

Group IV: Editorials

- P. H. Abelson, "Out of the Energy Crunch by 1976," **183**, 707 (1974).
 "No Easy Way Out of Energy Crisis," **183**, 475 (1974).
 "Underground Gasification of Coal," **182**, 1297 (1973).
 "Increasing World Energy Supplies," **182**, 1087 (1973).
 "Energy Independence," **182**, 779 (1973).
 "Let the Bastards Freeze in the Dark," **182**, 657 (1973).
 "The Urgent Need for Energy Conservation," **182**, 339 (1973).
 "Importance of Petroleum," **180**, 1127 (1973).
 "Energy and National Security," **179**, 857 (1973).

Reprints of articles listed in Group I are available. To inquire about reprints of other articles, write to Dawn Dominguez, *Science*, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005.

Forthcoming Events on Energy

May

2-7. **High Energy Accelerators**, 9th intern. conf., Stanford, Calif. (R. B. Neal, Stanford Linear Accelerator Center, P.O. Box 4349, Stanford 94305)

7-10. Conference on **Gas-Cooled Reactors: HTGR and GCFBR**, American Nuclear Soc., Gatlinburg, Tenn. (P. R. Kasten, Oak Ridge Natl. Lab., P.O. Box Y, Oak Ridge, Tenn. 37830)

9-11. Conference on **Enercology**, Alma, Mich. (R. Kapp, Alma College, Alma 48801)

21-23. **Environmental Exposition**, 4th intern., Chicago, Ill. (A. Cragg, Conference and Exposition Management Co., 34 W. Putnam Ave., Greenwich, Conn. 06830)

28-31. **Confinement of Radioactivity in Utilisation of Nuclear Energy**, 7th intern. congr., Versailles, France. (L. Fitoussi, Société Française de Radioprotection, CEN.FAR, B.P. 6, 92 260 Fontenay aux Roses, France)

29-31. International symp. on the **Effects of the Energy Shortage on Transportation Balance**, University Park, Pa. (Energy/Transport Symp., Keller Conf. Center, University Park 16802)

June

8-12. **Nuclear Energy Conf.**, European Federation of Chemical Engineers, Paris, France. (Société de Chimie Industrielle, 80, Ave. du 18-juin-1940, 9500 Rueil-Malmaison, France)

9-12. **Nuclear Reactors**, 14th intern. conf., Canadian Nuclear Assoc., Montreal, Canada. (J. A. Weller, CNA, Suite M20, 65 Queen St. W, Toronto, M5H 2M5, Canada)

August

18-23. Conference on the **Geography and Politics of Energy**, Potsdam, N.Y. (V. Minotti, State Univ. College at Potsdam, Potsdam 13676)

21-23. **International Solar Energy Soc.**, Fort Collins, Colo. (S. Karaki, Dept. of Civil Engineering, Colorado State Univ., Fort Collins 80521)

25-28. **Nuclear Power Plant Siting**, American Nuclear Soc., Portland. (J. Hind, General Electric Co., 175 Curtner Ave., San Jose, Calif. 95114)

26-30. **Circum-Pacific Energy and Mineral Resources Conf.**, sponsored by the American Assoc. of Petroleum Geologists,

Committee for Coordination of Joint Prospecting for Mineral Resources in Asian Offshore Areas, and the Pacific Science Assoc.; cosponsored by the American Assoc. for the Advancement of Science, Honolulu, Hawaii. (M. T. Halbouty, CPEMRC, Michel T. Halbouty Bldg., 511 Westheimer Rd., Houston, Tex. 77027)

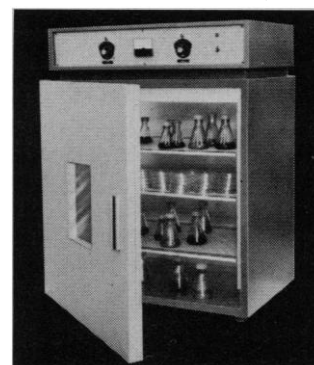
September

22-27. **Economic and Environmental Challenges of Future Energy Requirements**, 9th world energy conf., Detroit, Mich. (U.S. Natl. Committee, WEC, c/o Engineers Joint Council, 345 E. 47 St., New York, N.Y. 10017)



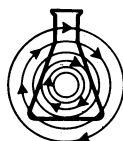
new benchtop CO₂ incubator

Designed to meet the most stringent research requirements, this new CO₂ incubator provides a carefully controlled, high-humidity CO₂ environment. The unit has an 8½ cubic foot working chamber, yet needs little bench space. Temperature is electronically controlled from ambient to 70°C, and CO₂ tension is maintained from ambient to 20%. Other features include an automatic CO₂ recovery system, a visible water reservoir and a self-decontamination system. NBS manufactures a broad line of environmental chambers for incubation, humidification, refrigeration and controlled temperature shaking.



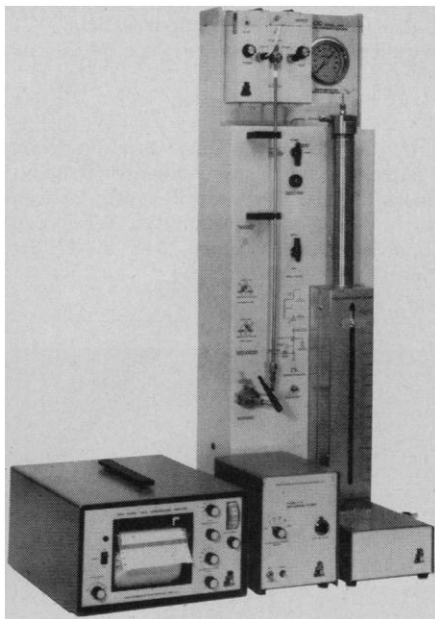
Biological bench-top incubator

ASK FOR BULLETIN CO-2/S474



NEW BRUNSWICK SCIENTIFIC CO., INC.
 1130 Somerset Street, New Brunswick, N.J. 08903 • 201/846-4600
With NBS, Advanced Technology Is a Way of Life.

L/C buyer's tip: Don't pay \$5,000 for the cabinet



A Model 1440 high pressure liquid chromatograph can give you separations and operating convenience identical to practically any \$9,000 fancy cabinet competitor. ISCO constant flow 2,000 psi gradient or metering pumps have absolutely pulseless, vibration-free single stroke piston construction. You don't have to settle for a gas pressure system (with you supplying the gas), or septum injection. The 6 port sample injection valve permits rapid and reproducible sample introduction. Stainless steel columns have non-clogging supports and fittings with no dead volume or mixing. The dual beam, high sensitivity UV photometer has eight absorbance ranges from 0.01A to 2.0A full scale, and instant wavelength selection of 254nm or 280nm. The whole chromatograph as pictured—pump, column (unpacked), photometer, 10 cm recorder, and sample injection valve, costs under \$4,800. Many additional features and options are available, all described in our current catalog. Send for your copy now.



ISCO

BOX 5347
PHONE (402) 464-0231

LINCOLN, NEBRASKA 68505
TELEX 48-6453

Circle No. 270 on Readers' Service Card

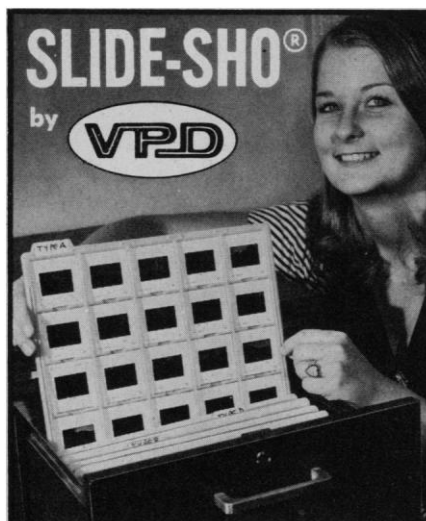
ENERGY POLICY

The international journal which analyses the whole energy scene—drawing together studies by technologists, economists, geographers and sociologists to give you a multidisciplinary insight.

If you are concerned with the economics and planning of energy you need **ENERGY POLICY**.

For full details write

John Barrios,
IPC (America) Inc.,
205 East 42nd Street,
New York, N.Y. 10017, USA.



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.

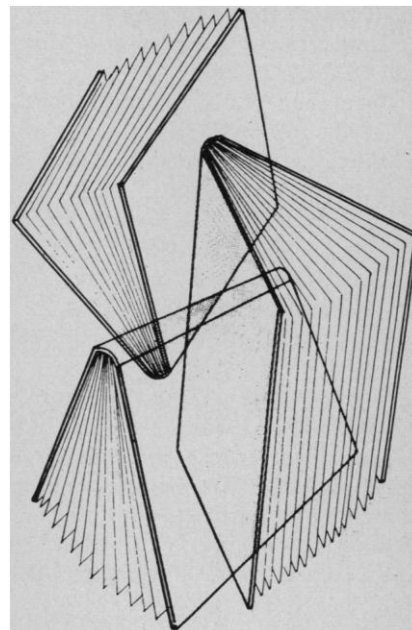
ASK FOR FREE SAMPLE
and brochure "Slide Filing Ideas"

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

Circle No. 286 on Readers' Service Card

Symposia on—

DENTISTRY



BIOLOGY OF THE MOUTH

A collection of comprehensive, multi-disciplinary articles dealing with problems of the biology of the mouth and of oral diseases and also the borderlands where fundamental approaches and investigations in physics and chemistry relate to, and can be brought to bear on such problems.

Edited by Philip Person. 320 pages. Electron micrographs and other illustrations. Bibliography. Index. Retail price: \$10. ISBN 087168-089-0.

ENVIRONMENTAL VARIABLES IN ORAL DISEASE

Twenty-four distinguished scientists present the findings of their research on the role of environmental factors in oral disease. Geographical and clinical considerations; the oral environment-nutrition and dental caries; experimental considerations in oral soft lesions; prenatally occurring influences.

Edited by S. H. Kreshover and F. J. McClure. 328 pages. Illustrations. Bibliography. Index. Retail price: \$8.75. ISBN 087168-081-5.

MECHANISMS OF HARD TISSUE DESTRUCTION

Forty-nine outstanding scientists in the fields of dentistry, medicine and zoology participate in a multidisciplinary symposium on the destruction of mineralized structures by organisms and physical and chemical agents.

Edited by Reidar F. Sognnaes. 776 pages. 430 illustrations. Bibliography. Indexes. Retail price: \$8.75. ISBN 087168-075-0.

Special price offer

All three volumes: \$24.95

When payment is sent with order: \$21.95

AAAS

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

Energy—from Surplus to Scarcity?

Edited by K. A. Inglis, *British Petroleum Co., Ltd.*
Emphasizes long-term prospects and attitudes which must be adopted to deal with the world's diminishing energy supply. Discusses the prospects for coal, future petroleum supplies, the increasing use of natural gas, and nuclear and other alternative sources of energy.
1974 250 pages \$21.95

Solar Energy for Man

By B. J. Brinkworth, *University College, Cardiff*
Outlines the energy problem facing man and discusses the feasibility of using the sun as an energy source. Presents an excellent review of thermodynamic principles and limitations; outlines the methods to collect solar energy for heating and conversion to work and electricity; and considers the usefulness of the methods in both urban and rural settings.
1974 251 pages \$8.95

Energy Crises in Perspective

By John C. Fisher
Provides an undistorted picture of the world energy situation as it is today, showing how it occurred and where it is likely to lead. The author strips away the camouflage from major energy activities and factors affecting them, and examines their structures and interactions to see how they behave as a whole.
1973 196 pages \$9.95

HALSTED PRESS

Dept. 992

a division of

John Wiley & Sons, Inc.

605 Third Avenue, New York, N.Y. 10016

prices subject to change without notice



092 A4497-HP

Circle No. 276 on Readers' Service Card

Diphosphopyridine Nucleotide

DPN [Adenine-2, 8-³H]* NET-443

1-5Ci/mmol \$75/50μCi \$276/250μCi

Ethanol: water solution 1:1

Shipped in dry ice.

*Nicotinamide-adenine dinucleotide (NAD)

This compound has been found to be the substrate for the synthesis of the new polymer¹, poly ADP-ribose, which was isolated from animal cell nuclei. The monomer unit is ADP-ribose which is glycosidically linked between the 1' carbon of the terminal ribose and the 2' hydroxyl of the nucleoside ribose of the adjacent unit.

DPN [Adenine-2, 8-³H] is suitable for the synthesis of this new polymer. It has been enzymatically synthesized and is offered biologically pure.

¹Nature, New Biology, **245**, 193 (1973)



New England Nuclear

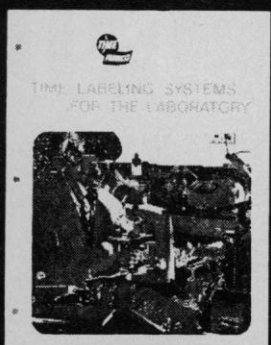
575 Albany Street, Boston, Mass. 02118
Customer service 617-482-9595

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

Circle No. 275 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.



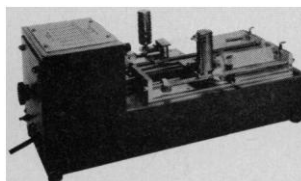
PROFESSIONAL TAPE COMPANY, INC.

DEPARTMENT 12
144 TOWER DR. BURR RIDGE (HINSDALE), ILL. 60521

19 APRIL 1974 Circle No. 279 on Readers' Service Card

FREE CATALOG Describes
world's largest single source of constant flow,
precision syringe pumps. 48 Models in eight
series: single- to 4-channel, parallel and
reciprocal pumping, synchronous and vari-
able speed motors, outputs to 150 psi. For
μl to 200 ml. glass, plastic or ss syringes.
Extremely wide range of flow rates.

SYRINGE PUMPS



Mail coupon to:
Harvard Apparatus
Dept. B-62, P.O. Box 24,
Millis, Mass. 02054.
Or call (617) 376-2987.

Please send Syringe Pumps Bulletin 900 to:

Name _____

Dept. _____

Institution _____

Address _____

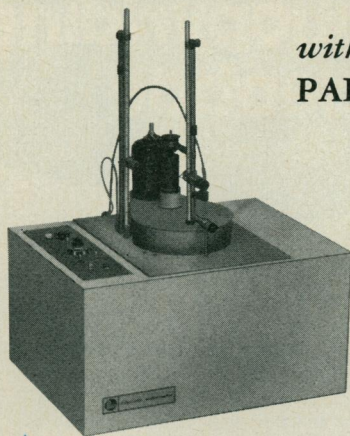
City _____ State _____ Zip _____

**HARVARD
APPARATUS**

Circle No. 282 on Readers' Service Card

391

Measure Calories
QUICKLY • ACCURATELY • CONVENIENTLY



*with a fully automatic
PARR® Adiabatic Calorimeter*

*. . . and a PARR®
Digital Thermometer*



Parr now offers a completely new oxygen bomb calorimeter for measuring the caloric or Btu value of coal, oil, jet fuels, foods and other solid or liquid samples.

A new solid-state automatic temperature controller eliminates all time consuming temperature adjustments, doubles the output and improves the repeatability in calorimetric tests.

A new Parr Digital Thermometer and Printer add speed, convenience and accuracy to any bomb calorimeter by displaying temperatures in bright, easily seen numbers readable to .001° C, and producing a printed record of all readings taken during a calorific test.

Ask for our latest calorimeter catalog.



PARR INSTRUMENT COMPANY
211 Fifty-Third St. Moline, Ill. 61265
Telephone (309) 762-7716

Circle No. 272 on Readers' Service Card

"I wish every citizen would read this book," Senator Paul H. Douglas wrote when it was first published. Perhaps there would be more understanding of our present situation if more people had.

If you didn't read it then, there will be never be a better time than now.

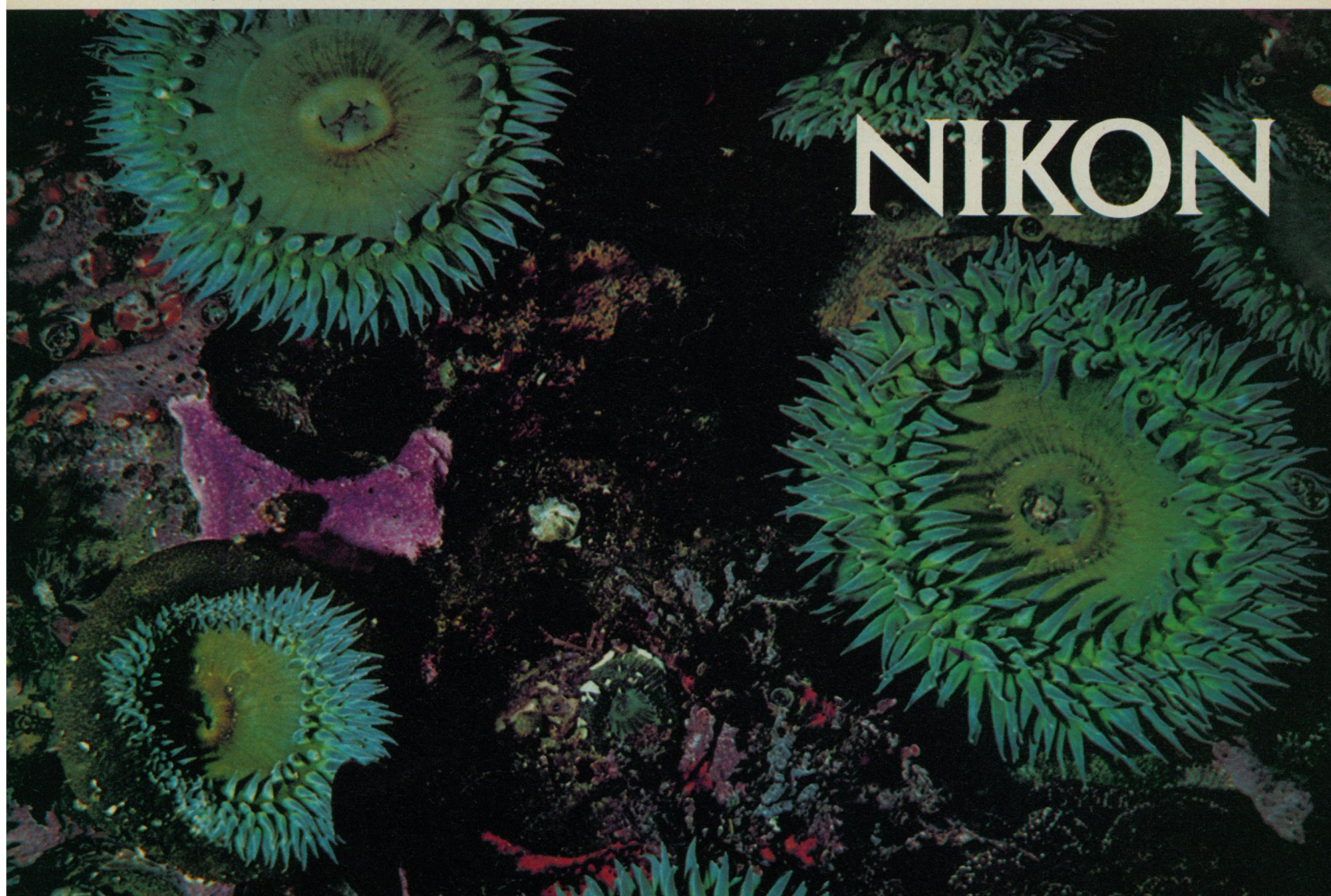
Now in paperback \$3.95

**THE
POLITICS
OF PRIVATE POWER
& DEMOCRATIC
OIL DIRECTIONS**

ROBERT ENGLER

The University of Chicago Press
Chicago 60637

Circle No. 287 on Readers' Service Card



NIKON

Second Printing

... Just Off the Press

ENERGY AND THE FUTURE

A new and authoritative AAAS book takes a long range look at energy. The broad scope and balanced perspective make it a valuable resource for anyone wishing to explore the scientific and technological bases of the energy dilemma. Presently in use as a text in more than thirty universities and colleges.

"At last book on energy that gives a comprehensive overview of emerging energy technologies. It reads like a What's What in Energy Research."

Business Week, August 1973

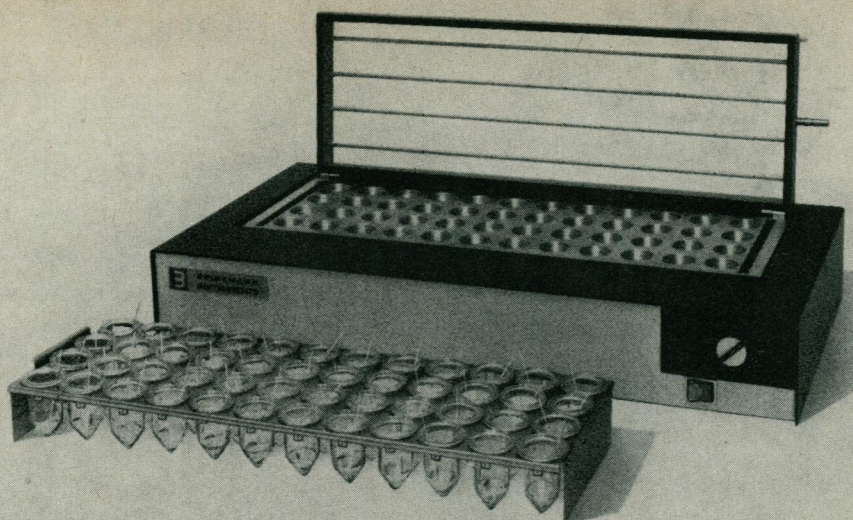
Price: \$9.95 (\$8.95 Member price)
Casebound

\$4.95 (\$4.45 Member price)
Paperbound

Send to Dept. EB

A A A S

AMERICAN ASSOCIATION for the
ADVANCEMENT of SCIENCE
1515 Massachusetts Avenue, N.W.
Washington, D. C. 20005



Now concentrate 48 samples at once...

Brinkmann's new Sample Concentrator SC/48 accommodates up to 48 evaporation tubes in a stainless steel rack, eliminating handling of individual samples.

Concentration is by means of heat and vacuum, combined with an air current directed into each sample. A glass cover prevents fumes from escaping and permits use of nitrogen atmosphere. Solid-state circuitry, with a temperature range adjustable from 30 to 100°C. Ideal for drug

screening extractions, column chromatography, liquid scintillation and many other procedures.

For literature, write: Brinkmann Instruments, Cantiague Rd., Westbury, N.Y. 11590. In Canada, write: Brinkmann Instruments (Canada) Ltd., 50 Galaxy Blvd., Rexdale (Toronto), Ont.

**B Brinkmann SC/48
SAMPLE CONCENTRATOR**

Circle No. 267 on Readers' Service Card

EXTENDING MAN'S VISION IN THE SEAS

The seas are our new frontier. Scientists are exploring the vast resources of the oceans, not only for links to our origins, but for new sources of food.

Many scientists believe that our beleaguered planet cannot forever support the population explosion.

The warning voices of these men are at last being heard. Mankind is slowly awakening to the frightening realization that even our seas cannot withstand the absorption of man's waste without dire consequences.

Nikon is in the forefront of undersea research technology.

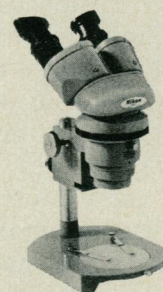
From an underwater Nikonos camera to the compact Model H microscope, we are producing instruments used by our scientist/conservationists to insure the continuation of the species, man.

Producing the finest instruments available for science and industry is a constant challenge.

Wherever essential research is being conducted; on land, beneath the seas, or in space—we are meeting that challenge. Extending your vision is our main concern.

The finest optics in the world.

Nikon Instrument Division, Ehrenreich Photo-Optical Industries,
623 Stewart Ave., Garden City, N.Y.
Tel. (516) 248-5200.
In Canada, Anglophoto Ltd., Ontario.



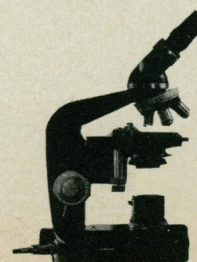
**Nikon SMZ Stereo
Zoom Microscope**
Total magnification range,
4X to 120X. Provides 5-
time zoom range without
change in focus. Excep-
tional wide range of
accessories.

Circle No. 257 on Readers' Service Card



Nikon Epi-Illuminator
Fits any standard Nikon
microscope. Designed for
observation of opaque
specimens. Provides colli-
mated on-axis illumination
with field and aperture
control. Dark field
reflected light systems
available.

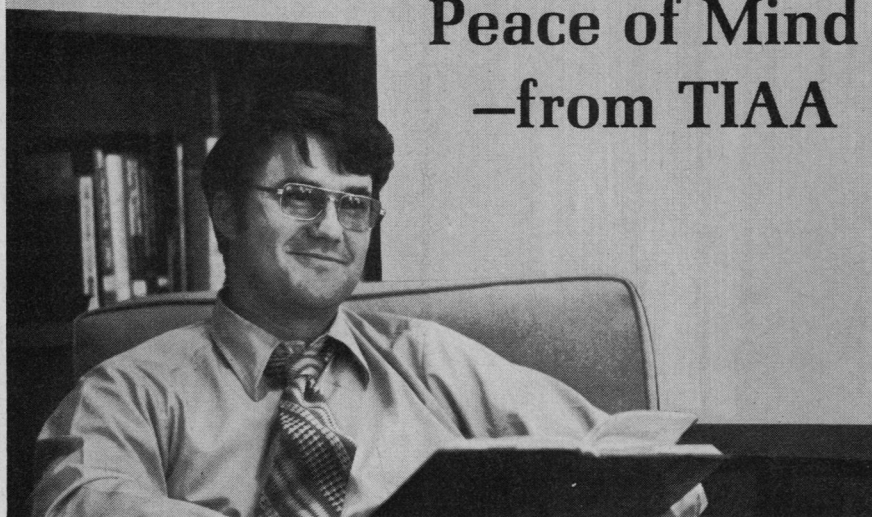
Circle No. 258 on Readers' Service Card



Nikon Kt Compact
Versatile laboratory
microscope with built-in
transformer, continuously
variable light intensity
control, and inbase volt-
meter. Features brilliant
Koehler type illumination
and full range of Nikon
accessories.

Circle No. 259 on Readers' Service Card

for college staff members— Low-Cost Peace of Mind —from TIAA



**\$50,000 of life insurance costs less than \$100
at age 30.**

That's right! For a man, age 30, the annual premium for a 20-Year Home Protection policy providing \$50,000 initial amount of insurance is \$159.00. The first-year dividend, based on our current dividend scale, is \$61.50, making a net payment of \$97.50. Dividends, of course, are not guaranteed.

The Home Protection plan is level premium Term insurance providing its largest amount of protection initially, reducing by schedule each year to recognize decreasing insurance needs. This is just one example of the many low-cost TIAA plans available.

If you need more protection for your family, ask us to mail you a personal illustration with figures for a policy issued at your age. We'll also send the Life Insurance Guide describing other TIAA policies.

ELIGIBILITY

Eligibility to apply for this or other TIAA life insurance is limited to persons employed at the time of application by a college, university, private school, or other nonprofit educational or scientific institution that qualifies for TIAA eligibility.

TEACHERS INSURANCE AND ANNUITY ASSOCIATION
730 Third Avenue, New York, N. Y. 10017



Please mail the Life Insurance Guide and a personal illustration.

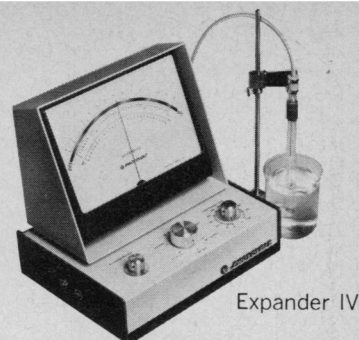
Name _____ Your Date of Birth _____

Address _____ Street _____

City _____ State _____ Zip _____

Dependents' Ages _____

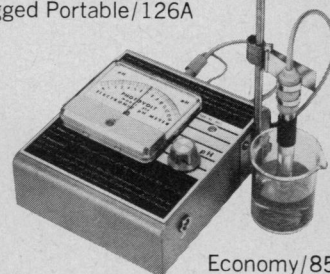
Nonprofit Employer _____
college, university, or other educational or scientific institution



Expander IV



Rugged Portable/126A



Economy/85A

Photovolt has basic pH meters to meet every acid test.

Our Expander IV (TM) is the only unit in its price range that offers an expanded scale for precise pH or millivolt measurements. With accuracy better than 0.01 pH! The 5-9 pH range scale is printed right on the face, along with the 0-14 pH range. For ion activity measurements, the instrument has two ranges, ± 140 mv and ± 1400 mv full scale. **\$450.00**

Plus the famous "Set and Forget" meters: Model 126A, our portable heavy duty blue ribbon workhorse offers sealed waterproof construction to operate under the worst ambient conditions. **\$385.00**

Need low cost reliability? Buy 85A. Single range 0-14, $3\frac{1}{2}$ " scale readable to 0.05 pH. Solid state; fully stabilized. Budget priced. **\$172.00 AC; \$225.00 AC and battery operation.**

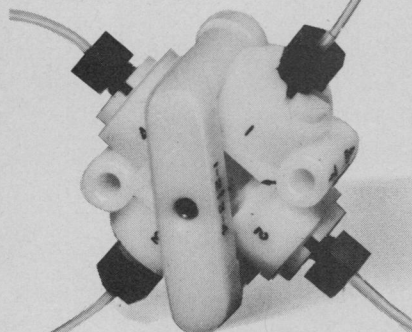
A full line of Photovolt pH meters are available. Send now for complete data.

PHOTOVOLT 

1115 Broadway, New York, N. Y. 10010
Phone (212) 989-2900

Circle No. 271 on Readers' Service Card

ALTEX[®] MINIATURE VALVES AND FITTINGS



2, 3, and 4-way models

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

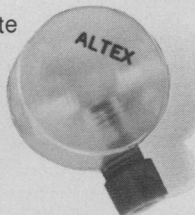
- ☐ CHEMICALLY INERT
- ☐ ZERO DEAD VOLUME
- ☐ LEAK TIGHT TO 500 PSI
- ☐ MATE PERFECTLY WITH GLASS-METAL-PLASTIC



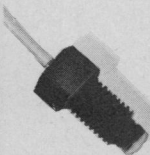
Compatible with other micro-plumbing components, the Altex system includes: Tees and

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.



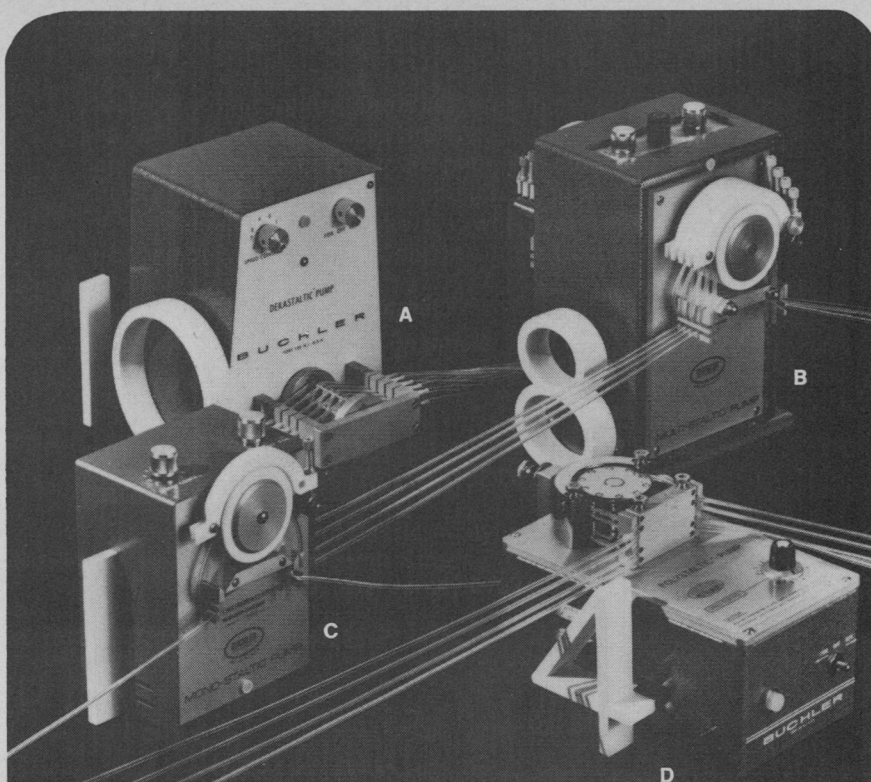
COMPLETE CATALOG on request



ANALTECH
75 Blue Hen Drive
Newark, Delaware 19711
(302) 737-6960

Circle No. 264 on Readers' Service Card

19 APRIL 1974



Choose your channels... You'll enjoy the performance Buchler Peristaltic Metering Pumps

Now you have a choice of multi-channeled peristaltic pumps for a wide variety of applications. No matter which pump you choose, you'll find uniformly adjustable flow rates, from a few ml to a liter per hour, and settings that are reproducible in subsequent runs. These Buchler pumps are ideally suited to handling corrosive liquids, sterile solutions or biologically infectious materials since they are completely contained in chemically inert tubing. Other features include reversible flow, easy change of tubing sizes and minimum pulsation. So if you need a reliable pump for electrophoresis, chromatography, density gradients; for on-line ratio mixing in process development; with automatic analyzers... wherever a versatile, precise metering pump is essential, check out the Buchler line today.

- A. Dekastaltic^{T.M.} with 10 channels
- B. Multi-Staltic[®] with 4 or 8 channels
- C. Mono-Staltic[®] with one channel
- D. Polystaltic[®] with 4 channels

SEARLE Buchler Instruments

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

Circle No. 252 on Readers' Service Card

395

The Brush 260 6-channel recorder. Precise data at low cost per channel.

Besides being an accurate, reliable instrument, the Brush 260 is also a real bargain.

You get six 40 mm analog channels and four event markers. Eight pushbutton chart speeds and built-in signal conditioners. Plus Brush exclusives like pressurized ink writing and Metrisite® servo-loop feedback system that assures 99½% linearity.

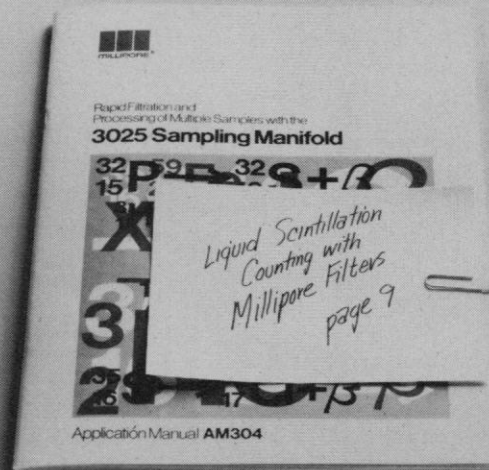
Write Gould Inc., Instrument Systems Division, 3631 Perkins Avenue, Cleveland, Ohio 44114. Or Kouterveldstraat Z/N, B 1920 Diegem, Belgium.



Circle No. 278 on Readers' Service Card

The basics of sample preparation with common LSC cocktails using various Millipore filters. The properties of Millipore filters in protein and nucleic acid binding applications. Also filtration for microbiological sampling and separation, micro-chemical analysis, and radio tracer ultracleaning. In all, 32 pages of useful information. Free. Ask for Manual AM304. Or call toll free 800-225-1380 (in Mass. call (617) 275-9200).

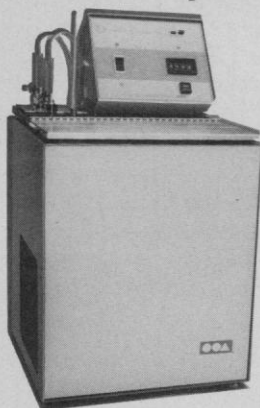
MILLIPORE Corporation
Bedford, Mass. 01730



Circle No. 277 on Readers' Service Card

GCA/PRECISION SCIENTIFIC

New Temptrol Model 254



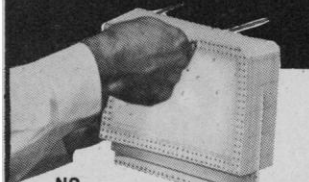
Save time in
temperature
selection and
sample cell
equilibration . . .
and get
added
capacity, too!

Simply dial the four place digital set temperature control to within 0.1°C, and when the pilot lamp begins pulsing, it lets you know the correct temperature is being maintained. It's a quick, one-time setting that you can set and forget. Operating range as bath or circulating system is -15° to +150°C, sensitivity is ±0.012 at 20°C. Bath volume is 2¾ gallons and pumping capacity is 260 GPH; circulates up to 15 foot head. More than enough pressure to locate circulator remotely from the test instrument, or even stabilize several test instruments simultaneously. Temptrol Circulators have always been known for their versatility. Completely redesigned, they now bring you a new level of accuracy and ease of operation. Get all the facts from your GCA/Precision Scientific dealer or write to GCA/Precision Scientific, 3737 West Cortland Street, Chicago, Illinois 60647. Sales offices in principal cities.

Circle No. 274 on Readers' Service Card

DESK TOP INSTANT DATA SYSTEM

FIND THOUSANDS OF FACTS AT COMPUTER SPEED



NO
FILING OR
REFILING
EVER!

COMPACT.
EASY-TO-DO

The modern rapid way to locate countless facts at your desk without thumbing thru files. Specially coded cards are used to record any information you want close at hand—technical data, formulas, abstracts, statistics, bibliographies. Obtain just what you need in seconds—any group separates automatically simply by inserting a rod. No slow inefficient cross filing . . . no mechanical parts . . . no special training . . . minimum set up time.

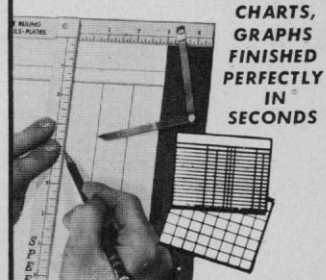
30 DAY MONEY BACK GUARANTEE

Basic package **ONLY \$29.95 POSTPAID**
(200 cards, hand notcher sorting rods, instructions).

Additional cards:
1000 for \$44.50 postpaid.

Information Retrieval System, Div. of
PROFESSIONAL AIDS CO.
1 N. WACKER DR., DEPT. SC-4
CHICAGO, ILL. 60606

For the first time
**I RULED
THAT FORM
ACCURATELY
THE FIRST TIME!**
WITH
SPEED RULER



CHARTS,
GRAPHS
FINISHED
PERFECTLY
IN
SECONDS

Now, anyone can rule any sheet from 5 to 17 inches into perfect parallel lines at any desired intervals—horizontal, vertical or both—in seconds with the improved patented Speed Ruler! Easy to use, no special training required. No calculations, measurements or pointing off. Use pencil, pen, ballpoint etc. Ideal stenciling and plate-making aid. You'll never be without it again.

\$1250

Postpaid
satisfaction
guaranteed
order now
for prompt
shipment

REQUEST
FREE
CHART
MAKER
GUIDE

PROFESSIONAL AIDS CO.
1 N. WACKER DR., DEPT. SC-5
CHICAGO, ILL. 60606

No. 280 on Readers' Service Card

No. 281 on Readers' Service Card

NALGENE® ALL-PLASTIC NOTEBOOKS...



FOR FIELD AND STREAM

Now it's possible to write your observations, take notes and have a permanent record in the most rugged outdoor environments—corrosive, arctic, tropical—even underwater. These notebooks have specially coated polyethylene PolyPaper™ pages which are washable, dry flat, have excellent chemical resistance, and accept virtually all writing devices when dry, including ball point pen and indelible pencil. Can be written on when wet, even underwater, with ordinary pencil.

The Nalgene Field Notebook (Cat. No. 6303) is bound in a black polyethylene binder cover with rust-proof staples. It has 48 sheets (9" x 11¼") printed on both sides with a light green grid, numbered 1-96, with spaces for dates, signatures, and witnessing.



The new Nalgene Pocket Data Book (Cat. No. 6306), measuring 4½" x 8", fits most pockets. White plastic comb binding is waterproof—pages lie flat when open. Outside, heavy-gauge green polyethylene covers provide a firm writing surface. Inside, 32 PolyPaper™ note sheets are horizontally-ruled on both sides. Entire notebook is chemical-resistant, completely waterproof, so light in weight it even floats on water.

You can also get practically indestructible PolyPaper™ (coated polyethylene), unprinted 8½" x 11" sheets, Cat. No. 6304. Unaffected by salt or fresh water, resist ultraviolet light, tearing, fraying, curling, aging, discoloration, rot or mildew, remain flexible at cold temperatures. Write with an ordinary pencil—even underwater. Will accept printing, typing, ball point pen and grease pencil.

Order from your Lab Supply Dealer. For more details and free sample of PolyPaper™, write Dept. 4116C, Nalgene Labware Division, Rochester, N.Y. 14602.



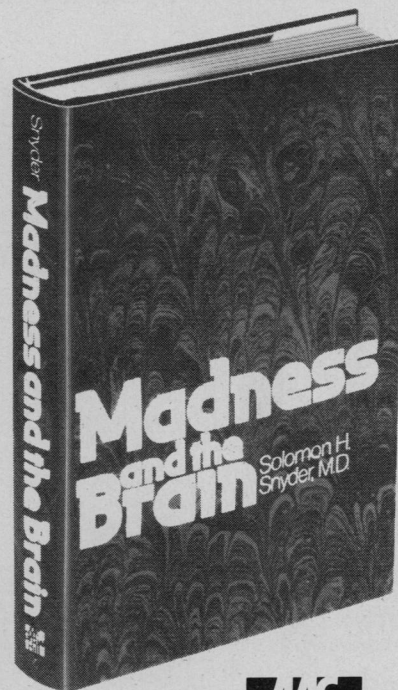
Circle No. 273 on Readers' Service Card

"...A fascinating and highly informative account of schizophrenia."

—DR. JULIUS AXELROD,
National Institute of Mental Health

"Solomon H. Snyder, a psychiatrist at Johns Hopkins University, is trying to do what no one else has been able to do: explain every facet of schizophrenia in a single scheme. ... Snyder plays it straight with the reader. ... The layman will appreciate Snyder's ability to give a marvelously exact description of schizophrenia in its various forms, leading the reader along step by step to levels where another writer might lose him." **Edward Edelson, Washington Post** ... "A profound book which may suggest the most innovative way of thinking about illness since Sigmund Freud." **Occupational Health Nursing**

MADNESS AND THE BRAIN Solomon H. Snyder, M.D.



\$8.95

Circle No. 269 on Readers' Service Card

PROTECT YOUR ELECTRICAL
EQUIPMENT WITH THE NEW REVCO

Voltage Stabilizer



- Protects against low voltage conditions (from 16% to 24% reduction)
- Assures maximum efficiency
- Prevents compressor burn-out
- Compact — less than a cubic foot
- Simple to operate — just plug in
- Standard models — 115, 208 or 230 volts — 50 or 60 cycle — with or without terminal boards

For complete information contact:

REVCO, INC.

1177 Memorial Drive • West Columbia, S.C. 29169
Telephone: 803/796-1700 TWX: 810-666-2103 Cable: Revco

Circle No. 268 on Readers' Service Card

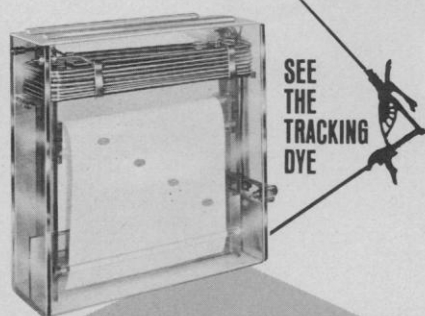
The world's most complete High Voltage Electrophoresis System ...and it's SAFE, TOO!



SAVANT'S HIGH VOLTAGE ELECTROPHORESIS ENCLOSURE WITH TWO LUCITE TANKS.

A fully integrated ELECTRICAL and
FIRE PROTECTED chamber.

- ☐ Fire Detection and CO₂ Extinguishing System.
- ☐ Audible Alarm and Remote Alert Signal.
- ☐ Electrical Interlocks for Primary and High Voltage Protection.
- ☐ Ground Fault Detection and Circuit Interruption.
- ☐ Flow-Thru Ventilation for Vapor Disposal.
- ☐ Cooling Water Flow Monitor and Visual Indicator.
- ☐ Unobstructed Visibility.
- ☐ Dimensions: 36" Wide x 39" Deep x 80" High.



Savant HVE Systems are "PROVEN"
in over one thousand laboratories
around the world. Request cat. #8036.

**Savant
Instruments, Inc.**
221 Park Avenue Hicksville, N.Y. 11801
(516) 935-8774

Circle No. 265 on Readers' Service Card

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

Anatomist-Histologist-Electron Microscopist. Ph.D. Desires senior academic teaching-research position. Extensive experience in transmission and scanning electron microscopy; microprobe analysis of normal and pathological tissues. Strong background in all phases of cell ultrafine structure. Versatile, innovative person with genuine commitment to teaching. Numerous publications. Box 197, SCIENCE. X

Animal Nutrition/Biochemistry. Ph.D. 1967. Basically veterinary graduate. Three years postdoctoral experience. Three years university teaching experience. Seeks industrial, academic or research position in closely related areas. Box 198, SCIENCE. X

Biochemist. Ph.D. Thesis concerned construction of a quantitative assay for mammalian messenger RNA's plus mRNA structural studies in relation to function. Postdoctoral work on isolation of hormone stimutable mRNA and characterization of induction process. Familiar with most nucleic acid and protein techniques. Desires assistant level appointment. 4603 Birch Street, Bellair, Texas 77401. X

Biochemistry and Physical Chemistry. Ph.D. 1964. Seven years of teaching and research, publications, grants, graduate, undergraduate and interdisciplinary courses, spectroscopy, protein binding. Desires research or administrative position. Box 163, SCIENCE. 4/19

Biologist (Ph.D., Genetics, 1973; M.S., Biology, 1968). Postdoctoral training, immunology, Avian tumor biology. Desires teaching and/or research position. Experience in undergraduate instruction, general biology. Box 199, SCIENCE. X

Biophysicist. (Ph.D., Cell Physiology). Postdoctoral experience in cell and small organism motility. Familiar with computer programming and advanced mathematics. Publications in well-reviewed journals. Teaching experience. Seeks academic position. Box 184, SCIENCE. X

Cell Physiologist, Microbiologist. Ph.D. 1971. Organ, tissue, cell culture. Morphogenesis. Three year postdoctorate on antigenic polysaccharides, glycoproteins, immunology, nucleic acids, enzymes. Seeks research position in institution, academic, clinical or industry. Box 200, SCIENCE. X

Cytogeneticist. Ph.D. 1968. Postdoctoral experience, publications, grant. Desires research/teaching position, mutagenesis, carcinogenesis, teratogenesis. Box 201, SCIENCE. X

Economic Geologist. Ph.D. 1966. Publications. Desires academic research-teaching position in western United States. Strong theoretical background with interests in geophysics and geochemistry. Broad North American field exploration experience in shield and cordillera. Current research and publication on porphyry deposits. Box 149, SCIENCE. 4/26; 5/3, 10, 17

POSITIONS WANTED

Electron Microscopist. Ph.D., with extensive experience in cell and molecular biology desires position where she can collaborate with non-microscopists. Also interested in teaching. Box 202, SCIENCE. 4/19, 4/26

Ethnobotanist. B.S. biology; M.S. botany; M.A. anthropology; Ph.D. candidate. Author of three books and several other significant publications. Well-attended university lecturer, research leader on four funded expeditions investigating primitive uses of plants in medicines. Seeks position teaching biology/ethnobotany or as coordinator of interdisciplinary program. Would consider natural products field work for pharmaceutical concern. Box 17143, Honolulu, Hawaii 96817. X

Geneticist. Woman, Ph.D., seeks position. Teaching experience in genetics, zoology, and evolution. Research experience with publications. Box 185, SCIENCE. 4/26; 5/3

Immunologist/Microbiologist. Ph.D. Minor in pathology. Interest in tumor immunology. One year postdoctorate. Seeks teaching or teaching/research position. Available September 1974. Box 203, SCIENCE. X

Microbiologist-Virologist. Ph.D. Seeks position in clinical laboratory or vaccine production. Seven years predoctoral experience in clinical microbiology and vaccine production; six postdoctoral in research with pathogenic bacteria and oncogenic viruses. Publications, patent. Box 204, SCIENCE. X

Prostaglandin Biochemist. Ph.D. 1972. Seeks research position in this or related fields in lipids. Available immediately. Box 190, SCIENCE. X

Reproductive Biologist. Ph.D. 1974. Seeks postdoctoral or research/teaching position. Experience in protein purification and immunoreproduction. Chief interest in physiology of mammalian reproductive secretions. Publications and teaching experience in physiology/anatomy. Box 205, SCIENCE. X

POSITIONS OPEN

The Department of Cellular and Comparative Biology (Division of Biological Sciences) expects to appoint an **Assistant Professor** to be director of the Biology Teacher Preparation Program and the Master's Program for High School Teachers of Biology. Applicants should possess the Ph.D. or Ed.D. degree in science education or biology, and have teaching experience in biology, preferably at both the junior and senior high school levels. The ability to communicate effectively with school administrators, practicing teachers, secondary and university students, and fellow biology faculty is essential. Please send curriculum vitae and names of three references to **Dr. A. D. Carlson, Acting Chairman, Department of Cellular and Comparative Biology, State University of New York at Stony Brook, Stony Brook, N.Y. 11790.**

EQUAL OPPORTUNITY EMPLOYER M/F

ASSISTANT PROFESSOR OF BIOSTATISTICS

Position available at the Harvard School of Public Health for a recent Ph.D. interested in teaching, consultations and applied research. *Harvard is an equal opportunity employer.* To be considered, send curriculum vitae to **Dr. Jane Worcester, Harvard School of Public Health, 677 Huntington Ave., Boston, Mass. 02115.**

ASSISTANT PROFESSOR OF PHYSIOLOGY/ ELECTRON MICROSCOPIST

Applications are invited for a new position in the Department of Physiology for work on the ultrastructure of ion transporting structures and of the nervous system. Knowledge both in conventional and specialized techniques in electron microscopy is essential; experience with epithelial structures (kidney tubule, skin, bladder) as well as muscle, peripheral, and central nervous systems is desirable. Opportunities are available for both collaborative and independent research and for graduate and medical student teaching.

Please send complete curriculum vitae including publications and the names and addresses of three references to:

Chairman, Electron Microscopist Search Committee

Department of Physiology
Yale University School of Medicine
333 Cedar Street—SHM B-106
New Haven, Connecticut 06510

Applications from women and members of minority groups are welcome.

SCIENCE, VOL. 184

AFFIRMATIVE ACTION IS THE LAW!

Is your ad reaching minorities and females?

The Affirmative Action Register is designed to reach over 25,000 female and minority sources with a projected readership in excess of 250,000.

Take a major step toward satisfying Federal Equal Employment Recruitment Guidelines.

Advertise in Affirmative Action Register: For Effective Equal Opportunity Recruitment.

Rates: \$80 per column inch (approx. 50 words, no charge for box number)

Affirmative Action Register
10 So. Brentwood Blvd.
St. Louis, Mo. 63105
314/863-1711

ANALYTICAL CHEMIST/Ph.D.

Quality Control

We are already a leader in the dynamic Medical Products Field, but don't think that stops us from growing. Sure, we're young in outlook and vitality, but wise enough to know that without that continual push to learn and grow, there can be no progress.

The individual we are seeking will develop a raw material testing program and revise testing methodology as it relates to product compliance with FDA regulations.

The qualified candidate will have a PhD in analytical Chemistry with 1 to 3 years experience. Some bench work will be required.

We offer excellent salary and benefits program. Send résumé with salary history in confidence to:

Box 206, SCIENCE

An equal opportunity employer

ASSISTANT PROFESSOR BOTANY

To teach mycology and/or Botany or Biology. Ph.D. required with ability to carry out original research in experimental mycology. Send curriculum vitae and three recommendation letters to **Box 24, Waterman Building, University of Vermont, Burlington, Vermont 05401.**

An Affirmative Action Employer

The Department of Mathematics, Texas A&M University, College Station, Texas 77843 is accepting applications for assistant professorships. Those who have earned the Ph.D. in mathematics by fall 1974 will be considered. Applicants should show strong research promise and ability in teaching, along with specialization in combinatorics, differential equations, finite groups, matrix analysis, numerical analysis or probability. Texas A&M University is an equal opportunity/affirmative action employer.

19 APRIL 1974

Biology

ASSOCIATE MICROBIOLOGIST

We are one of the nation's fastest growing pharmaceutical firms and part of a worldwide leader in chemical manufacturing. Currently, this growth position exists at our corporate headquarters in Somerville, New Jersey.

Requirements include a B.S. or M.S. in Microbiology, Immunology, or Biochemistry and 2 years of experience utilizing immunological testing procedures in an industrial or clinical laboratory. Duties will entail sampling, inspection, testing and release of diagnostic reagents and products.

If interested, send résumé, including salary requirements, to L. J. Zanoni.

HOECHST PHARMACEUTICALS, INC.

a Subsidiary of
American Hoechst Corp.
Route 202-206 North
Somerville, N.J. 08876

An Equal Opportunity Employer M/F

ASSISTANT OR ASSOCIATE PROFESSOR LEVEL

The Department of Cellular and Comparative Biology (Division of Biological Sciences) is seeking an individual with extensive experience in smaller computer operation at both the practical and theoretical levels. The candidate should have demonstrated ability to apply his computer skills to neurobiological and behavioral real time data analysis. This will include biological modeling and simulation and the interfacing of equipment with computers. The candidate will be expected to participate in the teaching and research activities of the department in relation to its program in behavioral biology. Salary and position are dependent on the candidate's experience and qualifications. Please send curriculum vitae and names of three references to **Dr. A. D. Carlson, Acting Chairman, Department of Cellular and Comparative Biology, State University of New York, Stony Brook, N.Y. 11790.**

EQUAL OPPORTUNITY EMPLOYER M/F

UNIVERSITY OF TORONTO, DEPARTMENT OF ZOOLOGY. Applications are invited for the position of Assistant Professor in the field of sensory physiology. The position will be tenable at the Erindale College Campus from 1 July 1974. Salary \$12,500 (minimum) negotiable. Applications with curriculum vitae should be sent to the **Chairman of the Search Committee, Professor B. I. Roots, University of Toronto, Erindale College, Mississauga, Ontario L5L 1C6, Canada.** Candidates should arrange for three letters of reference to be sent to the same address. Closing date 10 May 1974.

ASSISTANT PROFESSOR or LECTURER EQUIVALENT. Undergraduate and master's level teaching/research. Ph.D. required. **Systemic Physiologist**—applicants must have formal training in the field of human and/or vertebrate anatomy. Persons with clinical training and/or courses in pathology are encouraged to apply. Supply three letters of reference, curriculum vitae, and complete transcripts to **Dr. M. L. Bolar, Chairman, Department of Biological Sciences, California State University, Sacramento, Calif. 95819.** An equal opportunity/affirmative action employer.

ASSISTANT RESEARCH PHYSICIST
UNIVERSITY OF CALIFORNIA, SAN DIEGO—Institute for Pure and Applied Physical Sciences. The opening is an experimental postdoctoral position in low temperature solid state physics involving searching for new materials among the transition metal pnictides and chalcogenides, as well as intermetallic compounds with high superconducting transition temperatures. **QUALIFICATIONS:** good background in experimental superconductivity; in materials preparation and analysis; including arc melting and powder metallurgical synthesis techniques; and in x-ray diffraction analyses. Applicants must have an intuitive sense for the periodic table of the elements and be able to try unconventional approaches to problems. Applicants must be able to present proof of abilities and publications to substantiate new ideas and breakthroughs in this field. **EDUCATION:** Ph.D. in Physics and advanced knowledge of inorganic chemistry. Send replies to **IPAPS, UCSD, Box 109, La Jolla, Ca. 92037—Attention: S. A. Wolf.** No replies accepted after 30 June 1974. The University of California is an equal opportunity, affirmative action employer.

BIOLOGIST—BOTANIST

Positions are available for biologists and botanists experienced in applied field research. Mature persons with an M.S. or equivalent in experience preferred. Salary commensurate with experience. Job involves fresh water field work in Tampa area. Send résumé to **Personnel Manager, Southwest Florida Water Management District, P.O. Box 457, Brooksville, Fla. 33512.**

BIOLOGIST—BIOCHEMIST

The biology department of Bryn Mawr College requests applications for a three year temporary appointment as assistant professor. The doctorate is required and teaching experience desirable. The candidate will be expected to replace staff members in the instruction of introductory biology, cell physiology and biology, molecular biology, and biochemistry. Send résumé to **Box 207, SCIENCE.**

An Equal Opportunity Employer

SOUTHERN METHODIST UNIVERSITY

CHAIRPERSON: Applications are invited for the position of Chairperson, Department of Biology, Southern Methodist University. Earned doctorate necessary. Academic, research, and administrative experience is desired. Starting date, September 1975 or earlier.

Ph.D. Biologist: Teaching duties to include genetics, research interest in evolutionary biology desirable. Position as Assistant Professor available September, 1974.

Ecosystems Ecologist, Ph.D.: Teaching duties to include undergraduate and advanced courses. Position as Assistant Professor available September 1975 or earlier.

We are seeking people with an active interest in quality teaching and in research. Persons interested in any of the above positions are invited to send curriculum vitae and names of three references to **Dr. John L. McCarthy, Chairman, Department of Biology, Southern Methodist University, Dallas, Texas 75275.**

Southern Methodist University is an equal opportunity/affirmative action employer and encourages applications from members of minority groups and women.

DIRECTOR OF DATA PROCESSING

The University of Massachusetts Medical Center, consisting of a complete medical school and a teaching hospital to open in 1975 is searching for a Director of Data Processing. The Director should be qualified to make decisions on staff and hardware required to serve the data processing needs of the faculty, staff, and administration of the Medical Center, including complete medical records, business services, and collaborative and/or service relationships with faculty research efforts. The Medical Center is an affirmative action employer. Please send résumés or curriculum vitae to **Chairman, Data Processing Search Committee, Box 355, University of Massachusetts Medical School, 55 Lake Avenue, North, Worcester, Massachusetts 01605.**

POSITIONS OPEN

DEAN, COLLEGE OF SCIENCE AND MATHEMATICS

Position available for Dean of Science and Mathematics. Successful candidate is expected to assume leadership of an active college in a land grant institution. The college is composed of the departments of biochemistry, botany, chemistry, geology, mathematics, physics, polymers and coatings, psychology, and zoology. Candidates must have a Ph.D., an established research reputation in his or her field, and some academic administrative experience. Position may be filled as early as September 1974. *We are an equal opportunity employer.* Contact **Chairman, Dean Search Committee, College of Science and Mathematics, North Dakota State University, Fargo, North Dakota 58102.**

ECOLOGIST

An **ecologist** with training in vertebrate zoology is required for university teaching and research.

An interest in field methods of studying wildlife, and a concern for quantitative methods of analysis are essential. An interest in ethology, population biology, or ecological genetics would be highly desirable.

Although undergraduate teaching responsibilities may include one of the fields of interest outlined above, the main concern at both undergraduate and graduate levels would be to augment the university's offerings in wildlife biology, and to carry out field research.

The anticipated appointment will carry the rank of assistant professor, at a salary commensurate with training and experience.

The date of appointment is open.

An application, with curriculum vitae, representative reprints, and three letters of reference, should be sent to: **Chairman, Search Committee, Institute of Animal Resource Ecology, The University of British Columbia, Vancouver, B.C. V6T 1W5, Canada.**

ECOLOGIST

The Department of Biology, York University, has an opening for an Ecologist, preferably specializing in Behavioural Ecology or Environmental Physiology. The Department prefers to appoint an established scientist, but encourages exceptional junior candidates to apply. Salary and rank will be commensurate with qualifications. The position is tenable 1 July 1974, although other arrangements can be made if necessary. Send curriculum vitae, reprints and names of three referees to **Professor J. D. Friesen, Department of Biology, York University, 4700 Keele Street, Downsview, Ontario, M3J 1P3, Canada.**

ENDOCRINE PHYSIOLOGIST—Prefer a Ph.D. who has had some postdoctoral training in endocrinology, physiology and biochemistry. Research will include basic studies on the role of hormone deficiencies and excesses in the development of tissue and metabolic pathology. Expertise in radioimmunoassay techniques would be helpful. Our Westchester-based corporation offers excellent salary and comprehensive benefits package. Qualified applicants are requested to submit detailed résumé in strict confidence, specifying present and desired salary information to: **Mr. Barry Roth, CIBA-GEIGY Corporation, Saw Mill River Road, Ardsley, New York 10502.** *We are an equal opportunity employer/male and female.*

ENVIRONMENTALIST

Teaching general and advanced courses in specialty plus participation in general biology; research expected. Rank of Assistant Professor with Ph.D.; temporary Lecturer rank with essential completion of doctorate. Position available August 1974, or later. Research interests in systems simulation-modeling, or physiological ecology. Applications accepted until 3 May. Send curriculum vitae, letter statement of 5-year objectives, transcripts, names of three referees to: **Environmental Search Committee, Department of Biology, Indiana University-Purdue University at Indianapolis, Indianapolis, Indiana 46205.**

An Affirmative Action/Equal Opportunity Employer

ENVIRONMENTAL SCIENCES

Postdoctoral appointments and also staff positions at the Ph.D. and B.S. levels are available in ongoing research programs related to the measurement and assessment of the environmental impact of the utilization of nuclear and fossil fuels in the Great Lakes Region. Areas of interest include limnology of the Great Lakes, stream ecology, terrestrial ecology and soil science, and meteorology. Send résumé to: **Ronald A. Johns, Professional Placement Department, Argonne National Laboratory, 9700 South Cass Ave., Argonne, Ill. 60439.**

An equal opportunity employer M/F

POSITIONS OPEN

UNIVERSITY OF ILLINOIS

Applications are invited for faculty positions in the following areas for fall 1974:

- 1) **Clay Science**
- 2) **Engineering Geology or Engineering Geophysics**
- 3) **Marine Geology**

A senior person with a prominent research record and industrial experience will be given preference for the position in engineering geology. Rank open, but established researchers generally preferred for all positions. Salary dependent upon qualifications. Send résumé to **F. A. Donath, Head, Department of Geology, University of Illinois, Urbana, Ill. 61801.**

The University of Illinois is an affirmative action—equal opportunity employer and encourages applications from members of minority groups and women.

TERATOLOGIST PHARMACOLOGIST BEHAVIORAL TOXICOLOGIST

Midwest Research Institute, a not-for-profit organization, offers excellent career opportunities in the rapidly expanding fields of pharmacology and toxicology.

Teratologist—

Experience in teratology of rodents; experience with other animals beneficial.

Pharmacologist—

Experience in drug absorption and metabolism; knowledge in analytical technique desirable.

Behavioral Toxicologist—

Opportunity to develop methodology and research program in behavioral toxicology of environmental chemicals.

Candidates with doctoral degrees preferred. Careful consideration will be given to Masters with experience. Salaries are competitive and will be based on experience and training. Please send, in complete confidence, résumé with education, work experience and salary requirements to:

**Martin N. Schuler
Manager of Staff Development**



MIDWEST RESEARCH INSTITUTE
425 Volker Boulevard
Kansas City, Missouri 64110

An Equal Opportunity Employer M/F

POSITIONS OPEN

ENVIRONMENTALISTS

Academic positions available summer or fall 1974. Duties include teaching and research in environmental health sciences graduate program of growing School of Public Health. We seek candidates with Ph.D. or M.S. and qualifications related to the following areas: **WATER QUALITY, WASTE MANAGEMENT, CONSUMER PROTECTION, SANITARY ENGINEERING, POLLUTANT ANALYTICAL METHODS, URBAN ENVIRONMENTAL PROBLEMS.**

Preference will be given to applicants who present strong backgrounds of experience and training involving useful combinations in several of the above areas. Environmental or health agency service, research and/or teaching experience desirable. Rank and salary (\$12,000 to \$22,000, 12 months) dependent on qualifications. Opportunity for concurrent advanced academic studies.

The University of Illinois is an equal opportunity employer and encourages applications from women and minority groups.

Send biographical and other pertinent information, transcripts and direct at least three letters of reference to **Dr. Arthur H. Wolff, University of Illinois Medical Center, P.O. Box 6998, Chicago, Illinois 60680.**

CONNECTICUT CANCER EPIDEMIOLOGY UNIT

Epidemiologist with M.D. and biostatistics training plus experience in cancer epidemiology. Will conduct and develop studies in cooperation with Connecticut Department of Health Tumor Registry. Affiliation Yale University Department of Epidemiology and Public Health. Faculty appointment. Opportunities for teaching and research at Yale and University of Connecticut. Commences 1 July 1974. Further information from **J. Wister Meigs, M.D., Director, Connecticut Cancer Epidemiology Unit, Room 407, 60 College St., New Haven, Conn. 06510.**

An equal opportunity employer

HEALTH SCIENTIST

Experienced Ph.D. or M.D. required for staff position with the Environmental Defense Fund, a national public-interest environmental organization, to work with other staff scientists and lawyers in environmental health problem areas; Washington, D.C., location. **Environmental Defense Fund, 1525 18th St., NW, Washington, D.C. 20036.**

HISTOLOGIST AND VERTEBRATE ZOOLOGIST Ph.D.

To replace a staff member on a 1-year sabbatical leave. Send curriculum vitae and a list of three references to:

**Dr. Miriam F. Bennett
Department of Biology
Colby College
Waterville, Maine 04901**

Colby College is an equal opportunity employer.

INSTRUCTORSHIPS—RESEARCH

Postdoctoral appointments, teaching and research, 1974-75 starting September. Fields of research: analytical, inorganic, organic, experimental and theoretical physical chemistry; biochemistry including intermediary metabolism and membrane structure and function. Salary up to \$12,700 for 12 months. Send résumé and the names of three references to **Dr. Norman L. Goldman, Chairman, Department of Chemistry, Queens College of the City University of New York, Flushing, N.Y. 11367.**

An equal opportunity employer.

THE UCLA NEUROPSYCHIATRIC INSTITUTE conducts multidisciplinary educational and scientific programs related to neurological and psychiatric illness and mental retardation.

Occasional openings available for academic personnel in biological, behavioral and social sciences, and health-related professions. Equal opportunity employers with vigorous affirmative action program. Applications from women and members of minority groups receive top priority.

Write: **L. J. West, M.D., 760 Westwood Plaza, Los Angeles, California 90024.**

NEUROPHYSIOLOGIST

Assistant Professor. Qualifications include demonstrated teaching ability, an active research program as evidenced by publications, and the Ph.D. Teaching duties include courses in principles of physiology and graduate courses in neurophysiology. Women and minority candidates are urged to apply. Send curriculum vitae, reprints, description of research interests, and four letters of evaluation to: **Dr. Victor H. Hutchison, Chairman, Department of Zoology, University of Oklahoma, 730 Van Vleet Oval, Norman, Oklahoma 73069.** *An equal opportunity employer.*

IMMUNOCHEMISTRY/ CELL BIOLOGY

Three new openings created by expansion of Corporate level research activities in molecular biology:

CELL BIOLOGIST . . . Ph.D. in Cell Biology, Microbiology or Biochemistry to direct cell biology laboratory research program seeking therapeutic agents from cell culture. Requires background in human diploid cell culture and interest in factors regulating cell growth and function in culture. Background in hematology desirable.

IMMUNOLOGIST . . . Ph.D. level scientist with training and research experience in immunology to study tumor-associated antigens. Background in cell membrane biochemistry and glycoprotein characterization desirable.

IMMUNOCHEMIST . . . Ph.D. level scientist with strong background in immunology and biochemistry to research new methods of immunochemical diagnosis of disease.

Positions located at Abbott's research facilities located in the pleasant north shore suburbs of Chicago.

Please send résumé, stating your salary requirements, in complete confidence, to:

J. K. Hart
Professional Employment
Building HW

ABBOTT
NORTH CHICAGO, ILL. 60064

An Equal Opportunity Employer M/F

Circle No. 283 on Readers' Service Card

AAAS Memberships and Subscriptions

- Whenever you write us about your membership or subscription, please attach a Science address label to assure prompt service.
- Mail to: Membership and Subscription Records, AAAS, 1515 Massachusetts Ave., NW, Washington, D.C. 20005.
- ☐ **Change of Address:** Please provide 6 weeks' notice. Paste an address label from a recent issue in the space provided. Print new address below.
- ☐ **Query:** If you have a question, place your address label here and attach this form to your letter.
- **To join or subscribe:** Mail this form with your payment, mark the appropriate boxes, and print your name and address in the space below. (For renewals, attach label.)

ATTACH
LABEL
HERE

- ☐ **Membership rates** (individual only)
- ☐ \$18 USA ☐ \$21 Canada, PUAS ☐ \$22 Foreign
☐ \$36 Airlift to Europe, North Africa, Near East

- ☐ **Subscriber rates**
- ☐ \$30 USA ☐ \$34 Canada, PUAS ☐ \$36 Foreign
☐ \$48 Airlift to Europe, North Africa, Near East
New rates will become effective 1 May

- ☐ Payment enclosed ☐ Bill me later

Name Please print

Address

City State Zip MJD4



FOOD AND AGRICULTURE
ORGANIZATION OF
THE UNITED NATIONS

Viale delle Terme di Caracalla,
Rome, Italy

FISHERY RESOURCES OFFICER

Applications are invited for the post of Fishery Resources Officer (Marine Pollution) in the Fishery Resources and Environment Division of the Department of Fisheries, FAO, from candidates with the minimum of a University degree or equivalent, preferably in marine sciences or fisheries and at least seven years' experience in the field of aquatic pollution research in relation to living aquatic resources. Very good knowledge of English, French, or Spanish.

The duties and responsibilities of the post include participation in the Division's programme of work in the field of environmental management, particularly promotion of studies on the effects of pollution on fishery resources and aquatic environment; provision of secretariat to expert groups of FAO regional fishery bodies, training of personnel and technical backstopping of field projects.

Salary: U.S. \$16 542 to U.S. \$21 294 net
(tax free) plus Cost of Living Adjustment and other allowances

Further details can be obtained from the Personnel Officer, Department of Fisheries, FAO, Rome (refer to Vacancy Announcement No. 581 FIR). Closing date for receipt of applications: 15 May 1974.

POSITIONS OPEN

OCEANOGRAPHER

Permanent full-time position (Assistant Professor) open September 1974 requires Ph.D. and background to teach (1) rigorous physical oceanography to senior undergrad science majors (2) oceanography to non-science majors (3) advanced course in applicant's specialty. Requires ability to interface with existing marine sciences programs in geology, chemistry, biology and meteorology. Submit résumé, transcripts, list of publications and three letters of reference to: **Dr. Richard W. Berry, Department of Geological Sciences, San Diego State University, San Diego, California 92115.**

PHYTOPLANKTON (OR MARINE BOTANY) AND ZOOPLANKTON BIOLOGISTS

Positions are available at the advanced Assistant or Associate Professor level for estuarine or biological oceanographers in phytoplankton (or marine botany) (primary production, population dynamics, systematics) and zooplankton (distribution, grazing, systematics, behavior) studies. Starting date open 1 July 1974. Please send curriculum vitae and references to chairmen of search committees:

Dr. Jonathan H. Sharp
(phytoplankton-marine botany)
Dr. Don Maurer
(zooplankton)
College of Marine Studies
University of Delaware
Lewes, Delaware 19958

Affirmative action/equal opportunity employer.

PLANT ECOLOGIST. Applications are invited for a position at the Assistant Professor level. Knowledge of Northeastern vegetation desirable. Teaching duties will include an undergraduate course in general ecology and a course in area of specialty. Development of a strong research program required. Send curriculum vitae, reprints of publications and names of three referees to:

Professor C. J. Hillson
Chairman, Search Committee
The Pennsylvania State University
Department of Biology
317 Buckhout Laboratory
University Park, Pennsylvania 16802

An Equal Opportunity/Affirmative Action Employer

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

Applications are invited for appointment from persons qualified to teach courses in **Population Dynamics and Biometrics**. In addition, more junior courses in the Department will be allocated to the successful applicant in accordance with his/her other interests. These may very well include the teaching of Introductory courses in Zoology and Botany. Appointments will be made at assistant or associate professor level according to experience and qualifications. Curriculum vitae should be sent to the **Head, Department of Biology, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1C 5S7**, by 30 June 1974.

POSTDOCTORAL POSITION FOR PROTEIN CHEMIST interested in study of allosteric proteins or associating protein systems. Send two letters of recommendation and curriculum vitae to **Dr. R. F. Steiner, Department of Chemistry, University of Maryland Baltimore County, 5401 Wilkens Avenue, Catonsville, Maryland 21228.**

PROTEIN OR PHYSICAL CHEMIST

Position at the Assistant or Associate Professor level is available as of 1 July 1974, in the Department of Pathology, Section of Experimental Pathology and Medicine, University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma, with dual appointment in the Department of Biochemistry and Molecular Biology. *This institution is an equal opportunity affirmative action employer.* Applications from women and minorities are encouraged.

This position would be as one of a group of six other faculty members engaged in physical and biochemistry and ultrastructure research on proteins of biologic interest. The structure of the group is such that 80% of the time will be free for research and 20% of time for teaching. Maximum opportunity will be available for development or continuation of independent research activity with supporting personnel including pre and postdoctoral fellows. A high premium will be placed on a broad range of interests and contribution to a cooperative atmosphere while conducting independent work. An advanced degree, evidence of independent work, together with ability to communicate and teach effectively are required. Address inquiries to: **Dr. Fletcher B. Taylor, Jr., The University of Oklahoma Health Sciences Center, 800 Northeast 13th Street, Oklahoma City, Oklahoma 73190.**

POSITIONS OPEN

PLANT ECOLOGY-MARINE ECOLOGY-BIOCHEMISTRY-BIOPHYSICS

The Biology Department, University of Massachusetts/Boston, invites application for faculty positions at the level of Assistant Professor in these areas. We particularly desire plant ecologists interested in pollination, competition and community ecology; marine ecologists interested in productivity in Boston Harbor and adjacent waters; biochemists and biophysicists interested in modeling and the use of physical probes, in biomembranes and biopolymers. We will also consider applicants in related areas. Send curriculum vitae and names of three referees to: **Dr. Richard H. White, Department of Biology, University of Massachusetts, Boston, Massachusetts 02125.**

An Equal Opportunity Affirmative Action Employer

PREDOCTORAL AND POSTDOCTORAL MOLECULAR BIOLOGY RESEARCH

To study transcription of mitochondrial DNA or purification and properties of electron transport system enzymes. Training in Biochemistry desired. Stipends available 1 June: Postdoc \$9-10,000; Predoc \$3200. Send curriculum vitae or application to: **Dr. George C. Hill, Pathology Department, Colorado State University, Ft. Collins, CO 80521.**

An Equal Opportunity Employer

DEPARTMENT OF GENETICS UNIVERSITY OF COLOGNE

A post is offered to a *Senior Research Fellow* supported by the Sonderforschungsbereich 74 "Molecular Biology of the Cell". We are seeking a scientist, who works with

Eucaryotic cells or their subcellular systems and who has sufficient experience to establish and coordinate an independent research group. Applicants should be interested in cooperating with other groups of the SFB. Their work includes problems of molecular biology of bacteria, research with animal tumor viruses and cellular biology of immune systems.

The salary corresponds to that of an associate professor. The position is initially for three years with possible extension to five years. Suitable laboratory space and an independent budget for personnel and operating expenses are provided.

Applications should be sent before 31 May 1974 to the speaker of the SFB 74, **Prof. Dr. P. Starlinger, Institute für Genetik der Universität zu Köln, 5 Köln 41, Weyertal 121, Germany.**

SENIOR STAFF POSITION IN BIOLOGICAL RESEARCH

Sandoz-Wander, Inc., internationally renowned in drug research, is seeking an individual with a Ph.D. and 2 to 5 years postdoctoral experience in the general field of pharmacology, with special orientation towards neuropharmacology and/or neurochemistry.

The individual will be responsible for directing several staff individuals. Although not a prerequisite, industrial experience would be helpful.

Familiarity with preliminary and secondary screening procedures related to the development of central nervous system drugs is considered essential.

We offer an excellent starting salary and a full range of company benefits. Please forward complete resume, including salary history and requirements, in complete confidence, to: **Mr. Robert Clifton, Personnel Manager, Research and Development**

SANDOZ-WANDER, INC.
Route 10, East Hanover,
New Jersey 07936



An equal opportunity employer M/F

POSITIONS OPEN

POPULATION BIOLOGIST

**Department of Biology,
University of California, Riverside**

Applications are invited for a temporary position beginning in September 1974 to teach an introductory course in population biology and a more advanced course such as population or systems ecology. Appointment will be made at the level of Assistant Professor and the possibility for reappointment is an unresolved question. A balanced department of 26 biologists invites applications from all qualified individuals and especially from women and minority candidates. Please send inquiries and a résumé, including a list of three individuals from whom we might seek recommendations to **Dr. F. C. Vasek, Chairman Department of Biology, University of California, Riverside, California 92502.**

STAFF PHYSICIANS WANTED

Board certified or eligible Cardiologist, Nephrologist, Neurologist, Gastroenterologist, and Rheumatologist. University Affiliated Veterans Administration Hospital in Southern Cal. with active teaching program. Salary commensurate with experience. *An equal opportunity non-discrimination employer.* Contact **N. Costea, M.D., Medical Services, Veterans Administration Hospital, Sepulveda, Calif. 91343. Phone 213-894-8271.**

The **ZOOLOGY DEPARTMENT** is seeking someone to share in the teaching of elementary zoology to approximately 1000 students per semester starting either in the winter or fall of 1975. The teaching load will not preclude the opportunity to teach an advanced specialty course. Preference will be for someone with broad interests and an active research program. Criteria for selection will be based on excellence in teaching and research. Applications are due by 15 June 1974. Send résumé to: **Department of Zoology, 151 Noland Hall, University of Wisconsin, Madison, Wis. 53706.**

An equal opportunity employer.

FELLOWSHIPS

POSTDOCTORAL FELLOW

Opening available 1 July 1974, for a Fellow (M.D. or Ph.D.) in gastrointestinal physiological research for 12 months with option for renewal. Stipend depends on experience. Send curriculum vitae and three references to **G. Robert Mason, M.D., Ph.D., Professor and Chairman, Department of Surgery, University of Maryland Medical School Hospital, 22 S. Greene Street, Baltimore, Md. 21201.**

MARKET PLACE

Do You Need...

OXYGEN-18?

For lowest prices, call (415) 234-4130 or write for our newest isotope catalog.

BIO-RAD Laboratories

32nd & Griffin Ave., Richmond, CA 94804

Circle No. 293 on Readers' Service Card

AMINO ACID ANALYSIS

Latest high pressure computerized ion-exchange chromatography

- Protein Hydrolyzates
- Physiological Fluids
- Food Stuffs
- Pharmaceuticals

For further information call collect or write:

Eldex Laboratories, Inc. 557 Willow Road
Menlo Park, Ca. 94025 (415) 325-2250

Circle No. 299 on Readers' Service Card

CONSTRUCT & REPAIR LAB APPARATUS

GLASSBLOWING KITS
with instruction manuals
\$179—\$325

WALE APPARATUS CO. Hellertown, Pa.

Circle No. 294 on Readers' Service Card

Sometimes a digital computer can keep up with the real world only by calling an analog into play

Current theory holds that the tennis champion's efficiency—and yours—results from hybrid computation. Half your brain, it seems, does simultaneous parallel processing (which is what

our analog computers do). The other half does sequential processing (like a digital). It's the interaction between the two that lets you plan tactics logically while you follow the ball and position your racquet.

Similarly, it is the interaction between the digital and analog portions of EAI's computer systems that allows them to cope with immensely complex scientific and engineering problems at real-time speeds—or even faster.

These hybrid systems, called PACER™, solve the most intricate of mathematical models in a hundredth of the time and at a

quarter of the cost of a digital alone.

That's why our hybrids are hard at work for cost-conscious scientific and engineering labs involved in almost every area of manufacturing and research.

Producing speedy solutions to complex problems has made us the world's largest maker of analog/hybrid computers. Probably we can solve a problem or two for you. Write Electronic Associates, Inc., West Long Branch, N.J. 07764. Or call (201) 229-1100.



Circle No. 218 on Readers' Service Card



Electronic Associates, Inc.

The AO® FluoreStar V20 is about the most compact microscope package you can use for fluorescence techniques. A mercury-vapor arc lamp is enclosed in the base with easy-to-reach light centration controls at front and side. All exciter, neutral density and barrier filters are contained in rotatable turrets for easy dial-in filter change convenience. And there's room for additional filters to suit your personal preference.

Two condensers, allowing quick interchange from darkfield to conventional brightfield, assure multiple technique capability.

All this, plus the AO infinity-corrected optical system for outstanding contrast, resolution and color correction, gives you a lot of microscope in this little space.

For more information, see your AO representative or write for detailed literature.

TM Reg., American Optical Corporation

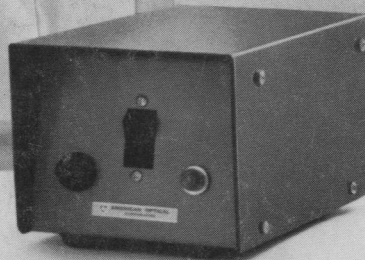
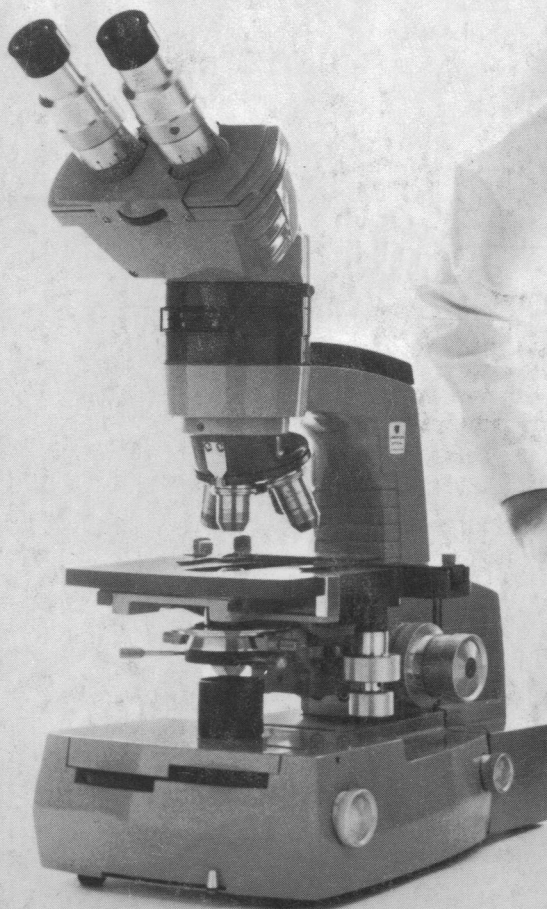


**AMERICAN OPTICAL
CORPORATION**

SCIENTIFIC INSTRUMENT DIVISION • BUFFALO, N.Y. 14215

How about that?

**A fluorescence
microscope
in this little
space.**



Circle No. 200 on Readers' Service Card