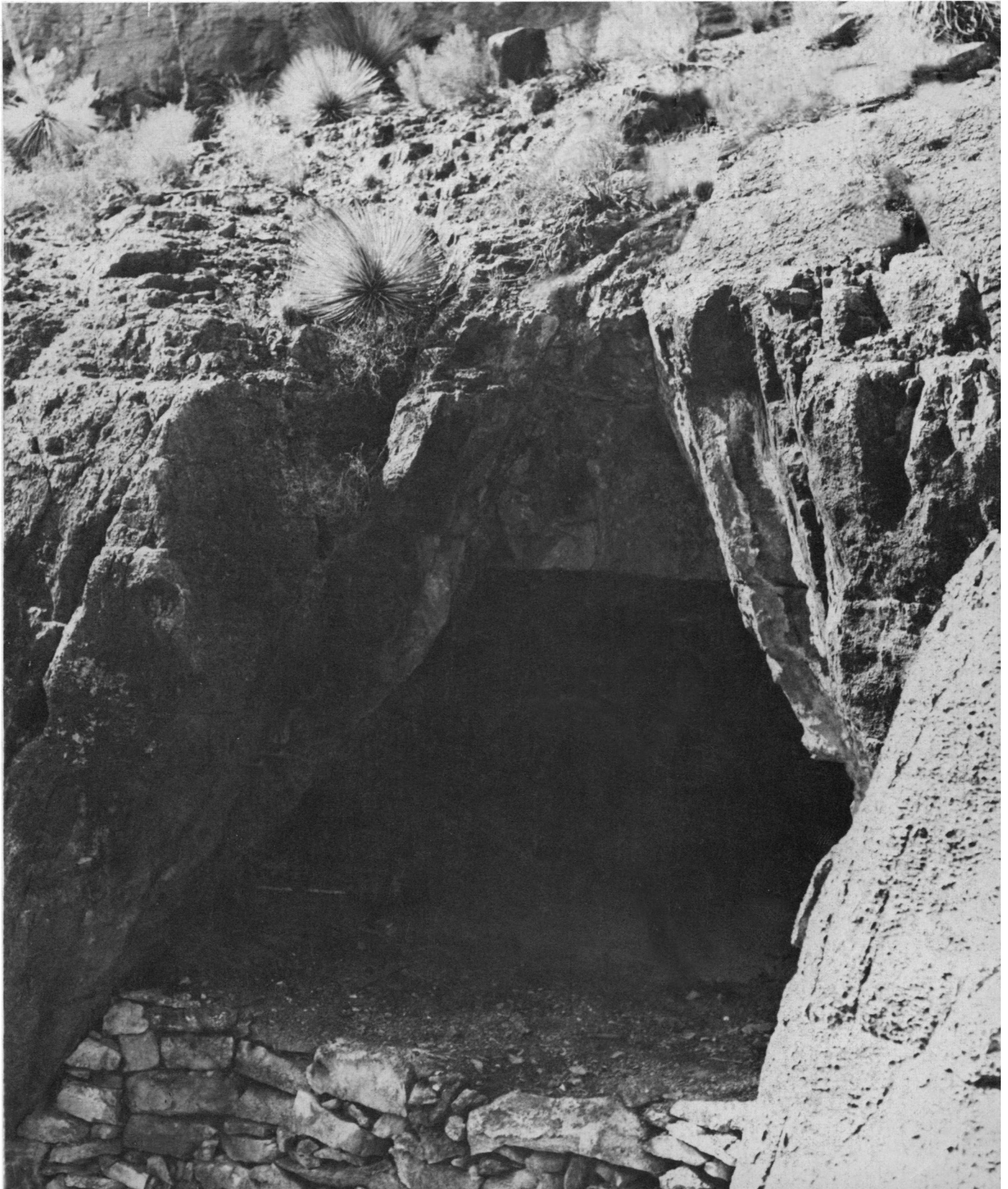


# SCIENCE

15 November 1974

Vol. 186, No. 4164

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE







BAUSCH & LOMB 

# Balplan™

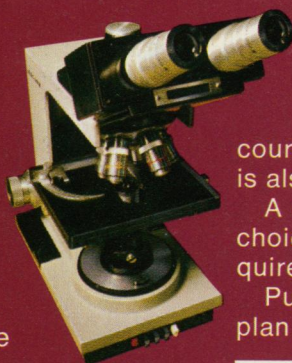
MICROSCOPE  
**One of a kind**

## Distinctively advanced optical efficiency

Research quality images in a standard priced instrument... that's what you'll get with the new Bausch & Lomb Balplan Microscope. Whether you're using it alone or consulting with another through the dual-viewing module, the new, innovative optical system will show you images true in detail, color, contrast.

We've combined lateral color correcting flint and crown glasses as well as fluorite elements in a completely new system. Multi-Film coatings minimize flare. Flat fields sharp to the edge, plus extra wide field coverage (up to 17% more area) make viewing and photography richly rewarding.

Color coded, ball detent positioned achro-



matic, flat field objectives start with a new 2.5X and feature the spring loaded 40X and 100X oil. All are parfocal, par-centered and interchangeable. Of course, the system is infinity corrected. There is also a selection of apochromats.

A complete line of condensers plus a full choice of integral illuminators fulfill every requirement of the system.

Put it all together and you'll agree that Balplan is different—truly one-of-a-kind.

**LOOK INTO BALPLAN.** No other microscope system offers so much for so little... a premium quality, research type microscope at up to half the price of another brand of comparable quality. See for yourself in a live demonstration in your lab with your own specimens. Send for new 24-page full color catalog 31-2411 and our free demonstration offer.

TM. Balplan is a Bausch & Lomb Tradename.





# So simple. So reliable. So effective. So successful. Sony.

The simplicity, reliability, and effectiveness of the Sony U-Matic Videocassette System are what have made it so successful.

So successful, in fact, that an independent survey\* shows that 3 out of every 4 purchasers of video recording/playback equipment in 1974 will buy the  $\frac{3}{4}$ " U format Videocassette System.

So successful in use that the U. S. Army has publicly stated that their  $\frac{3}{4}$ " U-matic equipment is "99.9% reliable."

And the  $\frac{3}{4}$ " U format is Sony's format. Originated and engineered by Sony. Perfected by Sony. And proven effective by thousands of users in Business and Industry: from the Fortune 500 to smaller regional companies. In Education: from Universities to Public School Systems. In Medicine, in Cable TV, Government.

Circle No. 122 on Readers' Service Card for Literature  
Circle No. 123 on Readers' Service Card for Demonstration

Wherever people must interchange information.

It's the new concept in communication. With all the impact that you know television has. Simple to use, ideal for training, teaching, product demonstrations, messages from management.

Here are some special features of the Sony  $\frac{3}{4}$ " U-matic format:

Delivers a picture that's superior in resolution, color fidelity, and stability.

2-track sound for bilingual or technical and non-technical presentations.

Playing time of up to 60 minutes, twice that of some other systems.

Push-button controls. Pause, automatic rewind and shut-off.

A book-sized cassette that can be mailed inexpensively anywhere in the U.S. or the world.

And everything the Sony name stands for in quality, reliability, and nationwide service.

It's Sony's easy and effective way for you to move into a new world of communications. Find out how easy. Write today.

## Sony. The proven one!



Sony Corporation of America  
Video Products Dept. SCI-114  
9 West 57th Street, N. Y., N. Y. 10019

SN-182

- ☐ Send me more information about the Sony Videocassette System.  
☐ Have a representative contact me for a demonstration.

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

ORGANIZATION \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PHONE (AREA CODE) \_\_\_\_\_

TYPE OF BUSINESS \_\_\_\_\_

**Sony U-matic Color  
Videocassette System**

\* Educational & Industrial Television, February 1974  
All TV reception simulated





15 November 1974

Volume 186, No. 4164

SCIENCE

LETTERS	AAAS and NAS Herbicide Reports: <i>J. D. Constable</i> et al.; Language Skills of <i>Homo sapiens</i> : <i>H. Stowell</i> ; A scientist's Campaign: <i>B. L. Welch</i> ; Iron in Enriched Bread: <i>S. Garb</i> ; <i>E. D. Weinberg</i> . . . . .	584
EDITORIAL	The Ghost at the Feast: <i>R. Revelle</i> . . . . .	589
ARTICLES	Hydrogeologic Constraints on Yucatán's Development: <i>D. O. Doehring</i> and <i>J. H. Butler</i> . . . . .	591
	Insect Control of the Future: Operational and Policy Aspects: <i>C. Djerassi</i> , <i>C. Shih-Coleman</i> , <i>J. Diekman</i> . . . . .	596
	Energy and Life-Style: <i>A. Mazur</i> and <i>E. Rosa</i> . . . . .	607
NEWS AND COMMENT	OCS Oil: Mammoth Lease Plan Encounters Heavy Opposition . . . . .	610
	Carey to be AAAS Executive Officer . . . . .	611
	NIH: Robert Stone Is in Trouble with HEW . . . . .	615
RESEARCH NEWS	The Demise of the Neandertals: Was Language a Factor? . . . . .	618
	The 1974 Nobel Prize in Physics: <i>J. W. Findlay</i> . . . . .	620
	The 1974 Nobel Prize for Economics: <i>G. L. S. Shackle</i> . . . . .	622
BOOK REVIEWS	Comparative Psychology at Issue, reviewed by <i>J. S. Rosenblatt</i> ; Computer Models of Thought and Language, <i>S. D. Isard</i> ; The Neuropsychology of Thirst, <i>D. Novin</i> ; Plasma Astrophysics, <i>P. A. Sturrock</i> ; Planets, Stars and Nebulae Studied with Photopolarimetry, <i>W. M. Sinton</i> ; The Ocean Basins and Margins, <i>C. L. Drake</i> ; Books Received . . . . .	624
AAAS NEWS	Office of International Science; A Note Concerning This Feature; Notes from Other Offices . . . . .	629

<b>BOARD OF DIRECTORS</b>	LEONARD M. RIESER Retiring President, Chairman	ROGER REVELLE President	MARGARET MEAD President-Elect	RICHARD H. BOLT BARRY COMMONER	EMILIO Q. DADDARIO EDWARD E. DAVID, JR.
<b>CHAIRMEN AND SECRETARIES OF AAAS SECTIONS</b>	MATHEMATICS (A) John G. Kemeny Truman A. Botts	PHYSICS (B) Solomon J. Buchsbaum Rolf M. Sinclair	CHEMISTRY (C) Milton Harris Leo Schubert	ASTRONOMY (D) Ivan R. King Arlo U. Landolt	
	PSYCHOLOGY (J) Charles Cofer Edwin P. Hollander	SOCIAL AND ECONOMIC SCIENCES (K) George J. Stigler Daniel Rich	HISTORY AND PHILOSOPHY OF SCIENCE (L) Owen Gingerich George Basalla		ENGINEERING (M) Byron D. Tapley Paul H. Robbins
	EDUCATION (Q) J. Myron Atkin Phillip R. Fordyce	DENTISTRY (R) Howard M. Myers Sholom Pearlman	PHARMACEUTICAL SCIENCES (S) Louis P. Jeffrey John Autian	INFORMATION AND COMMUNICATION (T) Martin Greenberger Joseph Becker	
<b>DIVISIONS</b>	<b>ALASKA DIVISION</b> William E. Davis Chairman, Executive Committee		<b>PACIFIC DIVISION</b> Robert C. Miller President		<b>SOUTHWESTERN AND ROCKY MOUNTAIN DIVISION</b> Joseph A. Schuffe President
	Irma Duncan Executive Secretary		Robert T. Orr Secretary-Treasurer		Max P. Dunford Executive Officer
SCIENCE is published weekly, except the last week in December, but with an extra issue on the fourth Tuesday in November, by the American Association for the Advancement of Science, 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Now combined with The Scientific Monthly®. Second-class postage paid at Washington, D.C. Copyright © 1974 by the American Association for the Advancement of Science. Member rates on request. Annual subscription \$40; foreign postage: Americas \$6, overseas: \$8, air lift to Europe \$20. Single copies \$1 (back issues, \$2) except Guide to Scientific Instruments which is \$4. School year subscription: 9 months \$30; 10 months \$33.50 Provide 6 weeks notice for change of address, giving new and old address and zip codes. Send a recent address label. Science is Indexed in the Reader's Guide to Periodical Literature.					



AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

REPORTS	Secondary Calcification of the Planktonic Foraminifer <i>Neoglobobadrina pachyderma</i> as a Climatic Index: <i>M. S. Srinivasan</i> and <i>J. P. Kennett</i> . . . . .	630
	Ice Crystal Concentration in Cumulus Clouds: Influence of the Drop Spectrum: <i>S. C. Mossop</i> and <i>J. Hallett</i> . . . . .	632
	Local-Regional Anesthesia during Childbirth: Effect on Newborn Behaviors: <i>K. Standley</i> et al. . . . .	634
	Central Trigeminal Structures and the Lateral Hypothalamic Syndrome in the Rat: <i>H. P. Zeigler</i> and <i>H. J. Karten</i> . . . . .	636
	Death of American Ground Sloths: <i>A. Long</i> and <i>P. S. Martin</i> . . . . .	638
	Neonatal Tolerance Induced by Antibody against Antigen-Specific Receptor: <i>D. S. Strayer</i> et al. . . . .	640
	Clonal Depletion in Neonatal Tolerance: <i>H. Köhler</i> , <i>D. R. Kaplan</i> , <i>D. S. Strayer</i> . . . .	643
	Biological Populations with Nonoverlapping Generations: Stable Points, Stable Cycles, and Chaos: <i>R. M. May</i> . . . . .	645
	Hycanthone Analogs: Dissociation of Mutagenic Effects from Antischistosomal Effects: <i>P. B. Hulbert</i> , <i>E. B. Bueding</i> , <i>P. E. Hartman</i> . . . . .	647
	Space Perception in Early Infancy: Perception within a Common Auditory-Visual Space?: <i>H. McGurk</i> and <i>M. Lewis</i> . . . . .	649
	Technical Comments: The Asteroid Belt: Doubts about the Particle Concentration Measured with Asteroid/Meteoroid Detector on Pioneer 10: <i>S. Auer</i> ; <i>R. K. Soberman</i> , <i>S. L. Neste</i> , <i>K. Lichtenfeld</i> . . . . .	650
MEETINGS	Mechanisms of Connective Tissue Degradation: <i>G. S. Lazarus</i> and <i>J. F. Goggins</i> ; Insecticides for the Future: <i>C. S. Koehler</i> ; Forthcoming Events . . . . .	653

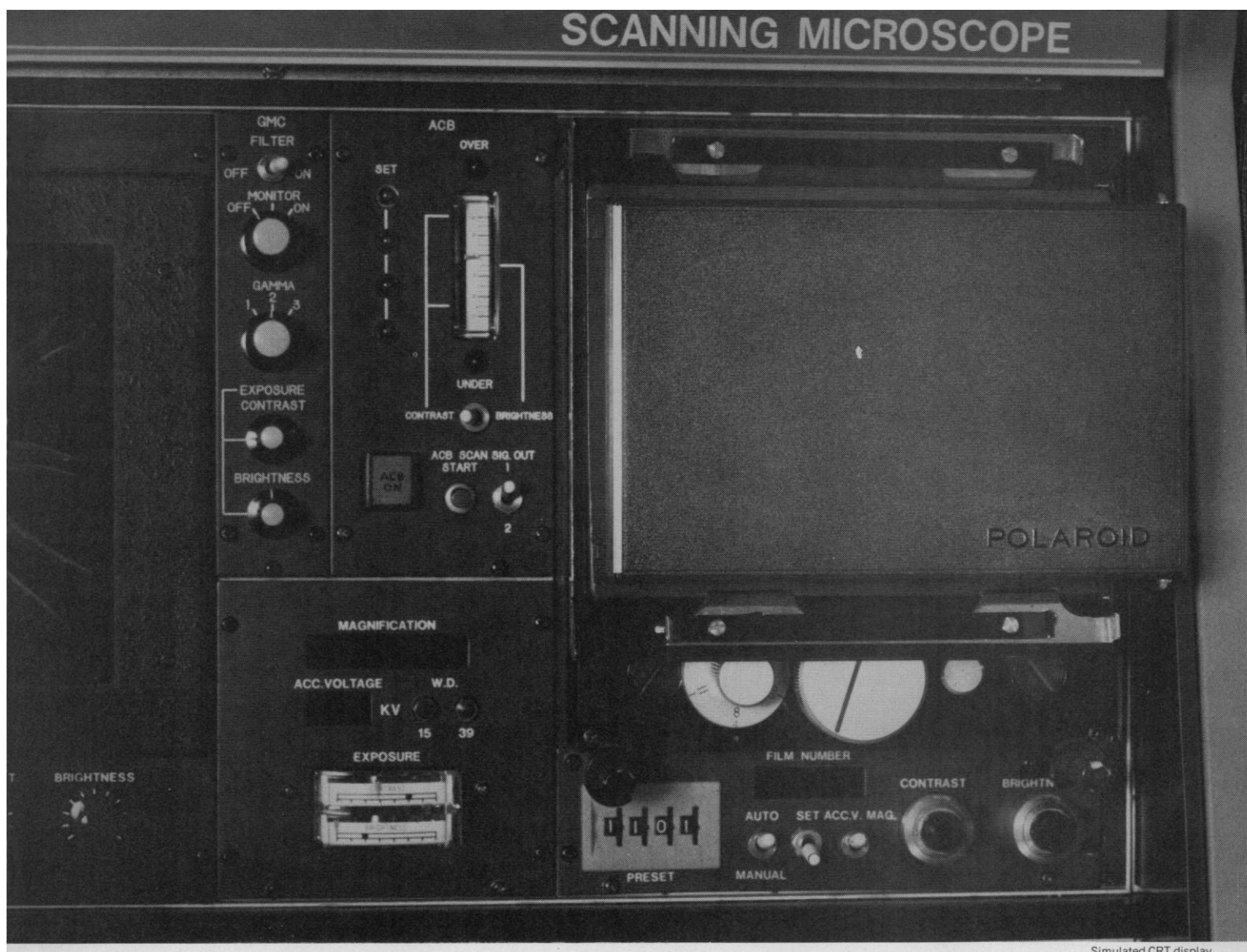
RUTH M. DAVIS WARD H. GOODENOUGH	CARYL P. HASKINS CHAUNCEY STARR	WILLIAM T. GOLDEN Treasurer	WILLIAM BEVAN Executive Officer
GEOLOGY AND GEOGRAPHY (E) Terah L. Smiley Ramon E. Bisque	BIOLOGICAL SCIENCES (G) Beatrice M. Sweeney Jane C. Kaitenbach	ANTHROPOLOGY (H) Bernice Kaplan Philleo Nash	
MEDICAL SCIENCES (N) Saul J. Farber Richard J. Johns	AGRICULTURE (O) Ned D. Bayley J. Lawrence Apple	INDUSTRIAL SCIENCE (P) Gabor Strasser Robert L. Stern	
STATISTICS (U) John W. Tukey Ezra Glaser	ATMOSPHERIC AND HYDROSPHERIC SCIENCES (W) William R. Bandeen Stanley A. Changnon, Jr.	GENERAL (X) Frederick Seitz Joseph F. Coates	

The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.

COVER

Entrance to Rampart Cave, Grand Canyon, Arizona. (Below) Sloth dung balls 11,000 years of age by radio-carbon dating. See page 638. [National Park Service, Boulder City, Nevada]





## Polaroid's instant negative pack film can back up almost any professional photographic instrument you now use.

Whether you make photomicrographs, CRT recordings or just quick photos for record purposes, Polaroid's Type 105 Land film will back up your equipment with a kind of flexibility you've never had before.

With Type 105 you get an instant photograph With superb tonal gradation and sharp detail, ready for immediate use. And you also get an instant professional-quality negative.

Without a trip to the darkroom.

After a simple clearing and washing of the negative, you can make as many copies and enlargements as you need.

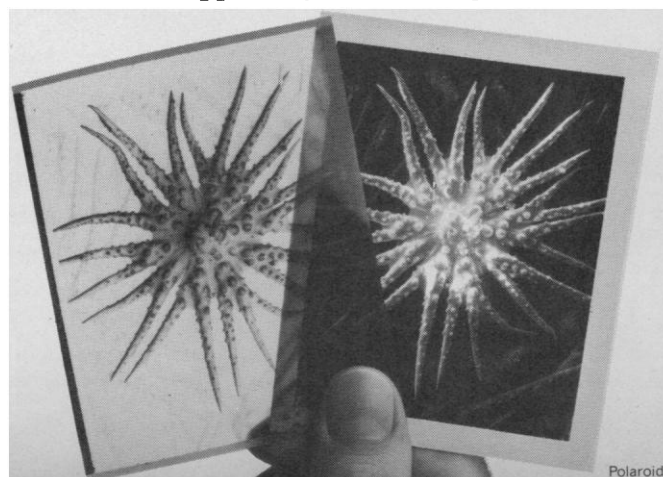
Type 105 comes in a 3 1/4 x 4 1/4 inch film pack that fits any instrument or camera that accepts a polaroid pack film back. And with our Model 405 pack film holder our film can be used with most 4 x 5 inch cameras and instruments. In addition, pack film is economical and easy to use. And since it develops outside the camera, you don't have to waste time between shots. Speed is a convenient 75 ASA.

Circle No. 17 on Readers' Service Card

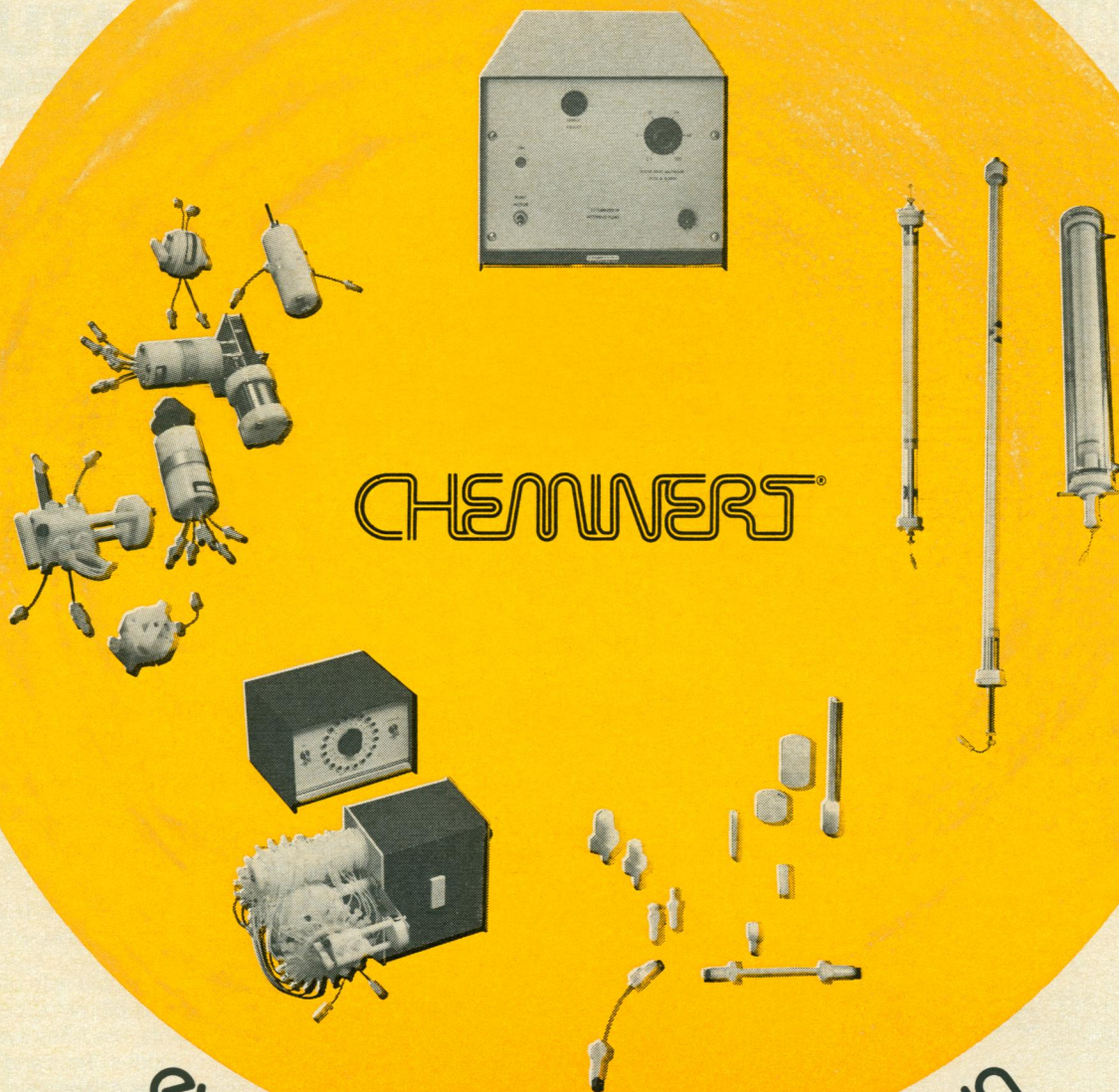
With our 105 you know what you've got when you've got it. And thanks to the instant negative, you can get as many copies and enlargements as you want when you want them.

See your photo dealer for more details.

### Polaroid Type 105 positive/negative film.







everything under the sun  
for liquid chromatography

Now you can depend on Laboratory Data Control for *all of your LC component needs*...including Cheminert®. Cheminert®, formerly manufactured and marketed by Chromatronix since 1967, is the chemically-inert connection system proven in laboratories all over the world. Laboratory Data Control is proud to announce the addition of this quality line to its family of products for liquid chromatography.

The Cheminert® System is so outstanding because it is the complete assortment of fittings, connectors, valves, columns, and pumps which may be joined together to form a most versatile and economical LC set-up. Fluid contacts only the tubing itself and the mating part. Absolutely no

contamination and virtually no extra-column zone spreading.

Send today for a complete, easy-to-use catalog. Close the loop with Cheminert® pumps, valves, columns, and fittings.



**LABORATORY DATA CONTROL**  
DIVISION OF MILTON ROY COMPANY  
P.O. Box 10235, Interstate Industrial Park  
Riviera Beach, Florida 33404  
Phone: (305) 844-5241 or Telex 513479.



# PIPETMAN<sup>tm</sup>

continuously  
adjustable  
digital pipettes

(1 $\mu$ l-5ml)

FOUR MODELS, adjustable over their entire range, can each replace 25 or more fixed-volume pipettes. Set and dispense any volume with remarkable repeatability. Even odd volumes like 11.5 $\mu$ l. PIPETMAN provides versatility without sacrifice in accuracy. All models provide better than 1% accuracy full range. Digital micrometer adjustment permits absolute accuracy for critical pipetting, even with fluids of varying viscosity. It also simplifies dilutions and calculations.

Rugged, polished, stainless-steel piston and Teflon seal never require lubrication. Disposable, non-wettable tips prevent contamination and provide maximum convenience and economy.

set it  
lock it  
dispense it

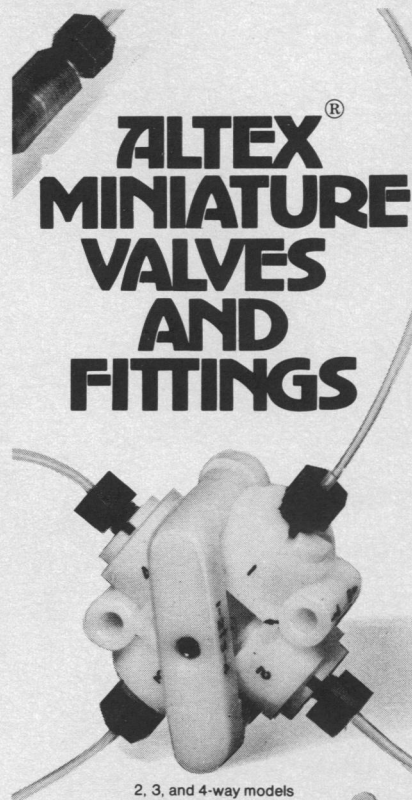
Model	Range	Price
P 20	0 - 20 $\mu$ l	\$ 98
P 200	20 - 200 $\mu$ l	\$ 98
P 1000	100 $\mu$ l - 1 ml	\$ 98
P 5000	0.5 - 5 ml	\$125

Better than 1% accuracy full range, all models.

94 Lincoln Street  
Boston, Mass. 02135  
(617) 787-5050

**RAININ**  
INSTRUMENT CO. INC.

## ALTEX<sup>®</sup> MINIATURE VALVES AND FITTINGS



2, 3, and 4-way models

Every inert component you need to quickly construct any liquid or gas flow system.

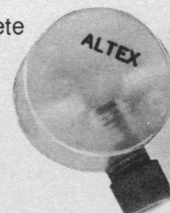
- ☐ CHEMICALLY INERT
- ☐ ZERO DEAD VOLUME
- ☐ LEAK TIGHT TO 500 PSI
- ☐ MATE PERFECTLY WITH GLASS-METAL-PLASTIC



Compatible with other micro-plumbing components, the Altex system includes: Tees and

Crosses, Luer Adapters, Couplings, Stainless-steel and Glass Tube Adapters, Plugs, Pipe Connectors, TEFLON Tubing and Flanging Tool.

Also . . . a complete line of Liquid Chromatography Columns and Sample Injection Valves.



COMPLETE CATALOG on request

**RAININ**  
INSTRUMENT CO. INC.

94 Lincoln Street  
Boston, Massachusetts 02135  
(617) 787-5050

Circle No. 13 on Readers' Service Card

Circle No. 12 on Readers' Service Card



# THE MODUMATIC™ 600-SAMPLE AUTO-GAMMA® SYSTEM

## SYSTEMS WITHIN A TOTAL SYSTEM

Packard's more than 20 years of experience has resulted in this evolutionary designed system which combines a series of development advancements in the four principal component areas of a gamma instrument — giving you a total counting system having many superior features to any conventional gamma counter so you can better meet your radioassay needs...

■ **The CONSTANT-QUANTA\* Crystal Detector System** provides for a remarkable range of constant counting efficiency regardless of varied sample volumes which may be used within that range;

■ **A Pedestal-Type Sample Elevator System** with "anti-jam" protection... accommodates

sample tubes of varying diameters, lengths and shapes, and positions such mixed samples in the detector aperture accurately and reproducibly;

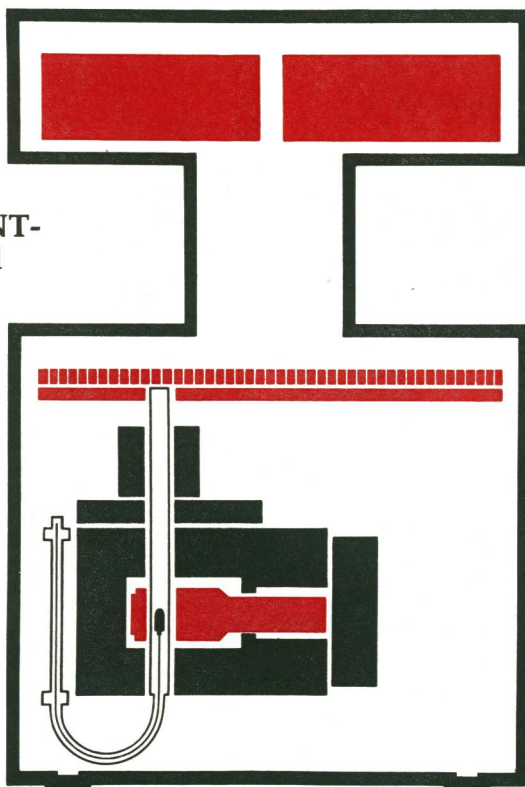
■ **A High-Speed Reversible Sample Changer System** which accepts intermixed sample size containers without requiring any special carriers, caps or cups... and can handle

over 1,000 samples per day;

■ **A Fully Modular Electronic Control System** that provides you with maximum operating flexibility, yet is functionally simple in design for ease of use.

In addition, this refrigerated temperature-controlled system can be utilized with an extensive variety of on-line and off-line data processing equipment to maximize your system's effectiveness.

\*Packard designation



Get the  
book on the  
**MODUMATIC**  
System

☐ Please send Bulletin 1203 describing the new MODUMATIC Auto-Gamma System in detail

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Institution \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_  
State \_\_\_\_\_ Zip \_\_\_\_\_

**Packard**

**PACKARD INSTRUMENT COMPANY, INC.**  
2200 WARRENVILLE RD • DOWNERS GROVE, ILL. 60515  
**PACKARD INSTRUMENT INTERNATIONAL S.A.**  
TALSTRASSE 39 • 8001 ZÜRICH, SWITZERLAND  
**SUBSIDIARIES OF AMBAC INDUSTRIES, INC.**

Circle No. 84 on Readers' Service Card



packard



Or just send the coupon. For as many Oxford® Model 10/30 PIPETTORS as you want. Use them 30 days to dispense virtually *any* chemical repetitively, reproducibly and safely. If you keep them, we'll process your order through the supply dealer you name — at \$10 off regular price.

Only Oxford® PIPETTORS\* offer you all these advantages: Full-scale precision of  $\pm 0.5\%$ . Three ranges, covering 0.1-30 ml. Heavy amber reservoirs to protect chemicals and save modular parts from breakage. Oxford-patented self-cleaning syringe. Autoclavable, too.

For any laboratory that dispenses liquids.

OXFORD LABORATORIES  
1149 Chess Drive  
Foster City, CA 94404

Please send our laboratory \_\_\_\_\_ Oxford® Model 10/30 PIPETTOR(S), Catalog No. 440, on a 30-day free trial at no obligation. If we keep the unit(s), you may process the order at \$80 per unit — \$10 off regular price.

Purchase Order No.: \_\_\_\_\_

Supply Dealer: \_\_\_\_\_

Our Laboratory: \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone \_\_\_\_\_ Signature \_\_\_\_\_

Limited offer: Must be postmarked before  
December 1, 1974, due to price increases.

**OXFORD**  
LABORATORIES

1149 Chess Drive  
Foster City, CA 94404  
800-227-0276  
From California and  
Canada: (415) 573-1343

Send us your old  
reagent bottle with  
this coupon, and we'll give you  
\$10 off on our new  
Oxford® 10-30 ml PIPETTOR.



\*Covered by U.S. Patent No. 3,452,901.

Catalog No. 440 — 10 to 30 ml. (Model 10/30)

Catalog No. 401 — 1 to 10 ml. (Model S-A)

Catalog No. 400 — 0.1 to 1 ml. (Model R)

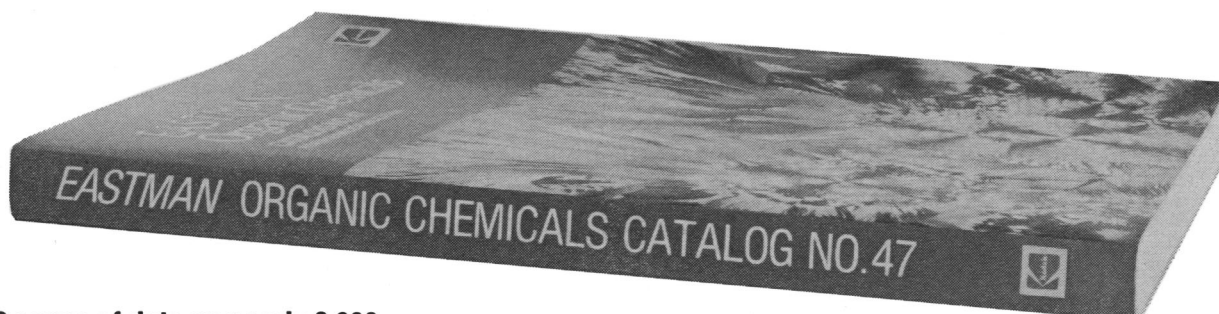
Offer applies only to No. 440.

Circle No. 155 on Readers' Service Card

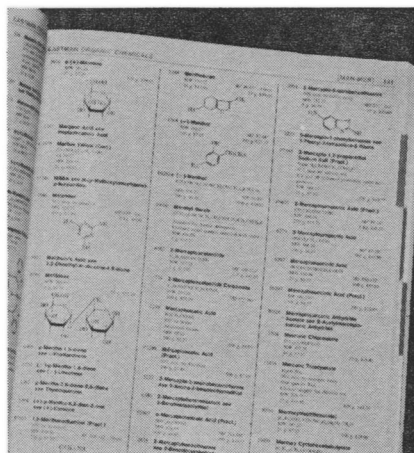


# Eastman Organic Chemicals News

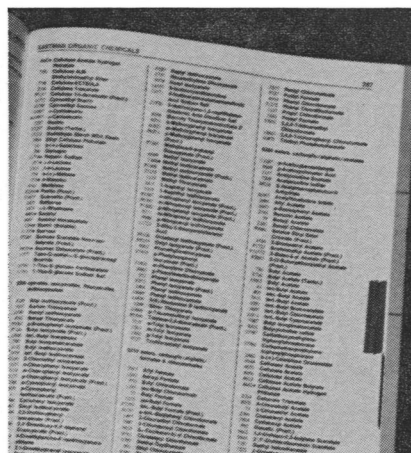
THE NEW EASTMAN ORGANIC CHEMICALS CATALOG, NUMBER 47.



332 pages of data on nearly 6,000  
EASTMAN Organic Chemicals



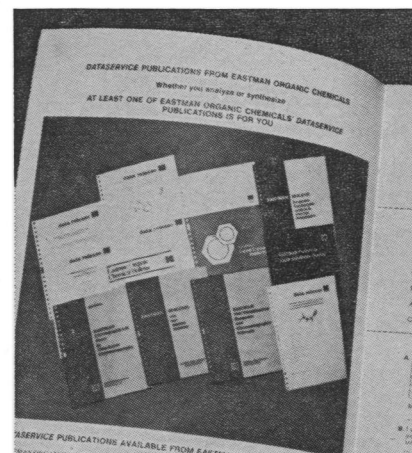
Structural formulas illustrated for more than 1,000 of the chemicals.



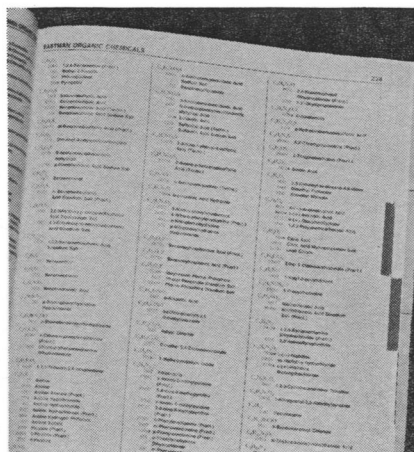
A functional group listing.

Color coding on all pages to help you find what you need fast.

Reader service postcards enabling you to request additional literature, quotes on bulk and custom chemicals, and other information.



Details on the EASTMAN Dataservice Publications Program and how you can participate in it.



An empirical formula index.

Circle No. 80 on Readers' Service Card



Eastman Kodak Company  
Eastman Organic Chemicals  
Dept 412L  
Rochester, N.Y. 14650

11-65

Please send a copy of  
EASTMAN Organic Chemicals Catalog No. 47 to:

Name

Affiliation

Address

City

State

Zip





• **Critical Stability Constants  
Volume 1  
Amino Acids**

By **Arthur E. Martell**  
and **Robert M. Smith**

469 pages

\$23.00

• Marine Science, Vol. 3

**Natural Gases in Marine  
Sediments**

Edited by **Isaac R. Kaplan**

324 pages

\$25.00

**Neuropoisons  
Their Pathophysiological  
Actions  
Volume 2  
Poisons of Plant Origin**

Edited by **L. L. Simpson**  
and **D. R. Curtis**

306 pages

\$25.00

**Pupillary Dynamics  
and Behavior**

Edited by **Michel Pierre Janisse**

264 pages

\$22.50

**Immobilized Enzymes in Food  
and Microbial Processes**

Edited by **Alfred C. Olson**  
and **Charles L. Cooney**

268 pages

\$18.50

- These series are eligible for a **SPECIAL CHARTER  
SUBSCRIBER'S DISCOUNT.**

For further information please contact the Publishers.

Advances in Experimental Medicine  
and Biology

**Vol. 37: Oxygen Transport  
to Tissue**

Edited by **Haim I. Bicher**  
and **Duane F. Bruley**

**Part A**

**Instrumentation, Methods, and Physiology**

634 pages

\$32.50

**Part B**

**Pharmacology, Mathematical Studies,  
and Neonatology**

527 pages

\$32.50

set price: \$57.50

**Vol. 48: Protein-Metal  
Interactions**

Edited by **Mendel Friedman**

692 pages

\$39.50

**Learning Systems and  
Intelligent Robots**

Edited by **K. S. Fu**  
and **Julius T. Tou**

452 pages

\$29.50

**Advances in Corrosion  
Science and Technology  
Volume 4**

Edited by **Mars G. Fontana**  
and **Roger W. Staehle**

331 pages

\$27.50

**Laser Raman Gas Diagnostics**

Edited by **Marshall Lapp**  
and **C. M. Penney**

397 pages

\$27.50

**PLENUM PUBLISHING CORPORATION**, 227 West 17th Street, New York, N.Y. 10011  
In United Kingdom: 4a Lower John Street, London W1R 3PD, England



# Nalge introduces Dial-a-Solution.

If you have a question about plastic labware call 716-586-8800 and we'll tell you what to use where.

No matter whose labware it is. Ours. Or somebody else's. With the widest line of plastic labware around it stands to reason we know more about plastic.

It may be that you've been holding off on using plastic labware because you didn't know how many different jobs it can do.

But we use ten different resins to make Nalgene® labware with a variety of qualities you need. Transparency. Autoclavability. Accuracy.

We know what each can do and what each can't do. Even if you're using it for a never-before-application.

Our 56-page catalog has a special Nalgene chemical resistance chart covering 192 chemicals from acetaldehyde to zinc stearate. Write for it. Nalgene Labware, Box 365, Rochester, N.Y. 14602. It's a handy reference.



**NALGE**  
SYBRON CORPORATION



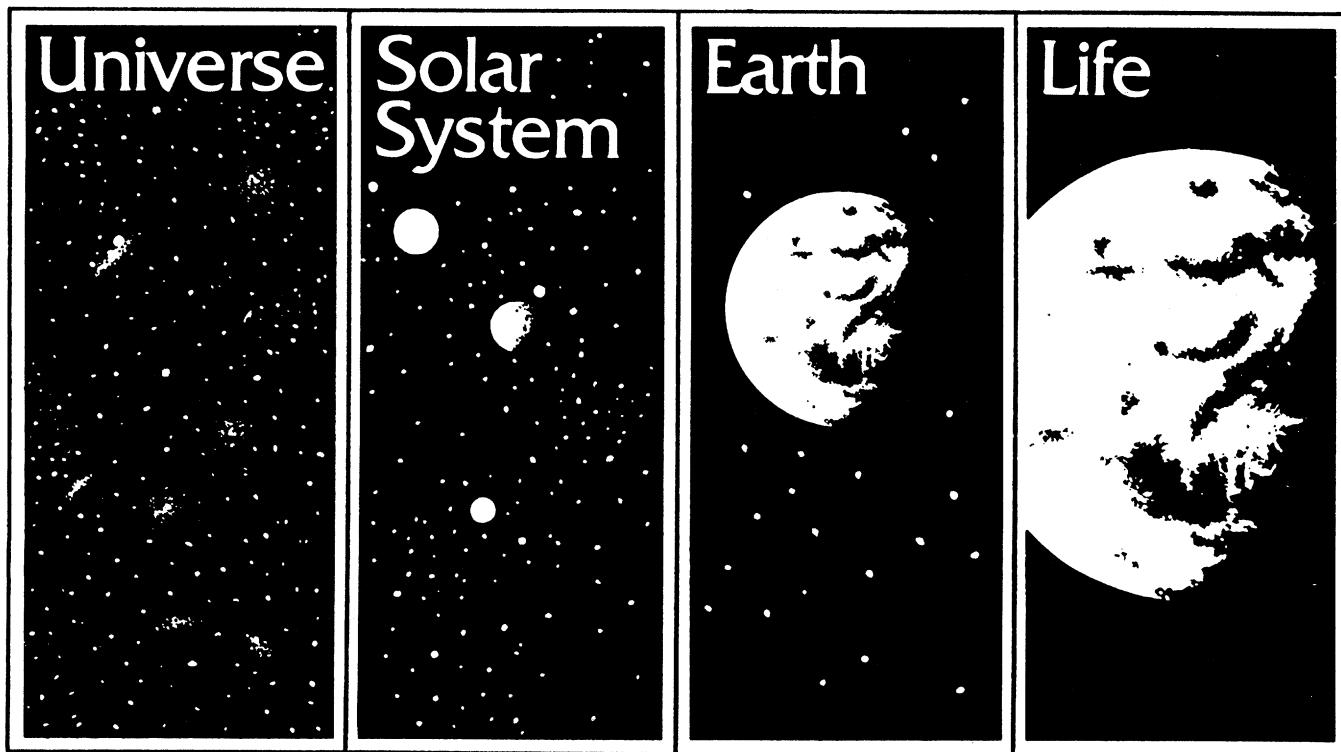


# Origins:

Speculations and facts on the sources of planets,

Earth, and life by Robert Jastrow, Philip Morrison,

Cyril Ponnampерuma, George Wald.



What is man's deepest mystery? Perhaps it is his own origin and that of his world. How did life begin? Where? ... How did primitive life evolve into man? ... How did the earth form? ... How was the universe created? ... What of the genesis, life, and death of stars? ... What do pulsars and quasars signify? How were elements created?

Four of the world's leading scientists probe these questions in ORIGINS. They talk of experiments that recreate the conditions for life ... speculations on the forces of evolution ... clues to life origins found in meteorites ... the underlying order in the chaotic formation of stars and solar systems ... the search for the true age of the earth.

The quest to understand our beginnings is an eternal one. We've used our intuition, our reasoning ability, and the steady accumulation of scientific tools to follow that quest. Through these four

talks, the listener learns how far we've come, what we now understand, and where we have to go.

ORIGINS is an attractive album with four 50-minute cassettes and an accompanying booklet. Ideas, facts, and speculations are given in layman's language—just as they were originally given in public lectures in Washington, D.C.

This album is ideal for the inquisitive mind that wants to understand the nature of stars, the universe, the earth, and life. For the science student, ORIGINS shows how scientific method and tools—those of chemistry, physics, astronomy and geology—can be applied to this basic mystery. And for everyone, ORIGINS is the opportunity to listen to scientific work-in-progress.

Price: \$34.95 to AAAS members.  
\$39.95 to nonmembers.

**DESIGN IN THE UNIVERSE**  
George Wald, Harvard University

**TO THE THRESHOLD OF LIFE**  
Robert Jastrow, NASA Institute for Space Studies

**THE ORIGIN OF LIFE**  
Cyril Ponnampерuma, University of Maryland

**INTELLIGENT LIFE BEYOND THE UNIVERSE**  
Philip Morrison, Massachusetts Institute of Technology

AAAS

**AMERICAN ASSOCIATION for the ADVANCEMENT OF SCIENCE**

Department O-2

1515 Massachusetts Avenue, N.W., Washington, D. C. 20005

Please send me \_\_\_\_\_ albums of ORIGINS at \$39.95 each (\$34.95 for AAAS members).

☐ Check enclosed ☐ Please bill me later

(Member orders must be accompanied by remittance.)

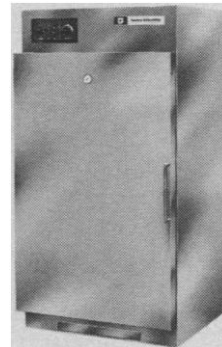
Name \_\_\_\_\_

Address \_\_\_\_\_

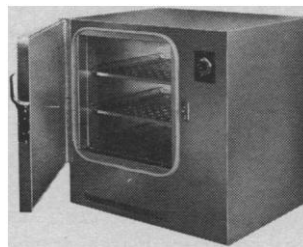
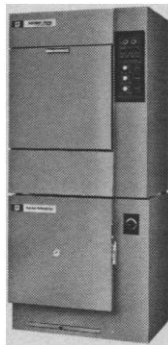
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_



# washers & dryers



A family of products  
for flexible laboratory planning.



## by Forma Scientific

☐ Laboratory glassware washers: undercounter, overcounter, washer and dryer combinations, free-standing units in medium and large capacities. ☐ Laboratory glassware dryers: undercounter, overcounter, free standing. ☐ Cabinet styles: front loading, pass-through and space saving guillotine doors. ☐ Automatic: complete programming of pre-rinse, wash, rinse and distilled water rinse cycles. ☐ Featuring as standard: solid state program timers, instant cycle selection, no lag time between functions, automatic steam elimination. ☐ Low maintenance: stainless steel construction, water driven rotary spray producing up to 150 exchanges of water to glass per minute, hydro-drive, no gears. ☐ Sales and service: Forma Scientific has sales offices throughout the United States and direct factory service in major cities.

distributed and serviced nation-wide  
BOX 649 • MARIETTA, OHIO 45750 • AREA CODE 614/373-4763 • TELEX 24-5394

  
**Forma Scientific®**


Circle No. 16 on Readers' Service Card



# SAVE 50% and get FREE ULTRA PURES

Schwarz/Mann is the only supplier of both radiochemicals and high quality Ultra Pure reagents. To dramatize this capability, we're making an unprecedented offer: **Buy \$300 worth of these radio-chemicals, at reduced prices, and we'll give you \$50 in Ultra Pure reagents.**

Your total cost? \$300. The Ultra Pures cost you nothing. They're free.

So get your order in today. Call collect 914-359-2700 or write Schwarz/ Mann, Division of Becton, Dickinson and Company , Mountain View Ave., Orangeburg, NY 10962.

## Select one free Ultra Pure from the following:

90-1946	Ammonium Sulfate, Ultra Pure	10 kg
90-5025	Cesium Chloride, Optical grade	100 g.
90-7801	Guanidine Hydrochloride, Ultra Pure	500 g.
90-9530	Sucrose, Density Gradient, Crystalline, Ultra Pure	7 kg
90-6593	Tris, Hydrochloride, Ultra Pure	1 kg
90-7438	Tris, Ultra Pure	2 kg
90-9200	Urea, Ultra Pure	5 lb.
90-2805	Adenosine 5'-Triphosphate, Disodium (ATP)	10 g.

**Special Offer and Special Prices end November 30, 1974**

Circle No. 145 on Readers' Service Card

  
**Schwarz/Mann**  
Science  
For Mankind

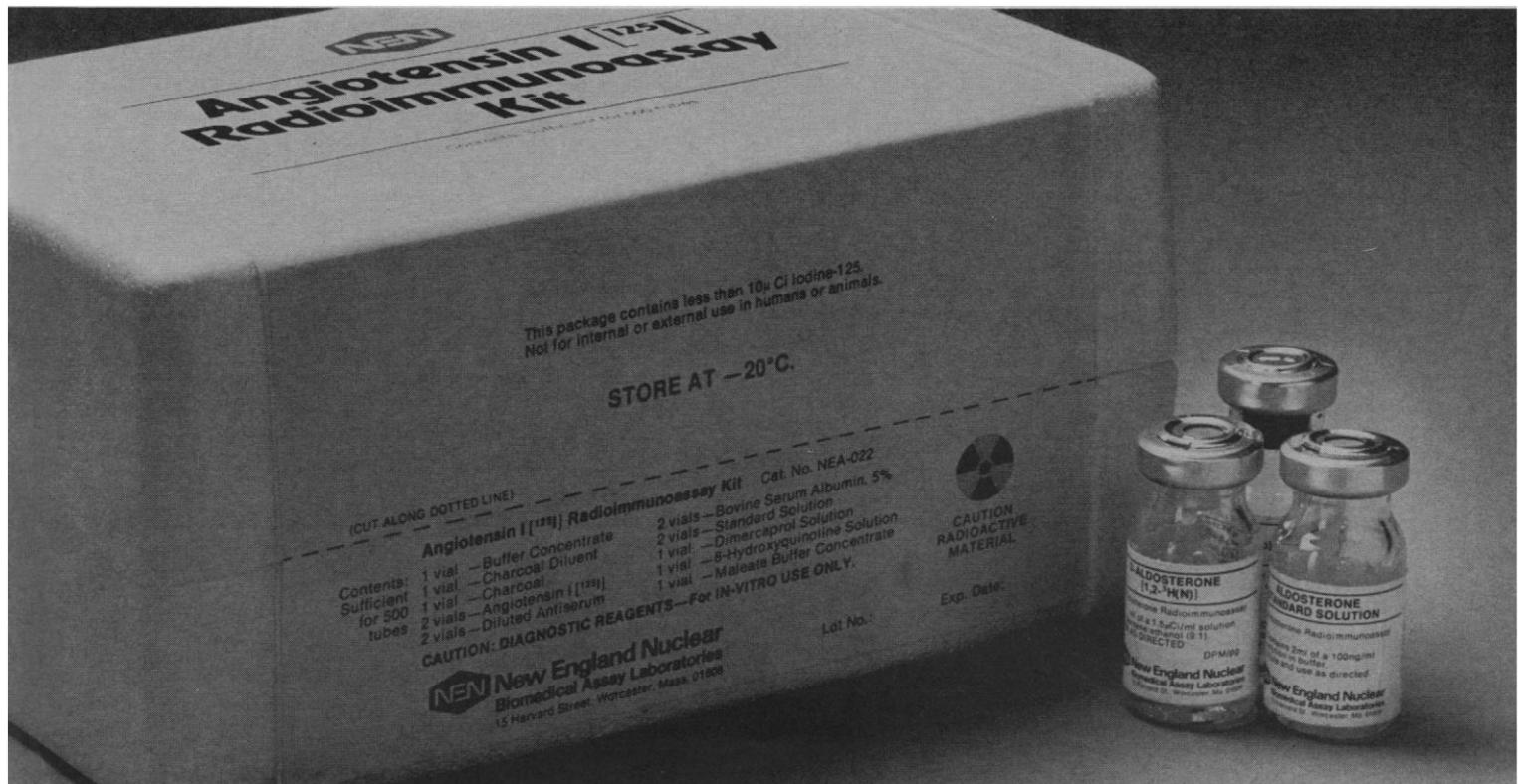
## SELECT FROM THESE FINE RADIOCHEMICALS

RADIOCHEMICALS			
CATALOG #	COMPOUND	SPEC. ACT. MC/MMOLE	PRICE
1433-07	Adenosine 5'-Triphosphate, Tetralithium [8- <sup>3</sup> H] (ethanol: water 1:1)	12,000-25,000	\$ 40./1 mc 165./5 mc
1433-09	Adenosine 5'-Triphosphate, Tetrasodium [8- <sup>3</sup> H] (ethanol: water 1:1)	12,000-25,000	40./1 mc 165./5 mc
3122-13	L-Alanine [ <sup>14</sup> C] (0.01 N HCl sol.) (U)	135-165	90./500 uc 170./1 mc
3122-15	L-Arginine [ <sup>14</sup> C] (0.01 N HCl sol.) (U)	270-320	75./250 uc 140./500 uc
1433-38	Cytidine 5'-Triphosphate, Tetralithium [5- <sup>3</sup> H]	5,000-15,000	40./1 mc 165./5 mc
1433-39	Cytidine 5'-Triphosphate, Tetrasodium [5- <sup>3</sup> H]	5,000-15,000	40./1 mc 165./5 mc
2433-06	Deoxyadenosine 5'-Triphosphate, Tetralithium [8- <sup>3</sup> H]	>10,000	40./1 mc 165./5 mc
2433-07	Deoxyadenosine 5'-Triphosphate, Tetrasodium [8- <sup>3</sup> H]	>10,000	40./1 mc 165./5 mc
2433-33	Deoxycytidine 5'-Triphosphate, Tetralithium [5- <sup>3</sup> H]	15,000-30,000	40./1 mc 165./5 mc
2433-34	Deoxycytidine 5'-Triphosphate, Tetrasodium [5- <sup>3</sup> H]	15,000-30,000	40./1 mc 165./5 mc
2433-58	Deoxyguanosine 5'-Triphosphate, Tetralithium [8- <sup>3</sup> H]	>10,000	40./1 mc 165./5 mc
2433-56	Deoxyguanosine 5'-Triphosphate, Tetrasodium [8- <sup>3</sup> H]	>10,000	40./1 mc 165./5 mc
3122-31	Glycine [ <sup>14</sup> C] (0.01 N HCl sol.) (U)	95-100	60./500 uc 110./1 mc
1433-59	Guanosine 5'-Triphosphate, Tetralithium [8- <sup>3</sup> H]	5,000-15,000	40./1 mc 165./5 mc
1433-60	Guanosine 5'-Triphosphate, Tetrasodium [8- <sup>3</sup> H]	5,000-15,000	40./1 mc 165./5 mc
3122-41	L-Leucine [ <sup>14</sup> C] (0.01 N HCl sol.) (U)	270-320	170./500 uc 320./1 mc
3122-45	L-Lysine [ <sup>14</sup> C] (0.01 N HCl sol.) (U)	270-300	170./500 uc 320./1 mc
3122-49	L-Phenylalanine [ <sup>14</sup> C] (0.01 N HCl sol.) (U)	405-495	170./500 uc 320./1 mc
3122-51	L-Proline [ <sup>14</sup> C] (0.01 N HCl sol.) (U)	225-265	170./500 uc 320./1 mc
3122-53	L-Serine [ <sup>14</sup> C] (0.01 N HCl sol.) (U)	135-165	170./500 uc 320./1 mc
2533-83	Thymidine [methyl- <sup>3</sup> H] (st. aq. sol.)	360	60./5 mc 260./25 mc
2533-84	Thymidine [methyl- <sup>3</sup> H] (st. aq. sol.)	1900	60./5 mc 260./25 mc
2533-85	Thymidine [methyl- <sup>3</sup> H] (st. aq. sol.)	3000	60./5 mc 260./25 mc
2533-86	Thymidine [methyl- <sup>3</sup> H] (st. aq. sol.)	6000	60./5 mc 260./25 mc
2533-87	Thymidine [methyl- <sup>3</sup> H] (st. aq. sol.)	>10,000	60./5 mc 260./25 mc
2533-88	Thymidine [methyl- <sup>3</sup> H] (st. aq. sol.)	40,000-60,000	60./5 mc 260./25 mc
2433-94	Thymidine 5'-Triphosphate, Tetralithium [methyl- <sup>3</sup> H]	>40,000	40./1 mc 150./5 mc
2433-95	Thymidine 5'-Triphosphate, Tetrasodium [methyl- <sup>3</sup> H]	>40,000	40./1 mc 150./5 mc
1533-94	Uridine [5- <sup>3</sup> H] (st. aq. sol.)	2000	50./5 mc 220./25 mc
1533-95	Uridine [5- <sup>3</sup> H] (st. aq. sol.)	4000	50./5 mc 220./25 mc
1533-96	Uridine [5- <sup>3</sup> H] (st. aq. sol.)	8000	50./5 mc 220./25 mc
1533-97	Uridine [5- <sup>3</sup> H] (st. aq. sol.)	>20,000	50./5 mc 220./25 mc
1533-92	Uridine [5,6- <sup>3</sup> H] (st. aq. sol.)	40,000-60,000	50./5 mc 220./25 mc
1433-89	Uridine 5'-Triphosphate, Tetralithium [5- <sup>3</sup> H]	10,000-25,000	40./1 mc 165./5 mc
1433-90	Uridine 5'-Triphosphate, Tetrasodium [5- <sup>3</sup> H]	10,000-25,000	40./1 mc 165./5 mc
3122-61	L-Valine [ <sup>14</sup> C] (0.01 N HCl sol.) (U)	225-265	140./500 uc 260./1 mc

Also available: <sup>125</sup>I - Bovine Serum Albumin (specific activity ~43 C/mM). . . . please inquire



# FOR THE DIFFERENTIAL DIAGNOSIS OF HYPERTENSION



## Angiotensin I [<sup>125</sup>I] RIA Kit for determination of Plasma Renin activity

NEN's Angiotensin I RIA Kit offers greater sensitivity and reproducibility. It provides optimal generation conditions, complete quantitation, minimum non-specific protein effect, and time/temperature independent separation.

## RIA Pak\* for determination of Aldosterone levels RIA Pak\* for determination of Deoxycorticosterone levels

\*RIA Paks from NEN are convenient, fast, reproducible, and economical. Each Pak consists of a matched set of labeled tracer, standard solution, lyophilized antiserum, and a clear cut, detailed method for processing routine clinical samples.

Circle No. 76 on Readers' Service Card

## **NEN** New England Nuclear Biomedical Assay Laboratories

15 Harvard Street, Worcester, Mass. 01608  
Telephone (617) 791-0911

Canada: NEN Canada Ltd., Dorval, Quebec,  
H9P-1B3, Tel: (514) 636-4971, Telex: 05-821808  
Europe: NEN Chemicals GmbH, D6072 Dreieichenhain,  
W. Germany, Siemensstrasse 1. Tel: Langen (06103) 85035

Please send complete information:

- ☐ Angiotensin I [<sup>125</sup>I] RIA Kit
- ☐ Aldosterone RIA Pak
- ☐ Deoxycorticosterone RIA Pak

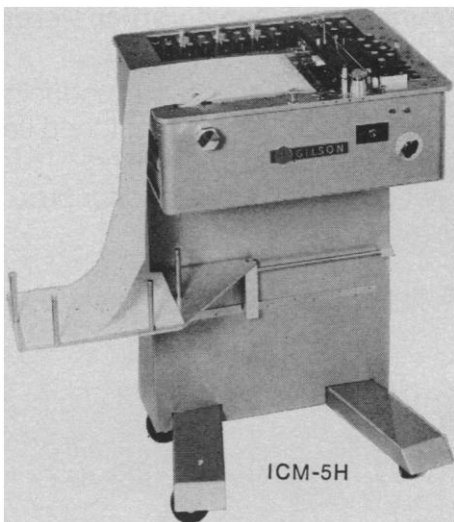
Name \_\_\_\_\_

Affiliation \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_ Zip \_\_\_\_\_





### **GILSON BISCRIPTUAL POLYGRAPHS**

**NEW! HEATED STYLUS PHYSIOLOGICAL RECORDING ON THERMOCHROMIC PAPER**

Bond paper texture • Abrasion-resistant • Crumple-resistant (for the record that didn't look relevant)  
• Substantially lower in cost than conventional wax-coated heat-sensitive paper

**NEW! HIGH FREQUENCY PEN RESPONSE UP TO 90 Hz**

**NEW! INTEGRATED CIRCUIT ELECTRONICS**

5- and 8-channel Polygraphs  
5-channel Projector Polygraph  
1- and 2-channel portable recorders

50 mm deflection galvanometer channels  
Pressure, force, direct coupled potentials, respiration, ECG, EEG, EMG, etc.

310 or 200 mm: full chart width servo channels  
Dye dilution curves, GSR, O<sub>2</sub>, pH, CO<sub>2</sub>, temperature, respiration, etc.

**Biscriptual Polygraphs can also be converted for ink pen recording**

*Call or write for literature  
and a sample recording*



**GILSON MEDICAL ELECTRONICS, INC.**

P.O. BOX 27, MIDDLETON, WISCONSIN 53562 • TELEPHONE 608/836-1551

**EUROPEAN MANUFACTURING PLANT**

**Gilson Medical Electronics • 69, rue Gambetta, 95-Villiers-le-Bel, FRANCE • Telephone 990-10-38**

Circle No. 179 on Readers' Service Card

# AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

*Science* serves its readers as a forum for the presentation and discussion of important issues related to the advancement of science, including the presentation of minority or conflicting points of view, rather than by publishing only material on which a consensus has been reached. Accordingly, all articles published in *Science*—including editorials, news and comment, and book reviews—are signed and reflect the individual views of the authors and not official points of view adopted by the AAAS or the institutions with which the authors are affiliated.

## Editorial Board

1974

ALFRED BROWN	FRANK W. PUTNAM
JAMES F. CROW	MAXINE F. SINGER
SEYMOUR S. KETY	GORDON WOLMAN
FRANK PRESS	

1975

HERBERT S. GUTOWSKY	DONALD LINDSLEY
N. BRUCE HANNAY	RUTH PATRICK
DONALD KENNEDY	RAYMOND H. THOMPSON
DANIEL E. KOSHLAND, JR.	

## Editorial Staff

**Editor:** PHILIP H. ABELSON

**Business Manager:** HANS NUSSBAUM

**Managing Editor:** ROBERT V. ORMES

**Assistant Editors:** ELLEN E. MURPHY, JOHN E. RINGLE

**Assistant to the Editors:** PATRICIA ROWE

**News and Comment:** JOHN WALSH, LUTHER J. CARTER, DEBORAH SHAPLEY, ROBERT GILLETTE, NICHOLAS WADE, CONSTANCE HOLDEN, BARBARA J. CULLITON, SCHERRAINE MACK

**Research News:** ALLEN L. HAMMOND, WILLIAM D. METZ, THOMAS H. MAUGH II, JEAN L. MARK, ARTHUR L. ROBINSON, GINA BARI KOLATA, FANNIE GROOM

**Book Reviews:** KATHERINE LIVINGSTON, LYNN MANFIELD, JANET KEGG

**Cover Editor:** GRAYCE FINGER

**Editorial Assistants:** MARGARET ALLEN, ISABELLA BOULDIN, ELEANORE BUTZ, MARY DOREMAN, SYLVIA EBERHART, JUDITH GIVELBER, CORRINE HARRIS, NANCY HARTNAGEL, OLIVER HEATWOLE, CHRISTINE KARLIK, MARGARET LLOYD, ERIC POGGENPOHL, JEAN ROCKWOOD, LEAH RYAN, LOIS SCHMITT, RICHARD SEMIKLOSE, YA LI SWIGART, ELEANOR WARNER

**Guide to Scientific Instruments:** RICHARD SOMMER

**Membership Recruitment:** GWENDOLYN HUDDLE;  
**Subscription Records and Member Records:** ANN RAGLAND

## Advertising Staff

<b>Director</b>	<b>Production Manager</b>
EARL J. SCHERAGO	MARGARET STERLING

**Advertising Sales Manager:** RICHARD L. CHARLES

**Sales:** NEW YORK, N.Y. 10036: Herbert L. Burklund, 11 W. 42 St. (212-PE-6-1858); SCOTCH PLAINS, N.J. 07076: C. Richard Callis, 12 Unami Lane (201-889-4873), CHICAGO, ILL. 60611: Jack Ryan, Room 2107, 919 N. Michigan Ave. (312-DE-7-4973); BEVERLY HILLS, CALIF. 90211: Winn Nance, 111 N. La Cienega Blvd. (213-657-2772); DORSET, VT. 05251: Fred W. Dieffenbach, Kent Hill Rd. (802-867-5581)

**EDITORIAL CORRESPONDENCE:** 1515 Massachusetts Ave., NW, Washington, D.C. 20005. Phones: (Area code 202) Central Office: 467-4350; Book Reviews: 467-4367; Business Office: 467-4411; Circulation: 467-4417; Guide to Scientific Instruments: 467-4480; News and Comment: 467-4430; Reprints and Permissions: 467-4483; Research News: 467-4321; Reviewing: 467-4440. Cable: Advancesci. Washington. Copies of "Instructions for Contributors" can be obtained from the editorial office. See also page xv, *Science*, 28 June 1974. **ADVERTISING CORRESPONDENCE:** Room 1740, 11 W. 42 St., New York, N.Y. 10036. Phone: 212-PE-6-1858.

## The Ghost at the Feast

The specter, unseen by some and ignored by others, looming over the World Food Conference this week in Rome is the continuing rapid population growth of the world's poor countries. Some scientists and publicists have seriously advocated a "lifeboat ethic," saying that nations which do not *compel* human fertility control (by what means is never stated) are endangering the survival of our species—hence they should be starved out of the human race by denying them food aid. This obscene doctrine assumes that men and women will not voluntarily limit their own fertility when they have good reasons and the knowledge and means to do so.

The sharp decline in birthrates during the past decade in a dozen developing countries belies the assumption. But one thing is clear from this experience: environmental changes can bring down birthrates only if they affect the people who have the children—the great mass of the poor who now have little hope for a better life.

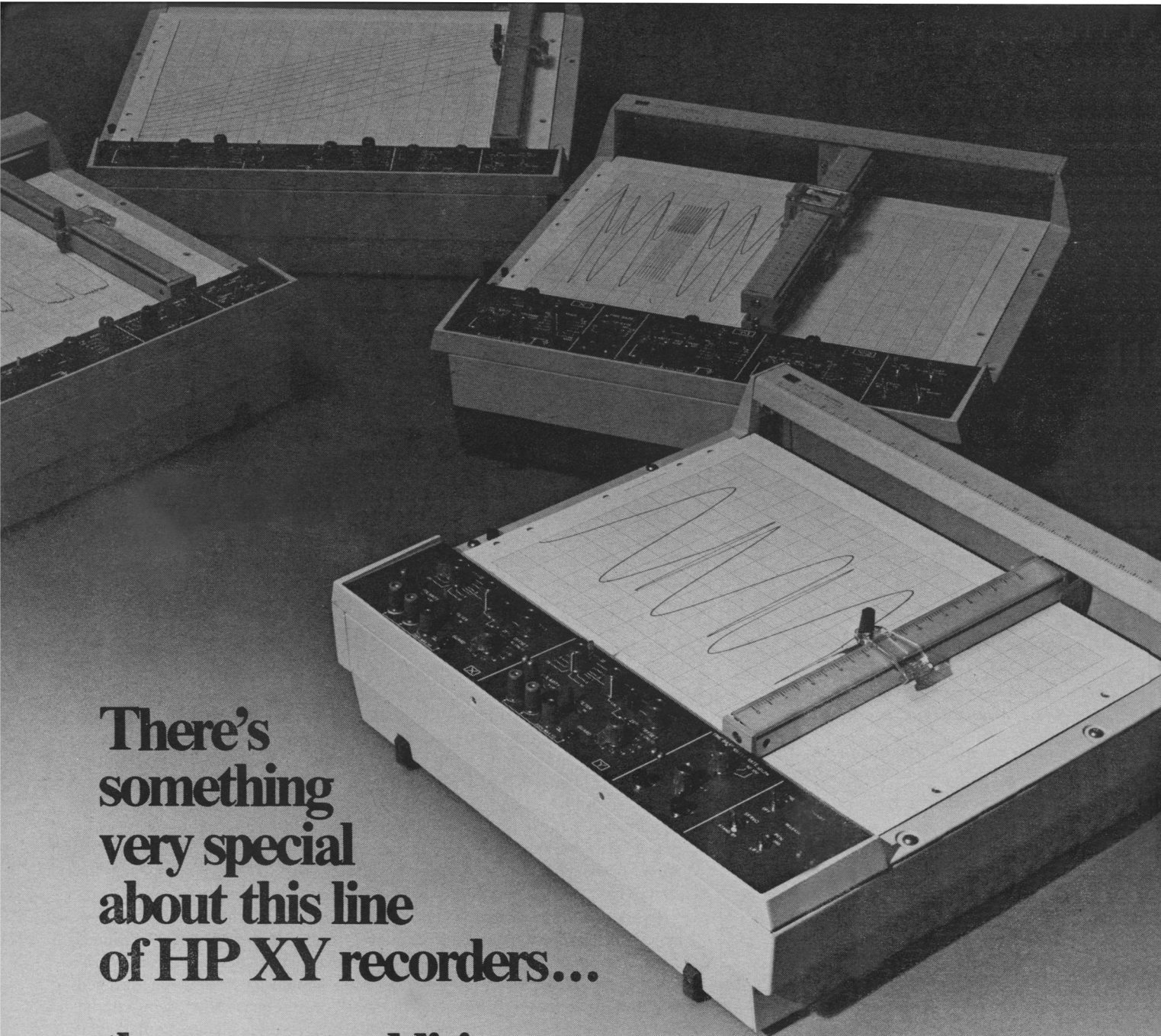
In the past, much foreign assistance has benefited elite groups; it has contributed little to the welfare of poor people in the poor countries. In future aid programs, the rich nations would be morally justified in insisting that the major part of capital and technical assistance be directed toward improving the living conditions and raising the aspirations of poor people, through bringing about higher levels of literacy and employment opportunities for women, improved health of both children and adults, better communications, greater opportunities for socioeconomic mobility, rational urbanization, agricultural modernization that benefits small farmers and landless laborers, and family planning services that give poor families freedom to choose the numbers of their children. Some or all of these conditions characterize the developing nations which have already markedly reduced their birthrates.

In the meantime, the World Food Conference has much to do. Emergency measures must be agreed upon to prevent widespread famines during the next 12 months. Preliminary plans must be laid for a World Food Bank. The Persian Gulf oil producers should be strongly encouraged to build nitrogen fertilizer plants based on the gas now being flared from their wells. The developed countries should pledge capital and technical assistance for agricultural modernization in the poor countries. Adequate nutrition should be recognized as a universal human right, applicable to poor people everywhere. And the world's scientists should be urged to devote part of their research efforts to increasing world food supplies.

One purpose of a World Food Bank should be to ensure maximum production of cereals and legumes by providing intergovernmental support prices. Another should be to dampen the wild short-term fluctuations in prices for cereals and soy beans that now occur whenever there is a slight deficit or excess of supplies. Reserve stocks provided to poor countries should not be used, as they were in the past, to depress prices received by their farmers, thereby reducing their incentives and ability to increase productivity. Support prices should be guaranteed to these farmers at a level which would ensure profitable operations for efficient producers.

The World Food Conference dramatically signifies the true interdependence of human beings everywhere, but it emphasizes even more the necessity to change the selfish and shortsighted behavior of many people in both the rich and the poor countries.—ROGER REVILLE, *Center for Population Studies, Harvard University, Cambridge, Massachusetts 02138*





**There's  
something  
very special  
about this line  
of HP XY recorders...**

**the newest addition  
is the fastest most sensitive machine  
we've ever built.**

HP's line of XY recorders is designed to let you choose the right machine with the right options to do the right kind of job for your lab. First: a basic one-pen workhorse. Then, a fast high-performance version. And a two-pen model that doesn't sacrifice speed.

Now, HP introduces a very special combination of acceleration and sensitivity: The Model 7047A.

This is an outstanding XY recorder, the top of the line. Sensitivity of  $50 \mu\text{V}/\text{in.}$

Acceleration in the Y axis of  $3000 \text{ in./sec}^2$  and  $2000 \text{ in./sec}^2$  in the X axis. With fully guarded input and 130db common mode rejection.

To meet the demands of the most exacting lab work, the 7047A gives you a switchable input filter, 11 scales of calibrated offset, internal time base and TTL remote control. All as standard equipment.

And like all recorders in the line, the 7047A is built on a strong die-cast aluminum mainframe. Inside, there are no

complicated slip clutches, just tough, continuous duty servo motors that can be driven offscale independently without damage.

This is the best of the best XY recorders ever offered by Hewlett-Packard. Prices start at \$2,850 (domestic USA price only). For complete details on the new 7047A and the other recorders in the HP line, see your HP field representative or write Hewlett-Packard, 1501 Page Mill Road, Palo Alto, California 94304.

11408

**HEWLETT  PACKARD**

Sales and service from 172 offices in 65 countries.  
1501 Page Mill Road, Palo Alto, California 94304

Circle No. 126 on Readers' Service Card

In Two Volumes

## THE ACTINIDES

**Electronic Structure and Related Properties**

edited by A. J. FREEMAN and J. B. DARBY, Jr.

*Volumes in the MATERIALS SCIENCE  
AND TECHNOLOGY Series*

**CONTENTS OF VOLUME 1:** Historical Introduction. Crystal Field Theory. Electronic Energy Band Structure of the Actinide Metals. Magnetic Properties of Actinide Compounds. Nuclear Magnetic Resonance and Electronic Structure of the Actinides. Hyperfine Studies in the Actinide Series Using Mössbauer Resonance and Angular Correlation Techniques. Neutron Scattering Studies of the Actinides.

*Volume 1/1974, 368 pp., \$36.00/£17.30*

**CONTENTS OF VOLUME 2:** Band Structure of Actinide Compounds Possessing NaCl-Type Symmetry. Many Electron Effects in the Actinides. Optical Properties and Electronic Structure of the Actinides. The Crystal Chemistry of Actinide Compounds. Transport Properties. Magnetic Properties. Ultrasonic Waves in Actinide Metals and Compounds. Surface Studies.

*Volume 2/1974, 392 pp., \$36.50/£17.50*

## THE ELECTRORETINOGRAM

by JOHN ARMINGTON

Here is a comprehensive discussion of the electroretinogram—one that emphasizes all areas of the subject, rather than just clinical applications. The first half of the book begins with chapters on the history and recording techniques of electroretinography, and then discusses in detail the response and its physiology in many invertebrate and vertebrate species. The second half is devoted to the human electroretinogram and its clinical applications. In discussing the human response, the author emphasizes the effects of the stimulus parameters on the several components of the response. Topics covered include the fundamental characteristics and properties of the response, psychophysics, human spectral sensitivity and color vision, and the clinical electroretinogram.

*1974, 480 pp., \$31.50/£15.10*

## SPOUTED BEDS

by KISHAN B. MATHUR and NORMAN EPSTEIN

This is a comprehensive state-of-the-art review of the spouted bed technique. It covers both theoretical and practical aspects and includes much previously unpublished material, notably many important contributions from the U.S.S.R. The introduction provides the historical background of the technique (of which K. B. Mathur is co-inventor), and discusses spouted beds in relation to other gas-solid contacting systems.

*1974, 320 pp., \$24.50/£11.75*

*(Prices subject to change without notice)*



We've just opened your field of vision.

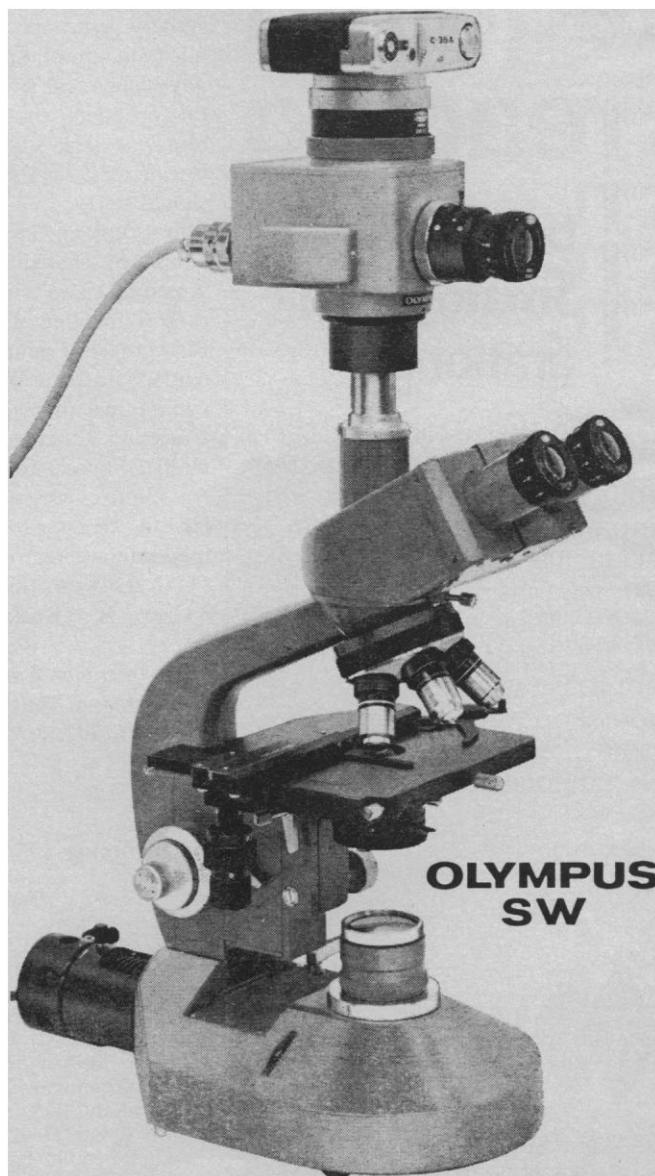
Now you can scan more than twice the area you could with ordinary, wide-field eyepieces. Olympus' new Super Widefield optical system gives you a clear, crisp view of five field diameters from 0.265mm at 1000x (oil) to 6.63mm at 40x. Scanning time is reduced, and with it, eyestrain and lost motion. Now you see 217% more of the flat field for which Olympus is known.

And, as usual with Olympus, you can add this new capability to your present Olympus EH, FH, EHA or FHA. It takes but a few minutes to install the Super Widefield Eyepieces, binocular or trinocular SW observation tube, SW Condenser and SW Plan Achromat objectives (4x, 10x, 20x, 40x and 100x oil-immersion).

After all, modular versatility is one of the features that opened people's eyes to Olympus in the first place. Send for literature. Write: Olympus Corporation of America, Two Nevada Drive, New Hyde Park, New York 11040.

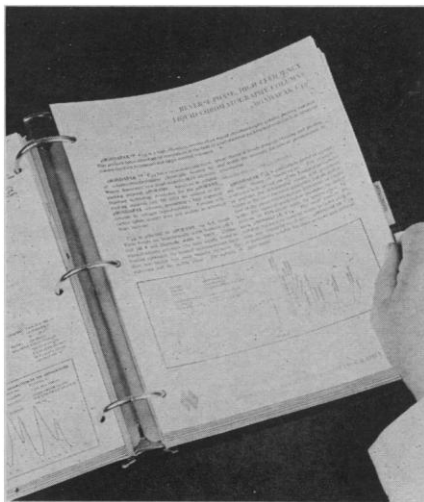
In Canada: W. Carsen Co. Ltd., 31 Scarsdale Road, Don Mills, Ontario.

# OLYMPUS Super Widefield: it's an eye-opener.





## from Waters/the Liquid Chromatography People



# required reading

## for better, faster chromatographic separations

Consider Waters' library of liquid chromatography information your resource for solving separations problems. We've got factual, concise, and helpful monographs on a wide variety of topics. They are yours for the asking. Send for our complete Applications Index today. And if your separations problem is more pressing, give us a call; we'll do our best to help you.



165 Maple Street, Milford, Mass. 01757  
Telephone (617) 478-2000

**The Liquid Chromatography People**

Circle No. 73 on Readers' Service Card

sity Medical Center), and (iv) pheromone systems in insects (W. Roelofs, New York State Agricultural Experiment Station, Geneva).

J. E. Casida (University of California, Berkeley) observed that various screening tests have been used in the search for new insecticidal natural products from plants, microorganisms, insects, annelids, and other organisms. A great variety of naturally occurring insecticidal materials is now known. Modifications of these toxicants have provided major new insecticides in a few cases; the best example of these are the pyrethroids, based on pyrethrins, which very well may be the next of the important classes of insecticides (M. Elliott, Rothamsted Experimental Station, England). Most natural insecticidal products are complex structures, and the toxic moiety is not defined. Simple analogs maximizing the critical portion of the molecule may provide improved activity, especially with structure optimization to obtain suitable polarity and physiochemical properties. These natural products should be subjected to more intensive study as a source of new insecticides, and increased attention should be focused on finding new naturally occurring insecticides by reexamination of available literature, directed screening, and structure optimization.

This meeting was sponsored by the Rockefeller Foundation, and was attended by 22 invited participants from institutions in Japan, England, West Germany, Canada, the Netherlands, the United States, and the U.N. Food and Agriculture Organization and World Health Organization. Cochairmen of this conference were R. L. Metcalf (University of Illinois) and J. J. McKelvey, Jr. (Rockefeller Foundation).

C. S. KOEHLER

*Department of Entomological Sciences,  
University of California,  
Berkeley 94720*

### Forthcoming Events

#### December

9-11. **Hydrodynamical Numerical Models for Coastal and Open Ocean Areas**, American Geophysical Union, Monterey, Calif. (AGU, 1707 L St., NW, Washington, D.C. 20036)

11-13. **Nuclear Science and Scintillation and Semiconductor Counter Symp.**, Inst. of Electrical and Electronics Engineers, Washington, D.C. (D. C. Cook, Code 6603C, Naval Research Lab., Washington, D.C. 20390)

11-15. **American Psychoanalytic Assoc.**,

Springer-Verlag New York  
Heidelberg Berlin

presenting definitive books and journals written by outstanding scientists throughout the world.

Over 130 years of experience in the Old World, now 10 years in the United States.

## New Series

### Comprehensive Manuals of Surgical Specialties

edited by Richard H. Egdahl

is a series of surgical atlases organized into a format useful to a wide range of physicians who diagnose and treat surgically correctable disorders.

Volumes in preparation include: *Manual of Endocrine Surgery*, *Manual of Urologic Surgery*, *Manual of Burns*, and *Manual of Vascular Surgery*.

### Lecture Notes in Biomathematics

edited by S. Levin

report on the progress made in the applications of mathematical methods to the life sciences.

Volume 1, *Deterministic Threshold Models in the Theory of Epidemics* has been published. *Mathematical Problems in Biology/Victoria Conference and Stochastic Population Theories* are scheduled for publication.

### Topics in Applied Physics

is a series devoted to research achievements of current interest. Each volume will deal with a different topic under the editorship of a recognized authority in the field.

New and forthcoming volumes include: *Dye Lasers*, *Laser Spectroscopy of Atoms and Molecules*, *Mössbauer Spectroscopy* and *Raman Scattering in Solids*.

*New International Journals*

**Environmental Geology  
Microbial Ecology  
Journal of Mathematical Biology**

Books and journals are on display at the

**Springer-Verlag Booth  
Inter Science International**

Americana Hotel, New York, N.Y.  
January 27-31, 1975



**Springer-Verlag New York Inc.**  
175 Fifth Avenue  
New York, N.Y. 10010

Circle No. 19 on Readers' Service Card

New York, N.Y. (M. A. Berezin, 90 Forest Ave., West Newton, Mass. 02165)

12-17. American **Geophysical Union**, San Francisco, Calif. (A. F. Spilhaus, Jr., AGU, 1707 L St., NW, Washington, D.C. 20036)

12-17. American Acad. of **Optometry**, Miami Beach, Fla. (J. N. Schoen, 118 N. Oak St., Owatonna, Minn. 55060)

14. U.S. Virgin Islands **Medical Soc.**, St. Croix. (S. Tabacco, Box 1, Cruz Bay, St. John, Virgin Islands 00830)

15-20. Asian Regional Congr. on **Radiation Protection**, Intern. Radiation Protection Assoc. under the auspices of the Indian Assoc. for Radiation Protection, Bombay. (S. D. Soman, Organizing Committee, RCRP, Modular Labs., Room 1-216H, Bhabha Atomic Research Centre, Bombay 400 085)

16. Academy of **Science** of St. Louis, Clayton, Mo. (M. D. Yates, ASSL, 1 Oak Knoll Pk., Clayton 63105)

16-17. **New Drug Seminar**, 5th, National Cancer Inst., Washington, D.C. (C. G. Zubrod, NCI, Room 3A-52, Building 31, Bethesda, Md. 20014)

17-19. British **Biophysical Soc.**, London, England. (G. Offer, Dept. of Biophysics, King's College, London, W.C.2)

26-31. American **Microscopical Soc.**, Tucson, Ariz. (G. Esch, Dept. of Biology, Wake Forest Univ., Winston-Salem, N.C. 27109)

27-29. American **Philosophical Assoc.**, Washington, D.C. (N. E. Bowie, APA, Hamilton College, Clinton, N.Y. 13323)

27-30. Western Soc. of **Naturalists**, Vancouver, B.C., Canada. (D. H. Montgomery, Dept. of Biological Sciences, California Polytechnic State Univ., San Luis Obispo 93401)

27-30. American Soc. of **Zoologists**, Tucson, Ariz. (M. Wiley, ASZ, Box 2739, California Lutheran College, Thousand Oaks 91360)

27-31. **Beta Beta Beta Biological Soc.**, Rio Piedras, P.R. (L. Bush, Drew Univ., Madison, N.J. 07940)

28-30. **Archaeological Inst. of America**, Chicago, Ill. (E. A. Whitehead, AIA, 260 W. Broadway, New York 10013)

28-30. American **Economic Assoc.**, San Francisco, Calif. (R. Fels, Vanderbilt Univ., 1313 21st Ave., S, Nashville, Tenn. 37212)

28-30. **Linguistic Soc. of America**, New York, N.Y. (T. A. Sebeok, Room 600, LSA, 1717 Massachusetts Ave., NW, Washington, D.C. 20036)

28-30. All India **Medical Conf.**, 50th, Indian Medical Assoc., Calcutta. (P. C. Bhatla, IMA House, Indraprastha Marg, New Delhi-1, India)

#### January

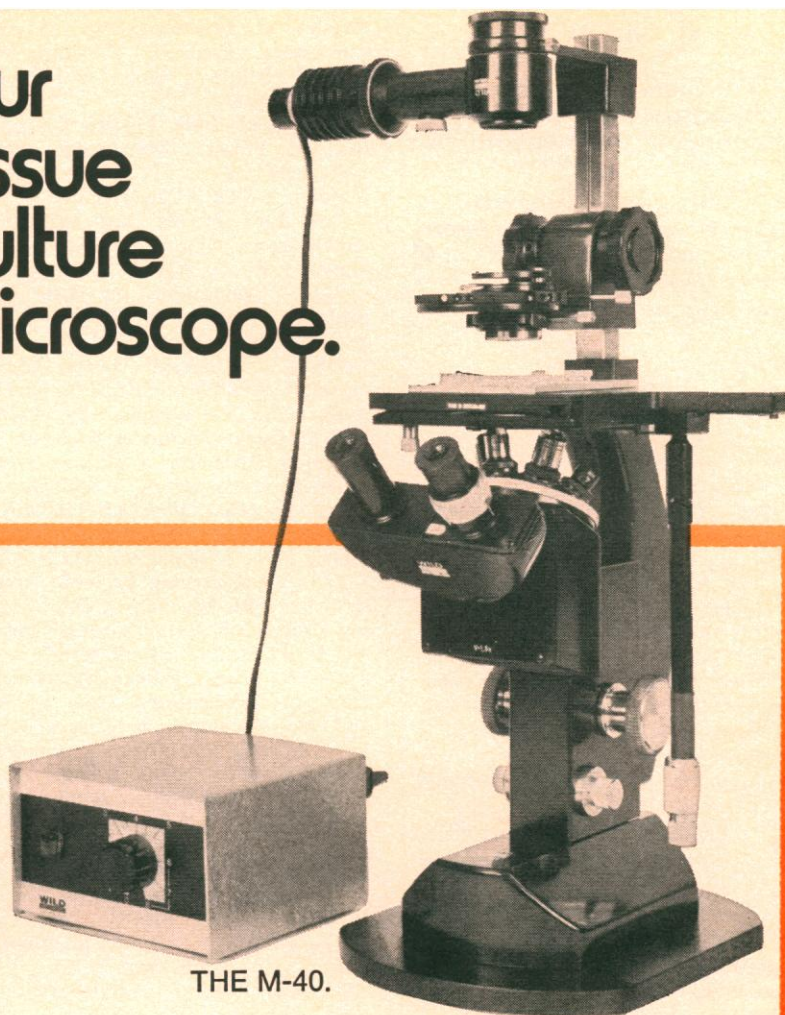
5-10. **Brackish Water as a Factor in Development**, intern. symp., Beer-Sheva, Israel. (A. Issar, Geology Dept., Ben Gurion Univ. of the Negev, P.O. Box 2053, Beer-Sheva)

6-7. **Central Action Drugs in the Regulation of Blood Pressure**, London, England. (O. T. Dollery, Dept. of Clinical Pharmacology, Royal Postgraduate Medical School, London, W12)

6-8. American **Chemical Soc.**, biennial Inorganic Div., Athens, Ga. (R. B. King, Dept. of Chemistry, Univ. of Georgia, Athens 30601)

15 NOVEMBER 1974

our  
tissue  
culture  
microscope.



THE M-40.

the **SPECIALIST.**

**WILD**

No modifications, no put-ons, no expedients. The Wild M-40 is designed **specifically** for tissue culture and plankton investigations.

Work with standard petri dishes, flasks and tissue culture vessels. Use Koehler illumination with conventional brightfield and phase contrast techniques. Use with accessories for two station viewing. For photomicrography, cinemicrography and CCTV microscopy. Some specialist.

That's the WILD M-40, from the family of great Swiss optical instruments for geodesy, photogrammetry and microscopy. Backed by fast, full factory services.

**WILD**  
HEERBRUGG

WRITE OR CALL  
FOR BROCHURE M-40.

**WILD HEERBRUGG INSTRUMENTS, INC.**  
FARMINGDALE, NEW YORK 11735 • 516-293-7400  
**WILD OF CANADA**, 881 LADY ELLEN PLACE, OTTAWA 3, CAN.  
**WILD OF MEXICO, S. A.** LONDRES 256, MEXICO 6, D. F.





**For Clinical, Research, or Industrial Applications of Continuous Flow Monitoring or**

**Single Tube Analysis**

*Glenco has the answer with Direct Linear Absorbance Monitors at a price ANY lab can afford!*



The GLENCO MODEL 57V offers versatility rarely found in instruments of this price range. For Continuous Flow Monitoring, this unit has the capability of monitoring two samples at the SAME or DIFFERENT WAVELENGTHS . . . or monitoring the differential signal of the same sample or monitoring the same sample at two different wavelengths. It is offered in two models:

- 1) with stepwise sensitivity selection or . . .
- 2) continuously variable sensitivity adjustment so that recorder response matches sample concentration.

**MODEL 57V, TYPE I OR TYPE II, 400-1100nm . . . . . \$1050.00**



The GLENCO MODEL 53A Direct Absorbance Reading Colorimeter is designed for Single Tube Analysis in all standard colorimetric methodologies. Utilizing the unique GLENCO Direct Absorbance Detecting Circuit, it allows the user to read directly in units of sample concentration in the range of 400-1100nm. With a 7nm bandpass and a linear range of over 2 absorbance units, this model offers features usually found only in expensive instruments.

It is adaptable for all tubes 10mm to 20mm and square cuvettes. An optional Pour-through Cell is available for repetitive readings using the same cell.

**MODEL 53A, Concentration Colorimeter . . . . . \$ 275.00**

**Model 53A-FC Concentration Colorimeter w/Flow-Through Cell 355.00**

For information on complete line of GLENCO products, write:

**GLENCO SCIENTIFIC, INC.**  
2802 White Oak Dr., Houston, Tx. 77007  
Phone: 713/861-9123  
TWX 910-881-6397

Circle No. 11 on Readers' Service Card

6-8. Conference on the Mechanics and Physics of Fracture, Inst. of Physics, Cambridge, England. (Meetings Office, IP, 47 Belgrave Sq., London, SW1X 8QX, England)

6-8. Solid State Physics Conf., 12th, Inst. of Physics, Manchester, England. (Meetings Office, IP, 47 Belgrave Sq., London, SW1X 8QX, England)

6-9. Law of the Sea Institute, 9th annual conf., Miami, Fla. (J. K. Gamble, Univ. of Rhode Island, Kingston 02881)

9-11. Symposium on Late Consequences of Successful Cancer Therapy: Proven and Potential, Natl. Cancer Inst., Orlando, Fla. (A. E. Evans, Children's Hospital of Philadelphia, 18th and Bainbridge Sts., Philadelphia, Pa. 19146)

1-2. Human Factors in Highway Transportation, 8th annual workshop, Transportation Research Board, Washington, D.C. (H. Lunenfeld, Office of Traffic Operations (HTD-32), Federal Highway Administration, Washington, D.C. 20590)

12-17. Engineering Problem Areas Interfacing with Rheology Conf., Engineering Foundation, Pacific Grove, Calif. (EF, 345 E. 47 St., New York 10017)

13-17. Miami Winter Symposia, 7th, Dept. of Biochemistry, Univ. of Miami, and the Papanicolaou Cancer Research Inst., Miami, Fla. (Miami Winter Symposia, P.O. Box 520906, Miami 33152)

13-17. Transportation Research Board, Natl. Acad. of Sciences-Natl. Research Council, 54th annual, Washington, D.C. (H. M. Gillespie, TRB, National Acad. of Sciences, 2101 Constitution Ave., NW, Washington, D.C. 20418)

14-15. Midwest Symp. on Bone, Columbia, Mo. (Conf. Section, M-175 Medical Center, Veterans Administration Hospital, Columbia, Mo. 65201)

17-19. Symposium on Animal Navigation, San Diego, Calif. (E. W. Huffman, Dept. of Zoology, San Diego State Univ., San Diego 92115)

19-25. American Mining Congr., Washington, D.C. (AMC, 1100 Ring Bldg., Washington, D.C. 20036)

20-22. Conference on Computer Architecture, Inst. of Electrical and Electronics Engineers, Houston, Tex. (W. King, Dept. of Computer Science, Univ. of Houston, Houston 77004)

20-22. Society of Thoracic Surgeons, Montreal, Canada. (W. G. Purcell, 111 E. Wacker Drive, Chicago, Ill. 60601)

20-23. American Meteorological Soc., 55th annual, Denver, Colo. (P. Julian, Natl. Center for Atmospheric Research, Box 3000, Boulder, Colo. 80303)

20-24. Nevada Acad. of Family Physicians, Lake Tahoe. (B. Holland, NAFF, 225 Albany St., Carson City, Nev. 89701)

20-25. Orbis Scientiae of the Center for Theoretical Studies, 2nd mtg., Coral Gables, Fla. (S. M. Widmayer, Center for Theoretical Studies, Univ. of Miami, Coral Gables 33124)

21-22. Vehicular Technology Conf., 25th, Inst. of Electrical and Electronics Engineers, Toronto, Ont., Canada. (G. A. Ross, Sinclair Radio Labs., Ltd., 122 Rayette Rd., Concord, Ont.)

22. Microprocessors and Microcomputers Symp., Newark, N.J. (Continuing Education, Newark College of Engineering/New Jersey Inst. of Technology, 323 High St., Newark 07102)

23-24. Fibrinolytic System: Molecular and Physiologic Aspects, 23rd annual symp., Detroit, Mich. (E. F. Mammen, Dept. of Physiology, Wayne State Univ., Scott Hall of Basic Medical Sciences, Detroit 48201)

23-27. American Mathematical Soc., Washington, D.C. (E. Pitcher, Dept. of Mathematics, Lehigh Univ., Bethlehem, Pa. 18015)

23-27. Conference Board of the Mathematical Sciences, Washington, D.C. (T. A. Botts, 834 Joseph Henry Bldg., 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

24-25. Developmental Psycholinguistics and Communication Disorders Conf., New York Acad. of Sciences, New York. (Conf. Dept., NYAS, 2 E. 63 St., New York 10021)

25-27. Mathematical Assoc. of America, Washington, D.C. (H. L. Alder, Dept. of Mathematics, Univ. of California, Davis 95616)

26-31. American Assoc. for the Advancement of Science, 141st annual, New York, N.Y. (AAAS Meetings Office, 1776 Massachusetts Ave., NW, Washington, D.C. 20036)

26-31. Power Engineering Soc., Inst. of Electrical and Electronics Engineers, New York, N.Y. (J. W. Bean, IEEE, 345 E. 47 St., New York 10017)

27-29. National Conf. on Materials Availability/Utilization, American Soc. for Metals, Chicago, Ill. (T. F. Andrassy, ASM Materials Conf., Metals Park, Ohio 44073)

27-30. American Assoc. of Physics Teachers, Anaheim, Calif. (A. A. Strassenburg, AAPT, Drawer AW, Stony Brook, N.Y. 11790)

27-31. American Nature Study Soc., New York, N.Y. (B. J. McKnight, ANSS, State Univ. College, New Paltz, N.Y. 12561)

28-30. Association for the Development of Computer-Based Instruction Systems, Charleston, S.C. (K. A. Duncan, Office of Computer Resources, College of Dental Medicine, 80 Barre St., Charleston 29401)

28-30. Reliability and Maintainability Symp., American Soc. for Quality Control, Washington, D.C. (J. H. Simm, Beckman Inst., Inc., 2200 Wright Ave., Richmond, Calif. 94804)

28-3. Winter Medical-Dental Assembly, Havana and Varadero Beach, Cuba. (A. T. Wachna, 504 Medical Arts Bldg., Windsor 14, Ont., Canada)

29-31. Western Spectroscopy Assoc., 22nd annual, Pacific Grove, Calif. (G. R. Haugen, L-404, Univ. of California, Lawrence Livermore Lab., Livermore 94550)

29-1. Southern Soc. for Pediatric Research, New Orleans, La. (J. R. Montgomery, Dept. of Pediatrics, Baylor College of Medicine, Houston, Tex. 77025)

31-2. Los Angeles Midwinter Radiological Conf., 27th annual, Los Angeles, Calif. (J. F. Mack, 4500 Marloma Dr., Rolling Hills Estate, Calif. 90274)

31-2. Southern Radiological Conf., 19th, Point Clear, Ala. (M. Eskridge, P.O. Box 7544, Mobile, Ala. 36607)

31-5. Biofeedback Research Soc., 6th annual, Monterey, Calif. (F. Butler, Room 202, Dept. of Psychiatry, Univ. of Colorado Medical Center, 4200 E. Ninth Ave., Denver, Colo. 80220)



UL and CSA  
Listed

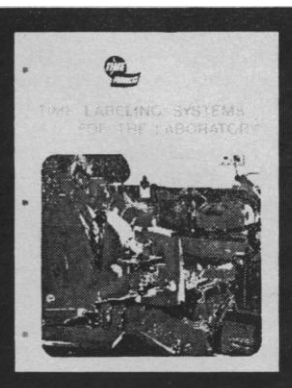
## There's a lot to like about Thelco® Ovens

In particular, Thelco's single-knob dual safety thermostat, magnetic door closure with push-button release, and shelves that pull out but don't drop down or fall out . . . features that help like an extra hand. Thelcos are designed to perform better, look better, last longer. Trouble-free service and reliability mean less maintenance. And, most of all, you'll like the unequaled temperature uniformity throughout the stainless steel chamber. It's guaranteed! Reproducible results from load to load are accomplished without worry about the placement of specimens. Performance is always accurate and dependable. Ask your GCA/Precision Scientific Dealer or write us. GCA/Precision Scientific, 3737 W. Cortland St., Chicago, IL 60647. Sales offices in principal cities.

Circle No. 81 on Readers' Service Card

## Your LAB is safer, more efficient with TIME PRODUCTS

### FREE New color brochure on Laboratory Labeling



- Safer because all Time Products are treated to interrupt the flow of bacteria.
- Safer because they eliminate a major source of contact infection, hand to mouth contact.
- Safer because they provide instant visual communication of warnings and proper procedures.
- More efficient because Time Identification Systems organize and correlate your Lab procedures.

There is a local Time Dealer or representative near you. Contact us for his name, we will also send samples and literature on our complete line of Time Tapes and Labels.



PROFESSIONAL TAPE COMPANY, INC.  
DEPARTMENT 12  
144 TOWER DR., BURR RIDGE (HINSDALE), ILL. 60521

Circle No. 96 on Readers' Service Card

## Practical new professional microscope for tomorrow's practitioners--SWIFT Model M1001

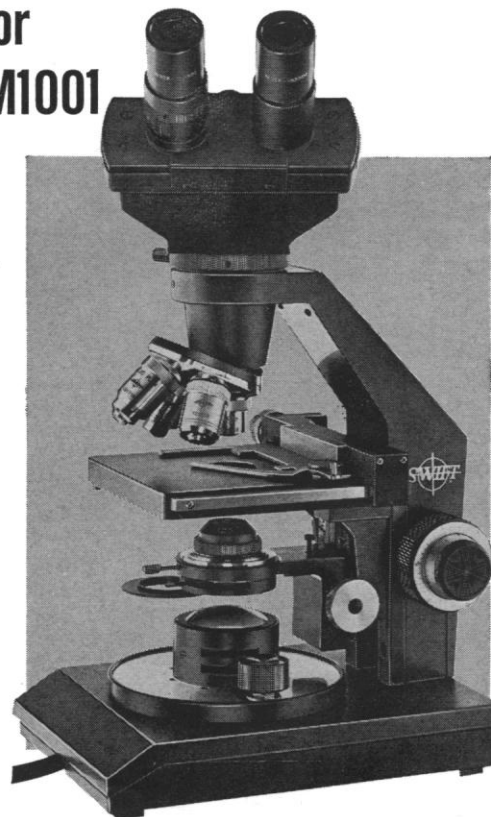
This SWIFT research quality microscope was meticulously designed to meet all requirements of medical, dental, and other advanced biological science areas. Optics are of particularly high caliber. Binocular head is rotatable 360°. Stage is raised and lowered uniformly on precision ball bearings with no lateral movement. Patented clutch mechanism operates automatically to prevent damage to finely balanced gear train. Coarse focusing lock can be preset to prevent slide breakage. Fine focus control operates continuously throughout the entire range of magnification.

Even with its many built-in preventives for excessive wear and tear, and its extraordinary research features, the M1001 is surprisingly moderate in price. Write today for literature, price list with variable options in components, and name of nearest dealer for demonstration.



### SWIFT INSTRUMENTS, INC.

Technical Instrument Division  
P.O. BOX 562, SAN JOSE, CA 95106 • 408/293-2380  
(MAIN OFFICE: Boston, MA)



SWIFT AGENCIES are located throughout the U.S.  
and in most foreign countries.



## February

2-5. American Soc. for **Adolescent Psychiatry**, 3rd Pan American mtg., Mexico City, Mexico. (M. D. Staples, 24 Green Valley Rd., Wallingford, Pa. 19086)

2-9. Noah Worcester **Dermatological Soc.**, Phoenix, Ariz. (H. Plotnick, 1150 David Whitney Bldg., Detroit, Mich. 48226)

3-7. National Symp. on **Forensic Science**, 4th, Perth, West Australia. (V. J. McLinden, Australian Forensic Science Soc., Government Chemical Labs., 30 Plain St., Perth, West Australia 6000)

4-7. **Industrial Waste Water and Wastes**, 2nd intern. congr., Union of Pure

and Applied Chemistry, Stockholm, Sweden. (B. Goransson, ICIWWW, Box 5607, S-114 86 Stockholm 5, Sweden)

4-7. Society for **Range Management**, Mexico City, Mexico. (F. T. Colbert, SRM, 2120 S. Birch St., Denver, Colo. 80222)

4-8. American **Group Psychotherapy Assoc.**, San Antonio, Tex. (M. Keefe, AGP, 12th Floor, 1865 Broadway, New York 10023)

5-7. **Aerospace and Electronic Systems**, 16th annual, Aerospace and Electronics Systems Soc. and the Los Angeles Council of the Inst. of Electrical and Electronic Engineers, Los Angeles, Calif. (Room 1920, IEEE Los Angeles Council Office, 3600 Wilshire Blvd., Los Angeles 90010)

5-7. San Diego **Biomedical Symp.**, 14th annual, sponsored by American Soc. for Quality Control, Mission Bay, San Diego, Calif. (L. Rosen, Dept. of Radiology, Univ. of California, P.O. Box 109, La Jolla 92037)

6-8. International Soc. of **Lymphology**, Rio de Janeiro, Brazil. (R. C. Mayall, 52, rue Dona Mariana, Buenos Aires, Argentina)

10-11. Symposium on **Practical Applications of Neutron Radiography and Gauging**, National Bureau of Standards and American Soc. for Testing and Materials, Gaithersburg, Md. (H. Berger, Reactor Radiation Div., Inst. for Materials Research, NBS, Washington, D.C. 20234)

10-13. American College of **Cardiology**, Houston, Tex. (W. D. Nelligan, ACC, 9650 Rockville Pike, Bethesda, Md. 20014)

10-13. **Meteorological Observations and Instrumentation**, 3rd symp., American Meteorological Soc., Washington, D.C. (J. Giraytys, Code W141, Natl. Weather Service, 8060 13th St., Silver Spring, Md. 20910)

12-14. **Solid State Circuits**, intern. conf., Inst. of Electrical and Electronics Engineers, Philadelphia, Pa. (IEEE, 345 E. 47 St., New York 10017)

12-15. Southern **Neurosurgical Soc.**, San Antonio, Tex. (G. T. Tindall, Emory Univ. Clinic, 1365 Clifton Rd., NE, Atlanta, Ga. 30322)

13-15. Society of **University Surgeons**, Phoenix, Ariz. (E. W. Fonkalsrud, Dept. of Surgery, Univ. of California Medical Center, Los Angeles, Calif. 90024)

14-15. International Symp. on **Psychopharmacology**, Louisville, Ky. (C. B. Denber, Dept. of Psychiatry and Behavioral Sciences, Univ. of Louisville, School of Medicine, Louisville 40201)

15-16. Symposium on **Computers in Laboratory Medicine**, San Francisco, Calif. (J. Hall, Continuing Education in Sciences and Mathematics, Univ. of California Extension, Berkeley 94720)

15-19. American Acad. of **Allergy**, San Diego, Calif. (J. O. Kelley, AAA, 225 E. Michigan St., Milwaukee, Wis. 53202)

15-21. Pan-Pacific **Surgical Assoc.**, Honolulu, Hawaii. (R. A. Rose, PPSA, 236 Alexander Young Bldg., Honolulu 96813)

16-20. American Inst. of **Mining, Metallurgical and Petroleum Engineers**, New York, N.Y. (J. B. Alford, AIMPE, 345 E. 47 St., New York 10017)

16-21. Inter-American Congr. of **Radiology**, Bogotá, Columbia. (A. Mejia, IACR, Aptdo Aereo 53737, Bogotá 2)

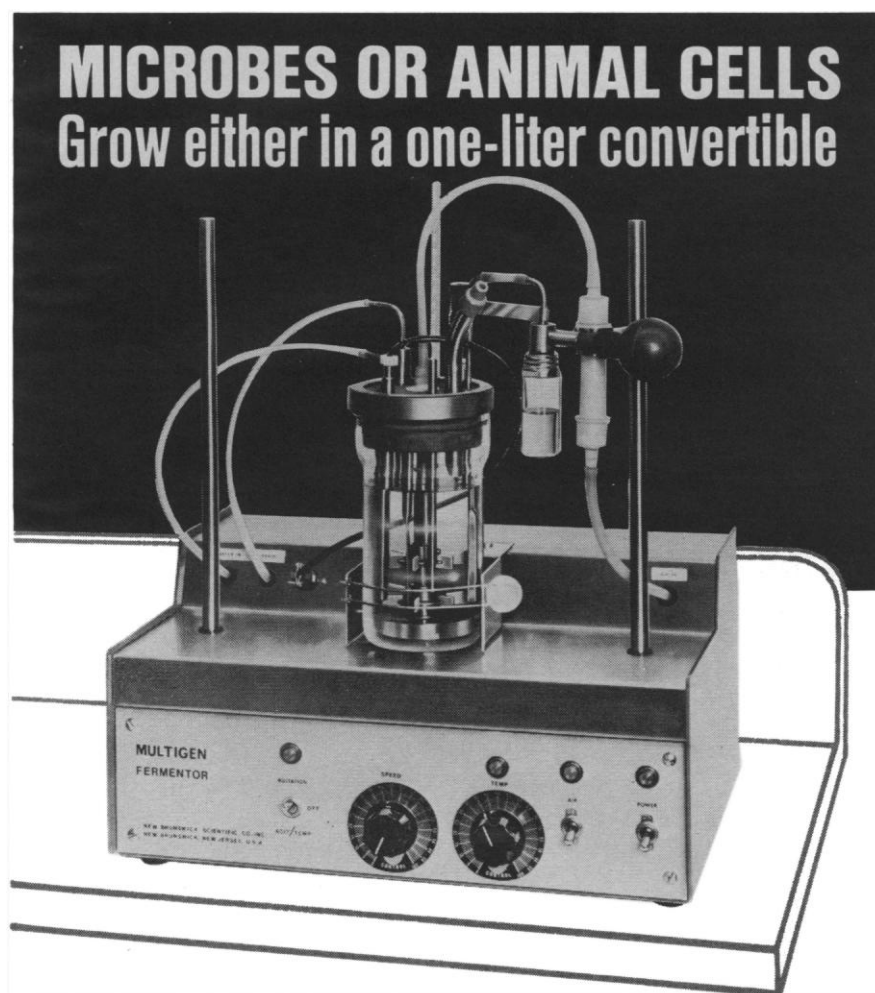
17-18. Conference on **Glacial Till**, Ottawa, Ont., Canada. (M. K. Ward, Conf. on Glacial Till, Natl. Research Council of Canada, Ottawa, K1A 0R6)

17-20. Southern **Surgical Congr.**, 43rd annual, Atlanta, Ga. (A. H. Letton, SSC, 340 Boulevard, NE, Atlanta 30312)

18-21. **Biophysical Soc.**, Philadelphia, Pa. (M. O. Daynoff, Natl. Biomedical Research Foundation, Georgetown Univ. Medical Center, 3900 Reservoir Rd., NW, Washington, D.C. 20007)

18-22. American Acad. of **Forensic Sciences**, Chicago, Ill. (M. M. Hibbard, AAFS, Room 515, 11400 Rockville Pike, Rockville, Md. 20852)

21-24. American Assoc. of **School Ad-**



The MultiGen is a low cost culture apparatus designed for the control of all basic environmental conditions: temperature, agitation, aeration, pH, and dissolved O<sub>2</sub>. Whether the need is for viscous microbial cultures or animal cell suspensions, air sparging or gas overlay, the MultiGen can be adapted to specific research requirements, and can provide an ideal alternative to spinner flask procedures.

Virtually every component is supplied in one compact assembly; glassware, tubing, penetrations, air filter and sampler. It even has its own built-in air pump, heating system, and facilities for cooling, as well as a choice of agitation systems. The impellers are magnetically coupled to eliminate contamination.



ASK FOR BULLETIN F1000/S1174

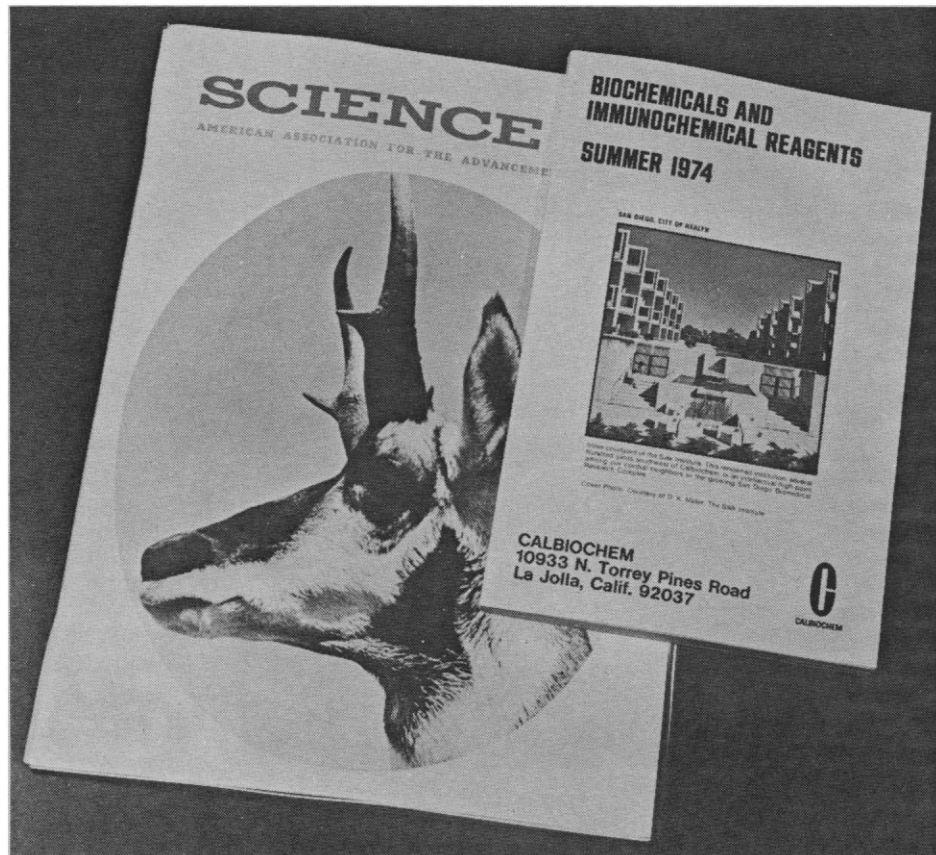
**NEW BRUNSWICK SCIENTIFIC CO., INC.**

1130 SOMERSET ST., NEW BRUNSWICK, N. J. 08903 201-846-4600

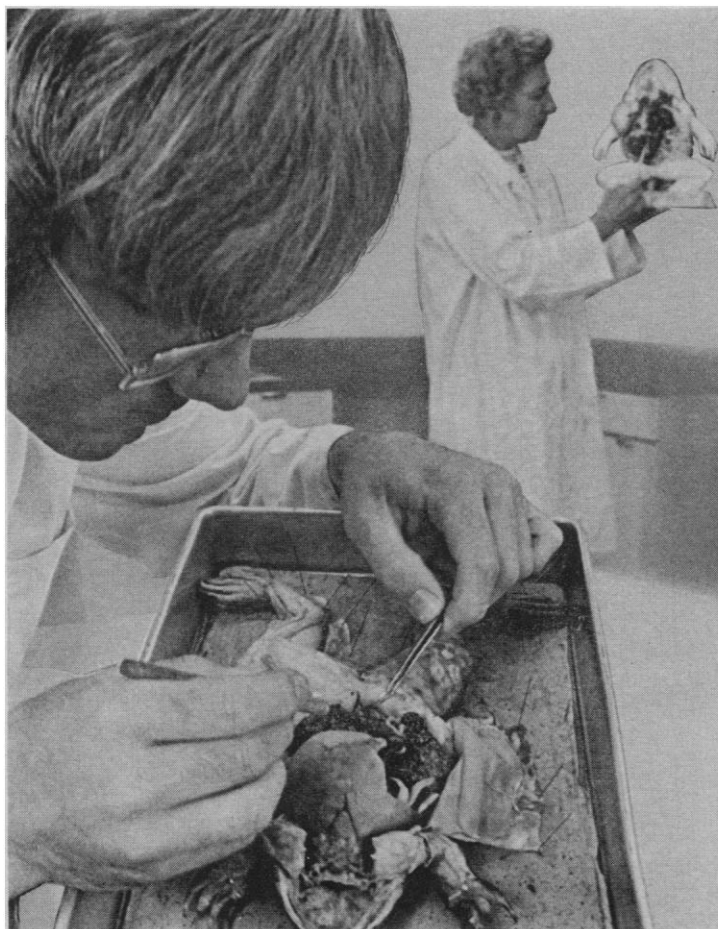
With NBS, Advanced Technology is a Way of Life.

# You really should read them both...

The publication in your hand contains current technical information of vital importance to your professional research. So does the Calbiochem catalog. Our editors strive to be informative, entertaining and brief in their uncluttered description of more than 2000 authentic research biochemicals. Calbiochem's publications and products are available throughout the world. If you want a free subscription to our publications, send your name and professional address to Ms. H. Gone, c/o Calbiochem, P.O. Box 12087, San Diego, California 92112. Ask for our current Biochemicals and Immunochemical Reagents List.

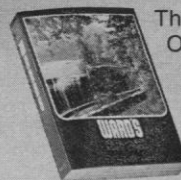


Circle No. 97 on Readers' Service Card



## At Ward's... We Match Your Pride in Teaching With Our Pride in Preparing Specimens

Your pride in teaching means taking extra care and time in your preparation. Ward's gives the "extras" that result in specimens that mean more to you and your students. We've had this pride since 1862. The guidelines for quality and service we set then have never been relaxed. Generations of teachers can attest to that. We've grown with the times . . . kept pace with modern technology. *And pioneered much of it.*



That's why we put quality first . . . Our mutual concern for good education demands it!

If you haven't seen our 1974-75 Catalog, send for it. See a panorama of living, preserved, mounted, embedded specimens; field and lab equipment.

**WARD'S** BIOLOGY  
EARTH SCIENCES  
CHEMISTRY

Ward's Natural Science Establishment, Inc., P.O. Box 1712,  
Rochester, N.Y. 14603; P.O. Box 1749, Monterey, Calif. 93940

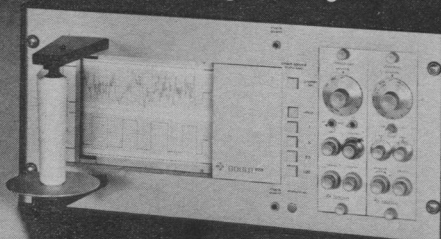


## The Gould 220: the workhorse of biophysical recording.

Why do so many hospitals and laboratories depend on the Gould 220? Just look at the features.

The modular system provides two 40 mm analog channels and two event channels and it accepts a broad range of biophysical plug-in signal conditioners so you can use the 220 to measure almost any physiological parameter. The 220's pressurized writing system makes the sharpest, crispest traces of any recorder on the market. And the 220's 99.5% linearity means you get accurate records you can trust.

For all these reasons, the Gould 220 belongs in your hospital or laboratory. Write for details. Gould Inc., Instrument Systems Division, 3631 Perkins Avenue, Cleveland, Ohio 44114. Or Kouterveldstraat Z/N, B 1920 Diegem, Belgium.



**GOULD**

Circle No. 89 on Readers' Service Page



After you've compared our price advantage, compare these other feature advantages:

- Choice of distilled or tap water rinse on any or all three rinse cycles.
- Booster heater to raise water temperature to 70°C (160°F) during final rinse cycle.
- 0-60 minute variable drying time.

Choose from 6 automatic models . . . under counter, free standing or mobile . . . and fifteen stainless steel racks. The CRC Labwasher . . . buy it now. And take advantage of all of its advantages.

Get all the information. Request Bulletin A-411

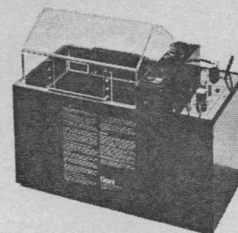
### The CRC Labwasher

Division / The Lab Apparatus Co.

18901 Cranwood Parkway, Cleveland, Ohio 44128

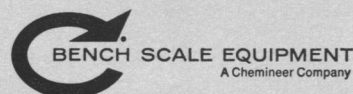
Circle No. 15 on Readers' Service Card

## SHAKING BATHS... FROM BENCO/GRANT

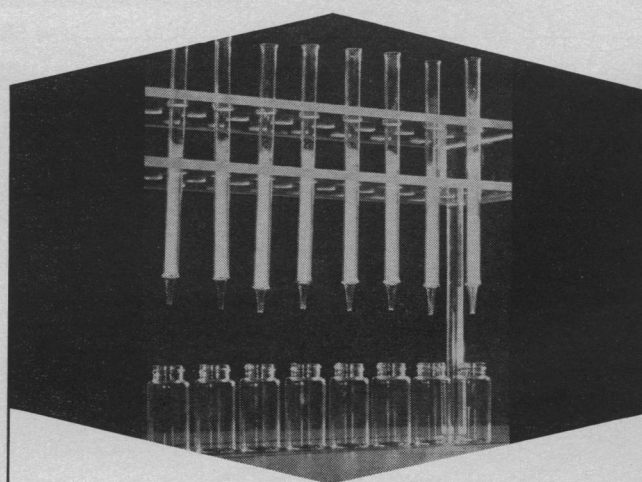


- unique encapsulated magnetic drive system for shaking tray
- three temperature control systems:  $\pm 0.2^{\circ}\text{C}$ ,  $\pm 0.1^{\circ}\text{C}$  or  $\pm 0.03^{\circ}\text{C}$
- temperature range  $0^{\circ}\text{C}$  (with cooler) to  $100^{\circ}\text{C}$
- gassing hoods, cooler units, flask trays (25 to 500 ml) and test tube racks available
- all baths are backed with 3-year unconditional guarantee

Bench Scale Equipment Co., P.O. Box 1123, Dayton, Ohio 45401, (513) 253-7111.



Circle No. 143 on Readers' Service Card



## Minicolumns

- Rapid and economical sample separation.
- May be utilized with various packings.
- Unique glass construction, designed to support a filter disc, conical elution tip.

DIMENSIONS: 18cm x 1cm I.D., supplied unfilled.

Order Minicolumns, **NEA-050**: \$31/15 columns, \$57/30 columns.

**NEN** New England Nuclear

575 Albany Street, Boston, Mass. 02118  
Telephone (617)-482-9595

NEN Canada Ltd., Dorval, Quebec; NEN Chemicals GmbH, Dreieichenhain, W. Germany.

Circle No. 78 on Readers' Service Card



ministrators, Dallas, Tex. (Exhibit Coordinator, AASA, 1801 N. Moore St., Arlington, Va. 22209)

21-26. California Medical Assoc., Los Angeles. (H. Hassard, 731 Market St., San Francisco, Calif. 94103)

21-28. American Soc. of Clinical Pathologists and College of American Pathologists, Las Vegas, Nev. (J. Graves, Intersociety Committee on Pathology Information, 9650 Rockville Pike, Bethesda, Md. 20014)

22. Oregon Acad. of Science, Salem. (F. A. Hirsch, Dept. of Geography, Oregon College of Education, Monmouth 94761)

23-28. Coping with Environmental and Safety Regulations in the Food Industry, 5th conf., Engineering Foundation, Pacific Grove, Calif. (EF, 345 E. 47 St., New York 10017)

24-27. International Conf. on Carriers and Channels in Biological Systems, New York Acad. of Sciences, New York, N.Y. (Conf. Dept., NYAS, 2 E. 63 St., New York 10021)

24-27. Experimental Medicine and Surgery in Primates, 4th conf., Jerusalem, Israel. (J. Moor-Jankowski, LEMSIP, New York Univ. Medical Center, 550 First Ave., New York 10016)

25-26. American Inst. of Aeronautics and Astronautics, Washington, D.C. (J. J. Harford, AIAA, 1290 Ave. of the Americas, New York 10019)

25-27. Computer Conf., Inst. of Electrical and Electronics Engineers, Philadelphia, Pa. (IEEE, Technical Activity Board, 345 E. 47 St., New York 10017)

26-1. Assoc. for Children with Learning Disabilities, 12th intern. conf., New York, N.Y. (K. M. Tillotson, ACLD, Lower Level, 5225 Grace St., Pittsburgh, Pa. 15236)

26-1. American Cleft Palate Assoc., New Orleans, La. (H. A. Leeper, Jr., Speech and Hearing Clinic, Hanner Hall, Oklahoma State Univ., Stillwater 74073)

26-1. Society of Professors of Education, Chicago, Ill. (R. E. Bayles, 326 Adams St., Decatur, Ga. 30030)

26-2. Medical Soc. of Pan-American Doctors' Club, San Miguel, Mexico. (T. R. Maxson, Arilen Acres, Warrenburg, Mo. 64093)

27-1. American Soc. for Surgery of the Hand, San Francisco, Calif. (J. A. Boswick, Jr., ASSH, Box 2414, 4200 E. Ninth Ave., Denver, Colo. 80220)

27-1. Central Surgical Assoc., Chicago, Ill. (A. J. Walt, CSA, 540 E. Canfield, Detroit, Mich. 48201)

#### March

1. American Orthopaedic Foot Soc., San Francisco, Calif. (H. R. Cowell, Veterans Administration Center, 1601 Kirkwood Hwy., Wilmington, Del. 19805)

1-4. American Assoc. of Pathologists and Bacteriologists, New Orleans, La. (R. E. Anderson, Dept. of Pathology, Univ. of New Mexico School of Medicine, Albuquerque 87106)

1-6. American Acad. of Orthopaedic Surgeons, San Francisco, Calif. (C. V. Heck, AAOS, 430 N. Michigan Ave., Chicago, Ill. 60611)

1-8. International Acad. of Pathology, U.S.-Canadian Div., New Orleans, La.

(L. D. Stoddard, Dept. of Pathology, Medical College of Georgia, Augusta 30902)

2-6. Pine Mountain Conf. on Immunochimistry, American Assoc. of Clinical Chemists, Pine Mountain, Ga. (PMC, P.O. Box 50122, Federal Annex, Atlanta, Ga. 30302)

2-7. American Soc. of Contemporary Medicine and Surgery, Miami Beach, Fla. (V. Kendall, Suite 1506, ASCMS, 30 N. Michigan Ave., Chicago, Ill. 60602)

2-7. American Soc. on Contemporary Ophthalmology, Miami Beach, Fla. (J. G. Bellows, Suite 1506, ASCO, 30 N. Michigan Ave., Chicago, Ill. 60602)

3-5. National Federation of Abstracting and Indexing Services, Washington, D.C. (S. Keenan, NFAIS, 3401 Market St., Philadelphia, Pa. 19104)

3-5. Hydrogen-Energy Fundamental Symp., Coral Gables, Fla. (T. N. Veziroglu, Clean Energy Research Inst., School of Engineering and Environmental Design, Univ. of Miami, Coral Gables 33124)

3-7. Pittsburgh Conf. on Analytical Chemistry and Applied Spectroscopy, 26th, Soc. for Analytical Chemists of Pittsburgh and Spectroscopy Soc. of Pittsburgh, Cleveland, Ohio. (P. M. Castle, Westinghouse Research Labs., Beulah Rd., Pittsburgh, Pa. 15235)

3-7. Medical Data Processing Symp., Toulouse, France. (Inst. for Research in Information and Automation, Public Relations Dept., Domaine de Voluceau, 7815-Rocquencourt, France)

3-7. Nuclear Cross Sections and Technology Conf., American Nuclear Soc., American Physical Soc., Intern. Union of Pure and Applied Physics, National Bureau of Standards, and U.S. Atomic Energy Commission, Washington, D.C. (W. W. Havens Jr., Div. of Nuclear Science and Engineering, Columbia Univ., 520 W. 120 St., New York 10027)

6-7. Mississippi Acad. of Sciences, Jackson. (C. L. Dodgen, University Medical Center, Jackson 39216)

6-7. American Psychopathological Assoc., 65th annual, New York, N.Y. (E. Sachar, Bronx Municipal Hospital Center, Eastchester Rd. and Pelham Pkwy., Bronx, N.Y. 10461)

6-9. Student American Medical Assoc., Chicago, Ill. (C. C. Dewitt, 1400 Hicks Rd., Rolling Meadows, Ill. 60008)

7-12. American Soc. of Photogrammetry, Washington, D.C. (L. P. Jacobs, ASP, 105 N. Virginia Ave., Falls Church, Va. 22046)

9-13. Medical Soc. of the State of New York, New York. (H. I. Fineberg, MSSNY, 420 Lakeville Rd., Lake Success, N.Y. 11040)

9-13. Society of Toxicology, Williamsburg, Va. (R. A. Scala, Exxon Research and Engineering Co., P.O. Box 45, Linden, N.J. 07036)

10-12. Symposium on the Integrity of Water, Environmental Protection Agency, Washington, D.C. (K. M. Mackenthun, Office of Water Planning and Standards, Office of Water and Hazardous Materials, EPA, Washington, D.C. 20460)

10-14. International Symp. on Advances in Biomedical Dosimetry, Intern. Atomic Energy Agency, Vienna, Austria. (J. H. Kane, Office of Information Ser-

# The last pipette you'll ever buy



With a  
service policy  
to back it.

The MLA Precision Pipette is the only automatic pipette with a lifetime guarantee.\*

The Precision Pipette has a lifetime guarantee because it is made better. Precision tooled in corrosion resistant metals, individually hand calibrated to exacting tolerances.

MLA Pipettes are more durable. But all pipettes can stop functioning, MLA included. If this happens, return it and we'll repair it or replace it, and mail it back within 24 hours.

MLA Pipettes are available from selected Laboratory Supply Houses.

The Pipetting Decision... is worth your time. Use the Reader Service Number to send for our Pipette Information Pack.

\*Nominal charge for postage and handling.



## Medical Laboratory Automation, Inc.

520 Nuber Ave., Mt. Vernon, N.Y. 10550  
914/664-0366

Circle No. 93 on Readers' Service Card





# RUTH BENEDICT by MARGARET MEAD

Ruth Benedict was the first great woman social scientist, yet her initial chosen career was that of housewife. Margaret Mead, as her student, colleague and literary executor, examines the long struggle for identity that led Ruth Benedict from domestic chores, to poetry, to field work among the Zuni Indians, to a preeminent position in anthropology. A varied selection from Ruth Benedict's essential writings rounds out this picture of a remarkable giant of modern scholarship.

"Mead's portrait of her teacher, friend and colleague is ... full of objective but warm professional appreciation. A fine presentation."—*The Kirkus Reviews*

Leaders of Modern Anthropology Series \$8.95

At your bookstore or from

**COLUMBIA UNIVERSITY PRESS**

Address for orders:

136 South Broadway, Irvington, New York 10533

Circle No. 111 on Readers' Service Card

## SEA WATER Heat Exchanger

- non-metallic
- non-contaminating
- heating
- cooling
- flow-through or recirculating
- FULL RANGE OF ACCESSORIES

CONTACT  
**NESLAB**  
INSTRUMENTS INC.

871 Islington Street, Portsmouth, N. H. 03801  
U. S. A.

## SLIDE-SHO®

by VPD



**THE VERSATILE SLIDE FILING  
AND RETRIEVAL SYSTEM FOR  
100 OR 100,000 SLIDES**

*adapts to your specific needs*

**SEE 20 SLIDES AT A GLANCE**  
on VPD Slide-Sho Pages, molded of  
lightweight, rigid, translucent plastic  
with matte, light diffusing back panel.  
For file cabinets, ring binders, rear-  
screen illuminators.

**ASK FOR FREE SAMPLE  
and brochure "Slide Filing Ideas"**

**JOSHUA MEIER DIVISION**  
W.R. Grace & Co., North Bergen, N.J. 07047

Circle No. 103 on Readers' Service Card

Circle No. 130 on Readers' Service Card

vices, U.S. Atomic Energy Commission, Washington, D.C. 20545)

11-12. **Industrial Applications of Microprocessors**, Inst. of Electrical and Electronics Engineers, Philadelphia, Pa. (R. W. Bolz, Automation for Industry, Inc., 627-D Alpha Drive, Cleveland, Ohio 44143)

11-13. **Developments in Power-Systems Protection Conf.**, Institution of Electrical Engineers, London, England. (IEE, Savoy Pl., London, WC 2R)

12-14. **Particle Accelerator Conf.**—Accelerator Engineering and Technology, American Physical Soc., Natl. Science Foundation, and U.S. Atomic Energy Commission, Washington, D.C. (J. E. Leiss, Center for Radiation Research, Natl. Bureau of Standards, Washington, D.C. 20234)

12-15. **Neurosurgical Soc. of America**, San Diego, Calif. (S. N. Chou, Univ. of Minnesota Medical School, Minneapolis 55455)

13-14. **Symposium on Infections of the Fetus and the Newborn Infant**, Natl. Foundation—March of Dimes, New York, N.Y. (NF-MD, 622 Third Ave., New York 10017)

13-15. **Texas Radiological Soc.**, Abilene. (F. E. O'Neill, 1128 Nix Professional Bldg., San Antonio, Tex. 78205)

13-19. **American College of Allergists**, Bal Harbour, Fla. (E. Bauers, 2100 Dain Tower, Minneapolis, Minn. 55402)

14-16. **National Medicolegal Symp.**, American Medical Assoc. and the American Bar Assoc., Las Vegas, Nev. (AMA Office of the General Counsel, 535 N. Dearborn St., Chicago, Ill. 60610)

14-16. **National Wildlife Federation**, Pittsburgh, Pa. (T. L. Kimball, NWF, 1412 16th St., NW, Washington, D.C. 20036)

15. **American Association for the Advancement of Science**, Lancaster Branch, Millersville, Pa. (A. C. Hoffman, Dept. of Biology, Millersville State College, Millersville 17551)

16-18. **Association for the Advancement of Medical Instrumentation**, 10th annual, Boston, Mass. (F. Keutman, AAMI, Suite 417, 1500 Wilson Blvd., Arlington, Va. 22209)

16-19. **American Assoc. of Dental Schools**, San Francisco, Calif. (B. F. Miller, AADS, 1625 Massachusetts Ave., NW, Washington, D.C. 20036)

16-20. **International Anesthesia Research Soc.**, Hollywood, Fla. (B. B. Sankey, 3645 Warrensville Center Rd., Cleveland, Ohio 44122)

17-20. **National Assoc. for Research in Science Teaching**, Los Angeles, Calif. (P. Bell, College of Education, Pennsylvania State Univ., State College 16801)

17-20. **Thin Films Conf. on Surfaces**, 9th, Inst. of Physics, Warwick, England. (Meetings Officer, IP, 47 Belgrave Sq., London, SW1X 8QX, England)

18-20. **Conference on Micro-Electron Beam Technology for Fabrication, Recording and Dynamic Inspection**, Inst. of Physics, Cambridge, England. (Meetings Officer, IP, 47 Belgrave Sq., London, SW1X 8QX, England)

19-22. **Society for Applied Anthropology**, Amsterdam, Netherlands. (A. W. Wolfe, Dept. of Anthropology, Univ. of Wisconsin, Milwaukee 53201)

SCIENCE, VOL. 186

## AAAS NEWS

(Continued from page 629)

also needed, particularly those with expertise in the social sciences and elementary school science.

\* \* \*

**Science and Society Programs:** Applications for the 1975-1976 Congressional Science Fellow Program will be considered starting 1 December.

\* \* \*

The following publications are available from the Office on request: "Community Information Expositions," "Institutions for the Application of Science to Social Needs," and "Changing Science Policy in the 1970's."

\* \* \*

**Opportunities in Science:** The Office is exploring possible research and/or action programs to benefit physically disabled scientists, including the publication of a roster to promote communications. Physically disabled scientists and others interested in this activity are invited to identify themselves.

\* \* \*

Assistance is being offered by the AAAS Communications Office to local groups interested in organizing activities to follow up programs presented by NOVA, the television science series. (See page 344 of the 25 October issue of *Science* for the November schedule.) Notes on current and future program listings will appear in *Science* from time to time.

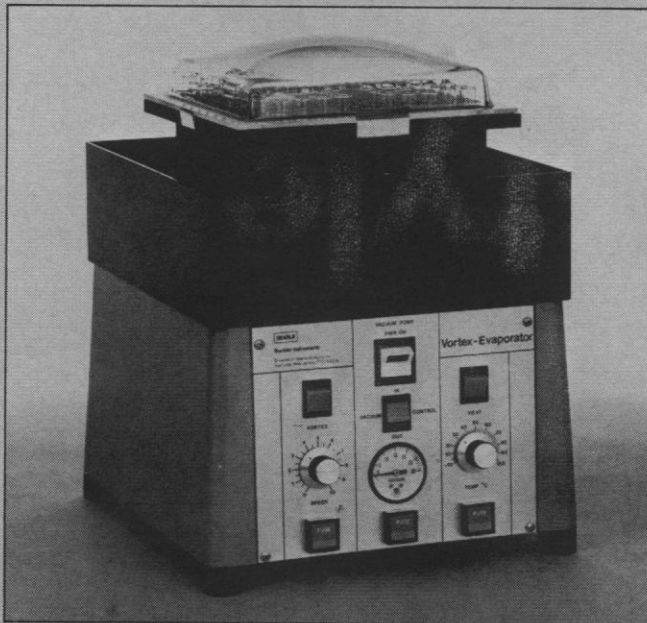
1 Dec. *Inside the Golden Gate*. A team of U.S. Geological Survey experts are involved in a project to find out how San Francisco Bay works: its physics, its chemistry, and its biology (a WGBH production).

8 Dec. *The Men Who Painted Caves*. French and American archeologists piece together the lifestyle of the hunters of the last great Ice Age, and try to interpret the meaning of their cave art (a BBC production).

15 Dec. *Red Sea Coral and the Crown of Thorns*. Living literally on a platform in the middle of the Red Sea, a group of English biologists has been studying the crown of thorns starfish, notorious for the devastation it has wrought on the coral reefs of Australia and the Pacific (a BBC production).

22 Dec. *Strange Sleep* (repeat). For the men who discovered and pioneered anesthesia—as this dramatized reconstruction vividly shows—the personal payoff was often bitter and tragic (a WGBH production).

# This is our new Vortex Evaporator



## This is the competition

(NONE)

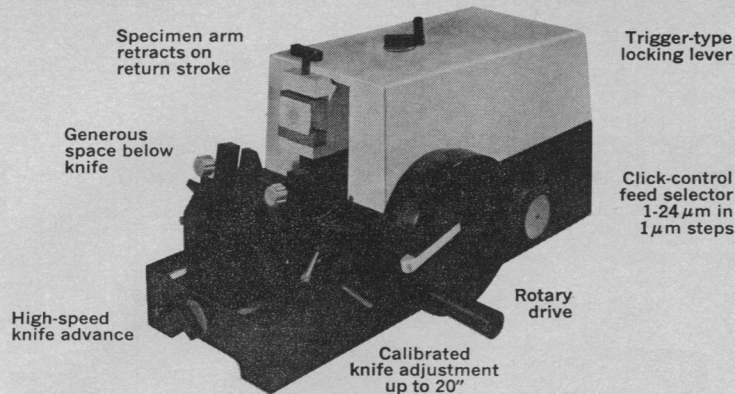
Now you can get evaporation, incubation and vortexing in *one* reliable instrument—and only Buchler makes it. The new Vortex Evaporator is a complete sample preparation station for RIA/CPB, drug abuse screening, electrophoresis, TLC, gas chromatography and quality control. Features include: variable vortexing speed; controlled heating constant within 1°C; optional cooling plate; special vacuum control system guards against bumping. Write today for complete information.

**SEARLE**

**Buchler Instruments**

Division of Searle Analytic Inc.  
1327 Sixteenth Street  
Fort Lee, New Jersey 07024





## ELIMINATE DAMAGE TO CUT SECTIONS

The **Cambridge-Shandon Rotary Microtome** retracts the specimen on the return stroke preventing scraping against the face of the cut. Get compact design, high-quality sectioning, vibration-free operation, practical serial sectioning. For data, contact Shandon Southern Instruments, Inc., 515 Broad St., Sewickley, PA 15143 (Pittsburgh Area).



PITTSBURGH • LONDON • FRANKFURT

Circle No. 18 on Readers' Service Card

# Ealing

## CPK<sup>®</sup> Molecular Models

individual atoms  
assembled helices  
macromolecular  
structures  
teaching  
and research sets

write for your **FREE** 32 pg. catalog

The Ealing Corporation, 2225 Mass. Avenue  
Cambridge, Mass. 02140 Tel: (617) 491-5870  
Ealing Scientific Ltd. 9649 Côte de Liesse  
Dorval H9P 1A3 Quebec • Ealing Beck Ltd.  
Greycaine Rd., Watford WD2 4PW, England

Circle No. 127 on Readers' Service Card

*Whose  
copy  
are  
you  
reading?*

**SCIENCE** February 1992  
Vol. 256 No. 5111



Why not order your own subscription?

- ☐ I apply for AAAS membership  
☐ \$21 USA ☐ \$26 Canada, PUAS ☐ \$27 Foreign

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

- ☐ Bill me ☐ Check enclosed

Signature \_\_\_\_\_

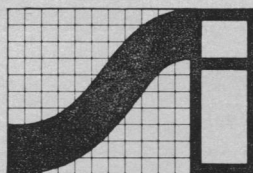
AAAS

Department MR  
**AMERICAN ASSOCIATION for the  
ADVANCEMENT OF SCIENCE**  
1515 Massachusetts Avenue, N.W.  
Washington, D. C. 20005

## VARIABLE UV-VISIBLE LIQUID CHROMATOGRAPHY DETECTOR



A highly stable and sensitive double beam system with 8  $\mu$ l quartz flow cells and a detection capability between 0.001 and 2 A.U. permits the selection of precise wavelengths required to match the absorption characteristics of compounds separated by high or low pressure liquid chromatography. With the Schoeffel SPECTROFLOW SF 770 a band of frequency between 200 and 630  $\eta$ m at full sensitivity and without photodecomposition can be obtained. Accurate analyses at absorption maxima are now quickly possible. Limitation to work on or near absorption minima or on the shoulder of a spectral emission line or to detect via the intervening step of derivatization has been eliminated. **Send today for complete technical literature.**



**SCHOEFFEL  
INSTRUMENT CORP.**  
24 Booker Street  
Westwood, N. J. 07675  
(201) 664-7263

Circle No. 14 on Readers' Service Card

SCIENCE, VOL. 186

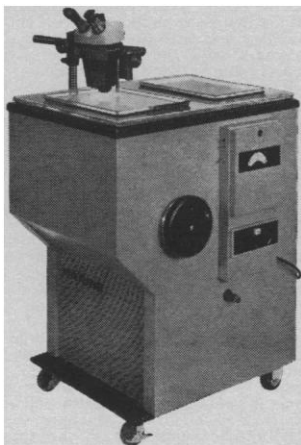
# The First Wide Range Microtome-cryostat... Temperatures from -15°C to -50°C... Frozen Sections from 40 $\mu$ to 2 $\mu$ .

The Harris LoTemp model WRC is two microtome-cryostats in one. A single unit that can do both routine diagnostic procedures and such sophisticated research procedures as thin section light microscopy, autoradiography, fluorescence microscopy and other histological procedures, at a cost comparable to presently available routine cryostats.

The Harris model WRC is compact . . . can be moved anywhere it's needed. The cold chamber has extra room for tissue handling, storage or freeze drying. Full opening top with special access ports combines the features of a totally closed system with the easy accessibility of open top models.

Available equipped with International Equipment Corp. microtomes, or cryostat only prepared for installation of your present I.E.C. microtome. Installed stereo zoom microscope also available.

For a full description of the Harris WRC and its wide range of additional features write or call . . .



**Harris Manufacturing Co., Inc.**  
14 Republic Road  
Treble Cove Industrial Park  
North Billerica, Mass. 01862  
(617) 667-5116

Circle No. 186 on Readers' Service Card

## NEWS AND COMMENT

(Continued from page 617)

At NIH, Stone also apparently has occasional problems with communications. For example, he is said to have trouble fielding the broad questions he inevitably gets: What is your philosophy for NIH? It is the sort of question he does not like to answer and it sometimes brings people to challenge his ability to lead. And yet it is evident to other individuals that Stone's philosophy for NIH or sense of its mission is not at all obscure.

It is safe to say that Stone places a high value on NIH as focus of the nation's biomedical research enterprise; while acknowledging the reality of pressures for "service," he believes that with limited funds NIH cannot do everything and should, therefore, concentrate on what it can do best—basic science, including clinical research.

But pressures to do something useful with that research are strong, coming not only from H but from Congress. The Senate Committee on Appropriations, which has many members sympathetic to research, said this in a recent report:

Information dissemination is a very high priority of this Committee because it directly affects just how quickly the research findings accomplished by the NIH are actually put into practice. . . . Until citizens actually receive some type of assistance from the many facets of research carried out by the NIH the total tax dollar has not been effectively utilized.

Whether the research community thinks it the ideal way to do business or not, and whether Stone stays at NIH or not, the fact is that there will have to be greater attention in the future to setting priorities, which means *not doing* some things, and to devising ways to take the fruits of research to the people. Furthermore, this is going to have to be accomplished without destroying the intellectual base of science.

If NIH is going to retain, let alone intensify, its identity as a research organization, it is going to have to find ways to collaborate with other health agencies whose mission is already clearly one of service. Not only would NIH have to abandon its aloofness; other agencies would have to "humbly" decide to seek its advice. Where egos are not in the way, it might work. But where egos are strong, as they are between HEW and NIH, cooperation is lost and science suffers.

—BARBARA J. CULLITON

## Personnel Placement

It is requested that only those employers who will not discriminate on the basis of race, sex, religion, color, or national origin submit positions open advertising.

**POSITION WANTED:** 40¢ per word, minimum charge \$10. Use of Box Number counts as 10 additional words. Payment in advance is required. These rates apply to individuals only. Personnel agencies and companies take display rate for all advertising.

**POSITIONS OPEN:** \$110 per inch. No charge for Box Number. Rates net. No agency commission allowed for ads under 4 inches. No cash discount. Ads over 1 inch will be billed to the nearest quarter inch. Payment in advance is required except where satisfactory credit has been established.

**COPY** for ads must reach **SCIENCE** 4 weeks before issue date (Friday of every week). Send copy for Personnel Placement advertising to:

**SCIENCE, Room 207**  
1515 Massachusetts Ave., NW  
Washington, D.C. 20005

Replies to blind ads should be addressed as follows:

Box (give number)  
**SCIENCE**  
1515 Massachusetts Ave., NW  
Washington, D.C. 20005

## POSITIONS WANTED

**Biologist/Taxonomist.** Ph.D. Postdoctoral experience. Publications. Research in phycology and zooplanktonology. Seeks research position in environmental studies or teaching position in small college. Box 507, **SCIENCE**. X

**Biomedical Engineering.** Ph.D., Materials Science, 1970. M.D., 1974. Surgery training, license. Experience cardiovascular, orthopedic, surgical biomaterials. Seeks faculty research position with teaching. Will consider industry. Numerous publications. Box 508, **SCIENCE**. X

**Botanist.** Ph.D., 7 years of teaching, publications, seeks position in small- or medium-sized college or university. Interests include taxonomy, plant-animal relationships, economic botany. Speaks Spanish. Stephen D. Koch, Rama de Botánica, Colegio de Postgraduados, Chapingo, México, México, 11/22

**Editor,** natural sciences; more than 5 years of editorial experience at university press, 4 years spent handling publication of multidisciplinary science journal. Present position static; wish to relocate. Box 509, **SCIENCE**. 11/22

**Environmental Assessment.** Ecologist/writer/administrator, Ph.D., seeks continuation of impact assessment work on established team. Broad experience in planning, resource management; strong coordinator-integrator. Specialties in park management/design, aquatic resources. Box 497, **SCIENCE**. X

Wanted: small undergraduate college where broadly trained **Geneticist** (Ph.D., 1965) can contribute to innovative program. Background in curriculum planning, modular teaching, interdisciplinary approaches. Two years postdoctoral, 16 years professional experience. Available September 1975. Box 510, **SCIENCE**. 11/29

**Medical Microbiologist.** Ph.D. Available January 1975. Energetic professional seeks academic position combining research and teaching. Six years of teaching experience. Research: biochemistry of host/pathogen relationships. Have served as consultant for state and regional planning efforts in health and science education. Box 511, **SCIENCE**.

**Molecular Biology/Biochemistry.** Ph.D. with successful background of teaching, research, management, and administration. Seeks a challenging, responsible position. Box 426, **SCIENCE**. 12/20

**Science Writer.** Ph.D. (physics), author of textbook, popular and scholarly articles, desires free-lance work editing or rewriting material for individuals and institutions. Box 629, Paonia, Colorado 81428.

**Visual Physiologist/Psychologist.** Ph.D. (1973), physiological psychology. Teaching experience in university psychology and biology departments. Currently a postdoctoral fellow in neurobiology working in visual electrophysiology. Available September 1975. Academic position desired. Box 512, **SCIENCE**. X