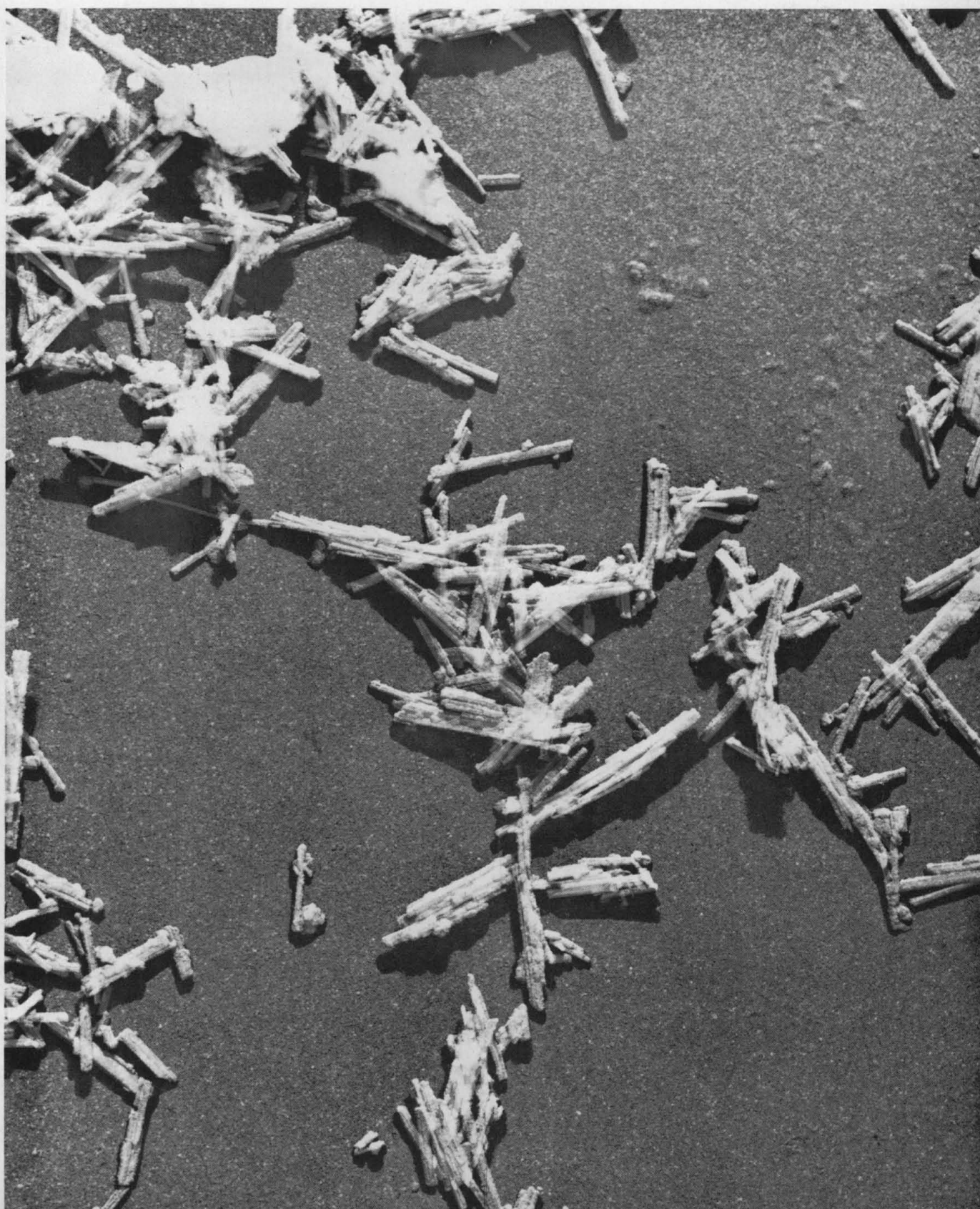


SCIENCE

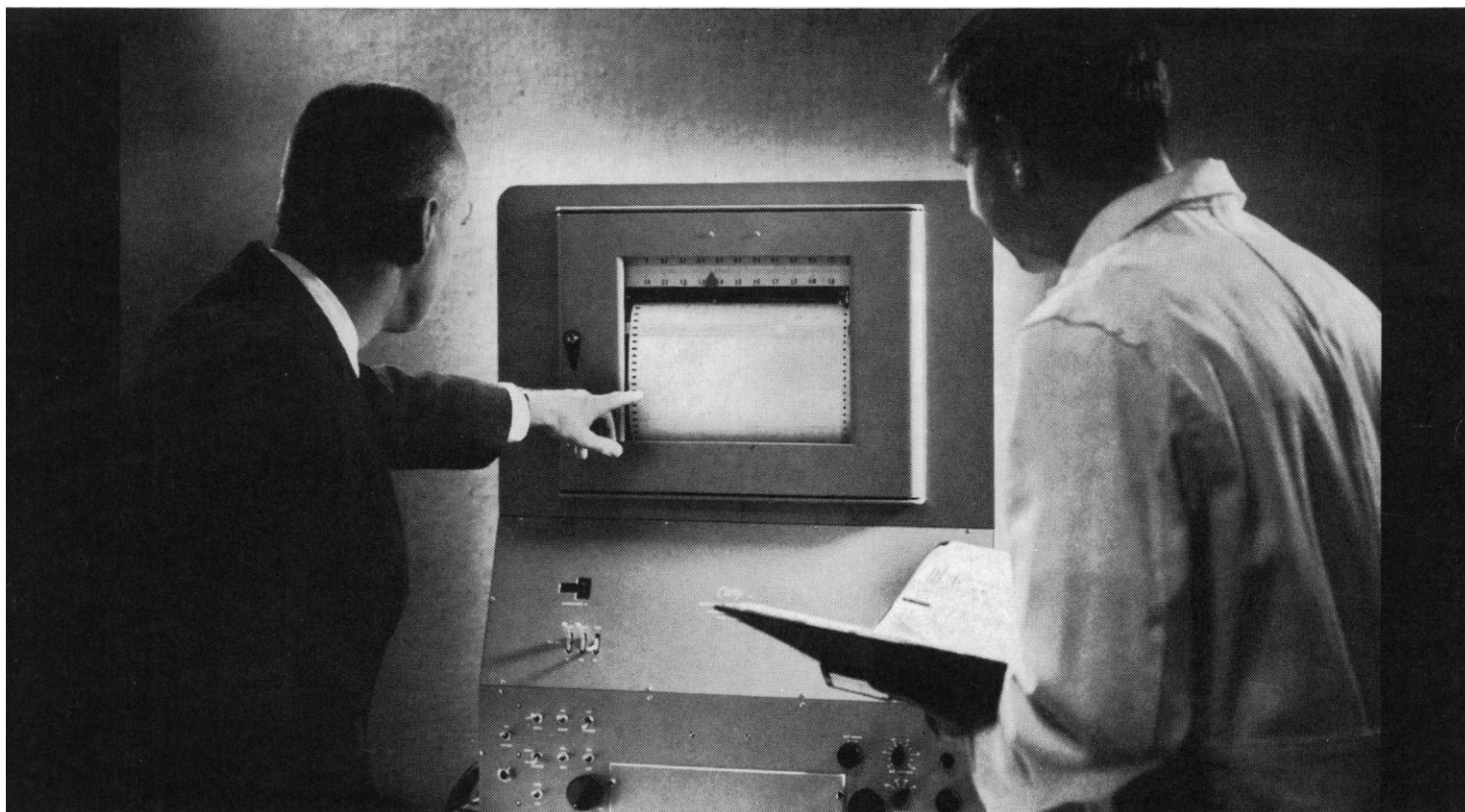
17 August 1962

Vol. 137, No. 3529

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



HOW DOES THE CARY MODEL 14 SPECTROPHOTOMETER MAKE GOOD BUSINESS SENSE?



For operation and performance details, ask for Data File E225-82.

Model 14 maximizes the value of good technical people. In most laboratories payroll is the largest budget item. For full benefit from this investment, capable men should not be equipment-limited. The Model 14's precision and speed save manhours and allow the scientist to work to his full capability.

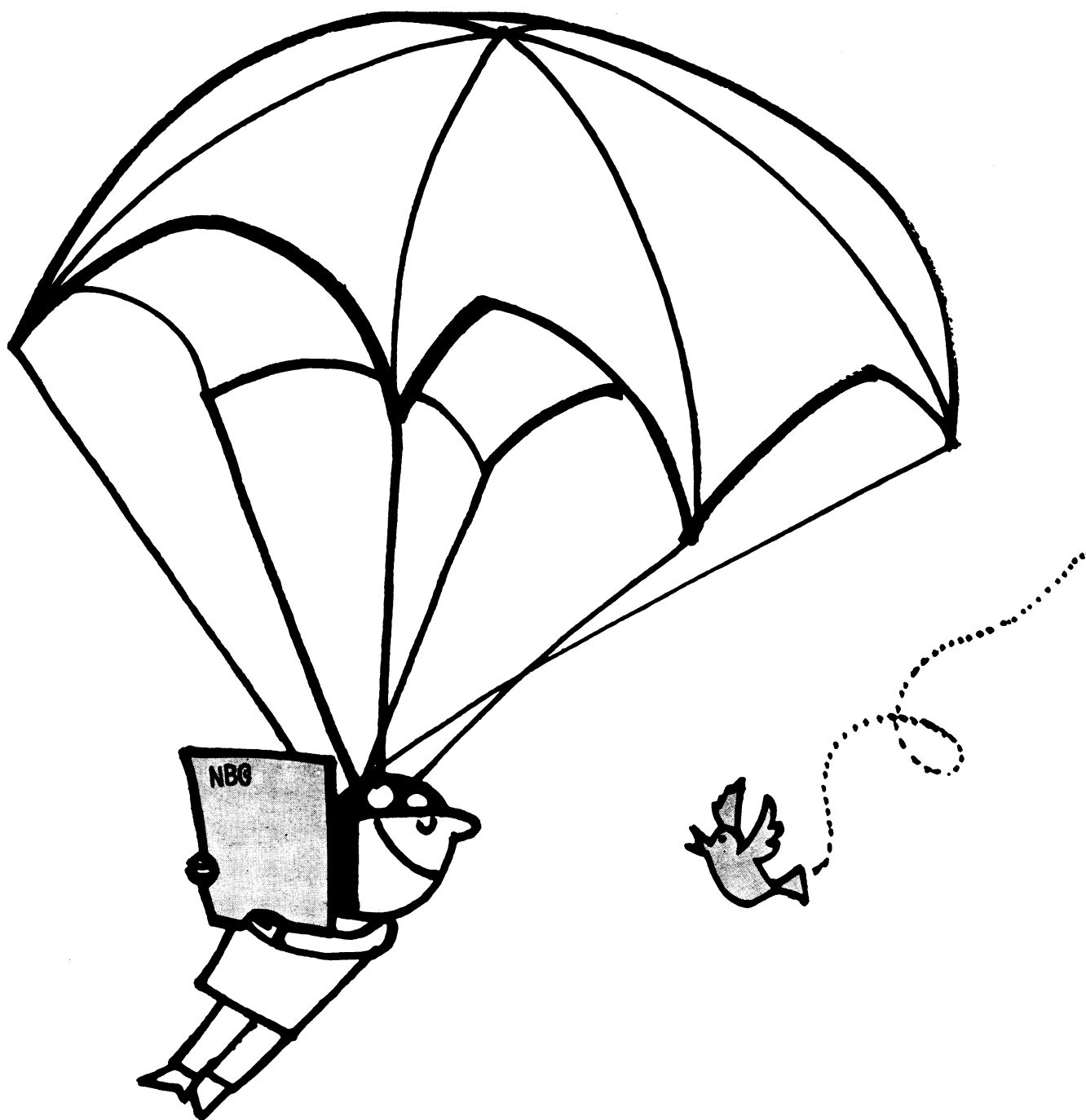
Model 14 meets constantly upgraded analytical demands. Advancing technology and increasing competition lead to demands for ever more precise information at faster rates. Instruments that are only adequate today won't stand the pace. The advanced design of the Model 14 assures meeting today's and tomorrow's needs as well.

Model 14 allows greatest return on capital investment. The average analytical instrument is fully depreciated in five years. But in nearly nine years since its introduction, no Cary Model 14 known to us has yet been retired from service. Its field-proved reliability gives valuable data years after the initial investment has been returned. Considered by many as the finest instrument of its kind, the Cary Model 14 Recording Spectrophotometer has ruggedness and reliability for routine laboratory service plus precision and flexibility to handle the varied problems of research.

APPLIED PHYSICS CORPORATION
2724 SOUTH PECK ROAD • MONROVIA, CALIFORNIA

Cary
INSTRUMENTS

Raman/UV/IR Recording Spectrophotometers • Vibrating Reed Electrometers



N. B. C. DELIVERS BIOCHEMICALS, NOT EXCUSES!

So the job's tough. Your laboratory is off an air route. But we'll get your order through. And it will be *your* order, too. N.B.Co. knows . . . your needs are special and immediate. With 2600 varieties of biochemicals in stock, N.B.Co. checks every order carefully and ships it just as fast as you need it. Practically 24 hour delivery in the U.S.A., slightly longer anywhere else. Naturally, because N.B.Co. sells on a world-wide volume basis, you buy *pure* biochemicals at the lowest prices. If you need biochemicals now, call

MOntrose 2-0214, Cleveland, Ohio, today! Or send for our FREE 2600-item catalogue.

NUTRITIONAL BIOCHEMICALS CORPORATION
21010 Miles Avenue • Cleveland 28, Ohio

Send for our free June, 1962 Catalog containing more than 2600 items. Fill out coupon and mail today for your copy. SC



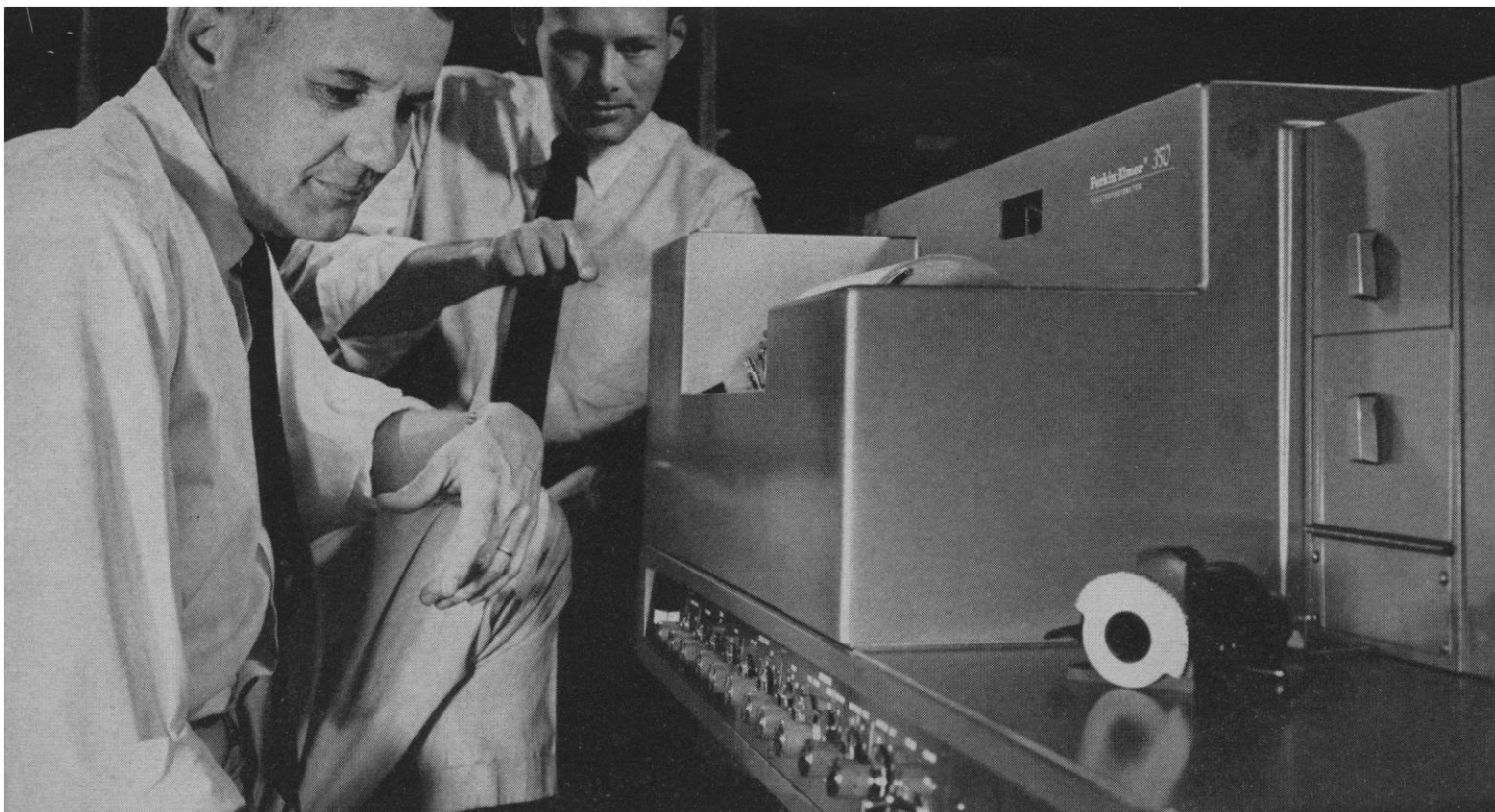
Name _____

Organization _____

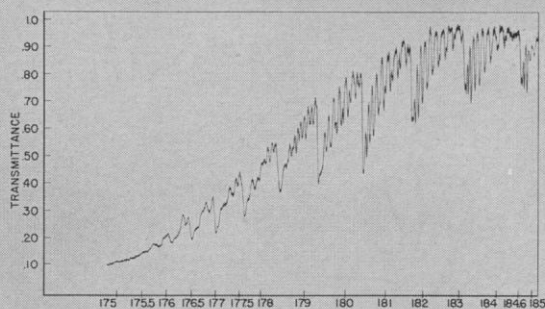
Address _____

City _____

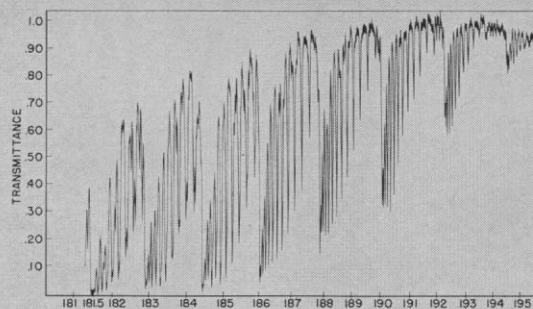
State _____ Zone _____



Far Ultraviolet Spectrum of Oxygen.



Air and nitrogen, 2 cm. cell, 14-minute scan.



Pure oxygen, 10 cm. cell, 30-minute scan.

FAR ULTRAVIOLET SPECTRAL REGION OPENED BY NEW PERKIN-ELMER MODEL 350 SPECTROPHOTOMETER

With Perkin-Elmer's new Model 350 UV-VIS-NIR Spectrophotometer, you can detect and measure less sample—over a wider wavelength range—with greater precision—than with any other ultraviolet instrument. The Model 350 provides this capability routinely from 175 μ in the far ultraviolet to 2.7 μ in the near infrared. You get analytical versatility over the widest wavelength range and through the widest range of optical densities. Compare these advantages offered by the Model 350.

- **Widest wavelength range in one instrument.** The Model 350's optimized wavelength capability ranges from 175 μ in the far ultraviolet to 2.7 μ in the near-infrared.

- **Maximum photometric efficiency throughout range.** High absorbances can be measured with accuracy throughout the range of the Model 350. Specially-coated, Perkin-Elmer reflecting optics, combined with high-efficient sources, assure maximum transmission of maximum energy. The double-monochromator dispersion system reduces interfering stray light to a negligible level.

- **Unexcelled resolution.** The standard Model 350 provides uniformly high resolution throughout its range; in the far

ultraviolet—a region of increasing significance—the Model 350's superior energy and dispersion characteristics mean the best resolution possible in the field today.

- **Ordinate scale expansion.** Adding range and versatility to the Model 350's excellent absorbance accuracy is the new, integral Ordinate Scale Expansion feature. Any 2, 5, 10 or 20% portion of the transmittance scale—even when the reading is near the zero or 100% line—can be electronically expanded by discrete factors of 50X, 20X, 10X or 5X, facilitating the determination of weak bands.

And more:

- Zero Absorbance Line Compensation
- Fast Pen Response
- Wide Dynamic Scan Speed Range
- High Sensitivity
- Integrated Controls
- Large Sample Compartments
- Wide Range of Accessories

Write for more information and spectra on the Model 350.

INSTRUMENT DIVISION
Perkin-Elmer Corporation
 NORWALK, CONNECTICUT

Editorial	The Thalidomide Lesson	497
Articles	Intracellular Oxidation-Reduction States in Vivo: <i>B. Chance et al.</i>	499
	The microfluorometry of pyridine nucleotide gives a continuous measurement of the oxidation state.	
	Cesium-137 in Man: <i>C. O. Onstead, E. Oberhausen, F. V. Keary</i>	508
	Fallout was decreasing at a rate equivalent to a half-life of 1 year before testing was resumed.	
	Alfvén Waves: <i>F. I. Boley and J. M. Wilcox</i>	511
	These waves, predicted by Alfvén, have been studied in laboratory and geophysical plasma experiments.	
News and Comment	Neither the Republicans nor the Russians accept the new U.S. test-ban position ...	514
Book Reviews	International Educational Programs: <i>F. Bowles</i>	519
	American higher education's commitment to world education is one of our most important undertakings.	
	<i>Handbook of North American Birds</i> , reviewed by <i>A. H. Miller</i> ; other reviews	520
Reports	Archeological Survey and Excavation in Iran, 1961: <i>F. Hole</i>	524
	Stranded Arrangement of Sporopollenin in the Exine of Microspores of <i>Poa annua</i> : <i>J. R. Rowley</i>	526
	Radiocarbon Ages of Postglacial Lake Clays near Michigan City, Indiana: <i>E. M. Winkler</i> ..	528
	Visual Depth Perception of a 10-Month-Old Monocular Human Infant: <i>R. D. Walk and S. H. Dodge</i>	529
	Operant Conditioning of Heart Rate: <i>D. W. Shearn</i>	530
	Spinal Cord Convulsions in Developing Rats: <i>A. Vernadakis</i>	532
	Beta Brain Waves as an Index of Alertness: <i>R. E. Dustman, R. S. Boswell, P. B. Porter</i>	533
	Action of Acetylcholine on Bivalve Hearts: <i>M. J. Greenberg and D. A. Windsor</i>	534
	Effect of Rotation on Flowering Response of <i>Xanthium pennsylvanicum</i> : <i>T. Hoshizaki and K. C. Hamner</i>	535
	Antigenic Structure of <i>Plasmodium vinckei</i> : <i>D. Spira and A. Zuckerman</i>	536
	Substituted Uracil Herbicides: <i>H. C. Bucha et al.</i>	537
	Patterns of Gene Pleiotropy in Morphogenetic Processes: <i>K. C. Sondhi</i>	538
	Theory of Homologous Sublattices and Intracrystalline Equilibria: <i>R. F. Mueller</i>	540
	Narcotic Antagonists as Analgesics: <i>S. Archer et al.</i>	541
	Recognition and Quantitation of Herpesvirus Particles in Human Vesicular Lesions: <i>K. O. Smith and J. L. Melnick</i>	543
	Protection of Rats against Adjuvant Arthritis by Bacterial Lipopolysaccharides: <i>F. D. Wood and C. M. Pearson</i>	544
	Tissue Cultures of a Cactus: <i>C. E. Steinhart</i>	545
Departments	New Products	549
	Comparative Pathology: An Opportunity for Biologists?; Forthcoming Events	550
Cover	Prehistoric blue pigment from Chichen Itza, Yucatan, used on temple frescoes and ritual vessels. The fibers are attapulgitic, but the fact that no natural occurrence of blue attapulgitic is known suggests that this is an artificial pigment. The color is remarkably stable, although the pigment contains no color-producing ions. Experiments are in progress to determine whether it is a clay-organic complex ($\times 33,000$). [John C. Hathaway, U.S. Geological Survey, Denver, and Anna O. Shepard, U.S. Geological Survey and Carnegie Institution of Washington]	

AUTOCLAVABLE

NALGENE[®] LABORATORY BOTTLES OF POLYPROPYLENE

SHATTER-
PROOF


ACID-
PROOF

LIGHT IN
WEIGHT

SLIP-PROOF,
WET OR DRY

A bottle is a bottle is a bottle? Not any more. Here's news of the first polypropylene bottles ever designed specifically for laboratory use. Safer handling—light in weight, non-slippery, shatter-proof. Safer storing—chemically inert, can't sustain bacterial growth. Non-toxic—because they're made from FDA approved resin. And you're sure of safe sterilization because these Nalgene bottles *withstand repeated autoclaving*. Standardize now on the safest, most economical laboratory bottle ever

made. Complete line—narrow or wide mouth, sizes from one ounce to five gallons. Ask your lab supply dealer.

And look for this  symbol of quality on the bottom of every Nalgene bottle. For a complete new catalog of Nalgene laboratory ware, write Dept. 2720.



THE NALGE CO. INC.
ROCHESTER 2, NEW YORK

The Quality Standard of Plastic Laboratory Ware

GREATEST
IDEA SINCE
GLASS!

IN GAS CHROMATOGRAPHY

for fast, accurate, usable
measurement — use . . .
**SARGENT
SR RECORDERS**

Shown at left: S-38610 Beckman
GC2-A Gas Chromatograph... \$2160.00



Sargent SR Recorders have input circuits, ranges, charts, and other characteristics specifically engineered for application with Beckman GC Gas Chromatographs, Precision Chronofrac, and custom-made experimental chromatographs. They offer you these important advantages:

FAST PEN RESPONSE. Less than one second is required for full scale travel, ensuring faithful reproduction of the sharp slopes and peaks of the chromatogram.

SENSITIVITY. Four microvolts per millimeter (1 millivolt per full 240 mm scale) permits full realization of the potential of the gas chromatograph and chromatographic method.

REPRODUCIBILITY—to a fraction of a millimeter—ensures that the accuracy of analytical measurement is not limited by the measuring instrument, which is accurate to within 20 microvolts.

SPECIAL CHART. Wide 240 mm scale is graduated from 0 to 100 to simplify calculations. Zero point is offset from mechanical zero to show negative signals and simplify adjustment—and is at the right for a logical, conventional presentation of the chromatogram.

VERSATILITY. A variety of accessories permit selection of chart speeds, charts, voltage ranges, pens, etc. for other applications—with true potentiometric measuring (no input dividers to distort the measured circuit).

INTEGRATING UNIT is available, as a component part of the recorder or as an accessory unit, to provide continuous integration of chromatogram record for quantitative analysis.

Besides their use in gas chromatography, Sargent SR Recorders have vital applications in spectrophotometry . . . in pH titration—in recording measurements by any analytical device, from simple cells to the more complex instrument, that provides a D.C. voltage output.

PRICES

S-72180-20 RECORDER—Potentiometric, 1 mv, Gas Chromatograph, Sargent Model SR (Pat. No. 2,931,964). With input circuit adapted for optimum performance with gas chromatographs . . . \$720.00

S-72180-30 RECORDER—Potentiometric, 1 mv, Gas Chromatograph, Integrating, Sargent Model SR (Pat. No. 2,931,964). Identical with S-72180-20 but with S-72170 Disc integrator installed for continuous integration of chromatogram. \$1305.00

For complete information on SR Recorders, contact your nearest Sargent representative.

SARGENT

Scientific Laboratory Instruments
Apparatus • Supplies • Chemicals



E. H. SARGENT & CO., 4647 W. FOSTER, CHICAGO 30, ILLINOIS
Detroit 4, Mich. • Dallas 35, Texas • Birmingham 4, Ala. • Springfield, N.J. • Anaheim, Calif.

PHILADELPHIA • 129th AAA

Order Your General Program

It provides complete, detailed information about all the sessions and symposia scheduled, the Annual Exposition of Science and Industry, and the Science Theatre.

Program Highlights

Moving Frontiers of Science Homer E. Newell on space science, Sterling B. Hendricks on biological timing mechanisms, Sydney Brenner on DNA, William O. Baker on industrial research.

Interdisciplinary Symposia AAAS day: Dynamics of planetary atmospheres, the spread of technical knowledge as an instrument of economic development, the DNA story.

Special Sessions AAAS Presidential Address by Thomas Park on "Beetles, Competition, and Population"; the George Sarton Memorial Lecture by Gerald Holton; the Joint Address of Sigma Xi and Phi Beta Kappa by Loren C. Eiseley; the AAAS Distinguished Lecture, the Tau Beta Pi address; and the National Geographic Society Illustrated Lecture.

AAAS Committees Sessions of the Cooperative Committee on the Teaching of Science and Mathematics, the Committee on Science in the Promotion of Human Welfare, and others.

Sections and Societies The 20 AAAS Sections and some 50 participating societies are scheduling specialized symposia, and many have sessions for contributed papers.

Science Theatre The latest foreign and domestic films.

Exposition The Annual Exposition of Science and Industry will be 35 percent larger than it was last year.

Advance Registration By registering in advance, you avoid delay at the Registration Center on arrival, you receive the *General Program* in time to plan your days at the meeting, and you permit your name to be posted in the Visible Directory of Registrants when the meeting opens.

Use the coupon below for advance registration or to order your advance copy of the *General Program*.

AAAS
1515 Massachusetts Ave., N.W.
Washington 5, D.C.

(Check 1a or 1b)

1a. ☐ Enclosed is \$3.50 Advance Registration Fee. This brings me the *General Program* and Convention Badge.

1b. ☐ Enclosed is \$2.50 for the *General Program*. (if I attend the meeting, the badge, which I need to obtain the privileges of the meeting, will cost me \$1.00 more.)

2. FULL NAME (Dr., Miss, etc.)
(Please print or typewrite) (Last) (First) (Initial)

3. OFFICE ☐ OR HOME ☐ ADDRESS
(For receipt of *General Program*)

4. ACADEMIC, PROFESSIONAL, OR
BUSINESS CONNECTION

CITY ZONE STATE

5. FIELD OF INTEREST

6. CONVENTION ADDRESS
(May be added later, after arrival)

Please mail this coupon and your check or money order for the total amount to the AAAS.

MEETING • 26-30 DECEMBER

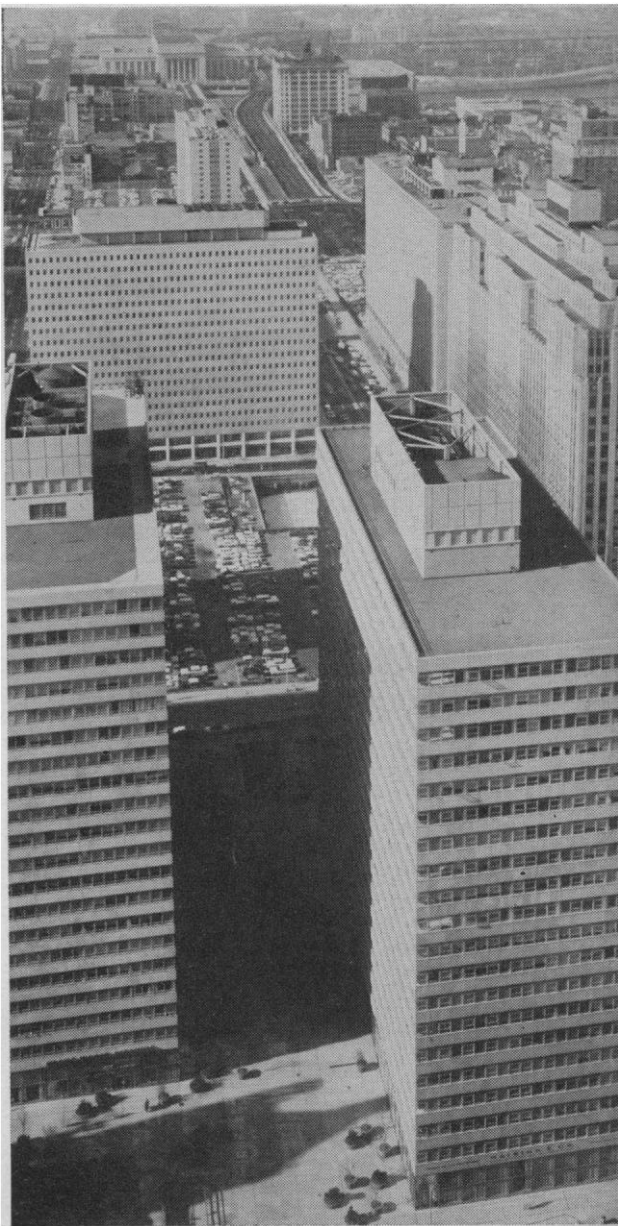
Reserve Your Hotel Room

Make sure you have the accommodations you prefer. A list of headquarters hotels of participating societies appears on page 235, *SCIENCE*, 20 July. The AAAS headquarters is the Sheraton.

The hotels for the AAAS Philadelphia meeting have established special, low flat rates and have reserved large blocks of rooms for the meeting.

Use the coupon below to make your hotel reservation in Philadelphia. Send your application to the AAAS Housing Bureau in Philadelphia, not to any hotel. Give a definite date and estimated hour of arrival, and also probable date of departure. The Housing Bureau will make the assignment and send you a confirmation in two weeks or less.

A rollaway bed can be added to any room at \$3.00 per night. Mail your application now to secure your first choice of accommodations.



HOTEL RATES* AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

For a list of the headquarters of each participating society and section, see page 235, *Science*, 20 July.

Hotel	Single Bed	Double Bed	Twin Beds	Suites
Sheraton**	\$8.50		\$14.00	\$35.00—\$45.00
Bellevue Stratford**	8.50		14.00	32.00— 60.00
Warwick**	8.50		14.00	30.00— 65.00
Franklin Motor Inn	8.50		14.00	
Robert Morris	5.50—7.50	\$9.00—\$11.00	10.00—11.00	
Sylvania	7.50	11.00	12.00	
Adelphia	7.50	11.00	12.00	
Benjamin Franklin	8.50	12.00	14.00	32.00— 60.00

* All rooms are subject to a 4% Pennsylvania state sales tax.
** Hotels with sessions.

AAAS Housing Bureau, Hospitality Center,
16th Street and Pennsylvania Boulevard
Philadelphia 2, Pa.

Date of Application

Please reserve the following accommodations for the 129th Meeting of the AAAS in Philadelphia, 26—30 December, 1962

First Choice Hotel Second Choice Hotel Third Choice Hotel

Type of room: Single ☐ Double ☐ Double, twin beds ☐ Suite ☐ Rates: Desired Maximum

Number in party..... Sharing this room will be:
(List name and address of each person, including yourself. Attach list if space is insufficient.)

DATES: ARRIVAL A.M. P.M. DEPARTURE
(These must be indicated—add approximate hour, A.M. or P.M.)

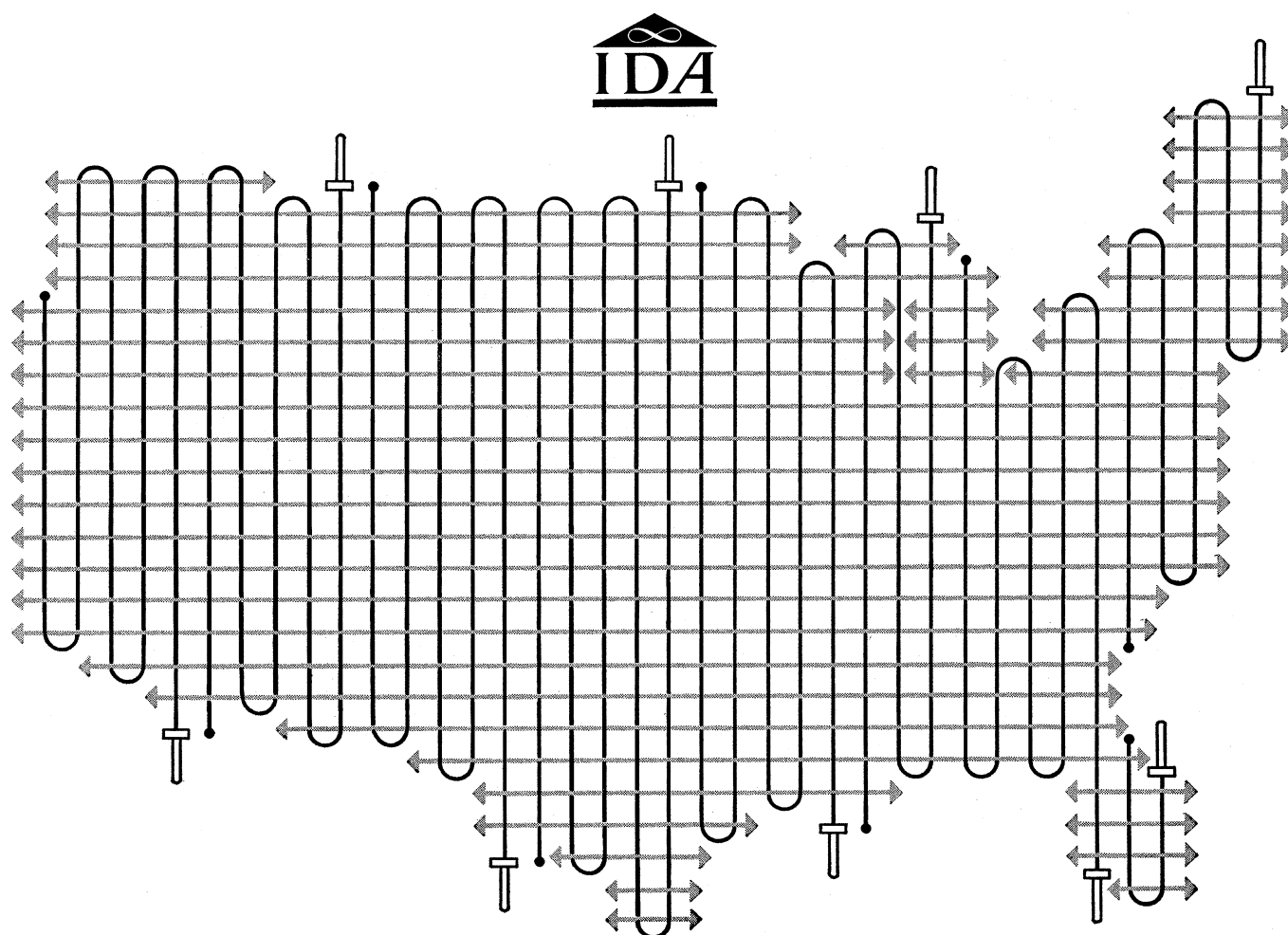
NAME
(Individual requesting reservation) (Please print or type)

ADDRESS
(Street) (City and Zone) (State)

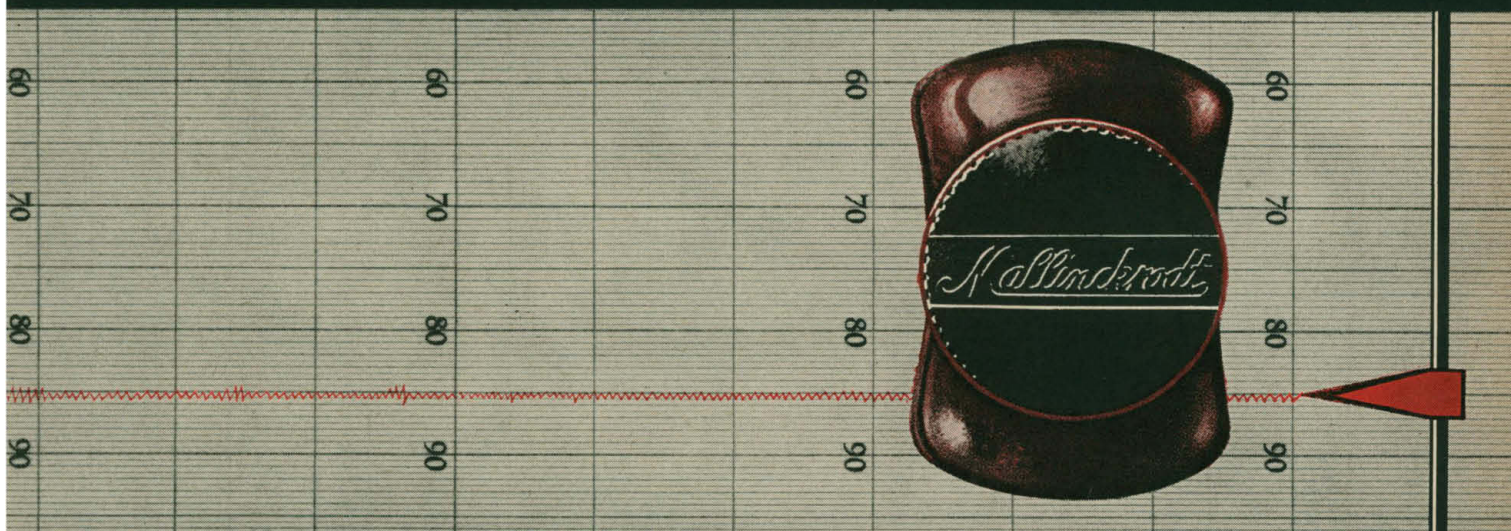
Mail this coupon now to the Housing Bureau. Rooms will be assigned and confirmed in order of receipt of reservation.

Woof

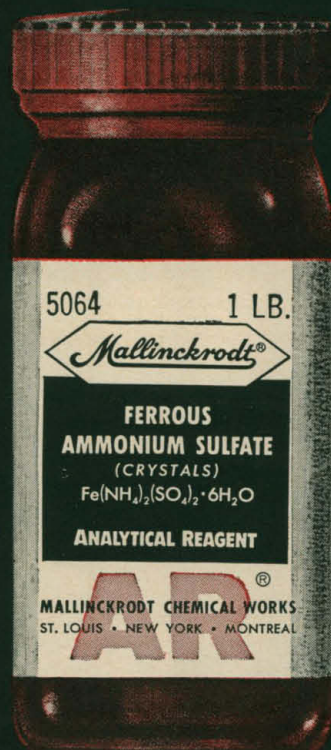
Warp is the threads that run the long way in woven fabric, and woof is the threads that run the short way. When they are interwoven, a strong and useful product results. * Let's say the warp is the Department of Defense and that the fabric desired is an effective national defense. The Institute for Defense Analyses helps to weave in the technical inputs that make the fabric strong. * IDA is an association of nine universities, formed at the behest of the government to serve as a medium by which the academic and scientific community can provide the technical advice needed in the Department of Defense to develop the fabric of national defense. Many universities that are not Members also participate in the substantive work. * The IDA roster is filled from all sources of scientific and engineering talent from industry, from research laboratories, and from academic faculty and graduates. The IDA staff grapples with problems of great moment, and often of great urgency, in which science is a principal ingredient. * Thus IDA weaves separate but interdependent strands into the protective clothing of the national body. Its work involves the highest level of sophistication in technology, and affects the highest level of responsibility in the national defense. * IDA seeks highly qualified scientific and engineering talent. A permanent career with IDA is a most satisfying possibility for capable people. IDA also welcomes, and due to its unique nature can put to good use, learned and skillful people for comparatively short periods of time. If you feel you are qualified to make a contribution to this vital work, & wish to do so, let's discuss the matter. It's possible that you could be a great help to us. INSTITUTE FOR DEFENSE ANALYSES Department B, 1710 H Street, NW, Washington 6, DC An equal opportunity employer



clearly... | constant
close
control

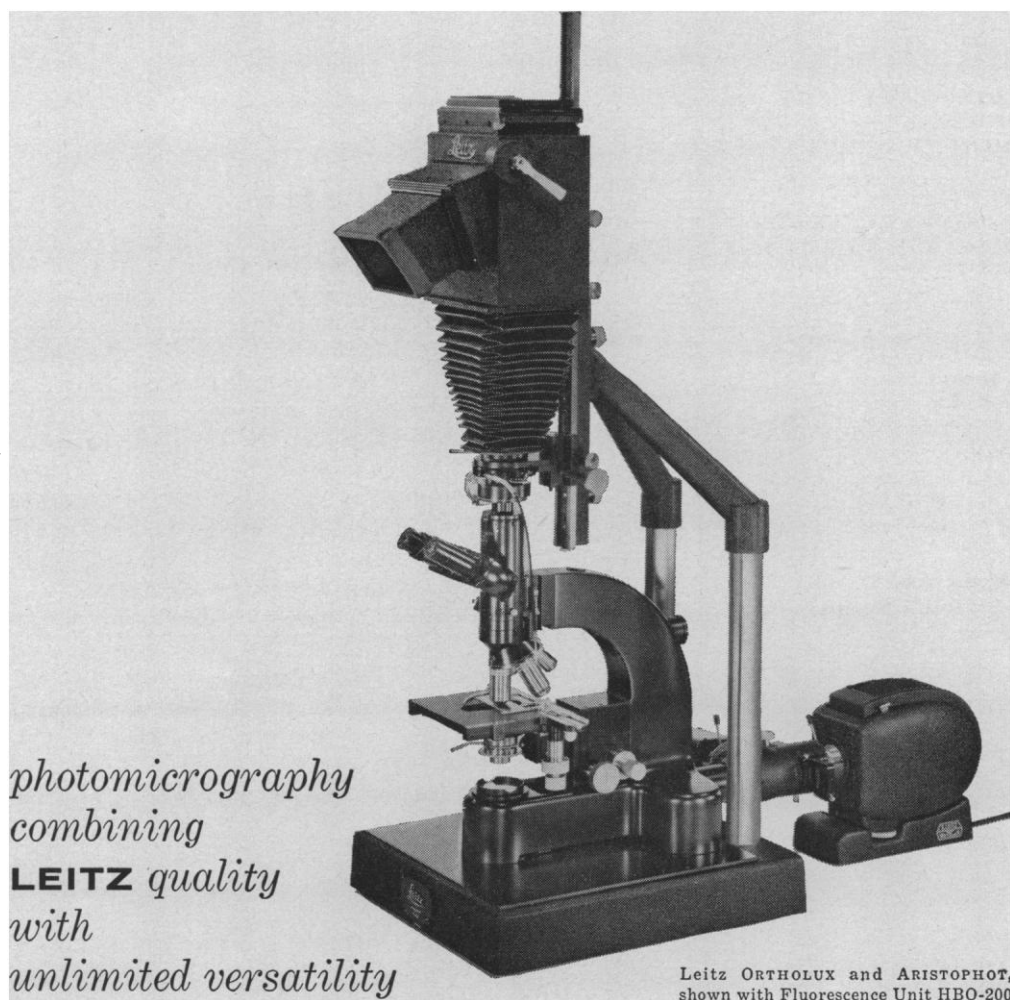


Only constancy of manufacturing control can guarantee *uniformity* of quality. It takes people...people dedicated to true chemical control. At Mallinckrodt over one-hundred professional, chemical control people in analytical and manufacturing laboratories guarantee this uniformity of quality identified by the Mallinckrodt AR label.



Mallinckrodt[®]

MALLINCKRODT CHEMICAL WORKS
St. Louis • New York • Montreal



ORTHOLUX *Microscope* with **ARISTOPHOT II**

Here are precision Leitz instruments perfectly matched for exacting photomicrography. They are simple to operate, yet capable of infinite variations to fit all your photomicrographic requirements.

With the Leitz ORTHOLUX with ARISTOPHOT, image sharpness is limited only by the resolution of the film you are using. Only air separates the optical system from the film. There is no loss of image sharpness because of mirrors or other devices.

Film size is not restricted: 35mm Leica, $3\frac{1}{4} \times 4\frac{1}{4}$, 4×5 , or Polaroid. Your choice of illumination, too, is virtually unlimited: transmitted or incident light, dark field, polarized or phase contrast.

With the ARISTOPHOT detached, the Leitz ORTHOLUX fulfills the most critical requirements for a research microscope. The ARISTOPHOT II may be used separately for gross photography or macrophotography.

Write for illustrated brochure, Dept. 294.



E. LEITZ, INC., 468 PARK AVENUE SOUTH, NEW YORK 16, N. Y.
Distributors of the world-famous products of
Ernst Leitz G. m. b. H., Wetzlar, Germany—Ernst Leitz Canada Ltd.
LEICA AND LEICINA CAMERAS · LENSES · PROJECTORS · MICROSCOPES

AMERICAN ASSOCIATION
FOR THE
ADVANCEMENT OF SCIENCE

Board of Directors

THOMAS PARK, *Retiring President, Chairman*
PAUL M. GROSS, *President*
ALAN T. WATERMAN, *President Elect*
HARRISON BROWN DON K. PRICE
HENRY EYRING MINA REES
H. BENTLEY GLASS ALFRED S. ROMER
MARGARET MEAD WILLIAM W. RUBEY
PAUL A. SCHERER, *Treasurer*
DAEL WOLFLE, *Executive Officer*

Editorial Board

KONRAD B. KRAUSKOPF H. BURR STEINBACH
EDWIN M. LERNER WILLIAM L. STRAUS, JR.
PHILIP M. MORSE EDWARD L. TATUM

Editorial Staff

DAEL WOLFLE HANS NUSSBAUM
Publisher Business Manager

PHILIP H. ABELSON
Editor

ROBERT V. ORMES ELLEN E. MURPHY
Managing Editor Assistant Editor

NANCY TEIMOURIAN, *Assistant to the Editor*

News: DANIEL S. GREENBERG, PATRICIA D. PADDOCK

Book Reviews: SARAH S. DEES

Editorial Assistants: GRAYCE A. FINGER, NANCY S. HAMILTON, OLIVER W. HEATWOLE, EDGAR C. RICH, JOHN E. RINGLE, CECIL F. SWEENEY, CONRAD YUNG-KWAI

Staff Assistants: LILLIAN HSU, MARION Y. KLINE, KAY E. KROZELY

Advertising Staff

EARL J. SCHERAGO, *Director*

HAZEL SANDS, *Production Manager*

Sales: RICHARD L. CHARLES (New York, N.Y., PE 6-1858); C. RICHARD CALLIS (Old Bridge, N.J., CL 4-3680); HERBERT BURKLUND (Chicago, Ill., DE 7-4973); Ed BIG (Monterey Park, Calif., CU 3-8600)

SCIENCE, now combined with THE SCIENTIFIC MONTHLY, is published each Friday by the American Association for the Advancement of Science at National Publishing Company, Washington, D.C. SCIENCE is indexed in the *Reader's Guide to Periodical Literature*.

Editorial correspondence should be addressed to SCIENCE, 1515 Massachusetts Ave., NW, Washington 5, D.C. Manuscripts should be typed with double spacing and submitted in triplicate. The AAAS assumes no responsibility for the safety of manuscripts. Opinions expressed by authors are their own and do not necessarily reflect the opinions of the AAAS or the institutions with which the authors are affiliated. For detailed suggestions on the preparation of manuscripts, see *Science* 125, 16 (4 Jan. 1957).

Advertising correspondence should be addressed to SCIENCE, Room 1740, 11 West 42 St., New York 36, N.Y.

Change of address notification should be sent to 1515 Massachusetts Ave., NW, Washington 5, D.C., 4 weeks in advance. Furnish an address label from a recent issue. Give both old and new addresses, including zone numbers.

Annual subscriptions: \$8.50; foreign postage, \$1.50; Canadian postage, 75¢. Single copies, 35¢. School year subscriptions: 9 months, \$7.00; 10 months, \$7.50. Cable address: Advancesci, Washington.

Copyright © 1962 by the American Association for the Advancement of Science.

The Thalidomide Lesson

The thalidomide case has given the nation a lesson on the work of the Food and Drug Administration and a demonstration of the merit of caution in approving new drugs. Dr. Frances Kelsey, the heroine of the case, has received from President Kennedy the gold medal Award for Distinguished Civilian Service, and is the deserved recipient of the nation's gratitude.

It is already clear that the case will be used to support efforts to secure tighter controls over the release of new drugs. The President has written to Senator Eastland, chairman of the Senate Judiciary Committee, recommending action "to protect the American people against unsafe and worthless drugs." The President had earlier made such recommendations, in his consumer message to Congress, and so had Senator Kefauver, following his three-year inquiry into practices of the drug industry (*Science*, 14 July, 27 October, and 15 December 1961). But these had been shelved by the Judiciary Committee in favor of what Secretary Ribicoff called a "mere shadow" of the original. What is now being considered comes close to the original.

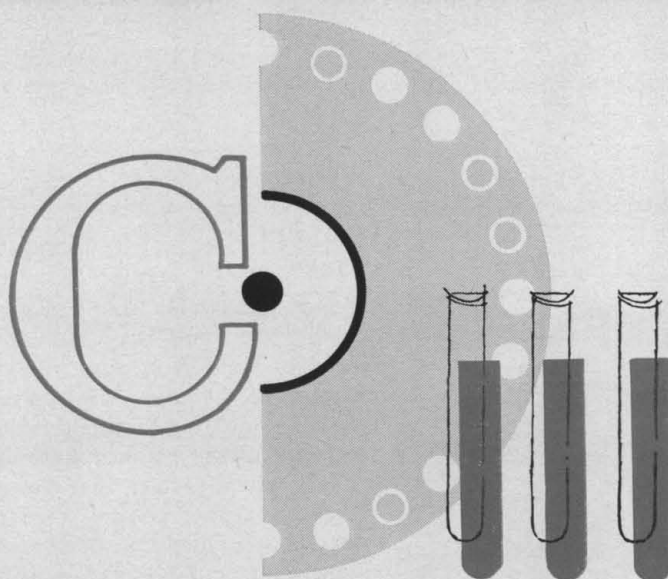
Whatever happens on the legislative scene, it also seems likely that pharmaceutical manufacturers will be more careful about the evaluation of new drugs. A new Commission on Drug Safety has been appointed by the Pharmaceutical Manufacturers Association (see page 516).

In short, Dr. Kelsey's caution has prevented much heartache, and it appears that the thalidomide case may be useful in improving the procedures used in evaluating and appraising new drugs.

But this happy outcome is not assured, for the reaction against what we have escaped could inspire restrictions severe enough to impede the development and use of new and beneficial drugs. The effect of delays in making new drugs available could be as detrimental as the effect of putting them into use too hastily. In the situation of knowing poignantly the dangers of commission and having to guess at the dangers of omission, we could adopt practices more harmful than those we seek to correct.

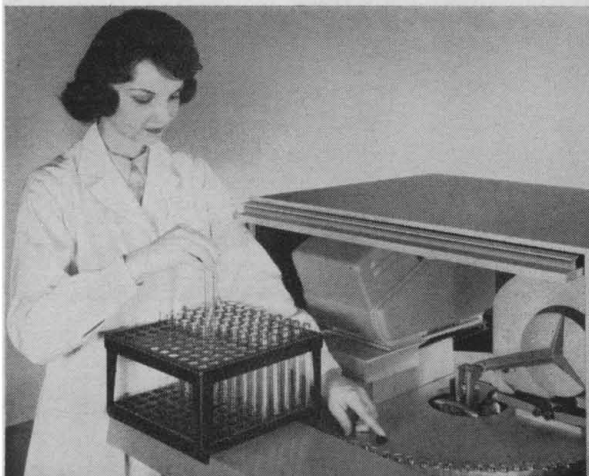
None of the principal issues of the Kefauver hearings—pricing policies, patent rights, generic vs. trade names, or proof of efficacy—were involved in this case, but only the old and fundamental matter of proof of safety. Nevertheless, if emotion over charges of giving dangerous drugs to pregnant young women, the universal pity aroused by horribly malformed babies, the publicity resources of a congressional inquiry, and the publicity and influence of organized medicine and the pharmaceutical industry are allowed to result in jangling clashes, the final result could be a bitter stalemate, or restrictions so severe as to enforce an unhealthy timidity on everyone involved in the testing, development, and approval of new drugs.

The moral is trite, but nonetheless important: moderation is required. Is it reasonable to hope that the thalidomide scare will bring all of the principals together for constructive planning of improvements in the always difficult business of screening, testing, and approving new drugs?—D.W.



THE NEW PACKARD NARROW CONSOLE AUTO-GAMMA[®] SPECTROMETER SYSTEM FEATURES A 100 SAMPLE CAPACITY WITH CONSTANT BACKGROUND... attained by means of a patented sample changer which locates the test tubes peripherally around the lead-shielded, well-type detector. Because the distance from detector to each sample remains constant, background remains constant even when "hot" samples are located adjacent to samples with little or no activity.

Another unique feature of the Model 402 Auto-Gamma Spectrometer is a narrow window and expander



amplifier circuitry which assures stability of the discriminators at window settings as small as 1% of full scale. The narrow window allows the operator to examine a small segment of the spectrum, define true photopeaks more accurately and decrease calibration time significantly.

For manual operation choose the Model 410A Auto-Gamma Spectrometer and a well-type scintillation detector. By adding a sample changer, automatic control unit and a digital printer, automatic operation will free your personnel of routine sample-handling and data recording chores.

For a complete technical description of Auto-Gamma Spectrometer Systems, call your Packard Sales Engineer or write for Bulletin AD-1004.

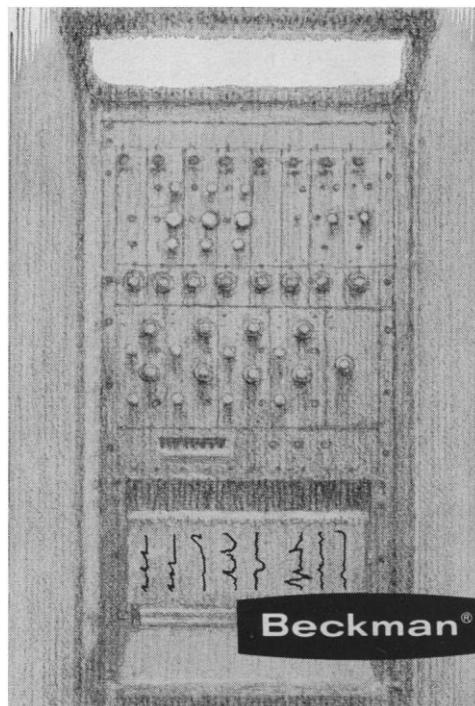
PACKARD INSTRUMENT COMPANY, INC.
BOX 428 • LA GRANGE, ILLINOIS • PHONE HUnter 5-6330

Packard

SALES OFFICES: BOSTON • NEW YORK • PHILADELPHIA
WASHINGTON, D.C. • DURHAM • ATLANTA • PITTSBURGH
CHICAGO • ALBUQUERQUE • DALLAS • SAN FRANCISCO
LOS ANGELES † ZURICH • FRANKFURT • LONDON • PARIS

Offner Type R Dynograph® Recorder / *will it help unlock secrets of delta P and open new doors in Hemodynamics?*

It may. The flexibility,
rapid response and fidelity of
Offner Equipment already have
sensitively and accurately
measured minute pressure
differences which point
toward new theories.
You can monitor patient
condition with the same precision.
Get simultaneous written
recording on up to 24 channels
of EKG, EEG, temperature,
respiration, blood pressure—all
physiological data. Simple,
inexpensive input couplers make
this versatility possible at far
lower cost than the special
purpose amplifiers required by
most other recorders. Durable
transistor circuitry offers great
reliability. The new ideas
on delta P are the subject
of a paper recently published by
Dr. Merrill Spencer, Bowman Gray
Medical School Hospital, Winston-Salem,
N. Carolina.* The new ideas in
medical recording? Write us.



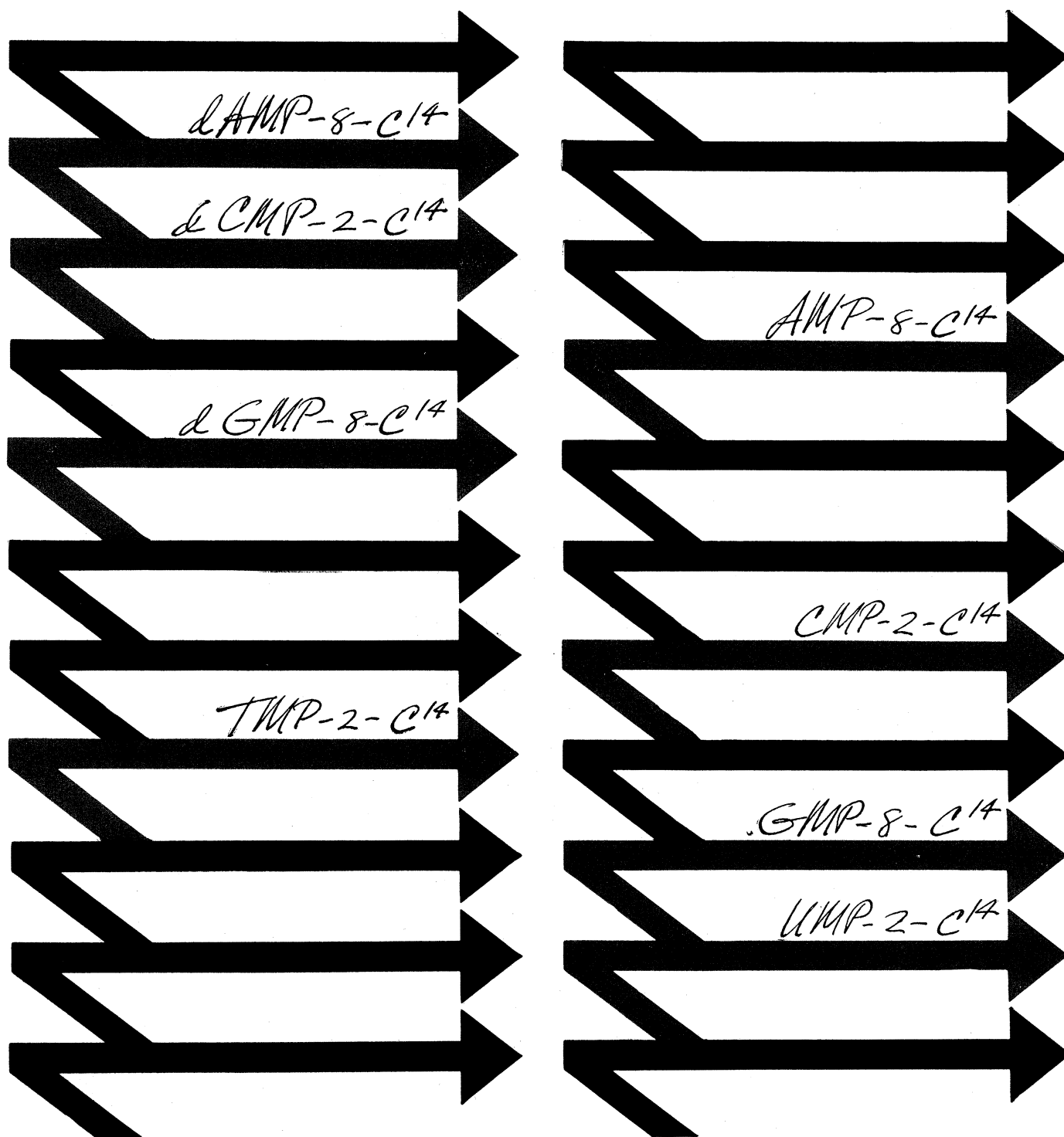
Beckman®

INSTRUMENTS, INC.

OFFNER DIVISION
Schiller Park, Illinois

062-783

*See Circulation Research; "Dynamics of Ventricular Ejection" by Dr. Merrill Spencer, Vol. 10, March, 1962, pg. 274.



new specifically labeled 5'-nucleotides—exclusive from Schwarz

Available for the first time, the four major 5'-ribo- and deoxyribonucleotides specifically labeled with C¹⁴. Specific activity: 6-10 $\mu\text{c}/\text{mg}$ for deoxyribonucleotides; 20-30 $\mu\text{c}/\text{mg}$ for ribonucleotides. Packed in 10 and 25 μc vials in 50% aqueous/ethanol solutions of the ammonium salts. We expect to have some C¹⁴-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

New Products

Neuron simulator is a transistorized electronic model in which the first two transistors are connected as a monostable multivibrator which produces individual output pulses when the input threshold is exceeded. Signals are fed into the multivibrator through five input resistors and an associated integrating capacitor. Thus, five dendritic inputs are available which have an integrating time constant consistent with the biological neuron. These inputs may be supplied either with continuous d-c signals, such as might be received from sensing devices, or with pulsed signals, such as the outputs of other neurons. The threshold level is dependent on the short-term firing history of the neuron. An inhibit input is provided which decreases the effectiveness of the input signals in a manner proportional to the inhibit signal. If the resulting signal level exceeds the threshold value, the multivibrator fires. The multivibrator produces a square-pulse output of uniform amplitude and pulse width. This pulse is amplified and an emitter follower provides a low impedance output so that each neuron is capable of driving 100 or more similar neurons without degradation of the output pulse. As normally supplied, both input and output are negative. Two models are available in the form of 4¼ by 4¾-inch plug-in cords, and several optional features can be added.—R.L.B. (Perceptive Research Products, Dept. S312, P.O. Box 94, East Station, Yonkers, N.Y.)

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).

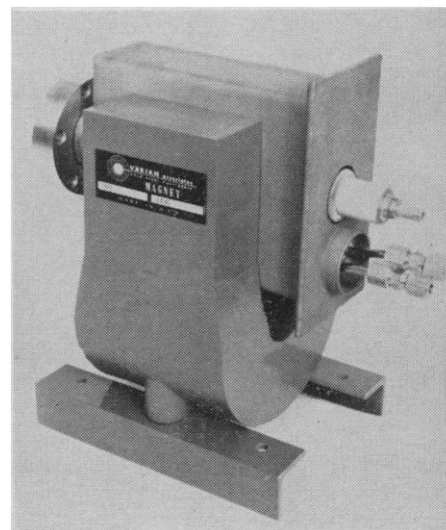
The information reported here is obtained from manufacturers and from other sources considered to be reliable. Neither *Science* nor the writers assume responsibility for the accuracy of the information. A Readers' Service card for use in mailing inquiries concerning the items listed is included on page 377. Circle the department number of the items in which you are interested on this card.

The model ITT-025 **data processor** receives and transmits at rates from 75 to 4800 bits/sec over telephone circuits. These rates range from the 100-word-per-minute standard teletype to 6000-word-per-minute data transmission. It can also accommodate greater capacities of wide-band communication lines. As a stored-program processor, the instrument is able to receive, process and transmit messages simultaneously over a large number of lines. Up to 256 separate jobs can be performed by interleaving steps of each. Effectively, each of the 256 jobs is performed by an individual data processor with the full capacity of the entire complex. As a communication switching center, the processor functions include automatic alternative routing of messages, message verification, retransmission of garbled messages, continuous self-checking, and traffic accounting to ensure that all messages are properly received.—J.S. (International Telephone and Telegraph Corp., Dept. S343, 320 Park Ave., New York 22, N.Y.)

Motor-driven multiple-diluting device facilitates one of the most time-consuming operations in any laboratory—the manual performance of serial dilutions. Designed for a broad range of applications in such fields as immunology, microbiology, and virus studies—it enables a single technician (even an inexperienced one) to perform serial dilutions of eight samples simultaneously, each dilution series consisting of up to 12 dilution steps. It aspirates measured volumes of sample (0.05 to 0.5 ml); dispenses them into a measured volume of diluent; mixes this dilution thoroughly; again aspirates, dispenses, mixes, and so on. In addition to saving valuable man-hours, this automatic method virtually eliminates the factor of human error. The automatic diluter consists of eight automatically operated syringe-and-pipette assemblies in a holder which

surmounts a movable flat-bed carriage. This carriage accommodates the disposable plastic tray, which provides 96 cups: 8 rows, 12 to a row, so the eight syringes may operate in unison over each row for up to twelve consecutive dilutions. The carriage has a positive positioning device that ensures placement of the sample directly under the pipette tips. The entire syringe-pipette-holder assembly may be removed easily for cleaning and sterilizing. In operation, pipettes are lowered into the first row of samples by means of a hand lever with a button switch on the end. Depression of this switch causes the pipettes to aspirate a preset volume of sample. To dilute these samples, the pipettes are lowered into successive rows of diluent and the automatic diluter is permitted to recycle several times in each position, to effect a thorough mixing of the sample and diluent. Any desired dilution factor can be obtained by regulating the volume of the diluent and the volume aspirated.—R.L.B. (American Instrument Co., Inc., Dept. S314, 8030 Georgia Ave., Silver Spring, Md.)

High-vacuum pump (model 911-0011) is an all-electronic pump that operates in the pressure range 10^{-2} to 10^{-10} mm-Hg. The pump may be mounted in any orientation, requires no cold traps or continuous forepumping, and functions as a gage, since the current

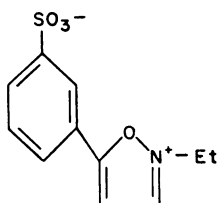


drawn by the pump is proportional to the pressure in the pump. When operating below 10^{-5} mm-Hg, the total power required by the pump is less than 60 w. The pump contains no liquid or moving parts. Pumping speed is 15 lit./sec.—J.S. (Varian Associates, Dept. S300, 611 Hansen Way, Palo Alto, Calif.)

A new Peptide-former

N-ETHYL-5-PHENYLISOXAZOLIUM-3'-SULFONATE (Woodward's Reagent K)

Woodward's Reagent K, manufactured by PILOT, functions as a peptide bond former by combining with the acid group of one amino acid or peptide to form an active ester. This ester bond is then broken by the amino group of a second amino acid or peptide ester with concurrent formation of a peptide and a water-soluble by-product. The new procedure is simple and fast, gives exceptionally high yields of very pure peptides free from by-products and without appreciable racemization. Also available from PILOT are synthetic polypeptides. For more information, write to



PILOT CHEMICALS, INC.

36 Pleasant St., Watertown 72, Mass.

D-Galactose-1-C¹⁴

\$50/50 μ c

\$75/100 μ c

D-Glucosamine-1-C¹⁴

\$40/50 μ c

\$57/100 μ c

NEN

LABELED
CHEMICALS

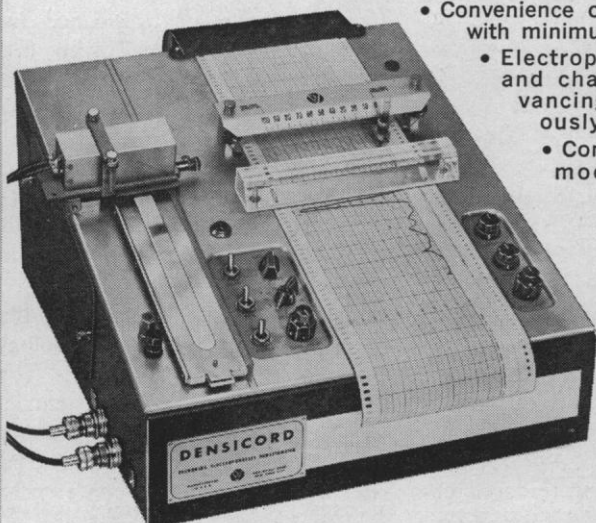
HAcock 6-7311

NEW ENGLAND NUCLEAR CORP.
575 ALBANY STREET, BOSTON 18, MASSACHUSETTS

DENSITOMETRIC EQUIPMENT

Single Unit
Densicord Model 542
for Recording
Electrophoresis

with this system:



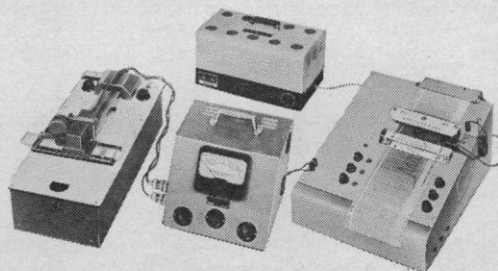
- Convenience of Single Unit with minimum of controls
- Electrophoresis strip and chart paper advancing simultaneously
- Compactness — moderate price.

Bulletin 800-D will give you complete operating details. Write today!

which should you use?

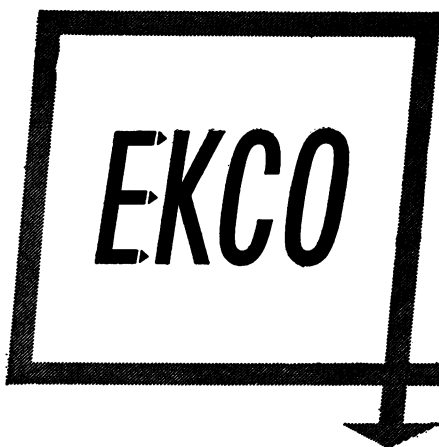
Building Blocks
for Electrophoresis
and Chromatography

with this system:



Bulletin 800-S will give you complete operating details. Write today!

PHOTOVOLT CORP. 1115 Broadway • New York 10, N.Y.



VIBRATING REED ELECTROMETER



The newest Vibrating Reed Electrometer Type N616B measures direct currents down to -10^{15} amps full scale using internal resistance! Very low noise and drift— ± 100 Microvolts over 24 hours. Applied D.C. is converted to A.C. by a vibrating reed capacitor and amplified by a stable A.C. amplifier. Output meter calibrated in voltage plus recorder output facility. Proven performance at low cost!

For full information on the N616B Electrometer or on any of the wide range of Ekco Equipment used in research, medicine, aviation and industry in more than 80 countries—write to



electronics

EKCO ELECTRONICS LTD SOUTHBEND-ON-SEA ENGLAND

In U.S.A. contact associate company
American Tradair Corporation
34-01 30th Street, Long Island City 6, New York
O-397

tain to current and projected areas of research. Conferences allow detailed review of the many examples of disease found on post-mortem examination of animals that die in the zoo. The purpose of these conferences is to develop skills in interpreting signs of disease and in formulating dynamic concepts of disease that may be tested by experiment.

This program is flexible. It has been combined with residency training in the schools of medicine and veterinary medicine. However, it is also designed for the graduate student who wishes to take an advanced degree in this area.

Graduates in medicine or in veterinary medicine who combine this training in comparative pathology with the residency training in pathology will find many opportunities awaiting them. Biologists who complete this program creditably will be equally well equipped for research, but possibly would not be accepted so readily for teaching-research positions in schools of medicine or veterinary medicine. However, a consensus of the conference was that, as the trained persons become available, so will the opportunities.

HERBERT L. RATCLIFFE

Penrose Research Laboratory,
Philadelphia Zoological Garden,
Philadelphia, Pennsylvania

References

1. D. Marine, *J. Exptl. Med.* **19**, 70 (1914); H. G. Schlumberger, *Brookhaven Symp. Biol.* **7**, 169 (1955).
2. D. R. Idler, A. P. Ronald, P. J. Schmidt, *Can. J. Biochem. Physiol.* **37**, 1238 (1959); D. H. Robertson, M. A. Kupp, C. B. Favour, S. Hane, S. F. Thomas, *Endocrinology* **68**, 733 (1961).
3. H. L. Ratcliffe, *Zoologica* **25**, 463 (1940); —, *Am. Rev. Tuberc. Pulmonary Diseases* **54**, 389 (1946); P. R. Cannon, *J. Am. Med. Assoc.* **126**, 360 (1945); R. W. Wissler, R. L. Woolridge, C. H. Steffer, P. R. Cannon, *J. Immunol.* **52**, 267 (1946).
4. R. L. Snyder, *Proc. Natl. Acad. Sci. U.S.* **47**, 449 (1961); H. L. Ratcliffe, *Circulation*, in press.

Forthcoming Events

September

19-20. **Industrial Electronics**, annual symp., Chicago, Ill. (E. A. Roberts, Compotometer Corp., 5600 Jarvis Ave., Chicago)

19-21. **Rocky Mountain Minerals Conf.**, Butte, Mont. (Metallurgical Soc. of AIME, 345 E. 47 St., New York 17)

19-22. **Information Retrieval**, seminar, Minneapolis, Minn. (Director, Center for Continuation Study, Univ. of Minnesota, Minneapolis 14)

19-23. **Air Force Assoc.**, convention and aerospace panorama-weapons meet, intern., Las Vegas, Nev. (Air Force Assoc., 1901 Pennsylvania Ave., NW, Washington 6)

20. **Surgery of the Hand**, intern. conf.,

Paris, France. (L. Gosse, c/o Hôpital de Nanterre, 3 Ave. de la République, Nanterre (Seine), France)

20-22. **Sulphur Therapy**, intern. symp., Innsbruck, Austria. (K. Weithaler, c/o Medizinische Universitäts Klinik, Innsbruck)

20-23. **International Soc. for Practical Applied Medicine**, intern. congr., Salzburg, Austria. (Sekretariat, Internationale Gesellschaft für Praktisch Angewandte Medizin, Lange Str. 21a, Oelde, Westfalen, Germany)

20-23 **Rockets and Space Flight**, symp., Coblenz, Germany. (Deutsche Raketen-Gesellschaft, Fritz-Beindorf-Allee 9, Hanover, Germany)

20-28. **Intergovernmental, Oceanographic Commission**, Paris, France. (U.N. Educational, Scientific and Cultural Organization, Place de Fontenoy, Paris 7°)

20-30. **Handling and Lifting Equipment and Industrial Electricity**, intern. study sessions, Charleroi, Belgium. (Société Coopérative de Gestion, Palais des Expositions, Avenue de l'Europe, Charleroi)

22. **Pharmacy Assembly**, annual, New York, N.Y. (J. Yellin, Hebrew Home for the Aged, Bronx, N.Y.)

22-29. **International Scientific Film Assoc.**, congr., Warsaw, Poland. (F. Gazan, ISFA, 38 Avenue des Ternes, Paris 17°, France)

22-4. **Cinematographic Techniques**, intern. congr., Turin, Italy. (Salone Internazionale della Tecnica, Corso Galileo Ferraris 60, Turin)

23-26. **Latin American Congr. of Angiology**, Buenos Aires, Argentina. (E. Sales, Santa Fé 1171, Buenos Aires)

23-26. **Petroleum Mechanical Engineering**, conf., Dallas, Tex. (American Soc. of Mechanical Engineers, Meetings Manager, 29 W. 39 St., New York 18)

23-27. **Electrochemical Soc.**, Boston, Mass. (ES, 1860 Broadway, New York 23)

23-27. **Metal**, intern. congr., Vienna, Austria. (Metall-u. Farben A.G., Kärntnerstrasse 7, Vienna 1)

23-27. **Microcirculation**, symp., Pavia, Italy. (G. Pellegrini, Inst. of Medical Pathology, Univ. of Pavia, Pavia)

24-26. **European Assoc. Against Poliomyelitis**, symp., Prague, Czechoslovakia. (P. Recht, EAAP, 56 rue Charles Legrelle, Brussels 4, Belgium)

24-26. **National Power Conf.**, Baltimore, Md. (American Soc. of Mechanical Engineers, 29 W. 39 St., New York 18)

24-26. **World Veterinary Poultry Assoc.**, conf., Cambridge, England. (W. M. McKay, Cyanamid of Great Britain, Ltd., Bush House, Aldwych, London, W.C.2, England)

24-28. **International Astronautical Federation**, congr., Sofia, Bulgaria. (J. A. Stemmer, IAF, P.O. Box 37, Baden, Switzerland)

24-28. **Organometallic Derivatives**, intern. colloquium, Paris, France. (H. Normant, Faculté des Sciences, Université de Paris à la Sorbonne, 47 rue des Ecoles, Paris 5°)

24-29. **International Committee on Electrochemical Thermodynamics and Kinetics**, Rome, Italy. (N. Ibl, c/o Laboratory of Physical Chemistry, Federal Polytechnicum, 6 Universitätsstrasse, Zurich, Switzerland)

S-Adenosyl-L-methionine-methyl-C¹⁴
\$45/10 uc • \$175/50 uc • \$300/100 uc

L-Methionine-methyl-C¹⁴
\$325/mc • \$32.50/100 uc • \$25.00/50 uc

DL-Methionine-2-C¹⁴
\$94.00/100 uc • \$75.00/50 uc

IMMEDIATE DELIVERY

Ask for NEW PRICE LIST revised July, 1962 with lower prices on more than 150 radioactive chemicals. For personal service call TWINBROOK 4-6600 (area code 617) or write Tracerlab, Dept. A 1601 Trapelo Road, Waltham 54, Massachusetts.

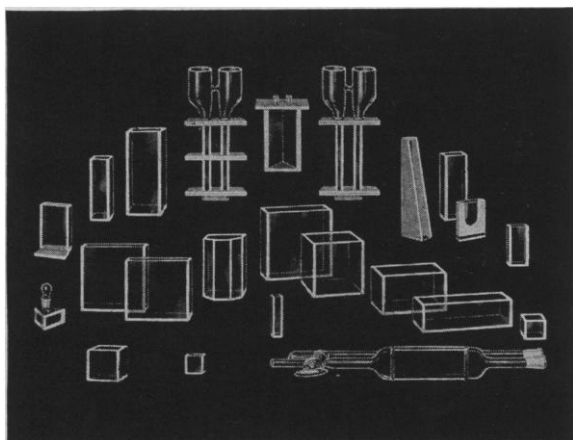


Tracerlab

A DIVISION OF LABORATORY FOR ELECTRONICS, INC.

GLASS ABSORPTION CELLS

made by **KLETT**

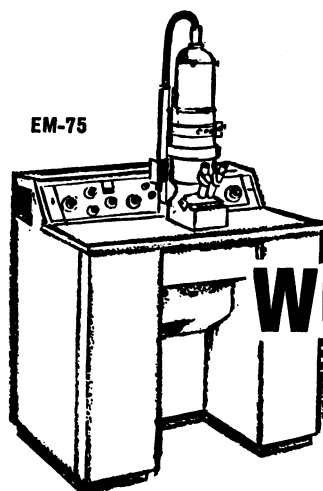


SCIENTIFIC APPARATUS

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

Klett Manufacturing Co.

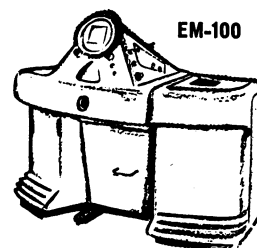
179 East 87 Street, New York, New York



EM-75

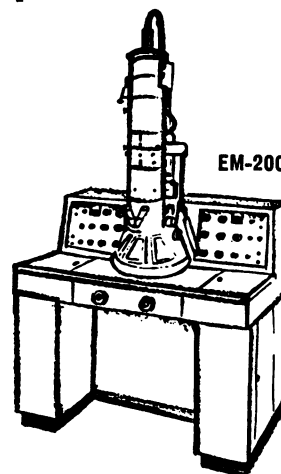
A NEW GENUS OF WORKHORSE FEATURES FOR LABORATORIES

This is an electron microscope whose only equine relationship is its ability to handle great quantities of work, *month-in, month-out* and yet remain relatively service free. The EM-75 is an unmatched instrument in the 25 Angstrom area for general service and screening use, process control, clinical procedures and as a teaching tool—primarily because it does not have to be pampered. It also has an interesting dual function. With few hours and a few parts it can be readily converted into a *Projection X-ray Microscope* providing morphological studies of opaque materials.



EM-100

The Norelco line of microscopes is extensive. There's the EM-100 which can be seen wherever discriminating microscopists gather and also the EM-200 whose new features require pages to cover.



EM-200

Norelco®
ELECTRON OPTICS

Our full line of microscopes will be displayed at Booths 13-14-15-16, Fifth International Congress for Electron Microscopy, Philadelphia-Sheraton, Aug. 29th-Sept. 5th.

For more detailed information write to:

PHILIPS
ELECTRONIC INSTRUMENTS
A Division of Philips Electronics and Pharmaceutical Industries Corp.
Dept. EM-4, 750 South Fulton Ave., Mount Vernon, N.Y.

accurate,
specific,
reliable
lab **O₂** analysis



—exclusive BECKMAN paramagnetic operation makes it possible!

Faster, easier, more specific O₂ measurements are yours with Beckman laboratory oxygen analyzers. Which model best fits your application?

PORTABLE MODEL D2...compact and battery-operated, delivers fast and reliable measurements. Accuracy is $\pm 2\%$ of full scale. Corrosion-resistant analysis cell available. Choose from two ranges: 0-25% or 0-100% O₂.

SEMI-PORTABLE MODEL C2...line-operated, is ideal for any routine static or flowing sample analysis. Accuracy is $\pm 1\%$ of full scale. Factory precalibration includes background gas correction. Corrosion-resistant, small volume, or fast response analysis cells available. Choose any range with 5% minimum span between 0-75%, or any range with 15% minimum span between 75-100%.

RESEARCH MODEL E2...finest of all lab O₂ analyzers—accuracy is $\pm 0.025\%$ O₂ on 5% spans. Line-operated null-balance circuitry facilitates precise readout from a 1000-division Helipot. Zero and span adjustments allow compensation for barometric pressure and background gas changes. Choose dual or multiple ranges with a 1% minimum span—up to 5 different zero-based or suppressed ranges on one instrument.

FOR YOUR PROCESS APPLICATION...there's also a complete line of highly-accurate, highly-specific Beckman process gaseous and dissolved oxygen analyzers.

Your nearest Beckman representative has details on the C2, D2, and E2. Contact him or write direct for Data File LO-38-162.

Beckman

INSTRUMENTS, INC.

SCIENTIFIC AND PROCESS INSTRUMENTS DIVISION
Fullerton, California

24-29. **Pharmaceutical Sciences**, intern. congr., Vienna, Austria. (W. Thor, Organizing Committee, Spitalgasse 31, Vienna 9)

24-29. **Technical Assoc. of the Pulp and Paper Industry**, annual conf., Stockholm, Sweden. (I. F. Hendry, Research and Development, Wiggings Teape & Co., Ltd., Beaconsfield, Bucks, England)

24-30. **European Seismological Commission**, general assembly, Jena, Germany. (E. Peterschmitt, ESC, 38 Boulevard d'Anvers, Strasbourg, France)

24-30. **Vital Substances, Nutrition, and Civilization Diseases**, intern. convention, Garmisch-Partenkirchen, Germany; and Innsbruck, Austria. (Intern. Soc. for Research on Nutrition and Vital Substances, Bremeroderstr. 61, Hanover-Kirchrode, Germany)

25-28. **Association of Iron and Steel Engineers**, Cleveland, Ohio. (Managing Director, AISE, 1010 Empire Bldg., Pittsburgh 22, Pa.)

25-28. **Electric Power Systems for Space**, conf., Santa Monica, Calif. (American Rocket Soc., 500 Fifth Ave., New York 36)

26-28. **Practice of Gas Chromatography**, meeting, East Lansing, Mich. (C. G. Hariz, Houdry Process & Chemical Co., Box 427, Marcus Hook, Pa.)

26-29. **Austrian Soc. of Biochemistry**, Society for Physiological Chemistry, German Pharmacology Soc., Vienna, Austria. (Secretariat, Vienna Medical Acad., 4 Alserstr, Vienna IX)

26-29. **Neurobiologists** intern. meeting, Kiel, Germany. (W. Bargmann, Neue Universität, Olshausenstrasse 40/60, Kiel)

27-29. **Protection of Plants and Extermination of Pests**, symp., Magdeburg, Germany. (Chemische Gesellschaft in der D.D.R., Unter den Linden 68-70, Berlin W.8, Germany)

27-29. **Society for General Microbiology**, Reading, England. (SGM, c/o Inst. of Biology, 41 Queen's Gate, London, S.W.7, England)

28-29. **Broadcast Symp.**, annual, Washington, D.C. (G. C. Wetmore, Collins Radio Co., 1825 Connecticut Ave., NW, Washington 9)

28-30. **Medical Psychology**, intern. colloquium, Brussels and Louvain, Belgium. (P. H. Davost, Société de Psychologie Médicale de Langue Française, 2 rue de Rohan, Rennes, France)

30-5. **American Soc. for Testing Materials**, Pacific area, Los Angeles, Calif. (Executive Secretary, ASTM, 1916 Race St., Philadelphia 3, Pa.)

30-6. **Medical Hydrology and Climatology**, intern. congr., Baden-Baden, Germany. (M. Fontan, c/o Faculté de Médecine, Lille, France)

October

1-3. **Association of Medical Illustrators**, annual, Detroit and Ann Arbor, Mich. (AMI, 1853 W. Polk St., Chicago 12, Ill.)

1-3. **Communications**, natl. symp., Utica, N.Y. (J. K. Webb, 489 Van Ellis Rd., Utica)

1-3. **Plastics**, intern. congr., Turin, Italy. (Segreteria, Congresso delle Materie Plastiche, Corso Galileo Ferraris 60, Turin)

1-4. **American Oil Chemists Soc.**, To-

ronto, Canada (K. F. Mattil, Swift & Co., Packers and Exchange Aves., Chicago 9, Ill.)

1-4. **Electroencephalographic** Information, Marseilles, France. (R. Naquet, 23 rue de la Loge, Marseilles 2^e)

1-4. **Iron and Steel**, intern., Luxembourg. (Secrétariat, c/o Centre National de Recherches Metallurgiques, Abbaye du Val-Benoit, Liège, Belgium)

1-4. **Shell Structures**, intern. conf., San Francisco, Calif. (A. C. Scordelis, Dept. of Civil Engineering, Univ. of California, Berkeley 4)

1-5. **American Soc. of Tool and Manufacturing Engineers**, Los Angeles, Calif. (R. M. Johnson, 3336 Stinson Blvd., Minneapolis 18, Minn.)

1-6. **Food Standards**, conf., Geneva, Switzerland. (Intern. Agency Liaison Branch, Office of the Director General, Food and Agriculture Organization, Viale delle Terme di Caracalla, Rome, Italy)

1-6. **International Astronomical Union**, symp. on site testing, Rome, Italy. (D. H. Sadler, c/o Royal Greenwich Observatory, Herstmonceux Castle, Hailsham, Sussex, England)

1-6. **International Soc. of Photogrammetry**, Milan, Italy. (A. L. Nowicki, c/o Army Map Service, 6009 Massachusetts Ave., N.W., Washington, D.C.)

1-6. **Malaria**, conf., Manila, Philippines. (World Health Organization, Regional Office for the Western Pacific, P.O. Box 2932, Manila)

1-10. **International Council for the Exploration of the Sea**, Copenhagen, Denmark. (ICES, Charlottenlund Slot, Charlottenlund, Denmark)

2-4. **Advanced Propulsion Concepts**, Cincinnati, Ohio. (M. M. Slawsky, Air Force Office of Scientific Research, Washington, 25)

2-4. **Batteries**, intern. symp., Bourne-mouth, England. (D. H. Collins, Inter-Departmental Committee on Batteries, Admiralty Engineering Laboratory, W. Drayton, Middlesex, England)

2-4. **Fluid Amplification**, symp., Washington, D.C. (by invitation only). (Public Information Officer, Diamond Ordnance Fuze Laboratories, Room 315, Bldg. 83, Washington 25)

2-4. **Physics and Nondestructive Testing**, symp., San Antonio, Tex. (D. L. Black, Southwest Research Inst., Box 2296, San Antonio)

2-4. **Space Electronics and Telemetry**, symp., Miami Beach, Fla. (O. A. Hoberg, Marshall Space Flight Center, M-ASTRI, Bldg. 4487-B, Huntsville, Ala.)

2-5. **American Roentgen Ray Soc.**, Washington, D.C. (C. A. Good, Mayo Clinic, Rochester, Minn.)

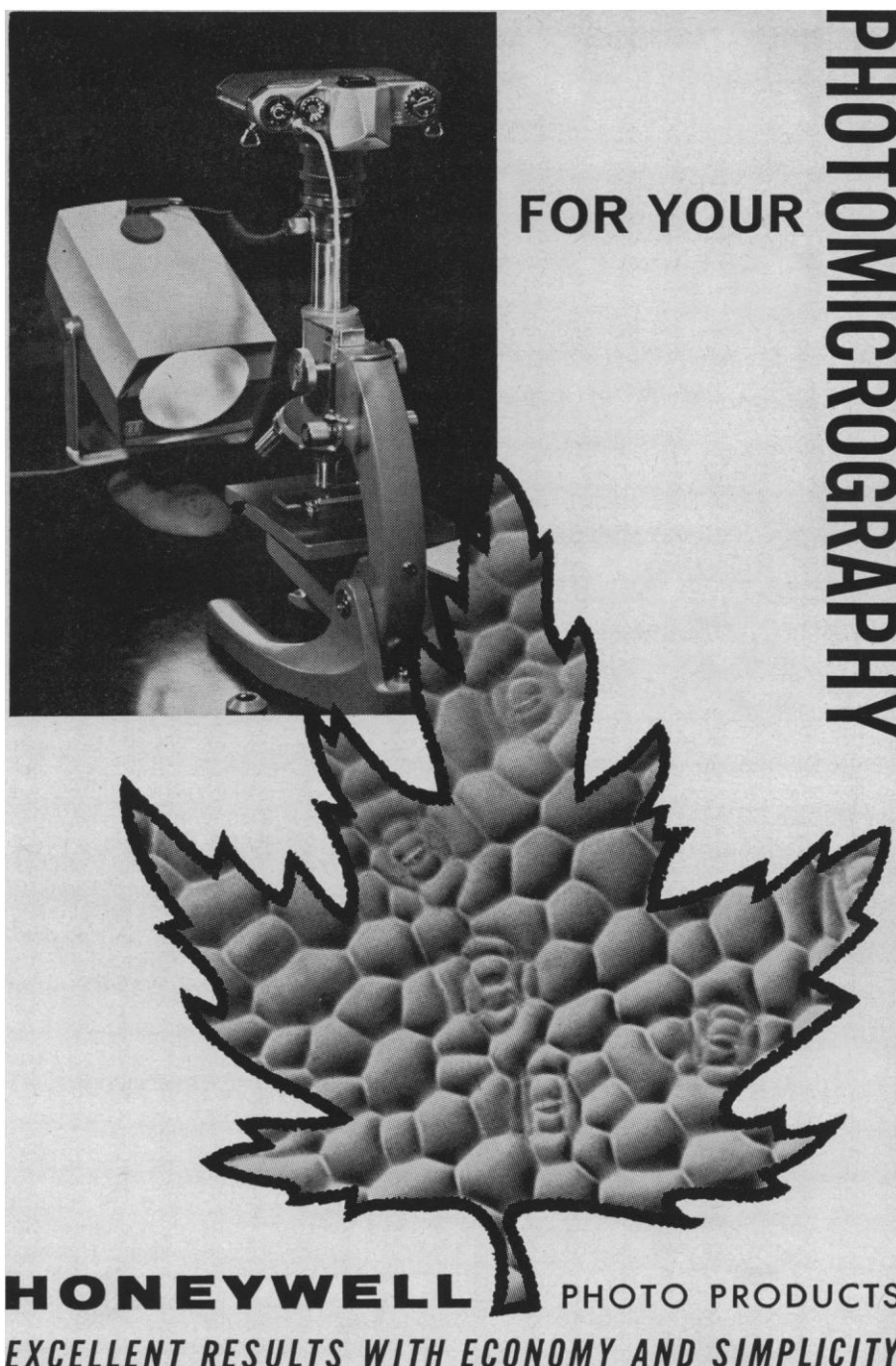
2-5. **Animal Care Panel**, annual, Chicago, Ill. (R. J. Flynn, Argonne National Laboratory, Argonne, Ill.)

2-5. **Human Engineering**. Annual inst., Stamford, Conn. (J. H. Ely, Dunlap and Associates, 429 Atlantic St., Stamford)

2-5. **Prophylactic Medicine and Social Hygiene**, intern. congr., Bad Godesberg, Germany. (Kongressbüro, Postfach 864, Bad Godesberg)

2-8. **Committee on Human Genetics**, World Health Organization, Geneva, Switzerland. (WHO, Palais des Nations, Geneva)

17 AUGUST 1962



PHOTOMICROGRAPHY

FOR YOUR

HONEYWELL PHOTO PRODUCTS

EXCELLENT RESULTS WITH ECONOMY AND SIMPLICITY

The classic maple shape outlines a specimen micrograph of leaf epidermis made at X100 with a Honeywell Pentax camera and a Honeywell 52-A Strobolar for flash illumination. (Sharp eyes will identify the leaf as *philodendron*, not maple; please indulge our preference in design!)

A Pentax should be a part of your standard laboratory equipment. At \$149.50 for the Model H-1, the reliable Pentax is undoubtedly your very best choice of a versatile single lens reflex camera. There are 13 interchangeable lenses for it (35 mm to 1000 mm).

The 52-A Electronic Flash Unit (\$69.95) plugs into 110V-AC and features a modeling light which insures your directing the flash into your microscope's mirror. This flash unit absolutely stops specimen movement and the effects of camera shake; it cannot burn or cook slides.

See these fine products at your local Honeywell Photo Products dealer's, or write for brochure to David Moore (209) Honeywell-Heiland, Denver 10, Colorado.

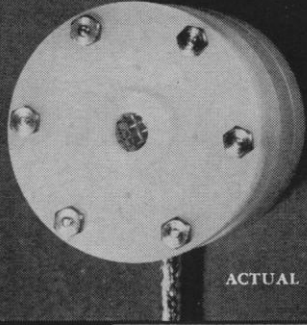
Honeywell



Photo Products

**NEW
GP-10** **GAS PHASE
OXYGEN TRANSDUCER***

*PATENT PENDING



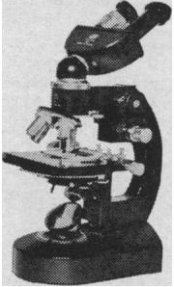
ACTUAL SIZE

PROVEN **PROJECT MERCURY
HILLARY EXPEDITION**

The GP-10 offers gas phase oxygen analysis—rapidly, continuously, accurately. Ruggedly designed for quick installation and mounting in any position, this self-powered unit is meeting the diverse demands of industrial and institutional users for measuring oxygen in trace or gross amounts. Write for Bulletin T-4 for details.

FROM **CHEMTRONICS, INC.**
P. O. Box 417
San Antonio 6, Texas

VARIMEX RESEARCH MICROSCOPES
Model MB-10, MB-15



Versatile biological binocular microscope with monocular attachment, quadrupal nose piece, built-in mechanical stage (4 & 3/4" by 6"). Concentric coarse, fine adjustment graduated 0.002 mm. Built-in illumination (Koehler's basis) resolving power with enough light for microprojection. Plano-concave mirror for day-light use. Double lense condenser, diaphragm, cobalt filter. Adjustable transformer: 220/6V. 4 Obj., 8 Ocul., 8x with scale. Bulbs: 6V/20W. Box, lock, keys. Magnification 35x-2250x. Weight 17 lbs. 4 oz., with case 30 lbs.

Extra accessories: dark field condenser; negative, positive phase contrast equipment; photographic, drawing, projection attachments; double & micrometer eyepiece. Also other type microscopes, precision instruments. Request catalog.

Sole Distributors:
MAGNIFICATION INSTRUMENT COMPANY
2 East 45th Street
New York 17, New York
OXford 7-8978

2-9. **Sanitary Engineers**, seminar, Belgium. (World Health Organization, Regional Committee for Europe, 8 Scherfigsvej, Copenhagen O, Denmark)

3. **California Acad. of Sciences**, San Francisco. (S. W. Muller, CAS, Golden Gate Park, San Francisco)

3-5. **International Union for Applied Ornithology**, Frankfurt am Main, Germany. (S. Pfeifer, Institut für angewandte Vogelkunde, Steinauer Strasse 44, Frankfurt am Main-Fechenheim)

3-5. **New Respiratory Disease Viruses**, intern. conf., Bethesda, Md. (C. G. Loosli, Univ. of Southern California School of Medicine, 2025 Zonal Ave., Los Angeles)

3-6. **Optical Soc. of America**, Rochester, N.Y. (M. E. Warga, Executive Office, OSA, 1155 16 St., NW, Washington, D.C.)

4-5. **International Soc. for Geomechanics**, congr., Salzburg, Austria. (Landesverkehrsamt Salzburg, Mozartplatz 10/1, Salzburg)

4-5. **International Soc. of Rock Mechanics**, colloquium, Salzburg, Austria. (ISRM, Franz-Josef-Str. 3, Salzburg)

4-5. **Solid Fuels**, conf., Pittsburgh, Pa. (Society of Mining Engineers, Coal Div., 345 E. 47 St., New York 17)

5-7. **Association of Cereal Research**, milling conf., Detmold, Germany. (Arbeitsgemeinschaft Getreideforschung, Am Schützenberg 9, Detmold)

5-10. **Moorland Research**, intern. congr., Bremen, Germany. (Internationale Gesellschaft für Moorforschung, Hauptstr. 26, Vaduz, Liechtenstein)

6-7. **American Acad. of Psychotherapists**, annual conf., Chicago, Ill. (A. Ellis, Parc Vendome, 333 W. 56 St., New York 19)

6-7. **Parathyroid Insufficiency and Chronic Tetany**, intern. symp., Paris, France. (H. P. Klotz, Hôpital Bichat, 170 Boulevard Ney, Paris 18°)

6-12. **Electronic Computers in Civil Engineering**, symp., Lisbon, Portugal. (M. Rocha, Laboratório Nacional de Engenharia Civil, Av. do Brasil, Lisbon)

7-9. **Neurology and Neurological Sciences**, congr., Tokyo, Japan. (Japanese Organizing Committee, c/o 3rd Dept. of Internal Medicine, Faculty of Medicine, University of Tokyo, Hongo, Tokyo)

7-10. **Process Engineers**, annual, Mainz, Germany. (Verfahrenstechnische Gesellschaft, Verein Deutscher Ingenieure, Rheingau-Allee 25, Frankfurt am Main, Germany)

7-10. **Society of Petroleum Engineers**, Los Angeles, Calif. (SPE, 345 E. 47 St., New York 17)

7-13. **Cardiology**, intern. congr., Mexico City, Mexico. (I. Costero, Instituto Nacional de Cardiologia, Ave. Cuauhtemoc 300, Mexico 7, D.F.)

8-10. **Electronics**, natl. conf., Chicago, Ill. (National Electronics Conf., 228 N. La Salle St., Chicago 1)

8-11. **Allergy**, congr., Basel, Switzerland. (R. Schuppli, c/o Dermatologische Universitäts-Klinik, Basel)

8-11. **Infectious Pathology**, intern. congr., Bucharest, Rumania. (N. Cajal, Str. Dumbrava, Rossie 23, Bucharest)

8-11. **Otorhinolaryngology**, congr., Paris, France. (H. Guillon, French Soc. of Otorhinolaryngology, 6 Avenue MacMahon, Paris 17°)

8-11. **Water Pollution Control Federation**, annual, Toronto, Canada. (R. E. Fuhrman, Executive Secretary, WPCF, 4435 Wisconsin Ave., NW, Washington 16, D.C.)

8-12. **American Soc. of Civil Engineers**, Detroit, Mich. (W. H. Wisely, 345 E. 47 St., New York 17)

8-12. **Industrial Forestry**, seminar, St. Paul, Minn. (Z. W. White, Yale School of Forestry, 205 Prospect St., New Haven 11, Conn.)

8-12. **Instruments and Research Equipment**, symp. and exhibit, Bethesda, Md. (L. Heiss, American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.)

8-12. **Lead and Radiation Shielding Problems**, intern. conf., London, England. (J. Oldroyd, Lead Development Assoc., 34 Berkeley Square, London, W.1)

8-13. **Treatment and Storage of High-Level Radioactive Wastes**, symp., Vienna, Austria. (Intern. Atomic Energy Agency, 11 Kärntner Ring, Vienna 1)

8-20. **Statistical Forecasting**, training seminar, Paris, France. (World Meteorological Organization, 41 Avenue Giuseppe Motta, Geneva, Switzerland)

9-11. **Analytical Chemistry in Nuclear Reactor Technology**, Gatlinburg, Tenn. (C. D. Susano, Oak Ridge Natl. Laboratory, P.O. Box X, Oak Ridge, Tenn.)

9-11. **International Assoc. of Food Analysts**, symp., Bordeaux, France. (L. de Saint Rat, 18 Avenue de Villars, Paris 7°, France)

9-11. **Nuclear Reactor Chemistry**, conf., Gatlinburg, Tenn. (W. R. Grimes, Oak Ridge Natl. Laboratory, P.O. Box X, Oak Ridge, Tenn.)

9-12. **American Dietetic Assoc.**, annual, Miami Beach, Fla. (V. F. Harger, Dept. of Home Economics, Ohio State Univ., Columbus 10)

9-12. **Scientific Soc. for Aviation**, annual, Brunswick, Germany. (Wissenschaftliche Gesellschaft für Luftfahrt, Martinstr. 40-42, Cologne, Germany)

10-12. **Comparative Medicine**, intern. symp., New York, N.Y. (J. D. Bech, Animal Medical Center, 350 Lafayette St., New York 12)

12-13. **American Medical Writers' Assoc.**, Washington, D.C. (S. O. Waife, P.O. Box 1796, Indianapolis 6, Ind.)

12-14. **Phosphorylated Glucides**, intern. symp., Milan, Italy. (Segreteria del Comitato Organizzatore del Symposium Internazionale sui Glucidi Fosforilati, Via Modica 6, Milano)

13-14. **Fundamental Nature of Living Matter**, interdisciplinary symp., Cleveland, Ohio. (Dedication Committee Office, Allen Memorial Library, 11000 Euclid Ave., Cleveland 6)

13-14. **International Federation of Surgical Colleges**, annual, Atlantic City, N.J. (I. S. Ravdin, American College of Surgeons, 3400 Spruce St., Philadelphia 4, Pa.)

13-14. **Society for Psychophysiological Research**, annual, Denver, Colo. (S. G. Margolin, Dept. of Psychophysiology, Univ. of Colorado, Denver 20)

13-21. **Electronics Telecommunications, Automation, and Nucleonics**, intern. fair, Ljubljana, Yugoslavia. (Gospodarsko Razstavišče, Ljubljana)

(See issue of 10 August for comprehensive list)