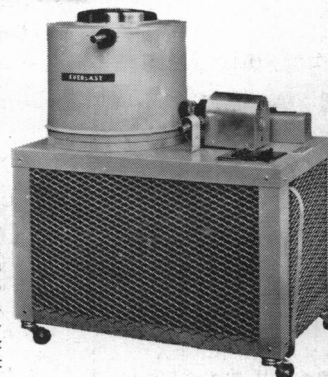
PORTABLE CONDENSING SYSTEM PLACES THE STAINLESS STEEL VACUUM TRAP AND VACUUM PUMP BELOW THE LABORATORY BENCH TO SAVE VALUABLE WORKING SPACE; UNIT IS MOUNTED ON A STAINLESS STEEL DOLLY FOR MOBILITY.

**FEATURES:** Cenco Hyvac pump, 10 liters/minute capacity, with ultimate vacuum at .3 microns; stainless steel heavy-duty condensor with two 1/2" ports; non-slip pure gum gasket; rapid vacuum break device; pure gum heavy wall stock rubber tubing. Pumps and traps are available in varying sizes and capacities.

### CIRCU-FREEZE

EXTREMELY VERSATILE PORTABLE UNIT FOR LOW TEMPERATURE -60°F DRY AIR STORAGE, OR -30°F CIRCULATING BRINE CHILLING UNIT.

Constructed of heavy-duty stainless steel; measures 22" x 14" x 25". Stainless-steel drum, 8" x 8 3/4" has total capacity of 6 quarts; other drum capacities are available to fit specific needs. Includes: inlet and outlet fixtures, electrical connections and switchgear. All units are mounted on rigid frame with 4 rubber casters for mobility. Also available in lower temperature ranges.



- VERSATILE • CUSTOMIZED
- RUGGED CONSTRUCTION
- ADVANCED ENGINEERING
- BUDGET PRICED



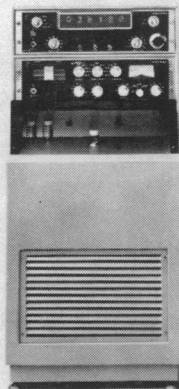
**INSTRUMENTATION ASSOCIATES, INC.**

*Laboratory and Scientific Specialties*

17 West 60th Street

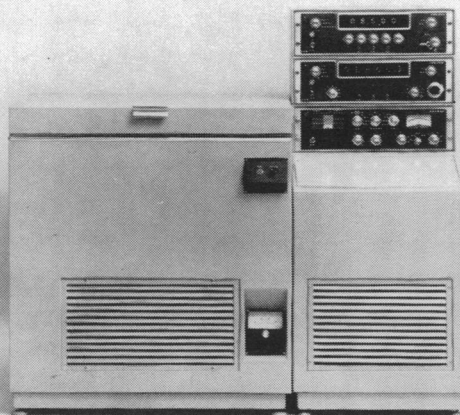
New York 23, N. Y.





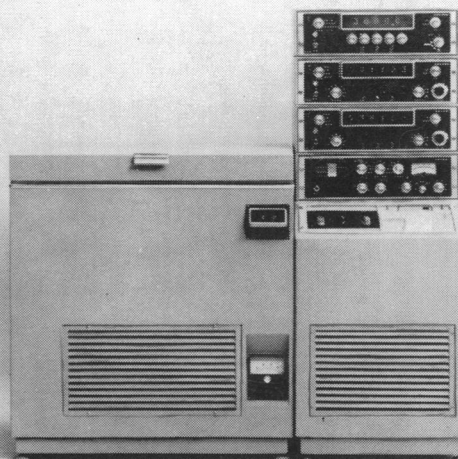
**1.**  
Start here for economical,  
room-temperature counting  
of  $C^{14}$  and  $H^3$

Model 701  
manual operation,  
shown with 8250 scaler



**2.**  
Add cooling for increased  
efficiency and precision

Model 702  
manual, temperature controlled operation,  
shown with 8250 scaler and 8600 timer



**3.**  
Incorporate automatic sample  
changing as work load grows

Model 703  
automatic, temperature controlled operation,  
shown with two 8250 scalers, 8600 timer,  
and 8401 digital recorder

## *New from Nuclear-Chicago... a family of liquid scintillation counting systems*

**Model 701** is the low-priced basic system for workers interested mainly in counting limited numbers of samples. Carbon-14 is counted with high efficiency and tritium with somewhat reduced efficiency. Model 701 includes components common to all three systems: uniquely sensitive optical cell and dual-detector assembly, high-speed two-channel pulse-height analyzer, ultra-fast coincidence circuit, and stabilized high-voltage supply. Output signals from this solid-state circuitry are shaped pulses which can feed any standard scaling instrument. From this point, your research needs and budget will guide your choice of options, now and in the future.

In **Model 702**, the dual-detector assembly is mounted in a custom-built, precision-controlled, low-temperature chamber permitting highest counting efficiency for carbon-14 and tritium. Field conversion to fully automatic operation requires only addition of the sample changer mechanism.

**Model 703's** simple and foolproof sample changer, its sophisticated options of data presentation, and its versatile modes of automatic operation suggest it as the system of choice for laboratories counting many samples.

One of the three new models in this first family of liquid scintillation counting systems is suited to your present research needs and to your expanding programs of investigation.

Prices for these integrated, compact and functionally elegant systems range from \$5,000 through \$15,000. Please write for full information.



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