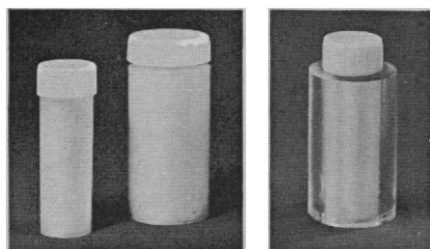


# How to lower the cost of your Liquid Scintillation Chemicals and Vials up to 50% or more

SWITCH to

**MiniVial™**  
COUNTING VIALS\*



40-218  
MiniVial      Standard  
20-ml Vial

MiniVial  
in Holder

In routine liquid scintillation counting, a solution of about 15 ml is placed in a 20-ml vial. A very small portion of the solution is radioactive material; most of it is scintillator.

With MiniVials, you reduce the amount and cost of the scintillator drastically. MiniVials have a 7-ml capacity. You insert the same amount of radioactivity as in a 20-ml vial but only about 1/3 to 1/2 of the scintillation chemicals. In addition to these savings, MiniVials cost about 30% less than plastic vials and about 50% less than low-background glass. When a MiniVial rests in its Vial Holder, the combination has the same configuration as a standard 20-ml vial and is compatible with all scintillation counters.

Vials are packed 1000 per case.

MiniVials.....	1-4 Cases.....	60.00M
	5-14 Cases.....	57.50M
Holders.....	Tray of 100.....	\$34.50

## SPECIAL OFFER

200 MiniVials **\$15<sup>00</sup>**  
12 Holders

MiniVials are available from most suppliers of liquid scintillation accessories.

For more details, ask for Catalog 95-T

TM Nuclear Associates Inc. \*Patent Pending



**NUCLEAR  
ASSOCIATES, INC.**

Subsidiary of  
RADIATION-MEDICAL PRODUCTS CORP.  
35 URBAN AVENUE, WESTBURY, N.Y. 11590  
PHONE (516) 333-9344

Circle No. 81 on Readers' Service Card

ity, and fetal antigens remain to be clarified immunologically, chemically, and genetically.

Finally, P. Bretscher (Salk Institute) presented a speculative model for the development of generalized autoimmunity, in which both B and T cells would be required for induction of antibody production by foreign antigen, but in which only B cells would be necessary for maintenance of tolerance (paralysis of self-antigen). Such a model will have to take into account extensive data from autoimmune-prone NZB mice and from human patients and families with autoimmune disorders.

During the past decade, the study of immunogenetics has revealed several important biological phenomena. The synthesis of a single immunoglobulin polypeptide chain involves at least two genes, and an unknown mechanism generates extraordinary diversity in the variable region sequences of immunoglobulins. Mammalian histocompatibility antigens are extensively polymorphic, are coded by a genetically complex chromosomal region, and are linked to genes controlling immune responsiveness. An interacting system of two cell types is necessary to trigger antibody synthesis. The implications of these findings extend beyond the field of immunology to other genetic systems involved in differentiation.

GILBERT S. OMENN

*Division of Medical Genetics,  
University of Washington, Seattle 98195*

HUGH O. MCDEVITT

*Division of Immunology, Stanford  
University, Stanford, California 94305*

## Forthcoming Events

### October

1-4. National Agricultural Chemical Assoc., 39th annual, White Sulphur Springs, W.Va. (D. Hayley, NACA, Madison Bldg., 1155 15th St., NW, Washington, D.C. 20005)

1-5. Society of American Foresters, Hot Springs, Ark. (H. R. Glascock, Jr., SAF, 1010 16th St., NW, Washington, D.C. 20036)

1-14. International Assoc. of Theoretical and Applied Limnology, jubilee symp., Plon, West Germany. (W. Ohle, Max-Planck-Inst. für Limnologie, Postfach-165, 232 Plon)

2-3. Air Pollution Medical Research Conf., American Medical Assoc., Chicago, Ill. (F. W. Barton, Council on Environmental and Public Health, AMA, 535 N. Dearborn St., Chicago 60610)

2-4. Distribution and Partition of Trace

Elements and Origin of Volcanic Rocks, intern. conf., sponsored by American Geophysical Union, Univ. of Rhode Island, Intern. Assoc. of Volcanology and Chemistry of the Earth's Interior, Newport, R.I. (American Geophysical Union, 1707 L St., NW, Washington, D.C. 20036)

2-4. Soil Microcommunities, 2nd conf., Syracuse, N.Y. (D. L. Dindal, Dept. of Forest Zoology, State Univ. College of Forestry, Syracuse 13210)

2-5. American Vacuum Soc., Chicago, Ill. (J. H. Singleton, Westinghouse Research Labs., Beulah Rd., Pittsburgh, Pa. 15235)

2-5. Yeast Protoplasts, 3rd intern. symp., sponsored by Spanish Biochemical Soc., Spanish Biological Soc., and Spanish Research Council, Salamanca. (Secretariat, Third Intern. Symp. on Yeast Protoplasts, Departamento de Microbiología, Facultad de Ciencias, Universidad de Salamanca, Salamanca)

2-6. Modern Trends in Activation Analysis, 4th intern. conf., Sacy, France. (American Nuclear Soc., 244 E. Ogden Ave., Hinsdale, Ill. 60521)

2-6. Environmental Health Aspects of Lead, Commission of the European Communities and U.S. Environmental Protection Agency, Amsterdam, Netherlands. (Secretariat, Direction Protection Sanitaire, Commission des Communautés Européennes, 29, rue Aldringen, Luxembourg)

2-6. International Congr. on Marine Corrosion and Fouling, 3rd, Gaithersburg, Md. (H. C. Burnett, Room B264, Materials Bldg., Natl. Bureau of Standards, Washington, D.C. 20234)

2-6. Remote Sensing of Environment, 8th intern. symp., Ann Arbor, Mich. (Conference Dept., Extension Service, Univ. of Michigan, Ann Arbor 48104)

3-4. Symposium on Aquatic Environment: Microbial Transformations and Water Quality Management Implications, Office of Water Programs, U.S. Environmental Protection Agency, Washington, D.C. (L. J. Guarria or R. K. Ballentine, Fresh Water Pollution Control Section, Water Quality Protection Branch, Water Quality Non-Point Sources Control Div., OWP, EPA, Washington, D.C. 20460)

3-5. Dietary Lipids and Postnatal Development, intern. symp., Milan, Italy. (Miss H. J. Prain, Inst. of Pharmacology and Pharmacognosy, Univ. of Milan, Via A. Del Sarto, 21, 20129 Milan)

3-5. Plastics, Electrical Properties and Applications, Plastics Inst. of America, Rensselaer, N.Y. (R. K. MacCrone, Materials Div., School of Engineering, Rensselaer Polytechnic Inst., Troy, N.Y. 12181)

3-5. USA-Japan Computer Conf., American Federation of Informational Processing Soc. and Information Processing Soc. of Japan, Tokyo, Japan. (R. W. Rector, University Extension, Continuing Education in Engineering and Science, 6115 Mathematical Sciences Bldg., Univ. of California, Los Angeles 90024)

3-6. American Roentgen Ray Soc., Washington, D.C. (T. F. Leigh, Emory Univ. Clinic, Atlanta, Ga. 30322)

3-6. Trends in Physics, European Physical Soc., Wiesbaden, West Germany. (EPS, P.O. Box 39, CH-1213 Petit-Lancy 2, Switzerland)

3-9. Intern. Soc. of Biometeorology, 6th intern. congr., Stresa, Italy. (S. W.

# High specific activity Cyclic Nucleotides: 3',5'-cyclic AMP [<sup>32</sup>P] 1-10Ci/mmol

**Adenosine 3',5'-cyclic phosphate, triethylammonium salt [<sup>32</sup>P] NEG-011**  
1-10Ci/mmol \$225/500μCi \$400/1mCi  
Aqueous solution in combi-vial in dry ice

**Adenosine 3',5'-cyclic phosphate, ammonium salt [<sup>3</sup>H(G)] NET-275**  
20-30Ci/mmol \$35/250μCi \$90/1mCi \$270/5mCi  
Ethanol:water, 1:1, in combi-vial in dry ice

**Adenosine 3',5'-cyclic phosphate, ammonium salt [8-<sup>14</sup>C] NEC-463**  
40-60mCi/mmol \$70/5μCi \$285/25μCi  
Ethanol:water, 1:1, in combi-vial in dry ice

**Guanosine 3',5'-cyclic phosphate, ammonium salt [<sup>3</sup>H(G)] NET-337**  
1-5Ci/mmol \$45/250μCi \$110/1mCi \$330/5mCi  
Ethanol:water, 1:1, in combi-vial in dry ice

**N<sup>6</sup>, 2'-O-Dibutyl adenosine 3',5'-cyclic phosphate, ammonium salt [<sup>3</sup>H(G)] NET-310**  
5-10Ci/mmol \$60/250μCi \$150/1mCi \$450/5mCi  
Ethanol:water, 1:1, in combi-vial in dry ice



**New England Nuclear**

575 Albany Street, Boston, Mass. 02118  
Customer Service (call collect) 617-482-9595

NEN Canada Ltd., Dorval, Quebec; NEN Chemicals GmbH, Dreieichenhain, Germany.  
Circle No. 87 on Readers' Service Card

## ART & SCIENCE

INTERNATIONAL JOURNAL OF THE CONTEMPORARY ARTIST

# LEONARDO

REVUE INTERNATIONALE DE L'ARTISTE CONTEMPORAIN

*"LEONARDO is an impressive publication. As there is nothing like it, it seems to be an obvious response to a need. Actually, now that LEONARDO, has appeared, it seems odd that such a Journal has not been published long before this... the editing is exceptional."*

*O.W. Riegel, Director,  
Lee Memorial Journalism Foundation,  
Washington and Lee University.*

LEONARDO is a truly international journal reflecting the developing world-wide impact of contemporary works of art on mankind. Articles published are written by artists in the various branches of the visual or plastic fine arts and by specialists on new developments of interest to artists in the sciences, technology, education and in the psychology of creativity. Although LEONARDO is designed for professional artists and art teachers, it is of outstanding value to anyone interested in the contemporary art scene and in the relationships between art, science and technology. The Founder-Editor, Frank J. Malina, can be contacted at 17 rue Emile Dunois, 92 Boulogne sur Seine, France.

**Published Quarterly**  
Annual subscription to multiple readership establishments 132.00 FF £10.00 \$35.00 per annum  
Special two years subscription 238.00 FF £18.00 \$45.00  
Individual subscription rate (for personal use only) 40.00 FF £3.00 \$7.50  
(There is no two year rate discount to private subscribers)  
Please send your order with payment to  
**LEONARDO**  
Pergamon Press Ltd  
Headington Hill Hall  
Oxford OX3 0BW  
England

Circle No. 89 on Readers' Service Card

Tromp, Hofbrouckerlaan 54, Cegstgeest., Leiden, Netherlands)

4-6. **Food Plants and Their Diets in Relation to Environmental Factors**, Intern. Assoc. for Quality Research on Food Plants and German Soc. for Quality Research, Berlin, West Germany. (W. Schupan, D-6222, Geisenheim/Rheingau Heidestrasse 9, West Germany)

4-6. **Populations by Microorganisms**, New York Acad. of Sciences, New York, N.Y. (W. Likely, NYAS, 2 E. 63 St., New York 10021)

4-6. **Thrombosis and the Molecular Biology of the Platelet and Other Interacting Cells**, 2nd intern. symp., Chicago, Ill. (R. M. Booyse, Dept. of Biochemistry, Rush Medical College, 1753 W. Congress Pkwy., Chicago 60612)

4-18. **Forests and Social-Economic Development**, 7th World Forestry Congr., Buenos Aires, Argentina. (M. B. Dickerman, U.S. Natl. Committee, U.S. Dept. of Agriculture, Forest Service, Washington, D.C. 20250)

5-6. **The Military and Society**, 5th symp., U.S. Air Force Acad., Colo. (R. Fogleman, Dept. of History, USAF Academy 80840)

5-6. **Toward a Unified Concept of Biological Waste Treatment Design**, Intern. Assoc. on Water Pollution Research, Atlanta, Ga. (F. G. Pohland, Civil Engineering Dept., Georgia Inst. of Technology, Atlanta)

5-7. **Culture of Invertebrate Animals**, Greenport, N.Y. (W. L. Smith, Dept. of Marine Science and Technology, Suffolk County Community College, Selden, N.Y. 11784)

5-7. **National Gaming Council**, 11th annual symp., Baltimore, Md. (S. J. Kidder, Center for Social Organization of Schools, Johns Hopkins Univ., 3505 N. Charles St., Baltimore 21218)

5-7. **Federation for Unified Science Education**, 7th conf., Gainesville, Fla. (B. R. Blair, 803 Seagle Bldg., Univ. of Florida, Gainesville 32601)

5-8. **Alcoholism and Addiction**, intern. conf., Dun Laoghaire, Ireland. (Mrs. O. Thompson, Irish Natl. Council on Alcoholism, 19 Fleet St., Dublin 2, Ireland)

5-8. **American Soc. of Bariatrics**, Las Vegas, Nev. (W. L. Asher, 3195 S. Broadway, Englewood, Colo. 80110)

6-7. **Atmospheric Physics**, American Physical Soc., New York State section, Rochester. (F. K. Elder, Jr., Rochester Inst. of Technology, 1 Lamb Memorial Dr., Rochester 14623)

6-7. **Endocrinology and Metabolism**, 8th Midwest conf., Columbia, Mo. (A. D. Kenny, Space Sciences Research Center, Univ. of Missouri-Columbia, Research Park, Columbia 65201)

6-8. **New Dimensions in Planetarium Use**, Middle Atlantic Planetarium Soc., Chadds Ford and West Chester, Pa. (M. A. Bennett, Splitz/McGraw-Hill, Chadds Ford 19317)

8. **International Soc. for Developmental Psychobiology**, Houston, Tex. (W. A. Himwich, Thudichum Psychiatric Research Lab., Galesburg State Research Hospital, Galesburg, Ill. 61401)

8-11. **Society of Research Administrators**, 6th annual, Seattle, Wash. (D. V. Baker, Dept. of Pathology, Univ. of Washington, Seattle 98195)

8-12. **Education in the Health Sciences**, 1st intern. conf., The Hague, Netherlands. (C. A. Chorus, P.O. Box 9058, The Hague)

8-13. **Chemistry and Physics of Compound Semiconductor Surfaces and Molecular Beam Epitaxy**, Electronics Div., Electrochemical Soc., Miami Beach, Fla. (H. R. Huff, Texas Instruments Inc., P.O. Box 5936, M/S 144, Dallas 75222)

8-13. **Electrochemical Soc.**, Miami Beach, Fla. (E. G. Enck, ES, P.O. Box 2071, Princeton, N.J. 08540)

8-13. **International Congr. of Nephrology**, 5th, Mexico City, Mexico. (J. E. Exiarc, Inst. Nacional de Cardiologia, Dpto. de Nefrologia Avenida, Cuauhtemoc 300, Mexico 7, D.F.)

8-13. **Water Pollution Control Federation**, Atlanta, Ga. (R. A. Canham, WPCF, 3900 Wisconsin Ave., Washington, D.C. 20016)

9-10. **Radiation Sterilization**, United States Pharmacopeial Convention, Inc., Washington, D.C. (R. H. Henry, USPCI, 12601 Twinbrook Parkway, Rockville, Md. 20852)

9-12. **Cybernetics and Society**, American Soc. for Cybernetics, jointly with Inst. of Electrical and Electronics Engineers, Washington, D.C. (K. S. Narendra, Engineering and Applied Science, Yale Univ., 10 Hill House, New Haven, Conn. 06520)

9-12. **Instrument Soc. of America**, New York, N.Y. (H. S. Kindler, ISA, 400 Stanwix St., Pittsburgh, Pa. 15222)

9-12. **International Iron and Steel Inst.**, 6th conf., London, England. (IISI, 5 Place du Cham de Mars, 1050 Brussels, Belgium)

9-12. **Association of Official Analytical Chemists**, 86th annual Washington, D.C. (L. G. Ensminger, AOAC, Box 540, Benjamin Franklin Sta., Washington, D.C. 20044)

9-12. **American Osteopathic Assoc.**, 77th annual, Bal Harbour, Fla. (E. P. Crowell, AOA, 212 E. Ohio St., Chicago, Ill. 60611)

9-13. **American Dietetic Assoc.**, 55th annual, New Orleans, La. (Mrs. J. R. Barnes, ADA, 620 N. Michigan Ave., Chicago, Ill. 60611)

9-13. **International Commission on Optics**, 9th conf., Santa Monica, Calif. (D. S. Nicholson, P.O. Box 95213, Air Force Unit Post Office, Los Angeles, Calif. 90045)

9-13. **International Congr. of Orthopedic Surgery and Traumatology**, 12th, Tel Aviv, Israel. (Secretariat, SICOT 12, P.O. Box 16271, Tel Aviv)

9-13. **Reactor Shielding**, 4th intern. conf., European Nuclear Energy Agency, French Atomic Energy Commission, in collaboration with the Intern. Atomic Energy Agency, Paris, France. (J. H. Kane, Office of Information Services, U.S. Atomic Energy Commission, Washington, D.C. 20545)

10-11. **Industrial Health Foundation**, 37th annual, Pittsburgh, Pa. (R. T. P. deTreville, IHF, 5231 Centre Ave., Pittsburgh 15232)

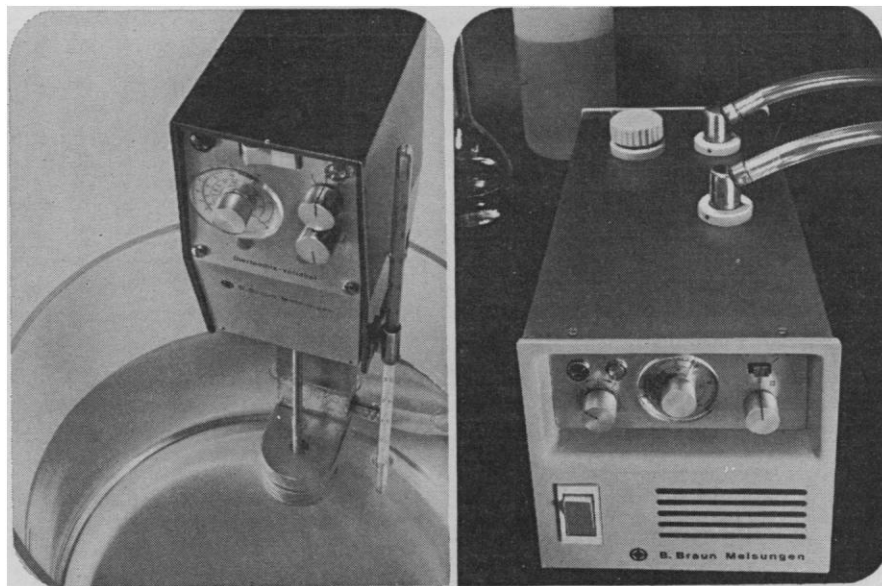
10-13. **International Symp. on Chemiluminescence**, Athens, Ga. (ISC, Dept. of Chemistry, Univ. of Georgia, Athens 30601)

10-13. **Proton Linear Accelerator Conf.**, Los Alamos, N.M. (M. S. Livingston, Los

# They have Thermistors!

## Bronwill's two new constant temperature circulators have them.

These semi-conductor sensors give instant response over a broad range . . . maintain uniformity better than  $\pm 0.01^\circ\text{C}$  . . . *certified*. No thermoregulators to change for different ranges, no breakage, *no chance of mercury contamination!* Just dial directly the dual controls (coarse and fine) to select temperature. Heater wattage is automatically proportioned to assure "straight-line" temperature control (off-on time equal). Solid state circuitry is designed to minimize RF interference.



**Variabel** . . . today's most advanced immersion circulator. Converts any container up to 30 liters into a constant temperature bath. Circulates up to 12 l/min. Temperature range, ambient to  $+120^\circ\text{C}$  . . . below ambient with accessory cooling coil.

**Thermomant** . . . reservoir-type, controls liquid temperature in closed systems or open baths up to 25 liters. Dual action: suction, 8 l/min.; pumping, 10 l/min. Choice of 1000 or 2000 watts of maximum power to minimize "overshoot". Temperature range, ambient to  $+100^\circ\text{C}$ ; built-in cooling coil for below ambient.

### Plus the rest of the full line of Bronwill CTC'S

**CTC Jr.** . . . the *economical* immersible CTC that converts any container up to 15 liters into a constant temperature bath.

**CTC 20** . . . the *ultra-reliable, accurate*, immersible CTC—now with all solid state circuitry. It heats, circulates and pumps up to 12 liters/minute.

**CTC Sr.** . . . the *high temperature* (up to  $200^\circ\text{C}$ ), heavy duty immersible CTC that heats, controls, pumps oil or water in any container with a capacity up to 60 liters.

**CTC 25 Adapt-O-Cool™** . . . *refrigerated coil unit* fits most circulators or can be used alone. Operates quietly from  $-25^\circ\text{C}$  up to  $40^\circ\text{C}$  (compressor reservoir protects refrigerant system above ambient). Exceptional efficiency, optimum pump-down times.

Sold and serviced by **VWR Scientific**   
A VWR United Company

Albuquerque • Anchorage • Atlanta • Baltimore • Boston • Buffalo • Columbus • Denver  
Detroit • Honolulu • Houston • Kansas City • Los Angeles • New York City  
Phoenix • Portland • Rochester • Salt Lake City • San Francisco • Seattle  
Circle No. 40 on Readers' Service Card

## What in the world ARE YOU doing with a Brinkmann Micromanipulator?

First and foremost, Brinkmann micromanipulators were designed for biological applications, so it's no surprise they are widely used in microsurgery and neurophysiology.

What is surprising is that they have so many other uses. For example, in microchemistry, they're used to handle radioactive samples; in electronics, to probe microcircuits, and by physicists to align laser systems.

What could you be doing more efficiently with a Brinkmann micromanipulator? Over 40 different models permit precise movement in magnification ranges up to 750X. There are inverted models, models with calibrated high sensitivity drives, tilting and rotating devices, and a full range of accessories. Let our free catalog start you thinking of some novel new uses. Just write: Brinkmann Instruments, Cantiague Rd., Westbury, New York 11590.



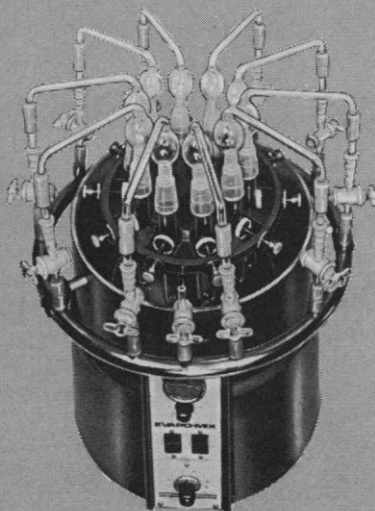
Circle No. 82 on Readers' Service Card

## Speed up your drug determination!

# ROTARY EVAPO-MIX

- Extract up to 4 ml/min of chloroform\*
- Multiple Use of Test Tubes
- Internally mounted temperature-controlled water bath
- Exclusive Orbital Mixing Action
- Simultaneous concentration or evaporation of 10 samples

\*When used with a Buchler aspirator pump



**BUCHLER INSTRUMENTS DIVISION**  
**NUCLEAR-CHICAGO CORP.**

A SUBSIDIARY OF G. D. SEARLE & CO.

1327 SIXTEENTH STREET, FORT LEE, NEW JERSEY, 07024

Circle No. 86 on Readers' Service Card

Alamos Meson Physics Facility, Los Alamos Scientific Laboratory, Los Alamos 87544)

10-13. American Vacuum Soc., Chicago, Ill. (Mrs. D. M. Hoffman, RCA Laboratories, Princeton, N.J. 08540)

10-15. Soc. for Clinical and Experimental Hypnosis, Boston, Mass. (Mrs. M. Kenn, SCEH, 140 West End Ave., New York 10023)

11-12. Gearing and Transmission, American Soc. of Mechanical Engineers, San Francisco, Calif. (M. Jones, Information Services, ASME, 345 E. 47 St., New York 10017)

11-13. American Assoc. of Petroleum Geologists and Soc. of Economic Paleontologists and Mineralogists, Gulf Coast, Corpus Christi, Tex. (Miss K. Wilson, AAPG, 1444 S. Boulder, Box 979, Tulsa, Okla. 74101)

11-14. American Inst. of Chemical Engineers, 1st Pacific congr., Kyoto, Japan. (AICE, 345 E. 47 St., New York 10017)

11-14. American Soc. of Human Genetics, Philadelphia, Pa. (W. E. Nance, Medical Genetics, Univ. of Indiana, 1100 W. Michigan St., Indianapolis 46202)

11-14. American Soc. of Photogrammetry, Columbus, Ohio. (W. Prescott, 4822 E. Livingston, Columbus 43227)

11-19. Institute of Sanitation Management, 15th annual, Philadelphia, Pa. (H. C. Rowe, ISM, 1710 Drew St., Clearwater, Fla. 33515)

11-24. World Meteorological Organization, Commission for Marine Meteorology, 6th session, Tokyo, Japan. (Secretariat, WMO, P.O. Box 1, CH-1211, Geneva 20, Switzerland)

12-15. American Academy of Child Psychiatry, New Orleans, La. (Miss L. M. Robinson, 1800 R St., NW, Washington, D.C. 20009)

12-15. Public Health, an Interdisciplinary Approach, Bucaramanga, Colombia. (C. P. Martinez, Asociacion Colombiana para el Avance de la Ciencia, Air Box 783, Bucaramanga)

13-17. American School Health Assoc., San Diego, Calif. (G. R. Knotts, 107 S. Depeyster St., Kent, Ohio 44240)

13-21. American Soc. of Clinical Pathologists and College of American Pathologists, San Francisco, Calif. (J. Graves, Intersociety Committee on Pathology Information, Inc., College of American Pathologists, 9650 Rockville Pike, Bethesda, Md. 20014)

14-15. Histochemical Soc., Boston, Mass. (S. I. Zacks, Dept. for Sick and Injured, Pennsylvania Hospital, 8th and Spruce Sts., Philadelphia 19107)

14-19. American Academy of Pediatrics, New York, N.Y. (R. G. Frazier, AAP, 1801 Hinman Ave., Evanston, Ill. 60201)

15-17. The Environment—Conflicts, Costs, Action, Blacksburg, Va. (Miss M. A. Johnson, Burruss 400, Virginia Polytechnic Inst. and State Univ., Blacksburg 24061)

15-17. International Federation of Fertility Socs., 8th world congr. of Fertility and Sterility, Tokyo, Japan. (I. Halbrecht, Medical School, Tel Aviv Univ., Tel Aviv, Israel)

15-18. American Gas Assoc.—Inst. of Gas Technology, Cincinnati, Ohio. (AGA, 1515 Wilson Blvd., Arlington, Va. 22209)



# The Columbia Series in Molecular Biology

Ernest Borek, Advisory Editor

## NUCLEIC ACID SEQUENCE ANALYSIS

Stanley Mandel. A comprehensive survey of the methods used to determine base sequences in nucleic acids, designed to stimulate the development of new methods and approaches, and to improve those already in use.

\$15.00 (October)

## THE MODIFIED NUCLEOSIDES IN NUCLEIC ACIDS

Ross H. Hall. This volume gathers pertinent facts about modified nucleosides and places them in their proper perspective with respect to nucleic acid structure and function. "A standard in the field."—*Nature*

\$20.00

## CONTROL MECHANISMS AND PROTEIN SYNTHESIS

S. D. Wainwright. This volume is a summary of what is presently known about mechanisms controlling the biosynthesis of specific proteins, with indications of areas of substantial ignorance at present and discussion of the probable direction of future research.

\$20.00

## INFORMATION THEORY AND THE LIVING SYSTEM

Lila Gatlin. This work makes the subtle revisions in basic theory necessary to apply information theory to the living system in a new and detailed manner.

\$10.00

**COLUMBIA UNIVERSITY PRESS**



Address for orders:  
136 South Broadway,  
Irvington, New York 10533

Circle No. 80 on Readers' Service Card

15-20. American Council of Independent Laboratories, San Juan, Puerto Rico. (P. Ledoux, Ledoux & Co., 359 Alfred Ave., Teaneck, N.J. 07666)

15-20. International Congr. of Radiology, 13th, Madrid, Spain. (J. Bonmati, La Gasca 27, Madrid 1)

15-21. American College of Gastroenterology, Montreal, P.Q., Canada. (D. Weiss, ACG, 299 Broadway, New York 10017)

16-17. Association of Earth Science Editors, Inc., Boulder, Colo. (Mrs. P. W. Dickerson, AESE, Box 31571, Dallas, Tex. 75231)

16-17. American Assoc. of Poison Control Centers, and American Acad. of Pediatrics, 15th annual, New York, N.Y. (M. S. McIntire, Childrens Memorial Hospital, 44th and Dewey Ave., Omaha, Neb. 68105)

16-18. Society for Industrial and Applied Mathematics, Austin, Tex. (R. K. Windsor, SIAM, 33 S. 17 St., Philadelphia 19103)

16-19. American Soc. for Metals, Cleveland, Ohio. (A. R. Putnam, ASM, Metals Park, Ohio 44073)

16-19. American Soc. for Nondestructive Testing, Cleveland, Ohio. (ASNT, 914 Chicago Ave., Evanston, Ill. 60202)

16-20. Congress of Neurological Surgeons, Denver, Colo. (R. G. Ojemann, Massachusetts General Hospital, Boston 02114)

17-19. Institute of Navigation, Annapolis, Md. (R. E. Freeman, IN, Suite 832, 815 15th St., NW, Washington, D.C. 20005)

17-19. Technology for Man, Human Factor Society, 16th, Beverly Hills, Calif. (J. L. Hoyt, HFS, P.O. Box 1369, Santa Monica, Calif. 90406)

17-20. Society for Experimental Stress Analysis, Seattle, Wash. (R. E. Rossi, SESA, 21 Bridge Sq., Westport, Conn. 06880)

17-20. Optical Soc. of America, San Francisco, Calif. (Miss M. E. Warga, OSA, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

17-21. Congress of Neurological Surgeons, Denver, Colo. (B. S. Patrick, University Medical Center, Jackson, Miss. 39216)

18-20. Entomological Soc. of America, Eastern Branch, Atlantic City, N.J. (D. J. Sutherland, Dept. of Entomology and Economic Zoology, College of Agriculture and Environmental Science, P.O. Box 231, Rutgers Univ., New Brunswick, N.J. 08903)

19-20. International Congr. on Road Safety, Dutch Road Safety Assoc., The Hague, Netherlands. (Secretariat, c/o Holland Organising Centre, 16, Lange Voorhout, The Hague)

19-20. Recycling Municipal Wood Fiber Wastes for Paper, Milwaukee, Wis. (J. Gammell, Univ. of Wisconsin-Extension, Dept. of Engineering, 600 W. Kilbourn Ave., Milwaukee 53203)

19-21. Tau Beta Pi Assoc., Inc., College Park, Md. (R. H. Nagel, Box 8840, University Sta., Knoxville, Tenn. 37916)

19-22. American College of Apothecaries, San Francisco, Calif. (R. A. Benedict, ACA, 7758 Wisconsin Ave., Washington, D.C. 20014)

# TLC

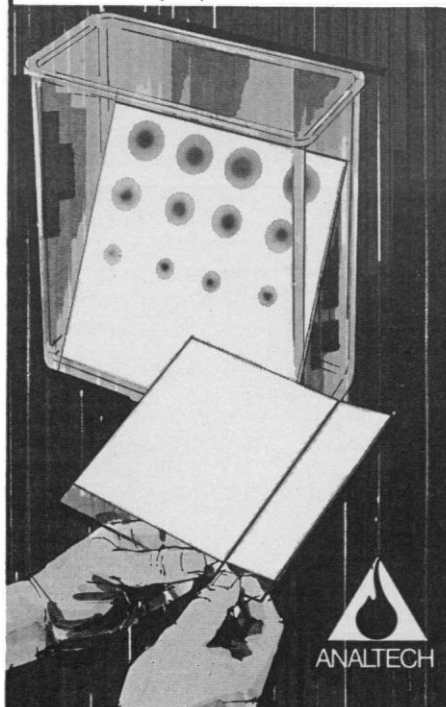
## PRE-COATED THIN LAYER CHROMATOGRAPHY PLATES (Ready-For-Use)

Analtech offers the widest range of pre-coated TLC plates available. Absolute uniformity assures reproducibility whether your application is in research, quality control, clinical TLC tests or drug screening.

■ Delivery is from stock on all coatings and sizes.

■ Low cost—write for catalog, prices.  
**ANALTECH, INC.**

75 BLUE HEN DRIVE,  
NEWARK, DELAWARE 19711  
(302) 737-6960



Circle No. 85 on Readers' Service Card

20. **Industrial Pharmacy Section**, American Pharmaceutical Assoc., 12th annual eastern regional, Cherry Hill, N.J. (A. J. Scarpone, Pharmaceutical Product Development Dept., Lederle Labs., Pearl River, N.Y. 10965)

20-21. **Magnetospheric Substorms**, American Geophysical Union, Houston, Tex. (AGU, 1707 L St., NW, Washington, D.C. 20036)

20-2. **Aerospace Medicine**, 2nd intern. congr., Intern. Acad. of Aviation and Space Medicine, Melbourne, Australia. (F. Parle, ICAM-72, 50 Franklin St., Melbourne, Victoria 3000)

22-25. **Diagnostic Radiologic Facilities and Operations**, Rochester, N.Y. (D. LiLella, Univ. of Rochester School of Medicine and Dentistry, Rochester 14642)

22-25. **Electrical Insulation and Dielectric Phenomena**, Natl. Acad. of Sciences, Buck Hill Falls, Pa. (R. A. Cliffe, NAS, 2101 Constitution Ave., NW, Washington, D.C. 20418)

22-26. **American College of Chest Physicians**, Denver, Colo. (A. Soffer, ACCP, 112 E. Chestnut St., Chicago, Ill. 60611)

22-26. **International Council for Scientific Management**, 16th intern. congr., Munich, Germany. (Rationalisierungs-Kuratorium der Deutschen Wirtschaft (RKW) e.V., Postfach 9193, 6000 Frankfurt/Main 9, Germany)

23. **Medical Correctional Assoc.**, New York, N.Y. (Miss C. Malamud, 171 Hawthorne Ave., Glen Ridge, N.J.)

23-24. **Spectroscopy Symp. and Exhibition**, 19th, Spectroscopy Soc. of Canada, Montreal, P.Q., Canada. (J. G. Dick, Dept. of Chemistry, Sir George Williams Univ., 1435 Drummond St., Montreal)

23-26. **American Inst. of Biological Sciences**, 2nd natl., Miami Beach, Fla. (AIBS, 3900 Wisconsin Ave., NW, Washington D.C. 20016)

23-26. **A World of Information**, American Soc. for Information Sciences, 35th annual, Washington, D.C. (ASIS, Suite 804, 1140 Connecticut Ave., NW, Washington, D.C. 20036)

23-28. **Medical Radioisotope Scintigraphy**, Intern. Atomic Energy Agency, Monaco. (J. H. Kane, Office of Information Services, U.S. Atomic Energy Commission, Washington, D.C. 20545)

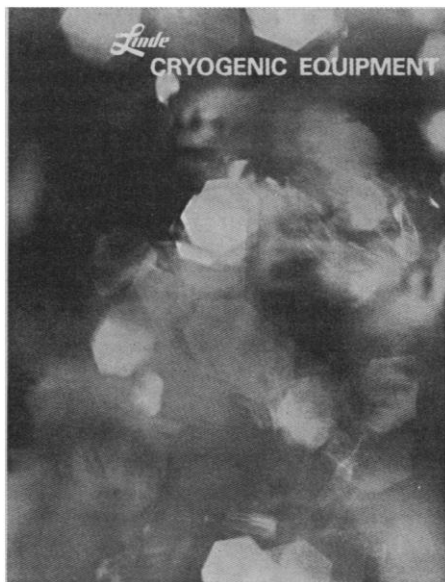
24-26. **Analytical Chemistry in Nuclear Technology**, 16th conf., Oak Ridge National Lab., Gatlinburg, Tenn. (L. J. Brady, P.O. Box X, ORNL, Oak Ridge, Tenn. 37830)

24-26. **International Conf. on Computer Communication**, Assoc. for Computing Machinery, IEEE Computer Soc., and IEEE Communication Technology Group, Washington, D.C. (S. Winkler, IBM Corp., 18100 Frederick Pike, Gaithersburg, Md. 20760)

24-26. **Continuing Medical Education**, State Medical Association Representatives, 3rd natl. conf., American Medical Assoc., Chicago, Ill. (C. H. W. Ruhe, Div. of Medical Education, AMA, 535 N. Dearborn St., Chicago 60610)

24-27. **Heat and Mass Transfer Problems in Food Engineering**, Intern. Union of Food Science and Technology and European Federation of Chemical Engineering, Wageningen, Netherlands. (In-

# EVERYTHING FROM A 2-LITER DEWAR TO A 50,000-GALLON STORAGE TANK IS IN IT.



**FREE.**  
**Linde's new**  
**34-page**  
**catalog.**  
**The most**  
**complete**  
**in the**  
**industry.**

What are your needs? Refrigerators, containers, accessories, liquid cylinders, storage tanks, super insulated systems, cryogenic liquids?

They're here in our big, new catalog. It lists all of Linde's high-quality, super-insulated cryogenic equipment with current prices.

And to make it easy for you to order, we've included a special insert listing all 34 Linde Distributor locations nationwide. The insert also includes prepaid postcards that make it easy for you to request any one or more of 42 other special-subject cryogenic booklets we have for you.

When you use Linde's new Cryogenic Equipment Catalog you can be sure of getting *what* you want *when* you want it.

Send for your free copy of Linde's Cryogenic Equipment Catalog today.

**UNION  
CARBIDE**

**CRYOGENIC  
PRODUCTS**

"Linde" is a registered trademark of Union Carbide Corporation.

**UNION CARBIDE CORPORATION**  
**LINDE DIVISION**  
**DEPT. S-9, P.O. BOX 766**  
**RADIO CITY STATION**  
**NEW YORK, NEW YORK 10019**

Gentlemen:

Please send me the Cryogenic Equipment Catalog that has everything from a 2-liter Dewar to a 50,000 gallon storage tank in it.

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

ADDRESS \_\_\_\_\_

COMPANY \_\_\_\_\_

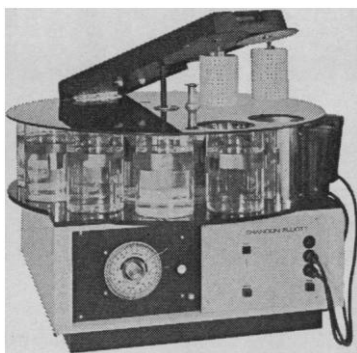
ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_

ZIP \_\_\_\_\_

## NOW...UP TO 72 TISSUES PROCESSED AT ONE TIME



The Shandon-Elliott Duplex Automatic Tissue Processor cycles two baskets, each holding up to 36 tissues, through a series of equal immersion-time routines requiring up to 12 processing stations. Equal-time routines involving less than 12 stations can be started at any point. Or the machine can process up to 36 tissues for special routines. Other features include 24-hour timer, delayed action, automatic agitation, and a third hot wax bath unit.

Send for literature and prices to Shandon Southern Instruments, Inc., 515 Broad Street, Sewickley, Pa. 15143 (Pittsburgh District).

# SHANDON

PITTSBURGH • LONDON • FRANKFURT

Circle No. 83 on Readers' Service Card

## continuously adjustable digital microliter pipettes

## PIPETMAN™

- excellent reproducibility
- precise compensation for variation in fluid viscosity
- two-step pushbutton operation
- disposable pipette tips eliminate cross contamination

A SINGLE PIPETMAN™  
DOES THE JOB OF AS MANY AS  
20 FIXED-VOLUME PIPETTES

Model	Capacity	Price
P 20	0 - 20 $\mu$ l	\$98.00
P 200	0 - 200 $\mu$ l	\$98.00
P 1000	0 - 1000 $\mu$ l	\$98.00

All models supplied with 100 disposable tips.

## RAININ

INSTRUMENT CO. INC.

1030 COMMONWEALTH AVE.  
BOSTON, MA 02215  
TEL. (617) 277-3335

tern. Agricultural Centre, P.O. Box 88, Wageningen)

25-27. **Parenteral Drug Assoc.**, New York, N.Y. (H. E. Boyden, PDA, Western Savings Fund Bldg., Broad and Chestnut Sts., Philadelphia, Pa. 19107)

25-28. **National Assoc. of Biology Teachers**, Anaheim, Calif. (J. P. Lightner, NABT, 1420 N St., NW, Washington, D.C. 20005)

25-28. **Implementing Nuclear Safeguard**, sponsored by Natl. Science Foundation, Manhattan, Kan. (R. Leachman, Diversion Safeguard Program, Cardwell Hall, Kansas State Univ., Manhattan 66502)

26-27. **Solid Earth and Ocean Tides**, Geodesy/Solid Earth and Ocean Physics Research Conf., Columbus, Ohio. (A. F. Spilhaus, Jr., AGU, 1707 L St., NW, Washington, D.C. 20036)

26-28. **National Council for Geographic Education**, Milwaukee, Wis. (W. E. Elam, NCGE, Room 1226, 111 W. Washington, Chicago, Ill. 60602)

26-28. **Religious Scene in the 70's: Analysis and Prospects**, Soc. for the Scientific Study of Religion, Inc., Boston, Mass. (W. V. D'Antonio, SSSR, Box U68A, Univ. of Connecticut, Storrs 06268)

27. **Utah Acad. of Sciences, Arts and Letters**, Salt Lake City. (H. Buchanan, Dept. of Botany, Weber State College, Ogden, Utah 84403)

27-28. **Research in Issues in Social Intervention Programs**, New York Acad. of Sciences, New York, N.Y. (W. Likely, NYAS, 2 E. 63 St., New York 10021)

27-29. **Philosophy of Science Assoc.**, Lansing, Mich. (P. D. Asquith, Dept. of Philosophy, Morrill Hall, Michigan State Univ., East Lansing 48823)

29. **American College of Dentists**, San Francisco, Calif. (R. J. Nelsen, ACD, Suite 304, 7316 Wisconsin Ave., Bethesda, Md. 20014)

29-1. **International Socs. for Hygiene, Preventive and Social Medicine**, Vienna, Austria. (Mrs. E. Weidenhaus, Weiner Medizinische Akademie, Stadiongasse 6-8, A 1010 Vienna)

29-1. **Problem-Directed and Medical Information Systems**, 4th annual, Soc. for Advanced Medical Systems, Saddle Brook, N.J. (Mrs. P. Horner, SAMS, Suite N-300, 3900 Wisconsin Ave., NW, Washington, D.C. 20016)

29-1. **Academy of Psychosomatic Medicine**, San Diego, Calif. (A. J. Krakowski, APM, 202A Cornelia St., Plattsburgh, N.Y. 12901)

29-1. **American Inst. of Ultrasound in Medicine**, 17th annual, Philadelphia, Pa. (B. B. Goldberg, Dept. of Radiology, Episcopal Hospital, Front St. and Lehigh Ave., Philadelphia 19125)

29-2. **American Assoc. of Cereal Chemists**, Miami Beach, Fla. (R. J. Tarleton, AACC, 3340 Pilot Knob Rd., St. Paul, Minn. 55121)

29-2. **American Dental Assoc.**, San Francisco, Calif. (C. G. Watson, ADA, 211 E. Chicago Ave., Chicago, Ill. 60611)

29-2. **Materials Research Symp.**, Inst. for Materials Research, Natl. Bureau of Standards, Gaithersburg, Md. (Office of Standards Reference Materials, NBS, Washington, D.C. 20234)

29-3. **Serving Man in an Urban En-**

vironment, American Soc. of Agronomy, Crop Science Soc. of America, and Soil Science Soc. of America, Miami Beach, Fla. (M. Stelly, ASA, 677 S. Segoe Road, Madison, Wis. 53711)

30-3. **Microzonation for Safer Construction**—Research and Application, intern. conf., sponsored by Natl. Science Foundation, UNESCO, and Univ. of Washington, Seattle. (M. A. Sherif, Engineering Div., Natl. Science Foundation, 1800 G St., NW, Washington, D.C. 20550)

31-1. **Air Pollution Control Conf.**, 11th annual, Lafayette, Ind. (D. W. Hawkins, Civil Engineering Bldg., Purdue Univ., Lafayette 47907)

31-2. **Eastern Analytic Symp.**, 14th, Atlantic City, N.J. (R. M. Crocco, EAS, Ortho Pharmaceutical Corp., Route 202, Raritan, N.J. 08869)

31-2. **Cycling and Control of Metals**, U.S. Environmental Protection Agency, Natl. Science Foundation, and Battelle, Columbus, Ohio. (G. R. Smithson, Jr., Columbus Laboratories of Battelle, 505 King Ave., Columbus 43201)

31-11. **International Electrotechnical Commission**, Athens, Greece. (U.S. Natl. Committee, American Natl. Standards Inst., 1430 Broadway, New York 10018)

#### November

1-2. **American Assoc. for the Study of Liver Disease**, Chicago, Ill. (F. Schaffner, Mount Sinai Hospital, Fifth Ave. and 100th St., New York 10029)

1-3. **Computers and Representation**, New York Acad. of Sciences, New York, N.Y. (W. Likely, NYAS, 2 E. 63 St., New York 10021)

1-3. **Pittsburgh Diffraction Conf.**, 30th, Pittsburgh, Pa. (J. H. Magill, Dept. of Metallurgy, Univ. of Pittsburgh, Pittsburgh 15213)

1-4. **American Soc. of Cytology**, 20th annual scientific mtg., New Orleans, La. (W. R. Lang, ASC, 7112 Lincoln Dr., Philadelphia, Pa. 19119)

1-5. **American Soc. of Clinical Hypnosis**, 15th annual and workshop on Clinical Hypnosis and Hypnotherapy, San Diego, Calif. (F. D. Nowlin, ASCH, 800 Washington Ave., SE, Minneapolis, Minn. 55414)

2-4. **Indiana Acad. of Science**, Notre Dame (J. D. Webster, Hanover College, Hanover, Ind. 47243)

2-4. **Gerontological Soc.**, Cleveland, Ohio. (E. Kaskowitz, GS, Suite 520, 1 Dupont Circle, NW, Washington, D.C. 20036)

2-4. **Trichinellosis (Trichinosis)**, 3rd intern. conf., Miami, Fla. (W. C. Campbell, Merck Inst., Rahway, N.J., or Z. Kozar, Norwida 29, Wroclaw, Poland)

2-5. **Association of Clinical Scientists**, Chicago, Ill. (F. W. Sunderman, Jr., Drawer B, Newington, Conn. 06111)

2-6. **Research in Medical Education**, Assoc. of American Medical Colleges, Miami Beach, Fla. (J. B. Erdmann, AAMC, Suite 200, 1 Dupont Circle, NW, Washington, D.C. 20036)

4. **Methods of Learning Environmental Sciences**, Illinois Earth Science Assoc., Chicago, Ill. (M. Qutub, Dept. of Earth Science, Northwestern Illinois Univ., Bryn Mawr at St. Louis Ave., Chicago 60625)

8 SEPTEMBER 1972

from the specialists  
in liquid chromatography

## Newest UV monitor outperforms all others.

### Why settle for less?

The most sophisticated  
UV monitor on the  
market costs only \$1395.  
It's the Chromatronix  
220 Absorbance Detector.

Our Model 220 gives you  
superior resolution—shown  
at right compared to a  
popular model of a leading  
competitor when both were  
operated at a full-scale range  
of 0.16 absorbance units.

It gives you easily  
quantifiable curves,  
since output is linear  
from .0002 to 1.0  
absorbance units.

It gives you the ability to detect very  
low concentrations by using our 1 cm path length cell to get  
a sensitivity of .0002 A per centimeter.

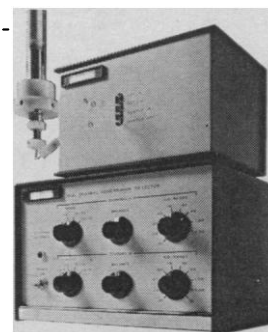
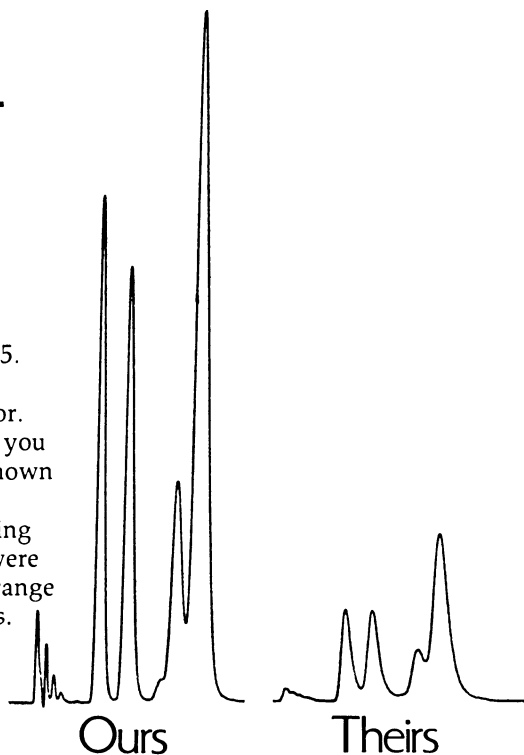
It keeps very high concentrations on scale when you use our  
.05 cm path length cell to get a linear range up to 20 A  
per centimeter ( $1.0 \text{ A} \div .05 \text{ cm}$ ).

It gives you the accuracy of true double-beam optics, in which  
the output is the difference between beam absorbance in the  
sample cell and in the reference cell.

It gives you two switch-selectable wave-  
lengths, 280 nm and 254 nm—so you can  
cope with compounds insensitive to one  
or the other.

And if you opt for our two-channel  
version (Model 230, \$1795), it gives you  
simultaneous read-outs of absorbance at  
280 nm and 254 nm.

This is a monitor you should know  
more about. Ask for a demonstration  
or send for 4-page product bulletin  
right now.



**CHROMATRONIX**

Chromatronix, Inc., 2743 Ninth Street,  
Berkeley, CA 94710. Phone (415) 841-7221.

Circle No. 42 on Readers' Service Card

915